



ANNUAL REPORT 2018-19



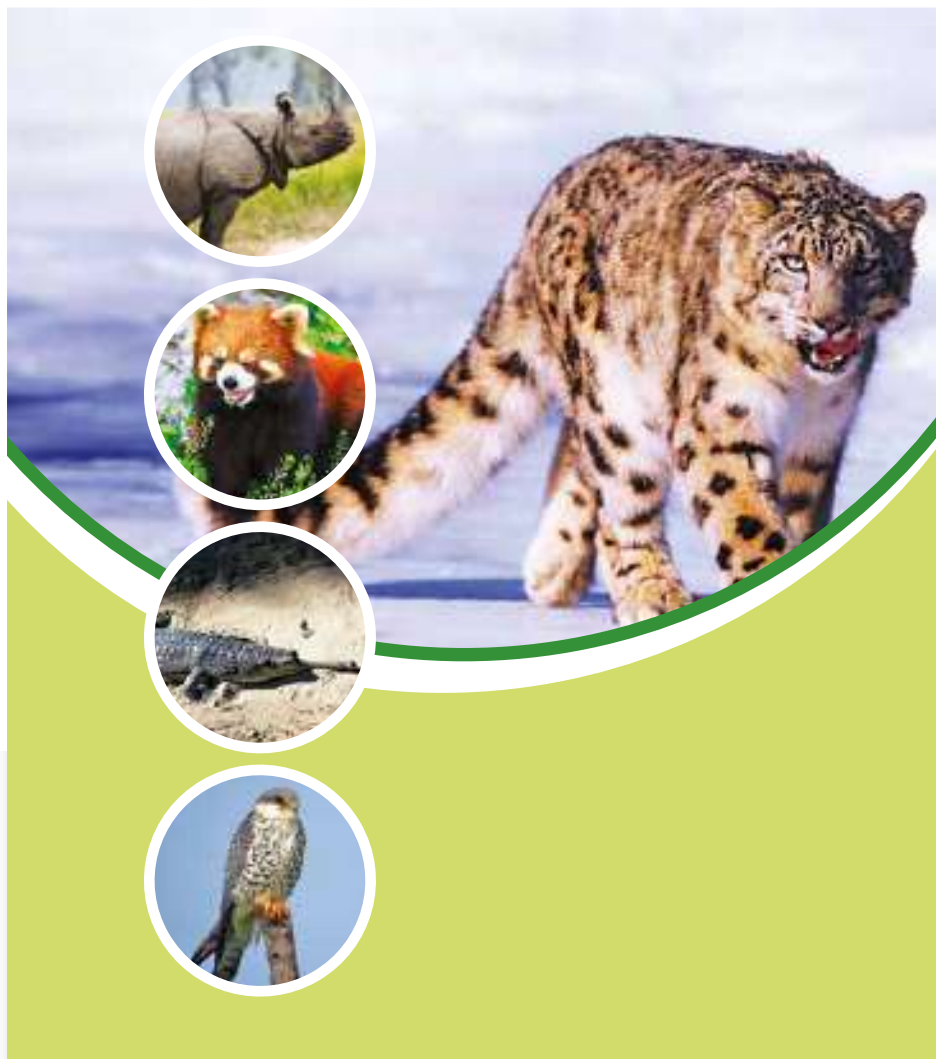
Government of India

**Ministry of Environment,
Forest and Climate Change**





ANNUAL REPORT 2018-19



Government of India
Ministry of Environment, Forest and Climate Change
New Delhi-110003



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Abbreviations

AICOPTAX	: All India Coordinated Project on Capacity Building in Taxonomy	NCZMA	: National Coastal Zone Management Authority
AW	: Animal Welfare	NEPTRI	: National Environmental Protection Training and Research Institute
BSI	: Botanical Survey of India	NESFP	: National Environmental Science Fellows Programme
BUR	: Biennial Update Report	NFA	: National Fellowship Awards
CAMPA	: Compensatory Afforestation Fund Management and Planning Authority	NFAP	: National Forestry Action Programme
CBD	: Convention on Biological Diversity	NFC	: National Forest Commission
CDM	: Clean Development Mechanism	NGO	: Non Governmental Organisation
CES	: Centre for Ecological Science	NGRBA	: National Ganga River Basin Authority
CMW	: Conservation and Management of Wetlands	NGT	: National Green Tribunal
COP	: Conference of the Parties	NIAW	: National Institute of Animal Welfare
CPA	: Control of Pollution Air	NLCP	: National Lake Conservation Plan
CPB	: Cartagena Protocol on Biosafety	NMCG	: National Mission on Clean Ganga
CPCB	: Central Pollution Control Board	NMNH	: National Museum for Natural History
CPW	: Control of Pollution Water	NNRMS	: National Natural Resources Management Systems
CRZ	: Coastal Regulation Zone	NRCD	: National River Conservation Directorate
CSD	: Commission on Sustainable Development	NRCP	: National River Conservation Plan
CT	: Clean Technology	NTCA	: National Tiger Conservation Authority
DSS	: Decision Support System	NZP	: National Zoological Park
DTEPA	: Dehanu Teluka Environment Protection Authority	OC	: Ozone Cell
EIVR	: Entities of Incomparable Value Regulations	OL	: Official Language
ENVIS	: Environmental Information System	PE	: Project Elephant
EPTRI	: Environment Protection Training & Research Institute	P G	: Public Grievances
ESA	: Ecologically Sensitive Areas	PT	: Project Tiger
GBPNIHESD	: G.B. Pant National Institute of Himalayan Environment and Sustainable Development	RE	: Research in Environment
GEAC	: Genetic Engineering Approval Committee	RFD	: Results Framework Document
GEF	: Global Environment Facility	RO	: Regional Office
GIM	: Green India Mission	ROHQ	: Regional Office Head Quarter
GLOBE	: Global Learning & Observation to Benefit the Environment	RT	: Research & Training
GOI	: Government of India	RTI	: Right to Information
GSDP	: Green Skill Development Programme	SACON	: Salim Ali Centre for Ornithology & Natural History
HSMD	: Hazardous Substance Management Division	SBA	: Swachh Bharat Abhiyan
ICIMOD	: International Centre for Integrated Mountain Development	SD	: Sustainable Development
IFS	: Indian Forest Service	SDG	: Sustainable Development Goals
IGPP	: Indira Gandhi Paryavaran Puraskar	SICOM	: Society for Integrated Coastal Management
INCCA	: Indian Network for Climate Change Assessment	SOER	: State of Environment Report
IPCC	: International Panel on Climate Change	STP	: Sewage Treatment Plants
MBP	: Man and Biosphere Programme	TOF	: Trees Outside Forest
MoEF&CC	: Ministry of Environment, Forest and Climate Change	UNCCD	: United Nations Convention to Combat Desertification
NATCOM	: National Communication	UNDP	: United Nations Development Programme
NBA	: National Biodiversity Authority	UNEP	: United Nations Environment Programme
NBAP	: National Biodiversity Action Plan	WCCB	: Wildlife Crime Control Bureau
		WGEEP	: Western Ghat Ecology Expert Panel
		WHC	: World Heritage Conservation
		WII	: Wildlife Institute of India
		ZSI	: Zoological Survey of India

Role and Mandate of the Ministry





Role and Mandate of the Ministry

The Ministry of Environment & Forest and Climate Change (MoEF&CC) is the nodal agency in the Central Government for overseeing the implementation of India's environment and forest policies and programmes relating to conservation of the country's natural resources including lakes and rivers, its biodiversity, forests and wildlife, ensuring the welfare of animals and prevention and abatement of pollution. While implementing these policies and programmes, the Ministry is guided by the principle of sustainable development. The Ministry is also the nodal agency for the United Nations Environment Programme (UNEP), South Asia Co-operative Environment Programme (SACEP), International Centre for Integrated Mountain Development (ICIMOD) and the United Nations Conference on Environment and Development (UNCED). The Ministry also coordinates with multilateral bodies such as the Commission on Sustainable Development (CSD), Global Environment Facility (GEF) and regional bodies such as Economic and Social Council for Asia and Pacific (ESCAP) and South Asian Association for Regional Cooperation (SAARC) on matters pertaining to environment. The broad objectives of the Ministry are:

- Conservation and survey of flora, fauna, forests and wildlife
- Prevention and control of pollution
- Afforestation and regeneration of degraded areas
- Protection of environment, and ensuring the welfare of animals.

These objectives are well supported by a set of

legislative and regulatory measures, aimed at the preservation, conservation and protection of the environment. Besides the legislative measures, a National Conservation Strategy and Policy Statement on Environment and Development, 1992, National Forest Policy, 1988, a Policy Statement on Abatement of Pollution, 1992 and a National Environment Policy, 2006 also guide the Ministry's work.

Subjects under the Ministry of Environment, Forest and Climate Change

The following items of work have been allocated to the MoEF&CC:

1. Environment and Ecology, including environment in coastal waters, in mangroves and coral reefs but excluding marine environment on the high seas.
2. Environment Research and Development, education, training, information and awareness.
3. Green Skill Development Programme
4. National Environmental Geodatabase
5. Environmental Health.
6. Environmental Impact Assessment.
7. Forest Development Agency and Joint Forest Management Programme for conservation, management and afforestation.
8. Survey and Exploration of Natural Resources particularly of Forest, Flora, Fauna, Ecosystems etc.
9. Bio-diversity Conservation including that of lakes and Wetlands.
10. Conservation, development, management



and abatement of pollution of rivers excluding the river Ganga and its tributaries.

11. National River Conservation Directorate.
12. Wildlife conservation, preservation, protection planning, research, education, training and awareness including Project Tiger and Project Elephant.
13. International co-operation on Issues concerning Environment, Forestry and Wildlife.
14. Botanical Survey of India and Botanical Gardens.
15. Zoological Survey of India.
16. National Museum of Natural History.
17. Biosphere Reserve Programme.
18. National Forest Policy and Forestry Development in the country, including Social Forestry.
19. All matters relating to Forest and Forest Administration in the Union territories.
20. Indian Forest Service.
21. Wildlife Preservation and protection of wild birds and animals.
22. Fundamental and applied research and training including higher education in forestry.
23. Padmaja Naidu Himalayan Zoological Park.
24. National Assistance to Forestry Development Schemes.
25. Indian Plywood Industries Research and Training Institute, Bangalore.
26. Afforestation and Eco-Development which

shall include National Afforestation and Eco- Development Board.

27. Bio-fuel plantations in forest, wastelands and environmental issues concerning bio-fuels.
28. Desert and Desertification.
29. Forest Survey of India.
30. Indian Institute of Bio-diversity, Itanagar.
31. Central Pollution Control Board.
32. G.B.Pant Institute of Himalayan Environment & Development.
33. Wildlife Institute of India and Indian Board for Wildlife.
34. Indian Institute of Forest Management.
35. Central Zoo Authority including National Zoo Park.
36. Indian Council of Forestry Research & Education.
37. Andaman and Nicobar Islands Forest and Plantation Development Corporation Limited.
38. Prevention of cruelty to animals.
39. Matters relating to pounds and cattle trespass.
40. Gaushalas and Gausadans.
41. Climate change and all other matters related thereto.
42. The Prevention of Cruelty to Animals Act, 1960 (59 of 1960).
43. The National Green Tribunal Act, 1995 (27 of 1995).



44. The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974).
45. The Water (Prevention and Control of Pollution) Cess Act, 1977 (36 of 1977).
46. The Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).
47. The Indian Forest Act, 1927 (16 of 1927).
48. Indian Forest (Amendment) Act, 2017
49. The Wildlife (Protection) Act, 1972 (53 of 1972)

50. The Forest (Conservation) Act, 1980 (69 of 1980).

51. The Environment (Protection) Act, 1986 (29 of 1986).

52. The Public Liability Insurance Act, 1991 (6 of 1991).

NOTE:- The Ministry of Environment, Forest and Climate Change will be responsible for overall policy in relation to forests, except all matters, including legislation, relating to the rights of forest dwelling Schedule Tribes on forest lands.

Natural Resources- Survey and Exploration

CHAPTER

01





1.1 Zoological Survey of India (ZSI)

ZSI is a premier research institute actively involved in the survey, exploration and research of the immensely rich faunal diversity of our country. ZSI is headquartered in Kolkata and has 16 Regional Centres across the Country.

Primary objectives

- Exploration, Survey, Inventorying and Monitoring of faunal diversity in various States, Ecosystems and Protected areas of India.
- Taxonomic studies of all faunal components collected.
- Periodic review of the Status of Threatened and Endemic species.
- Preparation of Red Data Book, Fauna of India and Fauna of States.
- Bio-ecological studies on selected important communities/species.
- Preparation of databases for the recorded species of the country.
- Maintenance & Development of National Zoological Collections.
- Training, Capacity Building and Human Resource Development.
- Faunal Identification, Advisory Services and Library Services.

Secondary Objectives:

- GIS and Remote Sensing studies for recorded animal diversity and selected threatened species, Environmental Impact Studies.

- Chromosomal Mapping and DNA finger printing.
- Development of ENVIS and CITES Centers; Maintenance of Museum at HQs and Regional Stations
- Research Fellowship, Associateship and Emeritus Scientists Programme.
- Collaborative research programmes on Biodiversity with other Organizations.

Activities undertaken:

- Faunal Identification and Surveys, New Discoveries and New Records
- Publications and Book releases; Identifications and Advisory services
- DNA Barcoding of important Taxa; ENVIS Centre on Faunal Diversity
- International Participation, Training and Extensions
- Identification of Confiscated Wildlife Material

Progress/Achievements

- Faunal Surveys:** Total surveys sanctioned for the financial year 2018-19 are 100, of which 74 have been completed by November 2018: Dr. Jasmine. P, Scientist, participated in Second Arctic Expedition. Surveys were conducted for faunal exploration to various ecosystems and protected areas : 17 surveys in Protected Areas, three surveys were conducted in Union Territories, six surveys in Marine Ecosystem, one survey of Freshwater Ecosystem, two surveys in Tropical Rain forests, three surveys

in Estuarine Ecosystems, one survey in Mangrove Ecosystem, three surveys in Himalayan Ecosystems, two surveys in Desert Ecosystems, one status survey of Endangered Species and 12 surveys for Taxonomic studies.



Royal Bengal Tiger Female Panthera tigris (Linnaeus, 1758)

- ii. **Faunal Identifications:** Various groups of animals comprising 24845 were collected from surveys conducted. Altogether 1812 species have been identified by the scientists of ZSI Headquarters and Regional Centres ranging from microscopic to the highly evolved organisms.



Studeriolites mirabilis Thomson and Simpson, 1909

- iii. **New Discoveries and New Records:** 77 species have been described by the scientists of ZSI: 2 species of Platyhelminthes, 2 Nematoda, 1 Acanthocephala, 1 Annelida, 7 Arachnida, 12 Crustacea, 4 Collembola,

3 Coleoptera, 3 Diptera, 6 Hemiptera, 11 Hymenoptera, 3 Lepidoptera, 1 Odonata, 8 Orthoptera, 5 Trichoptera, 1 Myriapoda, 4 Pisces, 2 Amphibia and 1 Reptilia



Lepus nigricollis F. Cuvier, 1823

- iv. **New records to India:** 12 species have been recorded for the first time from India.

v. **Important Books released:**

- Animal discoveries 2017 by Hon'ble Prime Minister of India during World Environment Day – 2018.
- Faunal Diversity of Biogeographic Zones: Islands of India, by Hon'ble Minister, EF&CC.
- Status of Coral Resources of India and Strategies for their Protection and Management, by Hon'ble Minister, EF&CC.
- Chelonian Types of National Zoological Collections released by Hon'ble Minister, EF&CC during his visit to FBRC, Hyderabad.
- Faunal Diversity of Estuarine Ecosystem released by Hon'ble Minister, EF&CC
- Faunal diversity of Indian Himalaya, by Secretary, MoEF&CC.



World Environment Day, 2018



Book releases by Hon'ble Minister EF&CC,
Dr. Harshvardhan



Inauguration Stapcor 2018 by Hon'ble Minister EF&CC,
Dr. Harshvardhan

vi. **Training and Extension:** Three National Conferences, six National workshops and three administrative trainings were organized during the period.

- Training program was organized on "GIS and Remote sensing and its application in zoological research".
- Workshop was organized on 'Orientation workshop on collection, preservation and identification of zoological specimens'.
- International Conference on Status and

Protection of Coral Reefs was organized.

- Swachh Bharat Abhiyan- An Initiative by Zoological Survey of India, Kolkata to Combat Plastic Pollution on the World Environment Day, 2018 was organized ZSI headquarters as well as its all 16 regional centres. Four awareness programmes were conducted at four different places of Kolkata. Awareness March to beat Plastic pollution was organized on 5th June'18.
- "International Day for Biological

Diversity” – 22nd May was organized at ZSI headquarters as well as its all 16 regional centres. The programmes included Inter-college seminar competition and In-house Quiz competition for research scholars, participation in exhibitions, bird watching programmes and internship programmes.

vii. Identification of Confiscated Wildlife

Material: Queries related to confiscated wildlife materials were attended and replied to.

viii. Identifications and Advisory services:

Identification and Advisory services were rendered to research and teaching institutions in India, Central and state Government/Agencies, NGO's, and Industries.

ix. ENVIS Centre on faunal diversity: Data Entry: Total: Entry 6442 species list.

Uploaded and updated: Fauna related News from Different Newspapers: 145; Distribution entry in ENVIS website: 735; Species edited in website: 245; Bibliography: 430 (Records of the ZSI: Vol 51 to Vol 75).

Green Skill Development Programme (GSDP) Mobile app, developed by ENVIS Centre on Biodiversity (Fauna), launched by Hon'ble Minister of Environment, Forest and Climate Change to skill India's youth.

Regional Centres of ZSI conducted the GSDP course on 'Parataxonomy including People's Biodiversity Register

International Conference on Status and Protection of Coral Reefs was organized from 22nd to 24th of October at Bangaram island

inaugurated by Hon'ble MEF. 78 participants including 26 dignitaries (with 8 overseas scientists), 42 delegates and 10 participants from Lakshadweep administration attended the Conference. 10 keynote addresses were delivered in 5 sessions covering 6 themes, followed by panel discussions with 6 panellists in each session. 31 scientific posters were presented by the participants.

International Participation:

- Scientist-D ZSI, Kolkata, participated in the Arctic Expedition Conducted by NCAOR, for the programme of ZSI "Longterm Monitoring Programme on vertical migration of Plankton and their role in the Biogeochemistry of Kongsfiorden, Arctic" from 25.06.2018 to 06.08.2018.
- Scientist-F ZSI, Kolkata, participated in the 30th meeting of the Animals Committee (AC30) of the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) from 16th to 20th July, 2018 (excluding journey period) at the Centre International de Conference (CICG) in Geneva, Switzerland.
- 2 Scientist-D, and one Scientist-C E B R C , ZSI, Gopalpur ANRC, ZSI, Port Blair ZSI, Kolkata, participated in the third leg of survey from 02.08.2018 to 17.08.2018 for Chittagong, Bangladesh.
- Director, ZSI and Scientist-D, ZSI-Kolkata, attended the 5th Asian Lepidoptera Conservation Symposium held at University of Hong Kong, Hong Kong from 13th to 14th December 2018.



List of Publications brought out:

- Two volumes of Records of Zoological Survey of India, Three Occasional papers, one Fauna of India, One Conservation Area Series (Protected Area Network), Two Guide/Handbooks and Two special publications. NAAS rating was obtained for Records of the ZSI journal 3.84. In addition, scientists of ZSI published 46 papers in SCI journals and 218 papers in National and Foreign journals.
- DNA Barcoding of important Taxa: 835 barcodes have been submitted on BOLD and about 20 sequences on NCBI have been submitted from April 2018 to November 2018: 40 Barcodes of Mammals, 2 for Birds, 13 for Reptiles, 18 for Amphibian, 186 barcodes for Fishes, 8 barcodes for ticks, 98 for Thysanoptera, 111 for Moths, 129 for Hymenoptera, 120 for Hemiptera, 10 for Coleoptera, 80 for Araneae, 5 for Crustacea, 5 for Porifera and 15 for other lower invertebrates.

SDG implementation progress in respect of Schemes(s) under the Division: Red List Index for ZSI - Actions being undertaken to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

1.2 Botanical Survey of India (BSI)

BSI is a premier research institute actively involved in the survey, exploration and research of the immensely rich floral diversity of our country. BSI is headquartered in Kolkata and has 15 Regional Centres/field offices/laboratories across the Country.

Primary Objectives:

- Exploration, inventorying and documentation of phytodiversity in general and protected areas, hotspots and fragile ecosystems in particular; publication of National, State and District Floras.
- Identification of threatened/red list species & species rich areas needing conservation; ex-situ conservation of critically threatened species in botanical gardens.
- Survey and documentation of traditional knowledge (ethno-botany) associated with plants.
- Develop a National database of Indian plants, including herbarium and live specimens, botanical paintings/illustrations, etc.

Secondary Objectives:

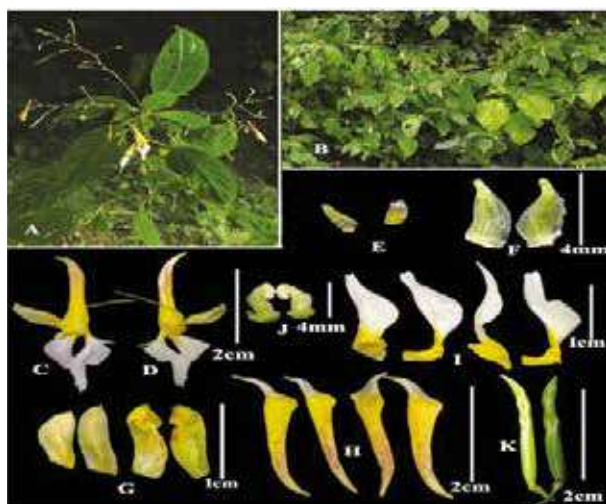
- Revisionary/Monographic studies on selected plant groups.
- Qualitative analysis of nutritive value of ethno-food plants and other economically useful species.
- Capacity building in plant taxonomy through refresher courses and post M.Sc. certificate course.
- Develop and maintain Botanical Gardens, Museums and Herbaria.
- Preparation of Seed, Pollen and Spore Atlas of Indian Plants.

Progress/Achievements:

- i. Botanical Exploration & Inventorisation of Phytodiversity: Field tours and Herbarium consultation tours: 112 field tours were

undertaken for floristic/ethnobotanical/ pharmacognostical studies on flowering and non-flowering plants, live germplasm collection for introduction in the gardens, by BSI covering the following regions. These include 25 tours in 22 protected areas in Western and Eastern Himalayas, North-East India, Arid-Semi Arid Forest area, Gangetic Plains, Deccan Peninsula, Western Ghats, Coastal regions and Andaman and Nicobar islands.

- Apart from that, 21 herbarium consultation tours and 16 ex-situ conservation tours were also conducted. During these field tours, ca 33,743 specimens were collected and 28,791 specimens were identified into 14,408 taxa (species, subspecies and varieties). This resulted into the discovery of 17 new species and 22 new records for India. 2 plant species have been rediscovered after 100 years.



Impatiens albopetala Gogoi & Borah



Zingiberstipitatum S.Q. Tong New to India



Cyathus gayanus Tul. C. Tul. New record to Asia



ii. Documentation of Phytodiversity:

National Flora (Flora of India):

- Completed the taxonomic description of 75 species of family Bignoniaceae, 15 species subtribe Sporobolinae and 24 species of Genera Lepisorus and Adiantum
- 186 species of following 7 projects have been completed by the Senior Research Fellows of BSI under Flora of India.
- Revision of the subtribe Eleusininae (Poaceae: Chloridoideae) in India; Revision of the Family Myrsinaceae in India; Taxonomic revision of subgenus Carex of Genus Carex L. (Cyperaceae) in India; Taxonomic revision of the family Fagaceae in India; Taxonomic Studies on lichenised non thelotremoid Indian Graphidaceae; Taxonomic Studies of genus Rubus L. in India; Taxonomic revision of fern genus Pteris L. (Pteridaceae) in India.

Regional/State Flora/District: Completed the taxonomic description of 986 species for Flora of Uttarakhand, Flora of Gujarat, Grass Flora of Arunachal Pradesh, Flora of Anjaw District & West Siang District, Arunachal Pradesh, Polypodiaceae of NE India, Bryoflora (Hepaticae & Anthocerotae) of Mizoram, Flora of South Garo Hills, Meghalaya, Wild Mushrooms of North Sikkim, Pteridophytic Flora of North Sikkim, Flora of Chhattisgarh, Floral Diversity of Upper Ganga Ramsar Site, UP, Flora of Uttarakhand, Vol. III, Endemic & Threatened Pteridophytic Flora of NW Himalayas, Flora of Gujarat, Vol. III, Ferns of Maharashtra, Follicolous Fungi of Maharashtra, Orchids of Maharashtra, Seaweed of Kerala

Coast, Flora of N. Andaman Isls., Follicolous lichens of Andaman, Alpine & Sub-Alpine Flora of Arunachal Pradesh, Flora of Bihar, Flora of Jharkhand, Liverworts & Hornworts of Sikkim, Wood Rotting Fungi of Koderma Wildlife Sanctuary and Algae of Jharkhand.

Flora of Protected Areas: Completed taxonomic description of 976 species from Buxa Wildlife Sanctuary, West Bengal; Gautama Buddha Wildlife Sanctuary, Bihar; Great Indian Bustard Wildlife Sanctuary, Maharashtra; Jaldapara Wildlife Sanctuary, West Bengal; Jamwa Ramgarh Wildlife Sanctuary, Rajasthan; Koderma Wildlife Sanctuary, Jharkhand; Malabar Wildlife Sanctuary, Kerala; Nagarjunasagar Srisailem Wildlife Sanctuary, Andhra Pradesh; Pakhui Wildlife Sanctuary, Arunachal Pradesh; Palkot Wildlife Sanctuary, Jharkhand; Rani Jhansi Marine National Park, South Andamans; Seshachalam Biosphere Reserve, Andhra Pradesh; Shoolpaneshwar Wildlife Sanctuary, Narmada, Gujarat; Srivilliputhur Wildlife Sanctuary, Tamil Nadu; Sultanpur National Park, Haryana; Udhwa Lake Bird Sanctuary, Sahibganj, Jharkhand.

Ex-Situ Conservation:

- 135 live plants under 49 species collected from WB, Meghalaya and Arunachal Pradesh have been introduced in the nursery of Acharya Jagadish Chandra Bose IBG, Howrah.
- 23 rare and endangered species have been introduced in other associated botanic gardens of different Regional Centres.

iii. Micro-Propagation of Threatened Species: Multiplication of *Cymbidium tigrinum*,

C. eburneum, *Illex khasiana* (at ERC, Shillong) and *Eremostachys superba*, *Pittosporum eriocarpum* and *Indopiptadenia oudensis* (at NRC, Dehradun) have been taken up through tissue culture.

iv. Documentation of Indigenous Knowledge of Plant Resources:

- 282 ethnobotanical information from Lodha tribal group of WB have also been recorded.
- Manuscript of the ethnobotanical study of Odisha have been finalized. Total 320 ethnobotanical interested plant species in duplicate voucher specimens were collected with the help of medicine man from different tribal populated village at Dhenkanal. Among these 320 plants, 194 plants are used for medicine, 42 plants for food, 14 plants for small timber, 5 for agriculture implements, 8 for bio-fencing, 3 plants for insect repel, 3 as tooth brush, 3 for oil, 2 for liquor, 10 as fodder and 4 as rope/fibre.

v. Studies of Nutritional Values of Wild Edible Plants of Meghalaya: Nutritive values, mineral estimation and antioxidant profile of 12 plant species have been carried out using parameters like proximate composition, mineral content and antioxidant activities.

vi. Other major activities undertaken:

- **Maintenance and enrichment of Herbaria in BSI:** During the period, 12360 specimens mounted, 6,789 herbarium specimens remounted, 20,359 herbarium sheets

dusted and fumigated, 14,268 herbarium sheets poisoned and 4,569 sheets have been incorporated in different herbaria.

- **Digitisation:** BSI started digitizing its herbarium specimens in its Data Centre at CNH for creation of Digital Herbarium (DH) of high resolution images and Indian Virtual Herbarium (IVH) of low resolution images by deploying the manpower from its existing strength. Digitization of 15485 specimens completed by December 2018.
- **Services rendered:** BSI disseminated scientific information to public and also assisted scientists, students and researchers in their pursuit of taxonomic research on plants. During the period 32,854 visitors, including scientists, students, teachers and VIPs, visited different botanic gardens, herbaria and museum of BSI. 146 queries on plant distribution and nomenclature were attended; 1886 specimens of angiosperms, pteridophytes, bryophytes and fungi, received from students / scientists outside BSI have been identified and about 285 plant materials, samples and seedlings supplied to scientists and students outside BSI.
- **Revenue Earnings:** During the period BSI earned Rs. 94,61,501/- which includes Rs. 86,215/- towards identification charges of specimens and samples, Rs. 3,58,205/- towards sale of BSI publications, Rs. 2,441/- towards photocopying of literature, Rs. 1,10,000/- towards guest house charges, Rs. 88,52,360/- towards Entry fee, Photography Charges and boating charges at AJCB Indian Botanic Garden, Howrah and



Rs. 52,280/- towards entry fee at National Orchidarium, Yercaud, Coimbatore.

- **Status of Database preparation and Digitisation of specimens:** Ca. 300 publications comprising of nearly 1 lakh pages and all 53 back volumes of BSI journal were digitized. Prepared database of around 22,000 records pertaining to Lichens and Fungi Checklist.
 - **Review of the work on 'Red listing of Orchids of Eastern Himalaya as per IUCN criteria' (Entire Sikkim, Darjeeling district of West Bengal and Arunachal Pradesh excl. Changlang and Tirap):** 350 specimens of Sikkim Himalayan Regional Centre, Gangtok were finalized in respect of their identity and geo-coordinates.
- vii. **Green Skill Development Programme:** Four Regional centres of BSI conducted the GSDP course on 'Parataxonomy including People's Biodiversity Register.



Impatiens albopetala Gogoi & Borah

List of Publications broughtout: During the last one year BSI published four important publications on the Indian flora. These are "Orchids of Maharashtra", "Flora of Uttarakhand, Volume I", "Endemic Bamboos of India" and "Plant Discoveries, 2017." In addition, scientists of BSI published 235 research papers and

communicated 68 research papers in various Indian and foreign journals.

1.3 Survey & Utilization

The Survey & Utilization Division deals with matters related to State Forest Development Corporations, International Organizations like International Tropical Timber Organization, International Network for Bamboo & Rattan (INBAR), Trade Policy, Forest Survey of India, Sandalwood & Red Sanders related matters, formulation of guidelines of international/ domestic trade in forest produce and regulation of export & import of forest produce as per the Export and Import (EXIM) policy, Minor Forest Produce, all matters relating to Andaman and Nicobar Islands Forest Plantation Development Corporation Limited, forestry trade tariff and related issues for Bilateral/ Multilateral Trade Negotiations, Wood Based Industries, Bamboo Cell, Permission for Industrial Estates including North Eastern States and NE Cell.

Highlights of some works of SU Division: SU Division deals with all the matter related to Forest Survey of India except establishment matters.

Forest Survey of India: Forest Survey of India (FSI), a premier national level organization under MoEF&CC, is engaged in the assessment of the country's forest resources on a regular basis. Established on 1st June, 1981, the FSI succeeded the "Pre investment Survey of Forest Resources" (PISFR), a project initiated in 1965 by Government of India with the sponsorship of FAO and UNDP. The main objective of PISFR was to ascertain the availability of raw material for establishment of wood based

industries in selected areas of the country. The National Commission on Agriculture (NCA), in its report in 1976, recommended the creation of a National Forest Survey Organization for collection of reliable data through countrywide comprehensive forest resources survey at regular intervals. Consequently, PISFR was reorganized into FSI. After a critical review of activities, the mandate of FSI was refined in 1986 in order to make it more relevant to the rapidly changing needs and aspirations of the country.

Objectives:

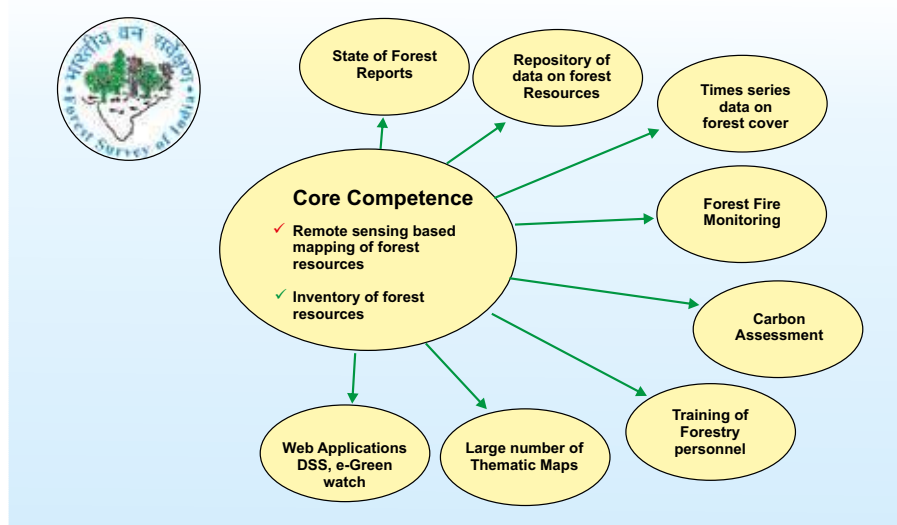
- To assess the forest cover of the country through Remote Sensing technology, analyze the changes and prepare State of Forest Report biennially.
- To conduct inventory in forests and non-forest areas at national level and develop database on wood volume and also estimate tree cover.
- function as a nodal agency for collection, compilation, storage and dissemination of

spatial database on forest resources.

- To conduct training of forestry personnel in application of technologies related to resources survey, remote sensing, GIS, etc.
- To strengthen research & development infrastructure in FSI and to conduct research on applied forest survey techniques.
- To Support State/UT Forest Departments (SFD) in forest resources survey, mapping and inventory.
- To undertake forestry related special studies/consultancies and custom made training courses for SFD's and other organizations on project basis.

The major activities of FSI are:

- Biennial Forest Cover Assessment using Remote Sensing technology.
- Inventory of Forest and Trees Outside Forests (Rural & Urban areas).
- Training and Extension.
- Projects and Consultancies



Major activities of FSI

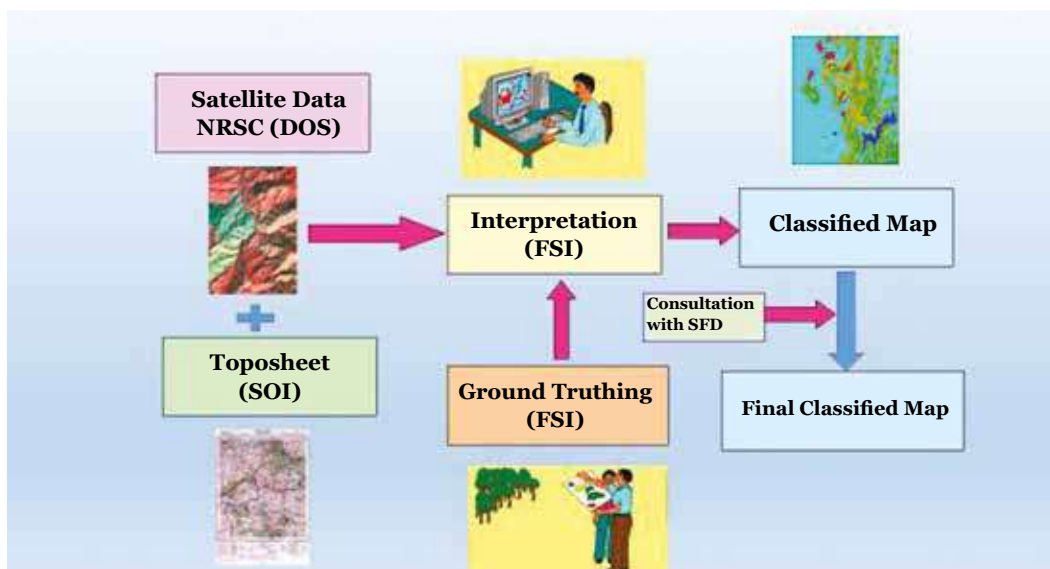


Forest Cover Mapping & Tree Cover: Forest Survey of India (FSI) is involved in forest cover assessment of the country on biennial basis by interpretation of satellite data on a two-year cycle and presents the information in the form of “India State of Forest Report”. So far 15 cycles of forest cover assessment have been completed since 1987 till year 2017. In addition to forest cover, assessment of tree cover of the country is also being carried out using the Trees Outside Forests (TOF) inventory data. There is an increase of 6,778sq km in the forest cover and 1,243sq km in tree cover of the country as compared to 2015 assessment.

Over the years, FSI has been updating the Forest Cover mapping methodology in order to derive maximum advantage of the advancement of technologies of image processing and improved quality of remote sensing data. This has helped in developing accurate data products for better operational management and planning in the forestry sector of the country. During year 2018, 305 scenes of LISS III sensor of Indian

Remote Sensing Satellite were procured from NRSC Hyderabad. For the first time, fully orthorectified satellite data has been procured for use in Forest Cover mapping which is expected to improve the positional accuracy of the data.

The 16th cycle FCM work was initiated with the two-day workshop on FCM methodology focusing on radiometric correction of orthorectified satellite data using ToA values was conducted on 12th-13th April, 2018. Meanwhile, the Forest Cover Mapping methodology was updated to include NDVI based approach for change detection and vector approach for incorporation of changes. This methodology was discussed with all analysts during the workshop held on 10th-11th September, 2018 to introduce these concepts and also provide a hands-on training based on the new approach. An updated methodology manual (Version 1.2) was prepared and recently published by FSI. The data preparation activities have been completed and the classification work was initiated in October 2018.



Forest Cover Mapping

By March, 2019 most of the interpretation work was completed and Ground Truthing of the 16th FCM cycle is being conducted in the month of April, 2019.

Forest & TOF Inventory

National Forest Inventory: National forest inventory is one of the important activities. FSI conducts, inventory of forest and TOF in selected grids of size 5kmx5km every year. Forest inventory is carried out on about 6,000 grids and TOF inventory is carried out on 10,000 grids every year. Till March 2019, 6116 grids have been inventoried in forest area and 11335 grids have been inventoried in TOF area. Data entry work of Forest Inventory (FI) 6272 grids and TOF (R & U) 9262 grids data have been completed.

Biodiversity study for Forest Type Group:

Under revisiting of forest types of India, FSI is attempting to assess the biodiversity of different forest type groups. For this purpose, a sampling design has been prepared and data collection is under progress on 1650 sample points.

Removal of fuelwood, fodder and small timber in Forest Fringe Villages from forest of India:

FSI has initiated a study to estimate the dependence of people in forest fringe villages in the country. A methodology has been developed for carrying of the study. About 1000 villages with 30 households in each village are selected for the survey for collection of data on fuelwood, fodder and small timber. The fieldwork for the study is under progress and data has already been collected in 605 villages so far. Data entry module prepared by FSI has

been functional and data has been entered. Data processing module is also in the testing mode.

Other major activities of FSI:

Revisiting of Forest Type Mapping (FTM): Forest Type Mapping of India was carried out by FSI between year 2005 to 2011 on 1:50,000 scale using LISS-III data of year 2003. Now, after a decade it is necessary to revisit the Forest Types of India to meet the following objectives:

- To improve and update the existing Forest Types as per the present scenario.
- To interpret the Forest Types as per their physiognomic distribution in the country.
- To facilitate use in DSS & E-Green watch applications.

A meeting of experts on the subject was held in FSI, Dehradun on 21-08-2018 to discuss the on the objectives and methodology of the project. A field exercise for assessing biodiversity indices for herbs and shrubs across major forest type groups has been initiated recently as a part of this project.

The preliminary updation in forest types for the majority of states have been completed and the field verification for the project is in progress and the entire project is expected to be completed in the year 2019.

Forest Fires: Forest fires are a recurrent phenomenon in India during fire season which is from February to June. The exercise on the real time monitoring of forest fires was initiated in 2004 by FSI. This system was revamped in 2017 with the launch of



“Forest Fire Alert System 2.0” wherein all the processes were fully automated to generate customized alerts at Beat level. The fire alerts received from MODIS (Moderate resolution imaging Spectro radiometer Sensor) and SNP-VIIRS (Visible Infrared Imaging Radiometer Suite) are processed for pure forest fire signals using Recorded Forest boundary layer/ FSI forest cover layer and other ancillary ground information.

The version 3.0 of fire alert system was launched in January, 2019 during the two days State Nodal Officer’s workshop held during 16-17 January, 2019. The new version has the capability to automatically monitor large forest fire. Additional feature such as open source base web GIS portal, generation of automated maps and KML file of large fires have been included in the new version.

The FSI forest fire alert system is being used by more than 50,000 user across the country.

Forest Fire Alerts Dissemination

Sensor	2018 (Jan-June)	2019(Nov 18- March 19)
MODIS	37059	17487
SNPP-VIIRS	258480	98238

Early Warning Alert System for Forest Fires:

The objective of the Early warning alerts for forest fire is not to predict forest fires but to identify areas, which are more vulnerable to severe forest fires. The parameters used for forest fire monitoring are forest type and forest cover map for virtually estimating the fuel load, Temperature, Relative Humidity, Rainfall for calculating Drought Index and forest fire archival data. The 5 km X 5 km grids

are used for identifying the vulnerable areas and these areas are disseminated to the state nodal officers as E-mail alerts which are valid for the ensuing week.

FSI is currently piloting the application of Canadian Forest Fire Danger Rating System (CFFDRS) in India in the state of Himachal Pradesh in collaboration with Himachal Pradesh Forest Department and World bank funded HP Forest For Prosperity Project. This pilot project is expected to test the application of CFFDRS in India and also customize it for nationwide application in the coming years.

National Spatial Data Infrastructure (NSDI):

It is a national program monitored by NSDI division of Department of Science and Technology to build consensus on harmonizing the available country-wide spatial data base to a common set of standards, parameters and to minimize the disparity in data themes among various institutions, organizations across the country. NSDI aims at encouraging collection, aggregation and distribution of spatial data on different themes on a common defined set of standards and formats by different mapping agencies in India. This endeavor of DST is aimed at creating a portal from which users may directly access all kinds of spatial data generated by Indian mapping agencies. The Web Server (Application Server) and Database Server have been installed and established as FSI node at Forest Survey of India, headquarters Dehradun. The server would be repository for the entire forestry database that would be available to users through internet. Preparation of Data Content Standard for forest theme of FSI along with Unified Modelling Language (UML)

Class Diagram with integration of unique forest codes was prepared and submitted to NSDI, which is further sent to BIS for finalization. Web Map Service (WMS) services have also been prepared for Forest Cover and Forest Type of the entire country and have been uploaded on NSDI portal. Web Feature Service (WFS) for some spatial layers also have been created and tested on NSDI portal.

Decision Support System (DSS): It is a web-GIS based application which has been developed to provide qualitative and quantitative information with respect to forest area. It uses different spatial layers for providing different information on different issues related to forest and wildlife areas. Geospatial data used in the DSS application includes state and district boundary layer protected area, tiger reserves, tiger corridors, forest type map, biological richness, landscape integrity, hydrological layer, forest cover map time series layer, recorded forest area, and recorded forest administrative boundary.

e-Green Watch: Compensatory Afforestation Fund Management and Planning Authority (CAMPA) is the National Advisory Council for monitoring, technical assistance and evaluation of compensatory afforestation and other forestry activities funded by CAMPA fund. It is designed and developed as a web based workflow applications and integrated information system which shall enable automating of various functions and activities related to monitoring and transparency in the use of CAMPA funds and various works sanctioned in the Annual Plan of Operations (State CAMPA) approved by the State

Authorities. State govt. uploads the polygons under following categories:

- Compensatory Afforestation Land (CA Land)
- Diverted Land (DL)
- Other Plantation Work (OPW)
- Plantation Work (PW)
- Assets

A total of 1,17,449 polygons pertaining to 28 states have been checked by FSI through this portal till March 2019. E-Green Watch is included in all the training programmes which are conducted for Forest Department officials at FSI to improve their participation in the monitoring programme as well as to improve the accuracy of the polygons uploaded in the portal.

Mapping of TOF in Bihar: Forest survey of India has recently initiated a project for Forest and tree cover mapping of Bihar State with LISS-IV data (Resolution 5.8 m) in 2017. An interim report with information pertaining to 17 districts has been submitted to Bihar Forest Department. This project is expected to complete by April, 2019.

Inventory of TOF in Rajasthan: On the request of Rajasthan forest Department, the project on Inventory of Trees Out-side Forests (TOF) in Rajasthan has undertaken by FSI. The field work in state is being carried out by Rajasthan state forest department. The field work is under progress.

JICA (Japan International Cooperation Agency) Project: On the request of West Bengal forest department, Forest Survey of India is conducting a base line survey in collaboration



with West Bengal forest department for forest growing stock under the “West Bengal Forest and Biodiversity Conservation Project(WBFBBCP)” being implemented by forest department of West Bengal with assistance of Japan International Cooperation Agency(JICA) in 8 districts of West Bengal viz. Bankura, Birbhum, Vardhaman, Cooch Bihar, Darjeeling, Jalpaiguri, PaschimMadinipur and Purulia to establish bench mark. The duration of the implementation of the project is 8 years starting from 2012-13 to 2019-20.

Forest Carbon Stock and Bamboo Resources Assessment in Nagaland (Phase II): On request of Nagaland Forest Department, an additional report on forest carbon and bamboo resources of Nagaland is to be prepared from the data collected during the field inventory on forest resources. Forest type and density wise Forest Carbon Stock under different carbon pools and Quality Wise Bamboo Resources in the state of Nagaland will be estimated under the project. The data processing work is under progress.

Regular Training Courses: FSI imparts trainings to forestry personnel working at various levels in State Forest Departments to sensitize them with the latest advancements in application of Remote Sensing & GIS for preparation of Working Plans, GPS Applications in Forest Survey and Demarcation, Application of GIS in Forest Resource Management etc. 19 courses were conducted during the period January 2018 to March 2019.

Following Customised and outreach training courses were conducted:

- Training on e-Green Watch & Handling of GPS to Madhya Pradesh Forest Department.



- Three Days Training Course for Officers of Karnataka Forest Department on National Working Plan Code 2014
- Two days training for field staff of Rajasthan Forest Department
- Three Days Training Course for Officers of Madhya Pradesh Forest Department on Carbon Estimation

Export & Import of forestry products and tariff structure of forestry items: The SU Division deals with the formulation of guidelines and directions for domestic and international trade in forest produce and necessary regulation of export and import of forest produce as per the Foreign Trade Policy as well as the applied tariff rates. The Division also deals with the issue of NOC for grant of license for export of wood and wood products for the application received through Directorate General of Foreign Trade, New Delhi. This includes Sandalwood, Red Sanders and other wood products.

Bamboo Cell: The Ministry has created a ‘Bamboo Cell’ in SU Division to deal with all matters related to Bamboo.

International Tropical Timber Organization (ITTO): ITTO has 74 members divided into two category: Producer Countries (36 members) and Consumer Countries (38 members).

India is a founder member (producer Country Category) of ITTO which aims for conserving tropical forest and assisting countries to develop economically in the field of forestry.

International Network of Bamboo and Rattan (INBAR): The International Network for Bamboo and Rattan (INBAR) is an intergovernmental organization established in 1997. INBAR is dedicated to improving the social, economic, and environmental benefits of bamboo and rattan. INBAR plays a unique role in finding and demonstrating innovative ways of using bamboo and rattan to protect the environment and biodiversity, alleviate poverty, and facilitates fairer pro-poor trade. India made a strong presence in the BARC by representing the strengths in the field of research and training in development of Bamboo and its value chain.

Andaman & Nicobar Islands Forest and Plantation Development Corporation Ltd.: Andaman & Nicobar Islands Forest

& Plantation Development Corporation Limited (ANIFPDCL) is a Government of India Public Sector Undertaking, created in 1977 with the broad objectives of development and managing forestry plantations on the Islands. As per communication received from Cabinet Secretariat dated 18th August, 2017, the Cabinet Committee on Economic Affairs on 16th August, 2017 approved the closure of Andaman & Nicobar Islands Forest and Plantation Development Corporation Limited (ANIFPDCL), Port Blair, through discharging the liabilities of all employees by offering VRS/VSS, auction of movable/immovable assets and settlement of outstanding liabilities. As per the above approval, Ministry is implementing the decision of closure of the Corporation.

SDG implementation progress: Towards National monitoring of SDGs 8 National Indicators are related to Forest Survey of India and the same are being assessed by Forest Survey of India on biennial basis.

Conservation

CHAPTER

02





2.1 Biodiversity Conservation

The Ministry undertakes activities under Convention on Biological Diversity (CBD), its Nagoya Protocol on Access and Benefit Sharing (ABS), National Report to the CBD and Nagoya Protocol, National Biodiversity Action Plan (NBAP), Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), Biological Diversity Act (BD Act), National Biodiversity Authority (NBA) and various projects on biodiversity implemented through NBA.

CBD is one of the key agreements adopted during the Earth Summit held in Rio de Janeiro in 1992. The three objectives of the CBD are: conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of benefits arising out of the use of genetic resources. Pursuant to the ratification of the CBD by India on 18 February 1994, several steps were initiated to meet the commitments under the Convention, and to realize the opportunities offered by the Convention. India enacted the BD Act in 2002 to give effect to the provision of this Convention. India has also prepared NBAP in 2008, and an Addendum to NBAP was prepared in 2014 with 12 National Biodiversity Targets (NBTs), developed in line with the 20 global Aichi biodiversity targets.

The Nagoya Protocol on ABS adopted under the aegis of CBD in 2010, is aimed at fair and equitable sharing of benefits arising from the utilization of genetic resources. India signed the Protocol on 11th May 2011, and ratified it on 9th October, 2012. The Nagoya Protocol on ABS entered into force on 12th October 2014.

The Nagoya Protocol is being implemented at the national level inter alia through the BD Act.

IPBES was established by the Governments in April 2012 as the biodiversity counterpart of Intergovernmental Panel on Climate Change (IPCC), for strengthening the science-policy interface on biodiversity so as to provide policy makers with reliable, independent and credible information on biodiversity, thus promoting human well-being and sustainable development through sustainable use of biodiversity (www.ipbes.net).

The BD Act, 2002 is implemented through a three-tier institutional mechanism: NBA, State Biodiversity Boards (SBBs) and Biodiversity Management Committees (BMCs). NBA is a statutory body that performs facilitative, regulatory and advisory functions for the Government on biodiversity related issues.

Activities undertaken

Convention on Biological Diversity (CBD):

- During the period, India participated in the following important international meetings relating to biodiversity:
 - Sixth session of the plenary of IPBES.
 - 'Beauty of sourcing with Respect' conference.
 - Twenty-second meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-22) and the second meeting of the Subsidiary Body on Implementation (SBI-2).
 - Regional meeting on the implementation of the Aichi Target 11 in the ASEAN and Meeting on Target setting for the ASEAN

Strategic Plan on Environment 2016-2025.

- Fourth BIOFIN Regional Workshop for Eurasia-Pacific Community.
- 'Community of Practice Workshop on the Nagoya Protocol on ABS.
- Fourteenth Conference of the Parties (CoP-14) to the CBD, Ninth meeting of the Parties to the CBD serving as meeting of the Parties (CoP-MoP 9) to the Cartagena Protocol on Biosafety (CPB), and third CoP-MoP to Nagoya Protocol on ABS.
- Sub-Regional Science-Policy Dialogue for South and West Asia on IPBES.
- For participating in these meetings of the CBD and IPBES, country positions were prepared through a consultative process, which were put forth at these meetings.
- During the period, work related to the implementation of decisions of CoP-13 to the CBD was continued, including through making submissions to the CBD Secretariat.
- India also continued to contribute to the IPBES work programme and deliverables including through nomination of Indian experts in its activities.
- Activities to strengthen the institutional capacity of NBA, SBBs and constitution of BMCs, as well as preparation of Peoples Biodiversity Registers (PBRs) were continued during the year, including by providing special grant to NBA, for SBBs and PBRs, and by developing project proposals.
- On the invitation of CBD Secretariat, in

India's capacity as past President of CoP-11, an article on 'Nature Protects if She is Protected' by the Minister was prepared, for the commemorative volume being brought out by CBD Secretariat on 25th anniversary of the Convention.

- Meeting of the Consultative Committee of Members of Parliament attached to MoEF&CC was held on 9th August 2018 at New Delhi with the theme on Biodiversity.
- The Parliament Estimate Committee meeting held informal discussion on 2nd July 2018 at Ooty, Tamil Nadu with the representatives of NBA, Tamil Nadu Biodiversity Board and Government Botanical Garden with the subject of 'Preservation of Biodiversity and Ecosystem. Replies to questions raised by Members were prepared after consulting concerned divisions.
- Consultations were organised to discuss the agenda items of CoP-14 to the CBD, CoP-MoP-9 to the Cartagena Protocol on Biosafety and CoP-MoP-3 on Nagoya Protocol on ABS with representatives of MoEF&CC and its organizations, concerned Ministries and Departments to prepare country positions.
- As an obligation under Article 26 of the CBD, India has to submit National Report (NR) to CBD Secretariat on measures taken for the implementation of the Convention once in four years. So far, five cycles of national reporting have been completed (1998, 2001, 2005, 2009 and 2014). NR 6 reporting format requires that Parties



report on the progress made towards their NBTs as well as national contribution towards the achievement of the Global Aichi Biodiversity Targets. During the year, work relating to preparation of India's NR6 was completed. This included organization of state level consultations by SBBs with NBA's support, and organization of a few NBT-wise thematic consultations. Information was collected from concerned Ministries/Departments, Heads of relevant organizations, concerned divisions of MoEF&CC and UN bodies, on relevant schemes, programmes, initiatives along with success stories as inputs to NR 6. India's National Report 6 (NR 6) was submitted online by Hon'ble Minister of Environment, Forest and Climate Change on 29th December 2018.

- First meeting of Indo-German Joint Working Group on Biological Diversity on 12th February 2019 was convened at New Delhi and the ToRs of the Indo-German Biodiversity Working Group were finalized.
- The Division is presently implementing eight projects on biodiversity through NBA. The details of the projects are given below:
 - i. UNEP-GEF-MoEF&CC ABS Project on "Strengthening the Implementation of the Biological Diversity Act and Rules with Focus on its ABS Provisions" is being implemented in ten provincial states of India in partnership with SBBs in Andhra Pradesh, Karnataka, Gujarat, Goa, Himachal Pradesh, Odisha, Sikkim, Telangana, Tripura and West Bengal, to

increase the institutional, individual and systemic capacities of stakeholders.

- ii. Centre for Biodiversity Policy and Law (CEBPOL) has been set up by the Ministry and housed in NBA with technical collaboration from Norway with the aim to develop professional expertise on biodiversity related policies and laws and develop capacity building on various issues identified by both India and Norway pertaining to biodiversity. The project activities were reviewed in the Ministry in a meeting held on 19th September 2018. The project was formally completed on 28th February 2019 and NBA is in process of submission of the final report of the project.
- iii. India joined UNDP managed global project on Biodiversity Finance Initiative (BIOFIN) in 2015. During the year, the ninth meeting of the Project Steering Committee of UNDP's Natural Resources Management project, of which BIOFIN is one component, was held on 19th September 2018 at MoEF&CC. A draft of the working document on Biodiversity Finance Plan was prepared and sent to concerned Ministries and organisations for comments.
- iv. A project on 'Capacity Development of Statutory Institutions for Effective Implementation of the ABS Mechanism in India' under Indo-German Biodiversity Programme for Euro 3 million is being implemented through NBA in three pilot states of Maharashtra, Tamil Nadu and Uttarakhand through the respective SBBs.

During the period, the second meeting of the Project Steering Committee of the project was held on 19th September 2018 at MoEF&CC.

- v. NBA-ASEAN Centre for Biodiversity Cooperation project entitled 'Capacity building towards implementing the Nagoya Protocol on ABS, the City Biodiversity Index and Strategic Plan for Biodiversity' was approved by the ASEAN Secretariat with a cost of USD 993,333 for two years. A review meeting of the project was held in 19th September 2018 at MoEF&CC. Under this project, a regional training workshop on "Development and implementation of ABS legal framework to implement Nagoya Protocol on ABS and Tradition Knowledge Digital Library" was conducted on 22nd-25th October, 2018 for ASEAN countries at NBA, Chennai.
- vi. Under the UNDP ABS global project on implementation of Nagoya Protocol which has been approved for USD 350,000, it is proposed to map research institutions that access and utilize genetic resources in India, develop a guidance document on ABS, and develop capacity of research institutions through training. The ninth meeting of the Project Steering Committee of UNDP's Natural Resources Management project, of which UNDP ABS global project is one component, was held on 19th September 2018 at MoEF&CC. Under this project, an inception training of the trainer's workshop was conducted to help them understand the Nagoya Protocol on ABS provisions, interpret and domesticate

the laws, and implement them accordingly. A comprehensive primer on biological diversity laws and ABS has been designed.

- vii. FAO TCP project on "Strengthening Agriculture and Allied Sector Contributions to India's National Biodiversity Action Plan (NBAP) 2008 and NBTs" with a budget of USD 263,000 for two years, is aimed at supporting India's efforts for mainstreaming biodiversity into agriculture and allied sectors through increasing the capacity of stakeholders at national, state and local levels in three states (Kerala, Mizoram, Punjab) for implementation of NBAP and relevant NBTs. Under project, a stakeholder meeting was held in the MoEF&CC on 8th June 2018, which was attended by representatives from the SBBs of project states, MoEF&CC, NBA and the Ministry of Agriculture and Farmers Welfare. An Experience Sharing workshop was organised on 6th-7th March 2019 at New Delhi, with the project state partners, NBA and MoEF&CC.
- viii. ICLEI project on "INTERACT-Bio: Integrated sub-national action for Biodiversity-Supporting implementation of National Biodiversity Strategy and Action Plan (NBSAP)" is supported by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Government of Germany under their International Climate Initiative (IKI). The project with four year duration is being implemented in three countries - Brazil, India and Tanzania, in partnership with ICLEI's offices in these regions. The project



cities in India are Cochin as the model city, and Mangalore and Panaji as the Satellite cities. The first and second meeting of Project Steering Committee of the project were held on 19th September 2018 and 19th March 2019 at MoEF&CC.

- The day when the Convention text was adopted in 1992, 22nd May is celebrated as the International Day for Biodiversity (IDB) to raise awareness about the importance of the biodiversity. The theme for the year 2018 was Celebrating “25 Years of Action For Biodiversity”. The national level celebrations of IDB were organised in Hyderabad on 22nd May 2018. The Hon’ble Governor of Andhra Pradesh & Telangana as the Chief Guest and Minister of Environment, Forests, Science & Technology, Government of Telangana were Guest of Honour on this occasion.



Chief Guest inaugurating Exhibition

During the event, 9 winners and 14 special mentions of the India Biodiversity Awards (IBA) 2018 were presented in four categories to recognise the efforts of individuals and communities working at the grassroots level for conservation of biodiversity. ‘India Naturally!’ a publication narrating the stories

of these Champions of biodiversity, and some knowledge products and communication materials were also released on the occasion.

- India published the “Procedure for accessing the biological resource and/or associated knowledge for commercial or non-commercial use” in the ABS Clearing House portal in all UN languages.
- A meeting was held on 28th May 2018 under the Chairmanship of the Additional Secretary, Ministry of Environment, Forest and Climate Change on the discussion note received from the Secretary, Department of Biotechnology (DBT) for revisiting certain provisions of the Biological Diversity Act.
- In pursuance to the order passed by the Principal Bench of Hon’ble National Green Tribunal (NGT), New Delhi on 8th August 2018 in O.A. 347 of 2016 directing the MoEF&CC and NBA to monitor the constitution of adequate number of BMCs and documentation of PBRs as per the provisions of the BD Act and Rules, meetings were organised with representatives of State Governments under the Chairmanship of Additional Secretary to review and monitor the establishment of BMCs and preparation of PBRs in the States. As per the directions of the Hon’ble National Green Tribunal, a compliance report was submitted on 29th March 2019.

Biological Diversity Act, 2002 and National Biodiversity Authority (NBA):

- During the period, seven meetings of the Authority were held viz., 46th meeting

on 24th July, 2018, 47th meeting on 26th September, 2018, 48th meeting on 29th October, 2018, 49th meeting on 15th November, 2018, 50th meeting on 10th-11th December, 2018, 51st meeting on 24th January, 2019 and 52nd meeting on 19th March, 2019 in which decisions have been taken on ABS applications, and on important regulatory, policy and legal issues.

- During the period, 968 applications were received, 524 applications have been cleared by the Authority and 260 agreements have been signed.
- NBA has received a sum of Rs. 29.51 crores as benefit sharing component during 2018-19.
- Seven meetings of the Expert Committee on Access and Benefit Sharing were held, viz., 48th meeting on 14th and 15th May 2018, 49th meeting on 10th and 11th July 2018, 50th meeting on 10th and 11th September 2018, 51st meeting on 15th and 16th October 2018, 52nd meeting on 4th December, 2018, 53rd meeting on 8th January 2019 and 54th meeting on 14th March 2019 to evaluate the request of the applicants and submitted recommendation to Authority for consideration and decision. The committee evaluated around 610 applications.
- A meeting of Core Expert Group to develop guidelines or eligibility conditions/parameters for identification of repositories was held on 5th May 2018 at Chennai.
- So far, 27 SBBs have constituted 1,44,371 BMCs across the country and 21 SBBs have

prepared 6,834 PBRs till 28th February 2019.

- Till date, 13 Biodiversity Heritage Sites have been notified in seven states.

Progress/achievements:

Internationally Recognised Certificate of Compliance (IRCC) issued under Nagoya Protocol:

- Nagoya Protocol on ABS requires Parties to issue a permit or its equivalent at the time of access as evidence that access to genetic resources was based on prior informed consent, and that mutually agreed terms were established. The Protocol further requires that Parties make information on the permit or its equivalent available to the ABS Clearing House for it to constitute an Internationally Recognised Certificate of Compliance (IRCC). After publishing the first IRCC under the Nagoya Protocol on 1st October 2015, India has published so far 220 IRCCs on the ABS Clearing House, out of the total 416 IRCCs published (<https://www.cbd.int/doc/press/2015/pr-2015-10-07-abs-en.pdf>).
- 1,44,371 BMCs have been constituted as on 28th February 2019.
- So far, 6,834 PBRs have been prepared as on 28th February 2019.
- One Biodiversity Heritage Site at Chilkigarh, West Bengal has been notified during this period.

Sustainable Development Goals (SDG) implementation progress: SDG National Indicator 15.6.1 measures progress made



by country in establishing legislative, administrative or policy framework on ABS. By developing ABS frameworks, we contribute to the achievement of Target 15.6 and to the conservation and sustainable use of biological and genetic diversity. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity entered into force on 12th October 2014. Nagoya Protocol covers genetic resources and Traditional Knowledge (TK) associated with them, including resources held by indigenous communities. This indicator shows the effectiveness of operationalization of the Nagoya Protocol in the country. National Biodiversity Authority, Chennai, a statutory organization of MoEF&CC is the data source for the indicator.

2.2 Conservation and Management of Mangroves & Coral Reefs

MoEF&CC is implementing a Central Sector Scheme (CSS) on conservation and management of Mangroves and Coral Reefs in coastal States/UTs of India. Under the scheme, 38 mangrove and 4 coral reef sites have been identified for on-ground intervention. List of identified sites is at Table-2.1. During the financial year 2018-19, the Ministry is providing financial support in the ratio 60:40 to the Forest Departments of the Coastal States/UTs on demand and the respective approval of their Management Action Plans (MAPs). According to Forest Survey of India (FSI) Report titled 'India State of Forest Report (2017)', the

mangrove cover in the country is 4,921 sq. km.

Objectives:

- Conservation and management of mangroves and coral reefs.
- Conservation and management of mangroves and coral reefs;
- Eco-restoration and afforestation in potential and also in degraded coastal areas;
- Maintenance of genetic diversity especially of threatened and endemic species
- Creation of awareness on importance of these ecosystems leading to their conservation.
- Livelihood improvement of people in coastal areas.

Progress/ Achievements:

- 18 MAPs have been approved under the scheme.
- 1 MAPs have been re-validated under the scheme.
- Increase of 181 sq. km of mangrove cover in the country in the year 2017 in comparison to year the 2015 assessment by FSI Report titled 'India State of Forest Report (2017).
- National Committee on Conservation and Management of Mangroves and Coral Reefs has been re-constituted with the approval of Hon'ble Minister.
- During this financial year, about Rs 9.49 crores have been released under the scheme.

Table- 2.1

State/Union Territories	Mangrove and Coral Reefs Sites
Andhra Pradesh	Coringa East Godavari Krishna
Andaman & Nicobar	North Andamans Nicobar
Goa	Goa
Gujarat	Gulf of Kutchh Gulf of Khambhat Dumas-Ubhrat
Kerala	Vembanad Kannur (Northern Kerala)
Karnataka	Coondapur Dakshin Kannada/Hon- navar Karwar Manglore Forest Division
Maharashtra	Achra-Ratnagiri Devgarh-Vijay Durg Veldur Kundalika-Revdanda Mumbra-Diva Vikroli Shreevardhan Vaitarna Vasai-Manori Malvan
Odisha	Bhaitarkanika Mahanadi Subernarekha Devi Dhamra Mangrove Genetic Re- sources Centre Chilka

State/Union Territories	Mangrove and Coral Reefs Sites
Tamil Nadu	Pichavaram Muthupet Ramnad Pulicat Kazhuveli
West Bengal	Sunderbans
Coral Reef Sites	
Andaman & Nicobar	Andaman and Nicobar Coral Reef
Gujarat	Gulf of Kutch
Lakshadweep	Lakshadweep
Tamil Nadu	Gulf of Mannar

2.3 Biosphere Reserves

The idea of 'Biosphere Reserves' was initiated by UNESCO in 1973-74 under its Man and Biosphere (MAB) Programme. The MAB, launched in 1970 by UNESCO, is a broad based ecological programme aimed to develop within the natural and social sciences a basis for the rational use and conservation of the resources of the biosphere and for the improvement of the relationship between man and the environment,; to predict the consequences of today's actions on tomorrows world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere. In India, the programme was initiated in 1986 and till date, 18 sites have been designated as Biosphere Reserves (BRs) in different parts of the country. The Ministry through the Centrally Sponsored Scheme of 'Biosphere Reserve' provides grant-in-aid to states on 60:40 sharing basis in case of States other than NER and on 90:10 basis in case of



NER States for conservation and management of the designated Biosphere Reserves.

The Indian National Man and Biosphere (MAB) Committee identifies and recommends potential sites for designation as Biosphere Reserves, following the UNESCO's guidelines and criteria. There are 18 designated Biosphere Reserves (BRs).

Out of the 18 Biosphere Reserves designated nationally, so far 11 Biosphere Reserves, viz., Nilgiri (Tamil Nadu, Kerala and Karnataka), Gulf of Mannar (Tamil Nadu), Sunderban (West Bengal), Nanda Devi, (Uttarakhand), Pachmarhi (Madhya Pradesh), Similipal (Odisha), Nokrek (Meghalaya), Achanakmar-Amarkantak (Chhattisgarh & Madhya Pradesh), Great Nicobar (Andaman and Nicobar Islands), Agasthyamala (Tamil Nadu & Kerala) and Khangchendzonga (Sikkim) have been included in the World Network of Biosphere Reserves of UNESCO.

Objectives:

- To reduce loss of biodiversity by conserving the diversity and integrity of plants and animals within the natural ecosystems;
- To provide facilities for education training and multi-faceted research and monitoring;
- To improve livelihood of local people and enhance social, economic and cultural condition for environmental sustainability.

Activities undertaken:

- Funds have been released to all the 18 BRs in four (14) states and one (1) union territory for habitat management/improvement, value addition, forest

protection, livelihood improvement of the communities, development of infrastructure for eco-tourism, research, monitoring and documentation activities in the core, buffer and transition zone.

- Applications for Young Scientist Award, Michele of Batisse Award 2018 of MAB. Programme UNESCO invited by the Ministry.
- BR manager from NDBR deputed to participate in the MAB Youth Forum in Italy.
- Brainstorming workshop in Bhopal regarding DBT with officials from BR and State Government.
- Submission of 60 -second video along with transcript of five BRs sent to UNESCO for exhibition in the ECOSOC event in New York on 05th June 2018 under the banner #Proudtoshare. Video clips of two BRs viz. Sundarban and Agasthyamalai selected for display at the event.

Progress/Achievements:

- Twelve (12) number of new Management Action Plans (MAP) sanctioned by the Ministry for carrying out various management activities in the BRs.
- Khangchendzonga Biosphere Reserve, Sikkim included in the World Network of Biosphere Reserves of UNESCO MAB Program during the meeting of MAB ICC Meeting held at Palembang, UNESCO.

List of meetings/ conferences organized or attended:

- Meeting of stakeholders on DBT in Bhopal, Madhya Pradesh.

- Meeting with officials from Nepal, Bhutan and UNESCO at UNESCO office, New Delhi.
- Participation of Indian delegate in ICC Meeting at Palembang, Indonesia wherein Khangchendzonga Biosphere Reserve was included in the World Network of Biospheres of UNESCO and presentation of country report.

2.4 Biosafety

Activities related to Cartagena Protocol on Biosafety (CPB) to the Convention on Biological Diversity (CBD) and Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress (NKLSPRL), and the Genetic Engineering Appraisal Committee (GEAC) are given below:

- CPB to CBD is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health. It was adopted on 29 January 2000 and entered into force on 11 September 2003. Nine meetings of the Conference of the Parties serving as the meeting of the Parties to the Protocol (COP-MOP) have held so far. In order to facilitate exchange of scientific, technical environmental and legal information on living modified organisms (LMOs), India has established a Biosafety Clearing House (BCH), which assist Parties to the Protocol to implement its provisions and to facilitate sharing of information on, and experience with, LMOs.
- NKLSPRL aims to contribute to conservation and sustainable use of biodiversity by providing international rules and procedures in the field of liability and redress relating to living modified organisms. The Supplementary Protocol requires that response measures are taken in the event of damage resulting from living modified organisms, or where there is sufficient likelihood that damage will result if timely response measures are not taken. The Supplementary Protocol was adopted on 15 October 2010 at the CoP-MoP-5 held in Nagoya, Japan, and entered into force on 5 March 2018 as a supplementary agreement to CPB after six years of intense negotiations. India is now the 28th country to ratify the Supplementary Protocol which is currently ratified by 42 countries. India has made significant positive contributions in finalisation of the Supplementary Protocol, which is considered as a milestone achievement in multilateral environmental negotiations.
- GEAC functions under the MoEF&CC for approval of activities involving large-scale use of hazardous microorganisms and recombinants in research and industrial production from the environmental angle. The Committee is responsible for approval of proposals relating to release of genetically engineered organisms and products into the environment including experimental field trials. It was established as per Rules for the Manufacture, Use/ Import/Export and Storage of Hazardous Micro Organisms/ Genetically Engineered



Organisms or Cells notified in 1989 under the Environmental (Protection) Act, 1986.

- As a Party to the CPB, MoEF&CC has accessed funds from United Nations Environment Program (UNEP) / Global Environment Facility (GEF) for the “Phase-II Capacity Building Project on Biosafety” to strengthen the biosafety management system in India with special emphasis on risk assessment and management (RARM), handling, transport, packaging and identification of LMOs (HTPI), socio economic considerations (SEC) and public awareness (PA) with an aim to ensure adequate protection of human health and biodiversity from potential harm arising from all LMO-related activities. The project was technically completed in December, 2017 and Biosafety Division has prepared a phase III proposal for seeking GEF funds under GEF-7 cycle.

Activities undertaken:

- The GEAC was reconstituted on 28.5.2018, after completion of tenure of previous Committee. Four meetings of the new GEAC have been convened during 2018-19 so far, and as per GEAC's decision, the meetings are being held on a quarterly basis. Last 137th GEAC meeting was held on 20th March, 2019. The Committee has considered applications related to event selection trials of GM crops, import of animal feed, protocols for additional studies to be undertaken on GM Mustard etc. in its meetings. A Sub-Committee on Framing Guidelines for Import of Animal Feed including Dried Distillers Grains Soluble (DDGS) was constituted based on the recommendations of the GEAC in its 135th meeting, to recommend a procedure for import of animal feed in India. The term of the Committee was extended for 3 months till 15th June, 2019.
- Indian delegation actively participated in relevant negotiation meetings: Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-22) and Subsidiary Body on Implementation (SBI-2) in July 2018 in Montreal. India also participated in online discussion forums organized by the CBD during the inter-session period as well as preparatory Regional Meetings/Workshops held in run-up to The Conference of the Parties serving as the meeting of the Parties to the Protocol (COP-MOP-9).
- Adviser, MoEF&CC and Vice Chair, GEAC participated in the 6th Annual South Asia Biosafety Conference and delivered remarks as a special guest in the inaugural session.
- Two biosafety newsletters for the period of April-June, 2018 and July-September, 2018 were prepared as a part of Phase II Capacity Building Project on Biosafety, covering various activities of the project, CBD, CPB and NKLSPLR.
- Seven training workshops for strengthening capacities of enforcement officials including customs and plant quarantine officers for trans-boundary movement of Living Modified Organisms were organised.

- A two member Indian delegation participated in the 25th National Project Coordinators meeting held in Dushanbe, Tajikistan where it presented project's thrust areas, components, activities, outcomes, and learning and best practices adopted for project implementation.
- An Indian delegation led by Secretary (EF&CC) participated in the fourteenth Conference of the Parties (CoP-14) to the Convention on Biological Diversity (CBD), Ninth meeting of the Parties to the CBD serving as meeting of the Parties (CoP-MoP 9) to the Cartagena Protocol on Biosafety (CPB), and third CoP-MoP to Nagoya Protocol on ABS held in Sharm El-Sheikh, Egypt from 17-29 November, 2018.

Progress/Achievements:

- Revised Action Taken Notes in respect of 301st Report of Parliamentary Standing Committee on "Genetically Modified Crops and its Impact on Environment" by Department-Related Parliamentary Standing Committee on Science & Technology, Environment & Forests, following meeting of Chair of the Committee with Secretary (EF&CC) in January, 2018 was submitted by the Division.
- Developed and operationalized new GEAC Website with features for receiving applications in online mode (www.geacindia.gov.in)
- Organized 15 capacity building workshops on Biosafety in 15 State Agricultural Universities.
- Organized 7 training workshops for

strengthening capacities of enforcement officials (Customs and Plant Quarantine).

- Reviewed and finalized the report of Mid-Term Evaluation of UNEP-GEF Phase-II Biosafety Project, which was held in early 2017, and had been pending since then.
- Preparation of outreach materials such as updated Biosafety Resource Kit; Brochure on State Agricultural Universities Workshops etc. which were released on International Day of Biodiversity (22nd May, 2018) in Hyderabad.
- Implementation Report in respect of six Parliament Assurances pending for the last 5 years were submitted and cleared.
- Nominated GEAC experts for various international trainings/ conferences, including Cochran Fellowship, South Asia Biosafety Conference, Korea BCH Workshop, OECD Conference, National Project Coordinators Meeting.
- Prepared and filed Counter Affidavits in High Court of Hyderabad on matters related to illegal cultivation of Bt Cotton.

2.5 All India Coordinated Project on Capacity Building in Taxonomy (AICOPTAX)

The AICOPTAX Project was launched in 1999 and a Steering Committee was constituted for overseeing the activities under the Taxonomic research in term of Plant, Microbial and Animal Taxonomy.

Objectives:

- Survey, collection, and maintenance of collections of taxonomic groups including



microbes for which no information is available and of unexplored and under-explored areas.

- Taxonomic analysis of collections made.
- Training in India and abroad to develop taxonomic expertise on various groups.
- Collection of ecological and population data for assessment of conservation status.
- Biosystematics research for the groups which require modern tools for refinement of taxonomy especially of economically important groups.
- Survey, collection, identification, and inventorisation of domesticated biodiversity;
- Storage and retrieval of taxonomic data.
- Creation of higher centers of learning and establishment of chairs in taxonomy; and also exploring the possibility of institution of Indian and foreign associateships for in-service as well as pre-service scientists.
- To promote field biological studies in colleges located in/near areas rich in biodiversity.
- To train school and college teachers and local communities in parataxonomy skills.
- Initiatives for making taxonomy as attractive as biotechnology among graduate and post graduate students.
- Preparation of manuals and other education materials to create awareness on the role of taxonomy in conservation and sustainable utilization of biodiversity among the public.

- To promote awareness and to provide parataxonomic skills among local communities.

Progress/Achievements:

- Taxonomic workshop conducted and 4 Newplant Taxonomic Research Training centre established in J& K, West Bengal, Maharashtra, Delhi and 4 new Animal Taxonomic centre proposed to be established in different parts of the Country.
- 37 New Project proposals under 15 thematic areas of Plant, Animal and Microbial Taxonomy Started.
- Steering Committee Constituted to act as a think tank for Taxonomic Research in India.
- Progress of the ongoing AICOPTAX project was reviewed by MoEF&CC, BSI, ZSI and the Steering Committee of AICOPTAX.
- EK Janaki Ammal Award Conferred in respective fields of Plant, Animal and Microbial Taxonomy to 9 Taxonomist.
- Brainstorming meeting of the AICOPTAX Scheme held in BGIR Noida.
- 14 New Thematic areas for Plant, Animal and Microbial Taxonomy identified for research and capacity building till 2020-21.
- Advertisement for call of AICOPTAX project proposal issued and against advertisement 567 new project proposals were received.

Implementing organizations: BSI and ZSI will be the implementing agencies for the Scheme. The BSI and ZSI would extend all expertise

available with them to the Steering Committee in evaluating and selecting the coordinating centres and collaborating units for undertaking advanced taxonomic research in identified priority thematic areas and in evaluating and selecting centres for imparting training in plant and animal taxonomy and biosystematics including modern taxonomy based on the proposals received through a transparent open advertisement.

2.6 Assistance to Botanic Garden (ABG)

The scheme on Assistance to Botanic Gardens was initiated in 1992 to augment facilities for ex-situ conservation of rare, endangered threatened and endemic plants.

Objectives:

Ex-situ conservation of indigenous; particularly RET species and their multiplication; Establishment of seed banks, arboreta and mist propagation facilities; Promotion of education and public awareness in respect of above said plants; and Reintroduction and rehabilitation of said plants in natural habitats in collaboration with State Forest Department on project basis.

Progress/Achievements:

- Five Lead and 18 small Botanic Gardens supported all over India, thereby ensuring conservation of Rare, Endangered and Threatened (RET) plant species through these Botanic Garden. Data base of RET plant conservation prepared under each Botanic Garden.
- Monitoring and evaluations of 38 Botanic Gardens undertaken by BSI. Region wise

RET species finalized by BSI to about 55 Botanic Garden all over India for conservation.

- Progress Reviewed for all the Lead Botanic Gardens and the ABG Scheme by MoEF&CC.
- MoU signed with on going 25 Lead and Small Botanic Garden for effective implementation of the scheme.
- Expert Group Committee of ABG Scheme recommended 34 new projects proposal for establishing Botanic Garden all over India till 2020-21.
- 816 Rare, Endangered and Threatened (RET) plants conserved through ex situ conservation and methodology developed for their conservation. 100 % fund utilized under Grant In Aid.
- Approximately 4 Lakh researchers, students enriched their knowledge on plant conservation and environment education through these Botanic Gardens all over India.

2.7 Forest Conservation

Implementation of FC Act, 1980: FC Division implements the provisions of Forest (Conservation) Act, 1980. The Act came in to force with effect from October 25, 1980. Under the provisions of this Act, prior approval of the Central Government is essential for diversion of forest lands for the non-forestry purposes.

Diversion of Forest land for use of Non-Forestry purposes:

- Diversion of forest land is allowed to meet mostly the developmental needs for Drinking water projects, Irrigation projects,



Transmission lines, Railway lines, Roads, Power projects, Defense related projects, Mining etc.

- The Act has succeeded in controlling the indiscriminate release of forest land for non-forestry purposes.
- Prior to 1980, the rate of diversion of forest lands for non-forestry purposes was about 1.43 lakh ha. per annum. But, with the advent of the Forest (Conservation) Act, 1980, the rate of diversion of forest lands has come down to around 16800 ha. per annum.
- For such diversions of forest lands for non-forestry purposes following measures are taken up to mitigate the ill effects of diversion of such vast area of green forests are as follows:
 - Compensatory Afforestation (CA).
 - Catchment Area Treatment (CAT).
 - Wildlife Habitat improvement.
 - Implementation of Rehabilitation & Resettlement.
 - Levy of Net Present Value (NPV) mitigative measures.
 - Monitoring of above activities.

Achievements:

- i. **Introduction of PARIVESH for single Window Clearance:** Ministry launched 'PARIVESH', the portal for online processing of forest clearance, besides Environment Clearance and Wildlife Clearance as a Single Window System. This initiative has significantly improved the entire process of Forest

Clearance under Forest (Conservation) Act, 1980. This has ensured high transparency and speed in the process. The important features are that the user agency gets a confirmation on mail about acceptance of his application or can receive queries raised on the application online and can file his reply to such objections online. The user agency can also track the movement of their application at different stages and can see the findings of the Forest Advisory Committee (FAC) on their project proposal.

- ii. **Timely disposal of the FC Proposals:** Processing of all proposals received for diversion of forest land for non-forest purposes under Forest (Conservation) Act, 1980, in respect of all States/UTs done after scrutinizing and found to be complete in all respects. These proposals are then placed before Forest Advisory Committee (FAC) at Ministry and before Regional Empowered Committee (REC) in the concerned Regional Offices of Ministry at least once in a Month. Proposals complete in all respects are placed before FAC or REC meetings, as the case may be and are disposed of. Now a days, it takes less than two months' time for disposal of a proposal.
- iii. For the purpose of transparency streamlining and for the fast disposal of forest land diversion proposal under Forest (Conservation) Act, 1980, a handbook of Forest (Conservation) Act, 1980, Acts, Rules, Guideline and clarification has been prepared. This is also been uploaded on the website of the ministry.

Statement Showing Total Area Diverted (State Wise) for Forest Land Under FC ACT, 1980

Category : All Categories		During the Period : 01/01/2018 to 31/03/2019			
S. No.	STATE / UT	In-Principle approval		Final Approval	
		No. of Cases	Total Land Diverted (Ha.)	No. of Cases	Total Land Diverted (Ha.)
1	Andhra Pradesh	75	2162.44	9	23.81
2	Arunachal Pradesh	1	48.15	0	0.00
3	Assam	20	921.57	1	1.00
4	Bihar	96	652.48	71	488.56
5	Chandigarh	2	0.36	0	0.00
6	Chhattisgarh	30	3399.41	6	659.07
7	Dadar & Nagar Haveli	21	13.43	7	3.20
8	Daman and Diu	1	0.97	0	0.00
9	Delhi	3	36.43	0	0.00
10	Goa	4	1.75	4	2.09
11	Gujarat	195	2993.76	48	1118.68
12	Haryana	472	803.54	342	607.39
13	Himachal Pradesh	120	738.95	80	692.99
14	Jharkhand	23	838.76	18	476.16
15	Karnataka	43	1310.59	8	146.45
16	Kerala	5	138.15	5	3.05
17	Madhya Pradesh	290	8973.89	199	6748.70
18	Maharashtra	87	2542.56	5	435.53
19	Manipur	8	622.22	0	0.00
20	Mizoram	2	22.79	0	0.00
21	Odisha	45	4473.25	21	4453.46
22	Punjab	265	660.19	254	719.49
23	Rajasthan	56	541.99	41	797.63
24	Sikkim	24	117.62	1	0.61
25	Tamil Nadu	13	46.23	3	27.53
26	Telangana	45	4570.94	13	2326.59
27	Tripura	12	387.09	2	8.48
28	Uttar Pradesh	222	27762.79	2	124.50
29	Uttarakhand	276	1333.83	140	801.13
30	West Bengal	10	667.24	3	26.91
Total		2466	66783.37	1283	20693.00



Statement Showing Total Area Diverted (Category Wise) for Forest Land under FC Act, 1980

Category : All States		During the Period : 01/01/2018 to 31/03/2019			
S. No.	Category	In-Principle approval		Final Approval	
		No. of Cases	Total Land Diverted (Ha.)	No. of Cases	Total Land Diverted (Ha.)
1	Approach Access	158	5.18	99	3.04
2	Canal	1	0.00	1	0.00
3	Defence	14	26996.37	5	4159.09
4	Dispensary/Hospital	1	40.51	2	41.37
5	Drinking Water	75	231.58	23	18.86
6	Encroachments	1	14.22	0	0.00
7	Forest Village Conversion	0	0.00	1	285.70
8	Hydel	25	1093.43	18	148.67
9	Industry	13	1635.32	19	181.85
10	Irrigation	72	7737.84	33	4456.51
11	Mining	70	13305.91	29	6263.62
12	Optical Fibre Cable	55	30.64	26	13.94
13	Others	814	2424.78	380	624.44
14	Pipeline	4	0.62	0	0.00
15	Quarrying	13	44.01	3	10.30
16	Railway	36	1386.76	18	844.71
17	Rehabilitation	2	101.61	0	0.00
18	Road	906	8264.48	483	2174.88
19	School	6	16.66	12	17.68
20	Thermal	5	80.93	1	10.70
21	Transmission Line	169	3292.58	111	1378.14
22	Village Electricity	24	24.40	17	29.50
23	Wind Power	2	55.54	2	30.00
Total		2466	66783.37	1283	20693.00

2.8 Forest Establishment

The Forest Establishment Division is handling the establishment matters relating to the Indian Council of Forestry Research and Education (ICFRE), an autonomous organisation under the Ministry of Environment, Forest and Climate Change and its Institutes/Centres;

Forest Survey of India (FSI) and its Regional Centres; National Zoological Park (NZP); Wildlife Crime Control Bureau (WCCB) and its Regional Offices; Indira Gandhi National Forest Academy (IGNFA); Directorate of Forest Education (DFE) with four Central Academies, Forest Departments of all the Union Territories

of India (except Andaman & Nicobar Forest Planation Development Corporation), general references relating to frontline staff of State Forest Departments viz;

- Recruitment Rules – framing & amendment of Recruitment Rules of technical and Ministerial posts.
- Constitution of Screening Committee for appointment of Joint Secretary and above level post in ICFRE.
- ACC approval for appointment of Director General, ICFRE.
- Consideration of proposals regarding up-gradation of pay scales, creation of posts, merger of posts, cadre restructuring and other establishment matters in r/o frontline staff of Forest Deptt. of States and UTs in consultation with nodal Ministries/ Departments.
- Consultation with nodal Ministries in various establishment/service matters of all Scientific/Technical/Ministerial officers/ staff.
- Recruitment/Promotion/Deputation of Group A & B officers through UPSC.
- Appeal against penalty in disciplinary cases of Group 'A' 'B' & 'C'.
- Appeal against adverse entries in the ACR/ APAR.
- Framing policy regarding various establishment matters of ICFRE as per extant guidelines of Govt. of India.
- FE Division is Nodal Division for sending requisition to Staff Selection Commission

for filling up Direct Recruitment posts in Attached and Subordinate Offices of this Ministry.

Activities undertaken

- Selection to the post of DDG (Education), ICFRE and Director, AFRI have been made.
- Search-cum-Selection committee is being constituted for selection of post of Director, FRI, Director, IWST, Director, HFRI.
- Framing/amendment of RRs for Group 'A', 'B' and 'C' posts in r/o FSI and Group 'B' post in IGNFA.
- Vacancy requisition of Regional/ Subordinate offices forwarded to SSC for various DR posts (Non-Gazetted).
- Promotion cases in r/o Group 'A' officers of FSI taken up with UPSC.
- Creation of 57 posts of Frontline Staff in Lakshadweep.
- Up-gradation of pay for the posts of ACF and Forest Ranger in UT of A & N Islands.
- Filling up the vacancy in the post of Training Officer (Hindi) in IGNFA on deputation basis taken up with UPSC.
- Appointment to the post of Inspector in Wildlife Crime Control Bureau (WCCB).

List of autonomous, attached and regional offices under the administrative control of the Division:

- I. Indian Council of Forestry Research and Education (ICFRE) – Autonomous organization. The Institutes and Centres under ICFRE are as under:



Institutes

- i. Forest Research Institute, Dehradun
- ii. Tropical Forest Research Institute, Jabalpur
- iii. Arid Forest Research Institute, Jodhpur
- iv. Himalayan Forest Research Institute, Shimla
- v. Institute of Forest Productivity, Ranchi
- vi. Institute of Forest Biodiversity, Hyderabad
- vii. Institute of Forest Genetics and Tree Breeding, Coimbatore
- viii. Rain Forest Research Institute, Jorhat
- ix. Institute of Wood Science and Technology, Bengaluru

Centres

- i. Forest Research Centre for Skill Development, Chhindwara
- ii. Forest Research Centre for Bamboo & Rattan, Aizawl
- iii. Forest Research Centre for Eco-Rehabilitation, Prayagraj
- iv. Forest Research Centre for Livelihood Extension, Agartala
- II. Directorate of Forest Education – Subordinate Office. Four Central Academies under DFE are as under:
 - i. Central Academy for State Forest Service, Dehradun (Uttarakhand)
 - ii. Central Academy for State Forest Service, Coimbatore (Tamil Nadu)
 - iii. Central Academy for State Forest Service, Burnihat (Assam)
 - iv. Central Academy of Forest Education, Kurseong (West Bengal)

- III. Indira Gandhi National Forest Academy – Subordinate Office
- IV. Forest Survey of India – Subordinate Office. The Regional offices under FSI are as under:
 - i. Central Zone, Nagpur
 - ii. Eastern Zone, Kolkata
 - iii. Northern Zone, Shimla
 - iv. Southern Zone, Bangalore
- V. Wildlife Crime Control Bureau – Subordinate Office. Five Regional offices under WCCB are as under :
 - i. Southern Region, Chennai.
 - ii. Eastern Region, Kolkata.
 - iii. Western Region, Mumbai.
 - iv. Central Region, Jabalpur.
 - v. Northern Region, New Delhi.

Three sub-regional offices at Guwahati, Amritsar and Cochin

- VI. National Zoological Park – Subordinate Office

2.9 Forest Policy

Ministry deals with the National Forest Policy, 1988, Indian Forest Act, 1927 and its amendments including policy matters and legislative matters of other Ministries and State Governments related to forests. In addition Forest Policy Division deals with forest related issues under various conventions such as UNFCCC, UNCCD & UNCBD, etc. The Forest Policy Division is the National Focal Division for the International Cooperation on United Nations Forum on Forestry (UNFF), Asia Pacific Forestry Commission (APFC), Asia Pacific

Forest Invasive Species Network (APFISN), Committee on Forestry of FAO (COFO), UN-REDD and Centre for International Forestry Research (CIFOR) and International Poplar Commission of FAO. The Division is mandated to deal with technical aspects related to NDC related forestry targets and implementation of REDD+ programme in the Country at National level. The Division is also nodal division for coordinating bilateral agreement between India and USAID on Forest PLUS 2.0 program. The Division gives policy directions and issues advisories from time to time to State Governments on important forestry matters.

Activities undertaken:

i. Amendment of Act & rules:

- Indian Forest (Amendment) Act, 2017 was notified in January 2018. With this amendment, bamboo grown outside forest has been removed from the category of tree and forest produce and therefore bamboo grown in non forest areas has been exempted from the requirement of felling and transit permit for its economic use. Thus the hardship being faced by farmers and other bamboo growers for obtaining felling and transit permit has been done away with. This will encourage bamboo growers and farmers for cultivation of bamboo on their private land.
- A Core Drafting Committee was constituted for drafting the Comprehensive Amendment of Indian Forest Act, 1927. The first draft of comprehensive amendment to IFA

1927 has been finalized and sent for consultation with all State/UT Governments for further necessary action.

ii. Advisories and Guidelines:

- As per information received from State Governments, 24 States/ UTs have already liberalized/ exempted the bamboo from requirement of transit and felling permit (with restriction on 1-2 spp. in few States). These States are Assam, Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Bihar, Punjab, Karnataka, Chhattisgarh, Maharashtra, Madhya Pradesh, Delhi, Haryana, Gujarat, Himachal Pradesh, Tamil Nadu, Odisha, Telangana, Kerala, Uttarakhand, Uttar Pradesh, Goa and Andhra Pradesh. Further Government of Tamil Nadu and Government of Goa have already amended their respective Acts to omit bamboo from definition of tree.
- Further an Advisory dated 25.06.2018 was again issued to all States/ UTs for necessary amendments in State Forest Act and State Transit and Felling Regulations in line with Indian Forest (Amendment) Act, 2017 regarding removal of bamboo grown outside forest from definition of forest produce and tree.
- Advisory dated 19.01.2018 issued to all States/UTs to consider Pan India Card/ Transit Permit for inter-state movement of commonly grown agro-forestry



species. Himachal Pradesh and some other States are adopting the pan India Transit System. Further Pan India Transit Permit for inter-state movement of ten commonly grown agroforestry species (eucalyptus, poplar, Casuarina, Subabul, Silver oak, Acacia mangium, Melia Dubia, Khejri, India willow and Gamari) was also issued on 23.01.2018 to all States/UTs for adoption.

iii. Draft National Forest Policy, 2019:

- Draft National Forest Policy had been prepared and placed in public domain for wide consultation till April 2018. Based on analysis of all comments received through consultation process including inter-ministerial consultation, a revised Draft National Forest Policy, 2019 has been finalized. The same is under consideration for notifying the new National Forest Policy of 2019.

iv. National Bamboo Mission related activities:

- Forest Policy Division supported and provided all necessary technical inputs to the Department of Agriculture, Cooperation and Farmers Welfare for finalizing the restructured National Bamboo Mission. The Mission has been launched in 2018 with an outlay of Rs. 1,290 Crore to promote bamboo sector in a holistic manner.

v. Celebration of International Day of Forests:

- Every year 21 March is celebrated as International Day of Forests. This

celebration brings to focus, the role of Forests in safeguarding the ecological security & livelihood of millions of people all around the world. Forests provide clean air, water and energy. Sustainably managed forests can provide renewable and carbon neutral energy for a greener future. International Day of Forests 2018 was celebrated at Okhla Bird Sanctuary on 23.03.2018 to sensitize the people, students and other stakeholders on importance of forests.

- In 2019, the International Day of Forests was celebrated with the theme Forests & Education. On behalf of the Ministry of Environment, Forest and Climate Change, Indian Council of Forestry Research and Education (ICFRE), Dehradun hosted the celebration of this year's International Day of Forests on 19.03.2019 at Forest Research Institute (FRI), Dehradun.



vi. REDD+ issues:

- National REDD+ Strategy as envisaged in Cancun Agreement under UNFCCC has been released to guide State

Governments for implementation of REDD+. The National REDD+ Strategy has also been placed at the webpage of UNFCCC. National Forest Reference Level for REDD+ implementation in country has been accepted by the UNFCCC. Four Committees viz. National Governing Council, Thematic Advisory Group, Technical Working Group and National Designated Entity for REDD+ have been constituted at national level for coordinating implementation of REDD+ in the country.

- The Forest Policy Division in consultation with ICFRE is developing the country-specific Safeguard Information system (SIS) for ensuring safeguards principles throughout implementation of REDD+ activities in the country.

vii. Promotion of Tree outside forests:

- Expert Committee was constituted to develop strategy to increase green cover/tree cover outside recorded forest areas. The committee submitted the Report. The report was released in public domain. The report contains action points and recommendations. Implementation of these action points will boost up and promote development of agro forestry models in the country and thereby will help create a multiple socio-economic and environmental benefits to the nation.

viii. New initiatives:

- Forest Policy Division has formulated the concept note on “Creation/

development of a “National Portal for inter-state/ intra-state movement of Timber and Bamboo and its products”. The portal is being developed.

- Draft Guidelines for Public Participation in Afforestation of Degraded Forests has been finalized. This will help improving the status of degraded forest/ scrub forest of the country and at the same time help in meeting the demand of wood domestically. The same is under active consideration.
- Draft Model Agreement for plantation on non forest government land has been finalized. This will help in greening vacant government lands and help in meeting the demand of timber from outside forest. The same is under consideration.

ix. Participation in international forum on forests:

- Indian delegation participated in Exchange visit on Forest fire management.
- Indian Delegation attended the 13th Session of United Nations forum on Forests and submitted the country's view and commitment regarding implementation of UN Strategic Plan on Forests for 2015-2030.
- Participation of Indian delegation in 24th session of Committee on Forestry (COFO) of FAO. The delegation also attended the special session of International Poplar Commission.



- Indian delegation attended Exchange Visit on “Forest Inventory” in USA.
- IG (Forest Policy) participated in expert group Meeting on the clearing house of the Global Forest financing Facilitation network (GFFFN).
- Indian delegation led by DGF&SS attended the FOREST EUROPE Expert level meeting.

List of publication brought out-brief purpose of each, wherever necessary: National REDD+ Strategy and Expert Committee Report on Tree outside Forests(TOF) have been published by the Division.

National REDD+ Strategy: In accordance with the requirements of UNFCCC, to be eligible to get result based financial incentives for REDD+, Government of India has prepared its National REDD+ Strategy. The Strategy recognizes the role of local and tribal communities in getting fair share of REDD+ benefits. The National REDD+Strategy of India outlines the facilitative and enabling environment for implementing REDD+. REDD+ aims to achieve climate change mitigation by incentivizing forestconservation. The strategy seeks to address drivers of deforestation and forest degradation and also developing a roadmap for enhancement of forest carbon stocks and achieving sustainable management of forests through REDD+ actions. The National REDD+ Strategy has been uploaded at the webpage of UNFCCC.

Expert Committee Report on TOF: The report contains action points and recommendations. Implementation of these action points will boost up and promote development of agro

forestry models in the country and thereby will help create a multiple socio-economic and environmental benefits to the nation. Ministry released the report and circulated to all concerned Central Ministries/ Departments and State Governments for implementation of action points.

2.10 Forest Protection

The Forest Protection Division of the Ministry supports the efforts of State/Union Territory Governments for protection of forests and prevention and control of forest fire by providing financial assistance and guidelines.

It also assists State/UTs in dealing with various issues related to illegal felling of trees, deforestation, encroachment of forest land, left wing extremism in forest areas, disaster management relating to forest fire, and application of space technology for forest fire management.

This division deals with the following subjects in the Ministry.

- All issues relating to forest fire, Forest Fire Prevention and Management Scheme (FPM) and implementation of National Action Plan on Forest Fire.
- Issues relating to protection of forests which include control of illicit felling of trees, deforestation, and encroachment of forest land
- Application of space technology for forest fire management which includes dissemination of forest fire alerts, pre-fire warning and assessment of burnt area by FSI.

- Miscellaneous issues relating to forest protection, parliament matters, etc.
- Crisis management related to forest fire.
- Disaster management issues relating to the Ministry: Forest Protection Division is the Nodal Division for disaster related matters in the Ministry.

Objectives: The scheme has long term and short term objectives.

Long Term Objectives:

- To contribute to the larger goal of maintaining environmental stability.
- To minimise forest fire incidences and assist in restoring productivity of forests in affected areas.
- To prepare fire danger rating system and devise forest fire forecasting system.
- To institutionalise the partnership with forest fringe communities for forest protection.
- To develop knowledge on impacts and dynamics of forest fire.
- To encourage the States/Uts for optimal use of modern technology (such as Remote Sensing, GPS and GIS) in planning, developing and operationalizing Fire prevention and management system.

Short Term Objectives:

- To effectively prevent and control forest fires by improving the traditional practices.
- To encourage community participation in prevention and control of forest fire.
- To develop and strengthen forestry infrastructure of the States and UTs that

are required for effective prevention and management of Forest fire.

- To carry out effective awareness campaign for prevention of forest fire.
- To impart suitable training to the field staff and forest fringe communities.

The Annual Plan Operations (APOs) submitted by the State Forest Departments are scrutinized by a Screening Committee. On recommendation of the Screening Committee, 80% of central share is released as 1st installment against approved Annual Work Programmes. On receipt of Utilization certificate and Progress report for at least 50% of the funds released, second installment is released to the State Governments.

List of publications: The Ministry in collaboration with the World Bank has conducted a study on Situation Analysis of Forest Fire and released a study report titled "Strengthening Forest Fire Management in India" which contains various recommendations regarding fire prevention, detection, suppression, post-fire management, engaging with communities, coordination with other agencies etc.

2.11 Wildlife Conservation

The Wildlife Division of the Ministry is the nodal Division which deals with the policy, legal and finances for conservation of wildlife in the Country. The Division also provides technical support to the State/ UT Governments for conservation of wildlife and their habitats under the Centrally Sponsored Scheme - Development of Wildlife Habitats (CSS-DWH).

The Wildlife Wing of the Ministry of



Environment, Forest and Climate Change, which is headed by the Additional Director General of Forests (Wildlife) who is the Director, Wildlife Preservation as per Wildlife (Protection) Act, 1972.

Major activities/ achievements:

i. Effective decision making in development

related projects: The Standing Committee of National Board for Wildlife (SC-NBWL) has been meeting regularly. In order to enhance the efficiency of the decision making process, and to save time and cost, it was decided to convene meetings of the Standing Committee of NBWL through Video Conference. Time for decision making in project proposals in NBWL/SC-NBWL has reduced from 365 days to 180 days. For ease of doing business Standing Committee of National Board for Wildlife has delegated its power to the State Board for Wildlife for sanctioning proposals on:

- Laying of drinking water pipelines
- Optical fibre cables (OFC) in Protected Areas

- There is zero pendency in Wildlife Clearances

- Video conferencing of SC-NBWL meeting

Training programme for Veterinary Doctors in Protected Areas:

The veterinary Doctors play an important role in the day to day management of the Protected Areas. The Veterinary Doctors are normally not trained in wildlife diseases. In order to build the capacity of the Veterinary doctors posted in Protected Areas, on management of wildlife, the Wildlife Division has initiated short term training programmes at the Indian Veterinary Research Institute (IVRI), Bareilly. As a first step, 20 Veterinary Doctors from 10 States of the Country were trained in wildlife health management.

ii. National Action Plan for conservation of Migratory birds along the Central Asian

Flyway (CAF): The Ministry released the 'National Action Plan on 19th November, 2018 for conservation of Migratory birds along the Central Asian Flyway (CAF)', signaling the leadership role India will play in conservation of migratory species.



The Action Plan emphasizes on coordination and cooperation between various Central Government Ministries, State Government Departments, managers of protected areas, Local Communities, Civil Society and Private sector. It gives focus on collective activities to protect the important bird habitats in India.

iii. Policy for Eco-tourism in Forest and Wildlife Areas: The Ministry released

the 'Policy for Eco-tourism in Forest and Wildlife Areas'. The Eco-tourism policy has been formulated in consultation with the Ministry of Tourism. The Eco-tourism policy will provide livelihood opportunities for the local communities, as well as educate visitors and enhance their understanding of nature.



iv. Asiatic Lion Conservation Project: The Ministry of Environment, Forest and Climate Change, Government of India launched the "Asiatic Lion Conservation Project" on 20th December, 2018 with an aim to protect and conserve the world's last ranging free population of Asiatic Lion and its associated ecosystem. The Project will strengthen the ongoing measures for conservation and recovery of Asiatic Lion with the help of state-of-the-art techniques/ instruments, regular scientific

research studies, disease management, Modern surveillance/ patrolling techniques etc.





v. Addressing Human Wildlife Conflict:

Considering the need of immediate assistance to farmers whose crops are being damaged by wild animals such as Blue bulls, Wild boars etc., the Wildlife Division of the Ministry requested of the Ministry of Agriculture and Farmers Welfare to include the crop damage by wild animals within the ambit of the 'Pradhan Mantri Fasal BimaYojna'. Taking into consideration, the Ministry of Agriculture and Farmers Welfare agreed to the request.

Also, it was for the first time in the country that scientific methods like Immuno-Contraception for population control of problematic animals, which are responsible for Human wildlife conflict has been initiated. The project is being assisted by WII and the National Immunology Institute, Delhi.

The compensation for damage to crops and loss of human lives has also been increased. The Central Government has increased the ex-gratia compensation for loss of human life from Rs. 2 Lakhs to Rs. 5 Lakhs.

vi. Recovery programme for critically Endangered Species: With a view to provide focused protection to the critically endangered species, the Standing Committee of National Board for Wildlife in its 49th meeting held on 13th June 2018, recommended for inclusion of four more species for taking up 'Recovery programme' under the Centrally Sponsored Scheme of 'Development of Wildlife Habitat'. The species include: Batagur Baska; Red Panda; Clouded Leopard and Arabian Sea

Humpback Whale. The number of species under the recovery programme has increased from 17 to 21 species.

vii. Enhancement of Protected Area Network in the Country: The number of Protected Areas in the country has increased from a total of 769 in 2017 to 868 in 2019. The total area under PA is now 1,65,088.10 Sq.kms.

With greater impetus on community participatory approach in wildlife conservation, the number of Community Reserves in the country has risen. The number of Community Reserves has increased from 46 in the year 2017 to 127 in 2019.

The Ministry commenced a major initiative 'Prakriti Paryavaran Aur Hum, 2018' under Swachh aur Swastha Bharat Mission to continue the activities of cleanliness and proper sanitation in each of State/ Union Territory.

In this context, Inspector General of Forests (Wildlife) along with staff of Wildlife Division visited the State of Maharashtra and carried out the cleanliness, health and waste management awareness drives/ activities at two different locations/ sites on 9th January, 2018. Viz. Sanjay Gandhi National Park (SGNP), Borivili, Mumbai, and at Airoli Mangrove Conservation Centre, Navi Mumbai.

Plastic Free Protected Areas: As part of celebration of World Environment Day, 2018, the Wildlife Division of this Ministry issued directions to all States & UT Governments to organize awareness generation programmes to sensitize people to avoid the usage of plastic in any form in all Protected Areas and declare

them as “Plastic Free Zones”. Protected Areas in States like West Bengal, Odisha, Delhi, Uttarakhand etc. have been declared as “Plastic free zones”.



Conceptualization of the Indo-German Technical Cooperation Project on Human Wildlife Conflict Mitigation in India: A new Indo-German Technical Cooperation project on ‘Human-Wildlife Conflict Mitigation in India’ was conceptualized on 5th February, 2018 at New Delhi. The project is being commissioned by Federal Ministry for Economic Cooperation and Development (BMZ) and is being implemented by Ministry of Environment, Forest and Climate Change (MoEF&CC), State Forest Departments of Karnataka, Uttarakhand & West Bengal and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The project aims at providing technical support at the National level and in selected partner States of Karnataka, West Bengal and Uttarakhand for effective implementation of Human Wildlife Conflict mitigation measures.



Enhanced sensitivity towards fragile Ecology:

Eco-Sensitive Zones (ESZ) are notified for conservation of the Eco sensitive zone of Sanctuaries and National Parks. Out of 662 NP/WLS during the year 2018, 202 were Draft notified and 306 NP/WLS were finally notified.

Eco-friendly measures: The Government has also introduced guidelines named “Eco-friendly measures to mitigate impacts of linear infrastructure on wildlife” to ensure that any linear project like roads, railway tracks and transmission line passing through Protected Areas and other Wildlife rich areas are designed in eco-friendly manner so that adverse impact of these projects on the conservation of wild animals can be avoided and development & conservation of wild life may go side by side.

Launch of Logo and Mascot for Convention on Migratory Species–Conference of Parties 13 (CMS- CoP 13): To conserve migratory species through dialogue, listing and concerted efforts of the member countries (129 countries), the 13th Cop has been decided to be held at Gandhinagar, Gujarat, India from 15th-22nd February, 2020. CMS also is linked with CITES and CBD for the larger cause of bio-diversity conservation.





The Conference of Parties in India will be an important and significant step to showcase the world about the India's contribution in the field of wildlife conservation. Since a large number of participants are expected to visit the country, it will also be an opportunity for the State Governments/Union Territories of the countries to show their achievements in wildlife and bio-diversity conservation.

The Logo and Mascot of CMS-CoP 13 were launched in an event on 8th February, 2019 at MoEF&CC in presence of Hon'ble Minister of Environment, Forest and Climate Change, Hon'ble Minister of Environment & Forest, Government of Gujarat and other officials of the Ministry, Government of Gujarat and CMS Secretariat. The concept of the Logo is inspired by the traditional 'KOLAM' from southern India, which has a profound significance in the context of living in harmony with the Mother Nature.

The form of the KOLAM is being used here as the main graphic element composed of the 'migrating species' that we want to protect as a part of the CMS-COP 13. This logo carries Amur Falcon, Humpback Whale, Marine Turtle, the key migratory species found in India. The mascot of CMS-CoP13 is 'GIBI', enchanting 'Great Indian Bustard', representing all the endangered species that need our love, care and protection.

National Conservation Strategy for the Indian One-Horned Rhinoceros: The Ministry launched the "National Conservation Strategy for the Indian One-Horned Rhinoceros" on 26th February, 2019.



The goal of this Plan is to spread the Rhinoceros population in those areas also which used to hold the Rhinoceros earlier by augmenting the existing conservation efforts by strengthening them through scientific and administrative measures. This will be a major step in conservation of Rhinoceros population across India.

Securing livelihoods, conservation, sustainable use and restoration of high range Himalayan Ecosystems (SECURE Himalaya)

Project: SECURE Himalaya is a Government of India (MOEF&CC)-UNDP-GEF project (2017- 2023) being implemented in Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Sikkim. The said project is under the parent programme "Global Partnership for Wildlife Conservation and Crime Prevention for Sustainable Development". The Project was launched by Honorable Minister of Environment, Forest and Climate Change in October 2017 during the Global Wildlife Programme conference.

SECURE Himalaya project aims to demonstrate a matrix of best practices of high range Himalayan ecosystem and snow leopard conservation for scaling up and replication in other landscapes, nationally and globally. The

focal species for conservation is Snow Leopard which is among the 21 critically endangered species being protected in India.

A draft national protocol on enumeration and monitoring of snow leopard has been developed with the participation of range states, technical institutions & NGOs. This protocol is the first such protocol at the national level which will be used for validation of baseline data of snow leopard population in the range states.

Management Effective Evaluation of Protected Areas: In order to assess the health and effectiveness of National Parks and Wildlife Sanctuaries Vis-à-vis their objective for creation, 324 numbers of MEE has been done during the year 2005-2006 till 2017-2018. MEE of 146 PAs (121 new PAs and 25 PAs whose evaluation was done earlier in 2005-2006) is under progress.

Centrally Sponsored Scheme- Development of Wildlife Habitat: The Ministry provides financial assistance to the State/ UT Governments for conservation and protection of wildlife and its habitat apart from providing legislative and policy support. The management and conservation efforts of the Government are discernable in the population increase of key stone species. Due to the enhanced financial allocation and concerted management efforts, most of these species have shown remarkable increase in population. The scheme has following three components:

- Support to Protected Areas (National Parks, Wildlife Sanctuaries, Conservation Reserves and Community Reserves)

- Protection of Wildlife Outside Protected Areas
- Recovery programmes for saving Critically Endangered Species and habitats.

2.12 Wildlife Crime Control Bureau (WCCB)

India is one of the mega bio-diverse countries of the world and is a prime target of organized illegal international trade in wildlife and wildlife parts/derivatives. Wild Life (Protection) Act, 1972, is the umbrella legislation for wildlife conservation and protection in the country. The implementation of the provisions of the Act is done by States mainly through forest & wildlife departments and police department. However, due to inadequate infrastructure in the States for combating organized wildlife crime and also keeping in view the inter-state and international ramification of the crimes, Wildlife Crime Control Bureau (WCCB) was constituted by Government of India under the Ministry of Environment Forests and Climate Change, as a sub – component of the ongoing Central Scheme ‘Strengthening of Wildlife Divisions and Consultancies for Special Tasks’; to complement the efforts of the State agencies and coordinate the actions of Central & State agencies in enforcement of the provisions of the Act. From the year 2017-18 the funding to the Wildlife Crime Control Bureau is being provided under the scheme of “Wildlife Crime Control Bureau”.

The Wildlife Crime Control Bureau shall exercise:

- Such powers as may be delegated to it under sub-section (1) of section 5; sub-



sections (1) and (8) of section 50 and section 55 of Wildlife (Protection) Act; and

- Such other powers as may be prescribed.

The Bureau also assists the Customs in inspection of consignments as per the provisions of the Wild Life Protection Act, CITES and Exim Policy. The Regional Deputy Directors of the Bureau at Delhi, Mumbai, Kolkata and Chennai are designated as CITES Assistant Management Authorities and tasked with regulation of trade in endangered species of flora & fauna under the Convention on International Trade in Endangered Species of Fauna and Flora (CITES).

Activities undertaken: In line with its mandate, the Bureau has undertaken the following activities:

- i. Collection, collation and dissemination of intelligence on wildlife crime and criminals to the central / state agencies concerned for apprehension of criminals.
- ii. Collection of wildlife crime data from the States/UTs by creation of online data management system in WCCB website base.
- iii. Wildlife Crime Enforcement under the provisions of Wild Life (Protection) Act, 1972:-
 - Detection/ search/ seizures/ apprehensions
 - Investigation of offences detected by the officers of the Bureau
 - Filing complaints in courts in cases detected by the Bureau.

iv. Capacity building in dealing with wildlife crimes and investigation of wildlife offences:-

- Two days capacity building training courses on investigation of wildlife offences and intelligence trade craft for police and forest officials.
- Sensitization programmes / workshops/ seminars for the central and State agencies on issues related to wildlife crimes and identification of wildlife articles.
- Provide expert resource persons to various training centers and agencies for sensitization on wildlife and wildlife crime
- Human Resource Development in WCCB – Deployment of WCCB officials for various training courses for their capacity building as trainers in the relevant fields.

v. Coordination and cooperation to combat organized wildlife crimes with trans – border ramifications: -

I. Within country:

- Inter - agency coordination meetings at national and regional level - to promote effective inter-departmental coordination to control poaching and illegal trade in wildlife and wildlife products; to promote sharing of information and enforcement of provisions of Wild Life (Protection) Act, 1972 and to curb illegal trans-border trade; and to promote capacity

building and sensitization toward wildlife protection issues.

- Joint operations with other agencies in wildlife crime enforcement.
- Special Enforcement Operations coordinated by WCCB to focus on specific species involved in wildlife crime as well as on online illegal wildlife trade.

II. International co-operation:-

- Liaison with Interpol, CITES Secretariat and concerned foreign authorities.
- Participate in Interpol coordinated multi – national joint operations.
- Attend relevant international meetings such as annual meeting of SAWEN, executive committee meeting of SAWEN, Wildlife Crime Working Group meeting and Investigative Support meetings of INTERPOL that includes 4th Executive Committee meeting of SAWEN and a workshop on strengthening the capacity of SAWEN at Kolkata from 8-10 May, 2018 and Regional Investigative Support meeting on Wildlife Crime at Siliguri from 23-25 April 2018 and at Valmiki Tiger Reserve from 29-30 October 2018, which were organized by WCCB.
- WCCB officials attended as trainers in an INTERPOL organized training programs on crime detection for Bhutan's Forest and other officials under INTERPOL Environmental Security Programme at Phuntsoling, Bhutan.

vi. Sensitization and awareness campaigns on wildlife and wildlife crimes to public and other stakeholders: -

- Public education and awareness campaigns - including schools/PRIs leaders/fairs/ pet markets etc.
- Sensitization programmes for other agencies and stakeholders.

vii. Assistance in investigation and prosecution of important wildlife offences being investigated by other agencies.

viii. Assist the Customs Department in inspection of consignments in respect of violations of WLP Act, CITES and FTP. Assist and advise Customs department in identification of wildlife articles and issues related to CITES. Regulate legal trade under CITES.

ix. Issue Alerts and Advisories to the stakeholders on the issues pertaining to wildlife crime enforcement, policy and legislations.

x. Published 3 Purple Notices on Illegal poaching & smuggling of Live tokay gecko (Gecko gecko), Agarwood smuggling from India and Unauthorized export of Dried Sea horse through courier mode.

xi. Other activities - Enrolment of volunteers to assist WCCB in performance of its mandated tasks pertaining to intelligence collection, capacity building and awareness generation on wildlife and wildlife crime issues.



Progress/Achievements: The key objectives, success indicators and target set for Wildlife Crime Control Bureau and the achievements under the set targets are as under:

S.N.	Objective	Success Indicator	Target	Achievement
1.	To detect violation of Wildlife (Protection) Act, 1972 including detections of violations under CITES and FTP at exit points.	No. of Cases detected at exit points.	Depend on the no of cases referred by Customs	99
2.	To develop effective intelligence network	No. of alerts/ advisories/ actionable intelligence inputs issued	70	124
3.	To delineate organized syndicates working in wildlife	No. of wildlife criminals apprehended and	54	210
		No of criminal dossiers prepared		606
4.	To assist in investigation and prosecution of organized wildlife crime	No. of WL cases in which assistance in investigation & prosecution of cases is rendered	46	84
5.	Capacity building of central and State agencies	No. of Training (2/3 days capacity building) programmes conducted	22	26
		No of officials trained		1081
6.	To conduct Regional coordination meetings (State & other agencies)	No. of coordination meetings conducted	12	9
7.	To conduct sensitization / awareness programmes for PRIs	No. of programmes conducted	36	31
		No of representatives sensitized		1641
8.	To conduct Sensitization / awareness programs for Central/ State government agencies and stakeholders.	No. of Programmes conducted	40	56
		No of officials/persons sensitized		2323

9.	To conduct joint operations with other enforcement agencies against wildlife criminals	Number of Joint Operations conducted	28	109
10.	Making functional the online crime management system of WCCB for uploading of Wildlife crime data	Issuing of user Ids & passwords to divisional officers of all the states in the Country for enabling them to upload online	36	35

WCCB received UNEP Award: Excellent work done in combating trans-boundary environmental crime by WCCB has been recognized by United Nation Environment Programme by awarding Asia Environment Enforcement Awards, 2018. The Asia Environment Enforcement Awards publicly recognize and celebrate excellence in enforcement by government officials and institutions/teams combating trans-boundary environmental crime in Asia. WCCB has been conferred this award in the Innovation category. WCCB has adopted innovative enforcement techniques that have dramatically increased enforcement of trans-boundary environmental crimes in India. Notably it has developed an online Wildlife Crime Database Management System to get real time data in order to help analyze trends in crime and devise effective measures to prevent and detect wildlife crimes across India. In order to involve the public in the fight against wildlife crime, WCCB has also developed a scheme to enroll willing persons as WCCB Volunteers.



Conference organized in India or International conference:

- WCCB in coordination with INTERPOL and SAWEN organized and conducted a Regional Investigative Support meeting at Siliguri, West Bengal on 23-25 Apr 2018, in which participants from Bangladesh, Bhutan and Nepal participated apart from Indian officials from BSF,SSB ,Customs, West Bengal- Uttrakhand-Bihar Forest department, Uttar Pradesh and West Bengal police department. During the meeting various issues related to the participating countries about wildlife criminal gangs, their modus operandi, species in illegal trade and the various border routes taken



by the wildlife criminals for smuggling of contrabands were discussed in detail and a road map was prepared for effective control of illegal activities and sharing of information. Various operations have been conducted based on the outcomes of the meeting

- b. Organized Investigative Support meeting on tiger smuggling at Valmiki Tiger Reserve, Bihar, between India and Nepal on 29-30 October 2018 to identify the various tiger poachers involved and wanted in tiger poaching cases and worked out the strategies to apprehend them. The meeting was attended by representatives from WCCB, NTCA, Bihar, Madhya Pradesh and Uttar Pradesh State Forest Departments, CIB Nepal and INTERPOL. No of tiger poachers have been arrested by Indian and Nepal authorities based on the inputs

generated during the meeting.

Organized 4th Executive Committee(EC) meeting of SAWEN and a workshop on strengthening the capacity of SAWEN at Kolkata from 8-10 May,2018 which was attended by SAWEN Nodal Points and officials of India, Nepal, Bhutan, Bangladesh, Afghanistan, Maldives and Srilanka along with representatives of various NGOs and UN agencies dealing with Wildlife crime. The E C meeting aimed to provide strategic direction and explore the wider perspectives in strengthening SAWEN. The workshop deliberated upon the six reports prepared by the expert consultants related to 'Strengthening Institutional Capacity of SAWEN'.

SDG implementation progress: WCCB has been assigned the following SDG target/ indicators

S.N.	Target	National Indicator
1	15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.	15.7.1: Number of wildlife crime cases reported.
2	15.c: Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.	15.c.1: (i) Cooperation with International agencies to enhance global support for combating wildlife crime. (ii) Total number of awareness/sensitization programmes conducted to end poaching and trafficking of protected species of flora and fauna

The WCCB is already implementing the same and has fixed its targets

2.13 Central Zoo Authority (CZA)

The Indian Board for Wildlife re-constituted its Zoo Wing as 'the Expert Group on Zoos' at its 9th session held on 18th November, 1972 at New Delhi to make detailed study for setting up and maintenance of zoos in the country. The Expert Group on Zoos submitted its report in June, 1973 which was accepted by the Board in its meeting in November, 1973. The report recommended setting up of a central agency (Zoo Grants Commission), and to give effect to this recommendation, the Wildlife (Protection) Act, 1972 was amended through an amendment Act in the year 1991. A separate chapter, Chapter IVA contains Section 38 A to 38 J was added to the Wildlife (Protection) Act, 1972 for establishment of Central Zoo Authority in India. Accordingly, the Central Zoo Authority was established as a statutory body under the Ministry of Environment & Forests by the Government of India in the year 1992.

The main objective:

- Enforce minimum standards and norms for upkeep and healthcare of animals in Indian zoos and;
- Control mushrooming of unplanned and ill-conceived zoos.

Achievements:

Improvement of zoos: During the reporting period the authority has convened four meeting (31st, 32nd, 33rd & 34th) of the Central Zoo Authority under the Chairmanship of Hon'ble Minister (EF&CC) held on 26th June, 2018, 19th November, 2018, 12th February, 2019 and 8th March, 2019 respectively. Similarly, the authority has also conducted four Technical

Committee meetings on 28th September, 2018 (86th Meeting), 01st February, 2019 (87th Meeting), 12th February, 2019 (88th meeting) and 07th March, 2019 (89th meeting) on the proposal on Improvement in zoos, Conservation Breeding Programme, Research and Training and approval of Master Plan and Master (Layout) Plan apart from the other policy level issues. The Administrative Committee Meeting of the Central Zoo Authority was also held on 18th May, 2018 at Indira Paryavaran Bhawan, Jor Bagh, New Delhi, under the chairmanship of DGF & SS wherein various administrative issues were deliberated and finalized. The Expert Group on zoo designing convened its meeting on 14th June, 2018 (78th Meeting), 29th August, 2018 (79th Meeting), 26th December, 2018 (80th Meeting), 29th January, 2019 (81st Meeting), 11th February, 2019 (82nd Meeting) and 06th March, 2019 (83rd Meeting) to approve the drawings of the enclosures of the endangered species to be constructed in Indian zoos and to recommend the approval of Master (Layout) Plan and Master Plan of the zoos.

- Evaluation of Zoos:** The Central Zoo Authority has evaluated 37 large, medium, small and mini zoos and Rescue Centres.
- Recognition/de-recognition of zoos:** The Central Zoo Authority granted recognition to 36 zoos/ deer parks/ rescue centres. There are 142 recognized zoos in the country.

Conservation Breeding Programme: The Central Zoo Authority is coordinating planned Conservation Breeding Programme of 73 identified critically endangered wild animal



species in Indian zoos. The CZA has prioritized 26 endangered animal species of total 73 identified species and already launched the programme for 23 animal species. The authority provided financial assistance for carrying forward the conservation breeding programme for Vultures, Mouse deer, Hoolock gibbon, Clouded leopard, Phayres leaf monkey, Pig tailed macaque, Binturong and Blyth's tragopan etc.

i. Exchange/Transfer of animals by zoos:

The Central Zoo Authority approved 58 exchange proposals of animals between Indian Zoos and 04 exchange proposals between Indian and Foreign Zoos received from various zoos.

- ii. Theme/Planning in zoos: The Central Zoo Authority is assisting recognized zoos in finalization of Master Plans for detailed long-term future development. The CZA is also reviewing the previously granted approved Master (layout) Plans of Zoos and Master Plan of the Zoos to ensure the more insight of CZA for better development of the zoos.

CZA has recommended the approval of Master (Layout) Plans of the 12 Zoos. Further, the CZA has also recommended in-principal approval of establishment of 8 new Zoos/ Rescue Centre.

2.14 Project Elephant

Project Elephant (PE) was launched by the Government of India in the year 1991-92 as a Centrally Sponsored Scheme with the following objectives:

- To protect elephants, their habitat and corridors
- To address issues of man-elephant conflict
- Welfare of domesticated elephants

The implementation of Project Elephant is through the C.S.S. Plan Scheme with the grant to State Governments on items of recurring expenditure on operational costs under Project Elephant at the rate of 100% of approved cost up to October 2015 after that funding pattern changed to the ratio of Central: State share to 60:40 and 90:10 for North East and Himalayan states). Presently the Project is being implemented in 22 States/UTs, viz. Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Nagaland, Odisha, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal, Rajasthan, Andaman & Nicobar, Bihar, Punjab, Gujarat and Haryana (where an elephant rescue centre has been set up supported by Project Elephant). There are 30 notified and 1 proposed Elephant Reserve in the country (Khasi Hills Elephant Reserve in Meghalaya).

Management of Captive Elephants: India has approximately 2675 captive elephants (based on the figures given by various states-figures are liable to change as more and more information is being furnished by states). The Task Force recognizing the role of captive elephants in our culture and traditions, has suggested following measures:-

- Strict enforcement of the existing legal provisions.

- One time amnesty to all elephant owners to declare the same for grant of ownership certificate to be called guardianship certificate in future.
- Setting up of Captive Elephant Welfare Committees (CEWCs) at state level for regular monitoring of the conditions of captive elephants.
- Training and certification of Mahouts.
- Creation of life time care centers for elephants.
- Creation of wildlife veterinary wing within State Forest Department.
- Establishment and Management of Elephant Rescue Centers.

Activities undertaken:

- The Steering Committee suggested that human – elephant conflict many a times could be averted if proper dialogue is established between the State Forest Department and other stakeholders. Therefore, it was decided to organize regional level workshops involving the forest department and other stakeholders such as line departments (National Highways, Railways, Power and Canal), civil societies, elephant experts to find measures to protect the elephant corridors and methods to mitigate human – elephant conflict. The second regional workshop was held on 20th and 21st April, 2018 at Darjeeling, West Bengal.
- The 9th Meeting of the IUCN SSC Asian Elephant Specialist Group (AsESG) was held

25th -30th April, 2018 at Bangkok, Thailand. The meeting was attended by Inspector General of Forests (Project Elephant). The visit for attending the AeESG meetings was useful as it gave an overall picture of the status of elephant conservation in Asian Elephant Range States. It also brought out the effectiveness and success of the Indian Elephant Conservation through its flagship Project Elephant. The discussions on the Indian success has benefitted the other Asian Elephant range States much. Further the Trans-boundary issues also could be understood better from Nepal, Bangladesh & Bhutan management problems and issues.

- A meeting under the chairmanship of Director General of Forests & Special Secretary, with all the major elephant range states was held on 29.5.2018 at Indira Paryavaran, Bhawan, New Delhi to discuss the matters related to critical elephant corridors, Annual Plan of Operation related matters and human elephant conflict situation etc.
- The World Elephant Day was conducted at Indira Gandhi National Centre for the Arts (IGNCA), 11, Mansingh Road in New Delhi on 12th August 2018. The programme included activities with school children where school children prepared clay models of elephants, brought in paintings on elephants and went on a walk and took pledge to conserve the species along with the Hon'ble Minister, Railways.



- Government of Nagaland has declared Singphan Wildlife Sanctuary as “Singphan Elephant Reserve” with the approval of Government of India on 16th August 2018. The Singphan Elephant Reserve is the 30th Elephant reserve in the country and it is the important Reserve in the North Eastern States as it is a huge tract of forest, strategically located in contiguity with the Abhaypur Reserve Forest of Assam, frequented by the moving herds of elephants.
- Finalization of the wild elephant population estimation figures of 2017 has been done on 11.9.2018 and the total estimated population of wild elephants in the country based on the All India Elephant Census of 2017 is 29964. These figures compare well with the earlier population estimates figures of 2012.
- A meeting was held under the chairmanship of Director General of Forests & Special Secretary, MoEF&CC on 16.11.2018 at Indira Paryavaran Bhawan, New Delhi to discuss the eco-friendly measures being adopted for mitigation of wildlife conflict along the linear infrastructure. The meeting was attended by the officials of the Ministry of Railways, Ministry of Power and Ministry of Road Transport, Highways and shipping, linear infrastructure developing agencies like NHAI, Railway Board, CEA and PGCIL.
- The 15th Meeting of Steering Committee of Project Elephant was held on 22.11.2018 at Indira Paryavaran Bhawan, New Delhi. Important issues such as Human elephant conflicts, court directions, preparation of elephant action plans and captive elephant managements were discussed in the meeting. The Steering Committee recommended that Ministry may constitute a “Central Project Elephant monitoring Committee” to monitor the implementations of various directions/instructions/guidelines related to conservation and protection of Indian elephants issued by the Ministry.

- **Establishment of Elephant Cell:** The elephant cell has been established in the Wildlife Institute of India for monitoring and research activities related to elephant conservation.
- **Pradhan Mantri Fasal Bima Yojana (PMFBY):** Add on coverage to crop loss due to wild animals has been included under the Pradhan Mantri Fasal Bima Yojana insurance scheme.

Conferences/Meeting organized in India or international conference attended:

- The second regional workshop for the North Eastern Region on Human Elephant Conflict was conducted on 20th -21st April, 2018 at Darjeeling, West Bengal. Wherein the Chief Wildlife of North Eastern States & West Bengal and other stakeholders such as line departments (National Highways, Railways, Power and Canal), civil societies, elephant experts participated.
- The second meeting of the “Expert Committee to suggest ways to deal with cases of Anthrax and Herpes diseases in wild elephants” was held on 25.5.2018 at Bhubneshwar, Odisha. An SoP was developed for sample collection in the field for anthrax cases and issues related to elephant port mortem was also discussed during the meeting.
- A meeting under the chairmanship of Director General of Forests & Special Secretary, with all the major elephant range states was held on 29.5.2018 at Indira Paryavararn Bhawan, New Delhi to discuss the matters related to critical elephant corridors, Annual Plan of Operation related matters and human elephant conflict situation etc.
- The 3rd Dialogue between Indo-Bangladesh on Trans-boundary Conservation of Elephant held on 29.11.2018 at Dhaka, Bangladesh. The draft Standard Operation Procedures (SoPs) and Protocol for Trans-boundary Conservation and Management of Elephants in India-Bangladesh landscape drafted during the 2nd Dialogue has been finalized and agreed by both the countries for further action.
- IUCN Master Class on the Prevention and Mitigation of Human-Elephant Conflict, attended by the officials of the MoEF&CC and State Forest Departments which was held on 11th -16th February, 2019 at Bangkok, Thailand.
- The Ministry in collaboration with Wildlife Trust of India organized a one day workshop involving the Indian Railways on 20th March, 2019 at Indira Paryavaran Bhawan, New Delhi. Senior officers of the Ministry of Environment, Forests & Climate Change and Indian Railways from Central Government and regional offices attended the workshop to discuss on issues leading to death of elephants to devise both short and long term measures to be adopted to address the issue and form the base to develop a mitigation plan for elephant deaths due to train hits.

Agreement with countries, international organizations, compliance: The draft Standard Operation Procedures (SoPs) and



Protocol for Trans-boundary Conservation and Management of Elephants in India-Bangladesh landscape drafted during the 2nd Dialogue has been finalized and agreed by both the countries for further action during the 3rd Dialogue between Indo-Bangladesh on Trans-boundary Conservation of Elephant held on 29.11.2018 at Dhaka, Bangladesh.



2.15 Project Tiger / National Tiger Conservation Authority (NTCA)

The Government of India has taken a pioneering initiative for conserving its national animal, the Tiger, by launching the 'Project Tiger' in 1973. From Nine Tiger Reserves since its formative years, the Project Tiger coverage has increased to fifty at present, spread out in 18 tiger range states. This amounts to around 2.21% of the geographical area of our country. The Tiger Reserves are constituted on a Core and Buffer strategy. The Core areas have the legal status of a National Park or a Wildlife Sanctuary whereas the buffer or peripheral areas area a mix of forest and non-forest land, managed as a multiple use area. The Project Tiger aims to foster an exclusive tiger agenda in the core areas of Tiger Reserves, with an inclusive people oriented agenda in the buffer.

Project Tiger is an ongoing Centrally Sponsored Scheme under the umbrella scheme of

Integrated Development of Wildlife Habitat of the Ministry of Environment, Forest and Climate Change for providing central assistance to the Tiger States for tiger conservation in designated Tiger Reserves, and tiger bearing forests outside tiger reserves.

The National Tiger Conservation Authority (NTCA) is a statutory body of the Ministry, with an overarching supervisory/coordination role, performing functions as provided in the Wildlife (Protection) Act, 1972. "The National Tiger Conservation Authority has been fulfilling its mandate within the ambit of the Wildlife (Protection) Act, 1972 for strengthening tiger conservation in the country by retaining an oversight through Advisories/Normative Guidelines based on appraisal of tiger status, ongoing conservation initiatives and recommendations of specially constituted Committees. 'Project Tiger' is a Centrally Sponsored Scheme of the Ministry of Environment, Forest and Climate Change, providing funding support to tiger range States for in-situ conservation of Tiger in designated Tiger Reserves and adjoining Tiger bearing Landscapes. This has put the Tiger and its habitat on an assured path of recovery by saving it from extinction as revealed by the recent findings of the All India Tiger Estimation using the refined methodology.

2.16 Animal Welfare

The mandate of the Animal Welfare Division is to prevent the infliction of needless pain or suffering on animals, in terms of the provision of the Prevention of Cruelty to Animals (PCA) Act, 1960. The provisions of the PCA Act are

general in nature, and rules dealing with specific situations have to be notified from time to time.

Role:

- Regulatory – Administration of the PCA Act & Rules.
- Developmental – Implementation of Schemes for animal welfare through the Animal Welfare Board of India.
- Educational – Conduct training programmes through the National Institute of Animal Welfare.

The three organs of Animal Welfare Division are:-

- Animal Welfare Board of India (Statutory Body):** The Animal Welfare Board of India (AWBI) was set up in 1962 in accordance with Section 4 of the Prevention of Cruelty to Animals Act 1960 (No.59 of 1960). The AWBI is presently functioning under the aegis of Ministry of Environment, Forest and Climate Change, Government of India.

The Board consists of 28 Members including six Members of Parliament (4 from Lok Sabha and 2 from Rajya Sabha – yet to be nominated in the present Board) and others from different walks of life, all nominated by the Government of India. The Board is reconstituted once in three years. The present Board was re-constituted for a period of three years by the Ministry w.e.f. 01.03.2017 having 18 members and 4 members were nominated on 08.12.2017.

The objectives of the Animal Welfare Board

of India is provided in Section 9 of the Prevention of Cruelty to Animals Act, 1960.

- The Committee for Purpose of Control and Supervision of Experiments on Animals (CPCSEA) (Committee):** The Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) was established under Section 15(1) of the Prevention of Cruelty to Animals (PCA) Act 1960. CPCSEA is a statutory Committee, which is duty bound to take all such measures as may be necessary to ensure that animals are not subjected to unnecessary pains or suffering before, during or after performance of experiments on them. For this purpose, the Committee formulated the “Breeding of and Experiments on Animals (Control & Supervision) Rules, 1998” (amended in 2001 and 2006) to regulate the experiments on animals.

Under the provisions of the above rules, establishments engaged in Bio-medical research are required to get themselves registered with CPCSEA, constitute Institutional Animal Ethics Committee (IAEC), get their Animal House Facilities inspected, and also get specific projects for research cleared by CPCSEA before commencing the research on animals. Further, breeding and trade of animals for such experimentation are also regulated under these Rules.

- National Institute of Animal Welfare (Subordinate body):** National Institute of Animal Welfare (NIAW) is a subordinate



office of Government of India under the Ministry of Environment, Forest & Climate Change, set up in a sprawling campus on 8 Acres of land at Ballabhgarh, Faridabad, Haryana. Its objective is to create enabling environment for fulfilment of the statutory requirement as laid down in the Prevention of Cruelty to Animals Act, 1960.

Activities undertaken:

Release of grant-in-aid under various schemes of animal welfare viz:-

- AWBI Plan Scheme.
- Scheme for Shelter Houses for looking after the animals.
- Scheme for Birth Control and Immunization of Stray Dogs.
- Scheme for Provision of Ambulance Services to Animals in Distress.
- Scheme for Relief to Animals during Natural Calamities and Unforeseen Circumstances.
- Notification of Prevention of Cruelty to Animals (Pet shop) Rule, 2018.
- Termination of MoU with JNU and signing of MoU with LUVAS for take over the management of entire NIAW campus and to run the training programmes there.

Progress/Achievements:

Animal Welfare Board of India: The Animal Welfare Board of India will be completing 56 years of dedicated service in the promotion of Animal Welfare and Prevention of Cruelty to them. During the year under report the activities of the Board continued to extend all over the country including Jammu Kashmir and

the North Eastern States and even in remote rural areas of the country.

- The Board has granted recognition to 241 AWOs in 2018-19 and the total number of Animal Welfare Organisations (AWOs) recognized by the Board till 31.3.2019 is 3487.
- The Board provides financial assistance to the recognized Animal Welfare Organisations (AWOs). During the period 1.1.2018 to 31.3.2019 the Board has given grant-in-aid to 267 AWOs.
- The Chairman and members of the Board are regularly meeting with the Hon'ble Chief Ministers of the States / UTs for activation of State Animal Welfare Board and District SPCAs, utilization of Gochar Land for animal welfare to achieve the objectives of the Board as per the Prevention of Cruelty to Animals Act, 1960 in all the States / UTs.
- The Board has nominated the Inspection Committee for checking the case of illegal slaughtering, sacrifice, killing and transportation of animals in violation of law, rules and regulations on the eve of Dussehra, Bakrid etc.
- 336 events of Jallikattu have been conducted successfully without any cruelty in the State of Tamilnadu from 01.01.2018 to 31.05.2018.
- **Free Mobile Animal Clinic:** The Board is providing free, on the spot veterinary treatment to sick and injured animals belonging to poor people through its Mobile Animal Clinic (MAC) programme operating

from its regional office at Chennai. The Veterinary Surgeon of the Board visits the pre-determined localities in the city where the animal population is concentrated to treat the animals free of charge during fore-noon as per fixed schedule. During the year 2018-19, 611 animals are treated / rescued by AWBI Mobile Clinic in Chennai till 15th November, 2018.

- **Humane Education & Training:** One of the main functions of the Board is propagation of Humane Education. The Animal Welfare Fortnight (from 14th to 30th January) and World Animal Day (4th October) are celebrated by all Animal Welfare Organisations, SPCAs, Animal Welfare Trainers, Honorary Animal Welfare Officers, Govt. Animal Husbandry Departments, Zoological Parks and Voluntary Organisations throughout the country with great interest, zeal and enthusiasm. The Board has so far conducted 10 training programmes wherein 328 Honorary State/Legal/District Animal Welfare Officers have been trained from July 2018 to January 2019. Photo Identity Cards were issued to the Honorary Animal Welfare Officers trained by the Board.
- **Registration of Performing Animals:** Under Rule 3 of the Performing Animals (Registration) Rules, 2001, the Board is the prescribed authority to issue registration certificates. Accordingly, Board is granting pre-shoot permission for using animals in Films/Ad films/TV serials/Documentaries/web-series etc. and issuing certificate for the same to the producers. During the year

2018-19 1162 Films / Ad films were granted No Objection Certificates and 1325 Films / Ad films have been granted pre-shoot permission for using animals in their films.

The process of performing animal registration and filing application for pre-shoot permission till issuing certificate is online now as per the direction of the Ministry under supervision of NIC.

- **Cruelty Matters and action taken:** The Board has received many complaints regarding cruelty to animals from various parts of the country and the same was informed to the concerned State Governments and District Collectors / Magistrates / District Superintendent of police for conducting an enquiry and send action taken report at the earliest.
- **Publications of AWBI:** The Board brings out publications like Animal Citizen (English), JeevSarathi (Hindi) and AWBI monthly Newsletter (English/Hindi) and other booklets/Rules pertaining to Animal Welfare.
- The Board has decided to celebrate Vasant Panchami as "Jiv-Jantu Kalyan Divas" every year. The Board has also decided to institute National Awards to foster animal welfare and to reward person(s) and Animal Welfare Organisation(s) to acknowledge their contribution towards cause of animal welfare and animal protection.

CPCSEA

- Animal House Facilities of 53 establishments (Biomedical research organizations) have been registered with CPCSEA with the



constitution of their Institutional Animal Ethics Committee (IAEC).

- Animal House Facilities of 189 establishments have been renewed with the re-constitution of their Institutional Animal Ethics Committee (IAEC).
- Institutional Animals Ethics Committee (IAEC) of 203 establishments have been revised.
- CPCSEA has conducted its five meetings wherein 236 Research protocol related to Large Animals have been approved.
- Training programme for Nominees of CPCSEA.

NIAW

- After termination of MoU with JNU, MoU has been signed between LUVAS, Hisar and MoEF&CC on 12.11.2018 for running animal welfare courses and the overall management of NIAW.
- AWBI has successfully completed the short-term courses (five days programme) for Honorary State Animal Welfare Officer (HSAWO)/ Honorary District Animal Welfare Officer (HDAWO) in the campus of NIAW. NIAW has given the financial assistance for running the said training programmes to AWBI.
- NIAW has improved the basic amenities for the participants during the training courses and CPWD (Civil & Electrical) is renovating the buildings of boys and girls hostel.
- NIAW has organized and celebrated Swachh Bharat Pakhwada, world Environment Day, Yoga Divas and Swachh Bharat Mission and

the other regular activities as directed by Ministry.

Animal Welfare Board of India: The Animal Welfare Board of India (AWBI) was set up in 1962 in accordance with Section 4 of the Prevention of Cruelty to Animals Act 1960 (No.59 of 1960). The AWBI is presently functioning under the aegis of MoEF&CC, GoI.

The Board consists of 28 Members including six Members of Parliament (4 from Lok Sabha and 2 from Rajya Sabha – yet to be nominated in the present Board) and others from different walks of life, all nominated by the Government of India. The Board is reconstituted once in three years. The present Board was re-constituted for a period of three years by the Ministry w.e.f. 01.03.2017 having 18 members and 4 members were nominated on 08.12.2017.

The objectives of the Animal Welfare Board of India are provided in Section 9 of the Prevention of Cruelty to Animals Act, 1960.

This Ministry is releasing grant-in-aid through the Animal welfare Board of India for implementing five schemes of animal welfare viz:-

Regular Grant: Under the regular grant, the Animal Welfare Board of India gives financial assistance to the recognized Animal Welfare Organisations as regular grants towards maintenance of animal shelters, animals medicines, purchase of medical equipments and conducting of veterinary camps etc. and rescued cattle maintenance grant for maintenance of the animals rescued from illegal transportation / slaughter houses.

Other Central Sector Schemes: In addition, four Central Sector Schemes are being implemented by the Animal Welfare Board of India as under:

Scheme for Shelter House for looking after the animals: The objective of this scheme is to establish and maintain shelter houses for distressed animals in the country. Primarily, Non-Governmental Organizations (NGOs) and Society for Prevention of Cruelty to Animals (SPCAs) are given grants for construction of boundary walls, shelter, water tank, drains, in-house Dispensary, medical equipment, contingencies etc.

Scheme for Animal Birth Control (ABC) & Immunization of Stray Dogs: The scheme is meant for controlling the population of stray (homeless / besahara) dogs by sterilization and reducing incidence of rabies by immunization. Non-Governmental Organisations, Society for Prevention of Cruelty to Animals and local bodies are eligible for this grant.

Scheme for Provision of Ambulance Services to Animals in Distress: Under this scheme the animal welfare organizations are given grants for purchase of suitable vehicles for transportation, rescue and also for providing emergency services to animals in distress.

Scheme for Relief to Animals during Natural Calamities: Every year, there are natural calamities in the form of flood, drought, earthquake etc. In such circumstances there is an immediate requirement for provision of fodder, adequate shelter, medical attention etc. for the affected animals. Funds for relief to such animals are provided under this scheme through the AWOs.

(vide Gazette notification dt. April 4, 2019, the subject matter has been transferred to Department of Animal Husbandry and Dairying, Ministry of Agriculture and Farmers Welfare)

Environmental Impact Assessment

CHAPTER

03





3.1 Environmental Impact Assessment

EIA is a planning tool to integrate environmental concerns into the developmental process from the initial stage of planning. It was first used in India as early as 1978 with river valley projects, and was subsequently extended to large public sector projects requiring Public Investment Board (PIB) clearance. These practices were formally codified for the first time in the EIA Notification, 1994, which came into effect from 27th January 1994. The above notification made the requirement of environmental clearance mandatory for 29 categories of projects/ processes, listed therein. The criterion of investment was the basis for the projects requiring environmental clearance in different sectors. Subsequently, EIA Notification, 2006 has been issued superseding the EIA Notification, 1994 with an objectives of National Environmental policy as approved by the Union Cabinet on 18th May, 2006. This notification made the requirement of prior environmental clearance mandatory for 39 categories of projects/ activities, listed therein based on the pollution potential. Ministry has issued the Coastal Regulation Zone (CRZ) Notification, 2019 in supersession of CRZ Notification, 2011 and Island Protection Zone Notification, 2019 in supersession of Island Protection Zone Notification, 2011 after a series of consultations with the various stakeholders including the fishermen community. The objective of the 2019 Notification is to ensure livelihood security to fishing and other local communities living in coastal areas, to conserve/ protect coastal

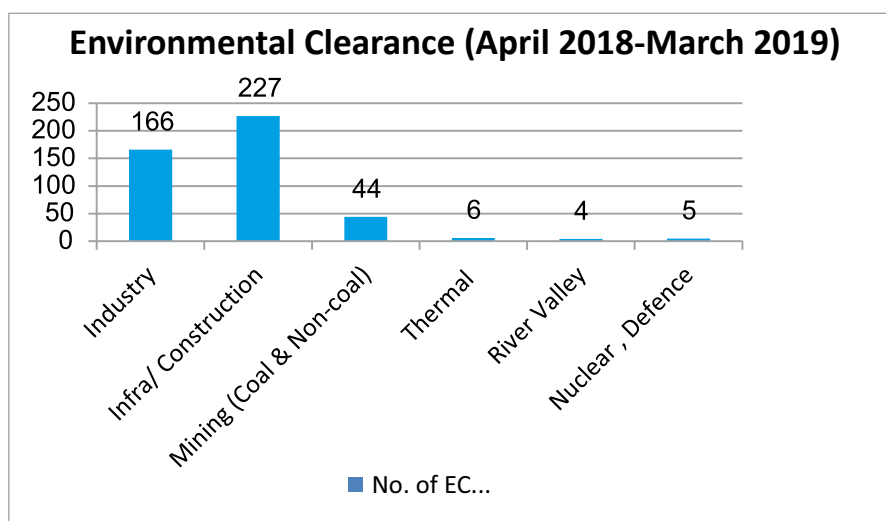
stretches and to promote development based on sustainable scientific principles.

EIA Notification, 2006 have been amended from time to time to further streamline the clearance process. The amendments have also been done to address emerging concerns stemming from the need to integrate environmental concerns into the developmental process for achieving the goal of sustainable development. While according Environmental Clearances to development project(s), necessary conditions, environmental safeguard and measures are stipulated for their effective implementation during the construction and operation of the project. The safeguard measures are intended to minimize adverse impacts, inter alia, on (i) air quality; (ii) water quality; (iii) land degradation; (iv) bio-diversity; and (v) wildlife habitat. In addition, measures like rainwater harvesting, water conservation, greenbelt and plantation; wildlife conservation plan, etc. are also required to be implemented in the project.

In keeping with the aim of 'Digital India' and capturing the essence of Minimum Government and Maximum Governance, Hon'ble Prime Minister has launched Single-Window Integrated Environmental Management System named PARIVESH (Pro-Active and Responsive facilitation by Interactive, Virtuous and Environmental Single-window Hub) for complete online, expeditious and transparent system for environment, forest, wildlife and CRZ clearances in the country. This will automate entire process and will facilitate speedy, transparent and informed decision making.

Environmental Clearance to Developmental Projects: As per the provisions of the EIA Notification 2006, several meetings of various sectoral Expert Appraisal Committees were convened during the year for appraisal of category “A” projects from sectors of Industry, Thermal, River valley and Hydroelectric Projects, Coal Mining, Non-Coal Mining, Infrastructure, Construction & CRZ and Nuclear, Defence & related Projects. As part

of appraisal process, wherever required, the Expert Appraisal Committees also visited project sites for obtaining first hand information about the ground level realities and response of people / stakeholders living in the vicinity. Environmental Clearance (EC) has been accorded to 452 projects (between April 2018 to March, 2019). The sector-wise list of environmental clearances issued to the projects by the Ministry.



Environmental Clearance (April 2018 – March, 2019) Total- 452

Constitution of State Environment Impact Assessment Authorities (SEIAA): The Ministry has so far constituted thirty four (34) State/ UT level Environment Impact Assessment Authorities (SEIAA) under sub section (3) of section 3 of the Environment (Protection) Act 1986 for approval of EC of category B projects and activities which have been appraised by SEACs. Ten (10) SEIAA/SEAC have been constituted in 2018-19.

Post Project Monitoring of Environment Clearance Conditions: Clearances under EIA Notification, 2006 are granted by MoEFCC for Category ‘A’ projects and by State Level Impact

Assessment Authorities (SEIAAs) / UT IAAs for Category ‘B’ projects and District Level Impact Assessment Authority (DEIAA) for mining lease up to 5 ha. Similarly, clearances under CRZ Notification, 2011 / CRZ Notification, 2019 are also granted by MoEFCC after the project has been recommended by the concerned Coastal Zone Management Authority. While granting environmental clearances under both these Notifications, various conditions and environmental safeguards are stipulated which are required to be implemented by the project proponent during various stages of project cycle.



The objectives of Post-Project Clearance Monitoring are:

- to ensure that actions have been taken to incorporate the environmental safeguards during the project cycle in accordance with the conditions stipulated in the Environmental Clearance letter; and
- to take appropriate corrective measures to check adverse impact on environment during operation of the respective projects.

Monitoring of projects with respect to conditions stipulated in the environmental clearance issued under EIA Notification, 2006 and Coastal Regulation Zone (CRZ), 2011 / Coastal Regulation Zone (CRZ), 2019 is carried out through the ten Regional offices.

The monitoring report is scrutinized in the Ministry and on that basis appropriate action is contemplated under the Environment (Protection) Act, 1986 for non-compliance of environmental clearance conditions.

Based on the observations made during field visit, necessary follow up action is taken with the project proponents in respect of monitored projects to ensure an effective compliance to EC conditions. The monitoring cell in the Ministry examines the monitoring reports submitted by Regional Offices. In cases of major non-compliance, further follow up action is taken for effecting compliance including issue of show cause notice followed by directions under Environment (Protection) Act, 1986 on case to case basis.

Accreditation of the EIA consultants with Quality Council of India (QCI / National Accreditation Board of Education and Training

(NABET): The environmental appraisal of development projects is undertaken as per the provisions of EIA Notification 2006 based on EIA/EMP reports prepared by the project proponents with the assistance of accredited consultants. Good quality EIA reports are pre-requisite for appropriate decision making. As of now, only consultants accredited with QCI/ NABET are allowed to prepare EIA/EMP reports and present the cases before EACs/SEAC. As on 31.03.2019, there are 182 accredited EIA Consultant Organizations.

Achievements made during the year:

- A Notification S.O. 3977 (E) dated the 14th August, 2018 was issued wherein powers have been delegated to the SEIAA to grant EC for non-coal mining projects upto 100 ha. and river valley projects from > 2000 ha. and < 50,000 ha. of culturable command area.
- A Notification S.O. 5736 (E) dated 15th November 2018 was issued to increase the threshold for obtaining a prior environmental clearance upto 50,000 square metres built up areas for Building or Construction projects and empowered the local bodies such as Municipalities, Development Authorities and District Panchayats, to stipulate environmental conditions while granting building permission, for the Building or Construction projects with built-up area $\geq 20,000$ sq. m. and $< 50,000$ sq. m. as specified in Notification S.O. 5733(E) dated 14th November, 2018.
- A Notification S.O.1030 (E) dated 8th March, 2018 was issued for delegation of



powers to SEIAA for dealing with Category B violation projects.

- A Notification S.O. 6250(E), dated the 19th December, 2018 was issued wherein Environmental clearance for CETPs setup for or within projects or activities which do not require environmental clearance are exempted.
- Standardization of Environmental Clearance conditions for all development projects have been issued.
- A Notification S.O. 345 (E) dated 17th January, 2019 was issued for expediting Ethanol Blending Programme for Petrol.
- A Notification S.O. 3611(E), dated 25th July, 2018 was issued wherein the format for preparation of District survey report was provided.
- A Notification S.O. 5845(E), dated the 26th November, 2018 was issued wherein it was informed that six month compliance reports are to be submitted in soft copies only.
- A Notification vide G.S.R 37(E), dated 18.01.2019 was issued in supersession of CRZ Notification, 2011 for greater economic growth while conserving the coastal eco-systems, thereby creating greater livelihood opportunities and better quality of life of coastal communities.
- A Notification vide S.O.1242(E), dated 8.03.2019 was issued in supersession of Island Protection Zone Notification, 2011 for greater economic growth while conserving the coastal eco-systems, thereby creating greater livelihood opportunities and better quality of life of coastal communities.
- A Notification S.O. 1530 (E) dated 6th April, 2018 was issued for providing six months window for mining project with EC under EIA 1994 to apply afresh for EC under EIA 2006 in light of the Hon'ble Supreme Court judgment in the matter of Sesa Sterlite.
- A Notification S.O. 2172 (E) dated 29th May, 2018 was issued to amend Aravali Notification to remove mining from its purview.
- An OM no. 22-76/2017-IA.III dated 13/02/2018 was issued on applicability of EIA Notification 2006 for small scale units of manufacturing of Linear Alkyl Benzene Sulphonic Acid (LABSA) as B2 Category.
- An OM No. Z-11013/22/2017-IA.II (M) dated. 15/03/2018 was issued on Implementation of Notification S.O.1030 (E) dated 8th March, 2018.
- Standardized format for application of Environmental Clearance (Form-2) was introduced for uniformity across the Country.
- Guidelines for Corporate Environment Responsibility (CER) in order to have transparency and uniformity while recommending CER by Expert Appraisal Committee (EAC) / State level Expert Appraisal Committee (SEAC) / District level Expert Appraisal Committee (DEAC).
- An OM No. J-11013/55/2017- IA.II(I) dated 04/09/2018 was issued on Increase in number of working days for distilleries.



3.2 Coastal Regulation Zone (CRZ)

With the objective of conservation and protection of the coastal environment, the Ministry notified the Coastal Regulation Zone (CRZ) Notification in 1991, which was subsequently revised in 2011. The objective of the notification is to ensure livelihood security to fishing and other local communities living in coastal areas, and to conserve/protect coastal stretches while also promoting development based on scientific principles. The notification covers categorization of CRZ areas, permissible and prohibited activities, regulation of permissible activities in CRZ areas, procedure for clearance, preparation of Coastal Zone Management Plans, mapping and areas requiring special consideration etc. The notification was amended from time to time based on representations received and a need was felt overtime to undertake a comprehensive revision of the notification on the basis of number of representations from various Coastal States and Union Territory administrations, besides other stakeholders.

Coastal Regulation Zone (CRZ) & Island Coastal Regulation Zone (ICRZ) Notification, 2019:

- The MoEF&CC constituted a Committee under the Chairmanship of Secretary, Ministry of Earth Sciences to examine the various issues and concerns of Coastal States/UTs and other stakeholders for recommending appropriate changes in the CRZ Notification, 2011. The Shailesh Nayank Committee held wide ranging consultations with State Governments and other stakeholders and submitted its recommendations.

- Pursuant to this, a draft CRZ Notification, 2018 was issued in April, 2018 for inviting comments from public at large. A number of suggestions and comments were received by the Central Government and based on overall imperative of sustainable development of coastal areas and need for conserving the coastal environment, the Government has approved the Coastal Regulation Zone Notification, 2018 which is expected to go a long way in meeting the aspirations of coastal communities besides ensuring welfare of poor and vulnerable populations. The CRZ Notification, 2018 has been approved by the Union Cabinet on 31.12.2018.
- A draft island protection zone notification, 2018 was issued in January, 2019 inviting comments from public at large. The final notification on Island Coastal Regulation Zone (ICRZ) was published on 8.03.2019.

The changes brought about in the CRZ Notification will provide boost to housing sector and affordable housing. Tourism, one of the greatest creators of livelihood and jobs, will get a much-needed fillip through better infrastructure which shall go a long way in creating significant employment opportunities in the sector. This will also give boost to people, desirous of seeing and enjoying the beauty of the mighty seas. Overall, this Notification will result in greater economic growth while conserving the coastal eco-systems, thereby creating greater livelihood opportunities and better quality of life of coastal communities.

3.3 Society of Integrated Coastal Management (SICOM)

National Coastal Management Programme (NCMP): To conserve, protect and manage the coastal and marine environment, Ministry is implementing the ICZM Project with the World Bank assistance. For the implementation of the above project MoEF&CC has established a Society of Integrated Coastal Management [SICOM] as nodal Body under the Society Registration Act, in Delhi. Under the above World Bank assisted ICZM Project, the above issues have been given a huge thrust for implementation both at the regional and national levels. The ICZM Project is being implemented as Pilot investments in the coastal States of Gujarat, Orissa and West Bengal. National activities are implemented through SICOM along with monitoring of activities carried out by three selected States. The project has four implementing agencies – MoEF&CC at the national level with lead responsibilities, and the Departments of Forests and Environment (DoFE) of the three participating states.

Objectives of the Project:

- “To develop the capacity and institutions to implement the Coastal Regulation Zone Notification, 1991 and achieve the objectives of integrated and sustainable coastal management as per the National Environmental Policy, 2006.
- To address the issues relating to climate change which have a major implication on the coastal areas and coastal communities especially with respect to sea level rise and increased frequency of cyclones and

storm surges. Under the programme, an exercise of hazard mapping will be carried out to protect the coastal people and infrastructure located in the coastal regions.

- To develop an institution to carry out studies and research in the area of coastal and marine management.
- To conserve and protect the fragile coastal ecosystems such as the mangroves, brackish water wetlands, coral reefs, etc.
- To control pollution of coastal waters from land based sources.
- To demonstrate and pilot improved livelihood option of coastal communities threatened by coastal hazard and pollution.
- To develop Integrated Coastal Zone Management Plans for better Management of coastal areas.

Activities undertaken:

National component: The following activities carried out under National component of the project:

- Mapping delineation and demarcation of the hazard lines.
- Mapping, delineation and demarcation of Environmentally Sensitive Areas (ESAs).
- Preparatory work for the Phase-II of the ICZM Project.
- Beach Environment and Aesthetic Management Services (BEAMS) Program.
- Establishment of three Data Centre.
- Green Action for National Dandi Heritage Initiatives (GANDHI) programme.



State level component: The following activities carried out under State level components of the project.

Gujarat State:

- Pilot studies have undertaken on the ICZM approach for the stretch falling along Gulf of Kachchh.
- Continuous water monitoring and physico-chemical parameters of the waters are carried out.
- Establishment of Marine Research, Conservation and Information Centre at Somnath.

Odisha State:

- To prepare the ICZM plan for the stretches of Paradip-Dhamra and Gopalpur-Chilika;
- To establish Solid Waste Management System at Paradip Municipality.

West Bengal State:

- Preparation of ICZM Plan for the identified stretches.
- Construction of sewage Treatment Plant.
- Beach cleaning, sanitation, beautification and solid waste management activities.
- Multipurpose cyclone shelters are constructed along the project area to reduce the cyclone impacts on coastal communities.

Progress/Achievements: Under this project, all activities have been completed and the status of ongoing activities are as under: -

- i. Preparation of ICZM Plan for three States (Gujarat, Odisha and West Bengal) was undertaken during the year and the draft

reports are under the process of obtaining necessary approvals from their respective State Governments in the case of Gujarat and Odisha. In the case of West Bengal, it is still under preparation. A National Workshop to review the draft plan was also organized on 30th November 2018 wherein officials from the three States, external International Experts and The World Bank participated.

- ii. With regard to Establishment of 3 Data Centers, Preliminary survey has been completed and the work is under process. Data center will be established by 30th June 2019.
- iii. With regard to preparatory activities of Phase-II of the ICZM: - DEA, MoF has given an in principal approval for Phase-II on 10.04.2018 and posed to The World Bank for external assistance.
 - a. SICOM and NCSCM are working on preparation of PPRs with all 13 Coastal States and UTs. Necessary support, advisory, guidance has been provided to all the 13 Coastal States/UTs.
 - b. Two Meetings under the Chairmanship of Additional Secretary (AKM) with all 13 Coastal States/UTs were held and all necessary advisory and guidance were issued.
 - c. Revised PPR of 7 States/UTs i.e. States of Odisha, Gujarat, Puducherry, Andhra Pradesh, Tamil Nadu, Goa and Lakshadweep has been submitted to The World Bank for their concurrence. Once the approval is obtained from

World Bank; the respective States/UTs shall be advised to prepare the Detailed Project Reports.

d. Karnataka, Kerala, Daman & Diu, Andaman & Nicobar, Maharashtra, West Bengal have not submitted their PPR. SICOM/NCSCM is following up with these States/UTs.

iv. With regard to Beach Environment and Aesthetic Management Services (BEAMS) programme:-

An initiative for pollution abatement, beautification & development of beaches under ICZM Project, MoEF&CC has initiated a Beach Environment and Aesthetic Management Services Programme termed as BEAMS in 13 pilot beaches across the country. This programme is to prepare and develop Indian beaches for Blue Flag Certification. Under this programme, basic facilities for

beaches is being developed such as security and surveillance, changing rooms, toilets, water kiosk, solid waste management system, waste water treatment plant, information centre, information boards, umbrella, seatout etc. Further, daily beach cleaning activities, awareness camps on environmental education and importance of beaches is being carried out. Process for Beach nomination by the State Govts/UTs; thereafter a National Workshop and National Jury review meeting was also held by SICOM between the Nodal Officers of the States/UTs and contractors. Contracts for develop preliminary beach facilities are awarded for seven beaches i.e for Shivrajpur beach Gujarat, Ghoghala beach Diu, Bhogave beach Maharashtra, Padubidri beach Karnataka, Kappad beach Kerala, Chandrabhaga beach Odisha and Rishikonda beach Andhra Pradesh.



Abatement of Pollution

CHAPTER

04





4.1 Control of Pollution

Air Pollution: Air quality regulation and actions for abatement of air pollution is undertaken under various provisions of Air (Prevention and Control of Pollution) Act, 1981 and Environment (Protection) Act, 1986 which prescribes the mechanism and authorities for handling the issue. In order to address air pollution in the country during the year, Ministry has under taken several new initiatives besides strengthening the ongoing national-level as well as city-specific activities on air pollution mitigation.

Major Government Interventions on Air Pollution Mitigation:

- i. A High Level Task Force (HLTF) has been constituted under the Chairmanship of Principal Secretary to PM for the management of air pollution in Delhi and NCR in November, 2017. The HLTF is closely monitoring implementation activities related to air pollution mitigation in Delhi and NCR. Further, regular review meetings have been held during the year with all concerned Central Government Ministries and State Governments under the chairmanship of Hon'ble Minister, EF&CC as well as Secretary, EF&CC to ensure that various measures for prevention, control and mitigation of air pollution in Delhi NCR are taken in a coordinated and effective manner.
- ii. A Comprehensive Air Plan (CAP) for Delhi NCR have been developed identifying the timelines and implementing agencies for actions identified. A total 55 agencies

have been directed under section 3 and 5 of E (P) Act, 1986 to ensure strict implementation of Comprehensive Action Plan for prevention, control and mitigation of air pollution in Delhi NCR. They include Ministry of Petroleum & Natural Gas, Ministry of Road Transport & Highways, Ministry of Housing & Urban Affairs, Delhi Police, Delhi NCR – Chief Secretaries, Environment Departments, Transport Departments, Urban Local Bodies, Industry Departments, etc.

- iii. In order to address the increasing air pollution across the country in a comprehensive manner, Ministry of Environment, Forest and Climate Change has launched a National Clean Air Program (NCAP) as a pan India time bound national level strategy to tackle the increasing air pollution problem across the country in comprehensive manner. Overall objective of the NCAP envisages comprehensive management plan for prevention, control and abatement of air pollution besides augmenting the air quality monitoring network across the country. The NCAP focuses on collaborative and participatory approach covering all sources of pollution and coordination between relevant Central Ministries, State Governments, local bodies and other stakeholders. The main components of NCAP include city specific air pollution abatement action plan for 102 non- attainment cities, increasing number of monitoring stations, creation of Technical Assessment Cell, technology support, public participation in planning

and implementation, setting up of Air Information Centres for data analysis, source apportionment studies, setting up of national inventory, guidelines for indoor air pollution and setting up of rural monitoring stations etc.

iv. **Technological Initiatives for Air Pollution**

Mitigation: Several new/ innovative technologies are being proposed towards air quality management. During 2018, three pilot projects have been sanctioned for deployment in Delhi under EPC funds- (i) To demonstrate the effectiveness of Air Pollution Mitigation by Pariyayatra Filtration” in 30 buses by Manav Rachna International University, (ii) Deployment and Evaluation of 54 units Air Purification Units (WAYU) for 5 Traffic Junction Pollution Abatement in Delhi by NEERI and (iii) Control of Dust Emission using Dust Suppressant at three locations.

v. **Thematic Workshops:** A thematic session on “Air Pollution: Current Status and Way Forward” was organized as a knowledge sharing activity during World Environment Day Conference (01.08.2018-05.06.2018) hosted by India this year. A Workshop on “Real-time Nationwide Low-Cost Sensor Network for Air Quality Monitoring” was organized on 29.08.2018 involving participation from institutions like IIT Kanpur, CSIR-NEERI, TERI, CPCB/SPCBs and other stakeholders.

vi. **Handling of Public Complaints** regarding air polluting activities- Public Complaints regarding prominent air pollution incidents in Delhi NCR can be reported through

‘Sameer App’, ‘Emails’(Aircomplaints.cpcb@gov.in) and ‘Social Media Networks’ (Facebook and Twitter). Every complaint lodged is immediately forwarded to the concerned agency.

vii. **Clean Air Campaign:** Ministry of Environment, Forest & Climate Change and Delhi Government launched Clean Air for Delhi Campaign from 10th– 23rd February 2018. The campaign aimed at sensitizing ground-level functionaries and general public about their roles in making the air quality better in Delhi along with enforcement of various measures for improving air quality. Also, to check air polluting activities pre and post Diwali, a special campaign called “Clean Air Campaign” was organized during November 01, 2018 to November 10, 2018. For the purpose, 52 teams had been constituted that included members from Ministry of Environment, Forest & Climate Change, Central Pollution Control Board and Government of Delhi and NCR towns (Noida, Gurugram, Greater Noida, Faridabad and Ghaziabad) to take on-spot ground actions to control air polluting activities and sensitizing public to ensure their effective participation. 2619 complaints lodged during Clean Air Campaign held in November 2018 and 454 challans were issued. The Clean Air Campaign report has been shared with the concerned District Magistrates/ Commissioners for recommended action.

viii. **Field Inspections and Feedback:** In view of anticipated poor air quality conditions



during winter months, rigorous ground level actions were initiated as early as September 15, 2018, including deployment of 52 CPCB teams for field feedback on pollution activities. Waste dumping/ burning, traffic congestion, construction activity, open storage of construction material, unpaved road, open dumping of C & D waste and road dust resuspension have been identified as major concerns. Scoring method has been developed for assessing the effectiveness of action taken on reported incidents.

Noise Pollution/Pollution Abatement Scheme

Activities undertaken:

- Amendment in the Noise Rules called as Noise Pollution (Regulation and Control) Amendment Rules, 2017 vide notification dated 10.08.2017 in view of various difficulties being faced by the society due to noise pollution;
- Ministry to examine the definition and formulation of Green Fire crackers proposed by NEERI in a Supreme Court matter.
- A Central Sector Scheme titled 'Control of Pollution' has been conceptualized to provide financial assistance to Central Pollution Control Board (CPCB) and State Pollution Control Boards/ Pollution Control Committee (SPCBs/ PCCs) in lieu of Water Cess funds and taking up of other activities related to prevention, control & abatement of environmental pollution.
- Re-constitution of Environment Pollution (Prevention and Control) Authority (EPCA)

for National Capital Region;

- Assistance under 'Abatement of Pollution', Common Effluent Treatment scheme (CETP).

Progress/Achievements:

In the Noise Pollution (Regulation and Control) Rules, 2000, in rule 5, for sub-rule (3), the following has been substituted:

- '(3) Notwithstanding anything contained in sub-rule (2), the State Government may subject to such terms and conditions as are necessary to reduce noise pollution, permit use of loud speakers or public address systems and the like during night hours (between 10.00 p.m. to 12.00 midnight) on or during any cultural, religious or festive occasion of a limited duration not exceeding fifteen days in all during a calendar year and the concerned State Government or District Authority in respect of its jurisdiction as authorised by the concerned State Government shall generally specify in advance, the number and particulars of the days on which such exemption should be operative.

In a meeting on 01.02.2019, Ministry examined the definition and formulation of Green Fire crackers proposed by NEERI in light of the Hon'ble Supreme Court's Judgement dated 23.10.2018 and decided the following:

- With regard to the category of fireworks/ firecrackers made with improved modifications, a study will be done by CSIR-NEERI for assessment of Barium and other toxic metals concentration in the ambient air due to various combinations

of conventional chemicals in the modified composition firecrackers. This study will be shared with CPCB in 1 month time.

- b. The formulation of the reduced emission firecrackers will be a dynamic process and revision of the chemical composition of the firecrackers through innovation and new research will be undertaken from time to time and all stakeholders including manufacturers will be involved.
- c. There will be phase-wise reduction in toxic components of the firecrackers in the new formulations as per the direction of Hon'ble Supreme Court.
- d. Ministry of Commerce and Industries will be requested to modify the concerned rules for licencing powers of District Magistrate for sale and purchase of 15 Kg of Gunpowder to the small firecrackers manufacturers and shopkeepers and give these powers only to PESO.
- The EFC of the 'Control of Pollution' scheme has been approved by the Hon'ble Finance Minister vide MoF (Exp.) ID No. 54(5)/PF.II/2017 dated 22.11.2018 with an allocation of ₹ 05.00 Cr for the year 2018-19 and ₹ 460.00 Cr for 2019-2020.
- Vide Order dated 3rd October, 2018, EPCA is constituted with Dr. Bhure Lal as Chairman and twenty members for a period of six months for control of pollution in the Delhi NCR.
- **Assistance under 'Abatement of Pollution' scheme:**
 - I. The assistance of Rs.4.9 cr. has been

extended to State Pollution Control Boards/ Pollution Control Committees of Assam, J&K, Manipur, Meghalaya, Mizoram, Nagaland, Puducherry, Sikkim, Tripura for establishment of Manual Ambient Air Quality Monitoring Stations during 2018-19.

II. Rs.4.2 cr. has been extended to State Pollution Control Boards/ Pollution Control Committees of Assam, Arunachal Pradesh, Manipur, Meghalaya, Tripura for setting up of Continuous Ambient Air Quality Monitoring Stations during 2018-19.

III. Rs.1.3 cr. has been extended to State Pollution Control Boards/ Pollution Control Committees of Assam, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura for procurement of basic lab equipment during 2018-19.

- **Assistance under Common Effluent Treatment (CETP) scheme:** Provided funding of Rs. 2.88 Cr. for one 40 MLD ongoing CETP project in Ludhiana, Punjab.
- **Assistance under 'Control of Pollution' scheme:**
 - I. Released Rs. 2.00 Cr. as Grants-in-Aid to Central Pollution Control Board for National Water Monitoring Programme (NWMP) under the scheme "Control of Pollution" for the year 2018-19;
 - II. Released Rs. 1.45 Cr. of Grants-in-Aid to Central Pollution Control Board for Operation and Maintenance under



National Air Quality Programme (NAMP).

Regulatory Acts/Rules governing the programme and promulgation of new Acts:

The Central Government has notified a Graded Response Action Plan (GRAP) on 12th January 2017 for Delhi and NCR for different level of pollution, which comprises measures such as prohibition on entry of trucks into Delhi; ban on construction activities, introduction of odd and even scheme for private vehicles, shutting of schools, closure of brick kilns, hot mix plants and stone crushers; ban on diesel generator sets, garbage burning in landfills and plying of visibly polluting vehicles etc. The nature, scope and rigor of measures to be taken is linked to levels of pollution viz. severe + or emergency, severe, very poor, moderate to poor and moderate, after due consideration by authorities concerned. The actions are to be implemented in the entire NCR throughout the year. A comprehensive set of directions have been issued under section 18 (1) (b) of Air (Prevention and Control of Pollution) Act, 1981 for implementation of 42/31 measures to mitigate air pollution in major cities including Delhi and NCR cities comprising of control and mitigation measures related to vehicular emissions, re-suspension of road dust and other fugitive emissions, bio-mass/municipal solid waste burning, industrial pollution, construction and demolition activities, and other general steps.

The Government is executing a nation-wise programme of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). Presently, the network

consists of 731 monitoring stations covering 312 cities/towns in 29 States and 6 Union Territories across the country under National Air Quality Monitoring Programme (NAMP). Under NAMP three criteria of pollutants viz. PM₁₀ (Particulate Matter having an aerodynamic diameter less than or equal to 10 μ m), Sulphur dioxide (SO₂) and Nitrogen dioxide (NO₂) is being monitored regularly at all locations. In addition, there are 148 Continuous Ambient Air Quality Monitoring Stations (CAAQMS) in 86 cities the country.

National Ambient Air Quality Standards were notified in 2009 under EPA, 1986 prescribing 12 pollutants, namely, PM₁₀, PM_{2.5}, SO₂, NO₂, CO, NH₃, Ozone, Lead, Benzene, Benzo-a Pyrene, Arsenic and Nickel. Emission/effluent standards for different sectors of industries have been also notified and revised from time to time.

National Air Quality index (AQI) was launched by the Prime Minister in April, 2015 starting with 14 cities and now extended to 40 cities. This has been most significant achievement wrt public dissemination of information on air pollution in the form of number and colour codes for easy understanding.

Outcome of Initiatives in Delhi: Due to extensive efforts by all stakeholders, there has been marginal improvement in overall air quality in 2018 in Delhi. As per AQI data, the number of good, satisfactory and moderate days in 2018 is 159 as compared to 152 in 2017 during the corresponding period. Similarly, the number of poor, very poor and severe AQI days have shown a drop in the 2018 as compared to 2017: 206 in 2018 against 213 in 2017. Further,

the annual average values of PM10 and PM2.5 in Delhi have decreased in 2018 as compared to that in 2017 and in 2016. The average

values of PM10 and PM2.5 for 2016-2018 and the percent reduction over previous years are tabulated below.

Annual Average Values of CAAQMS Stations in Delhi (2016-18)				
(2016-2018)	PM2.5 in $\mu\text{g}/\text{m}^3$	Percent reduction over previous year	PM10 in $\mu\text{g}/\text{m}^3$	Percent reduction over previous year
2016	135	-	291	-
2017	124	7	266	9
2018	115	7	243	9

Development of Environmental Standards: The MoEF&CC formulates and notifies standards for emission or discharge of environmental pollutants viz. Air pollutants, water pollutants and noise limits, from industries, operations or processes with an aim to protect and improve the quality of the environment and abate environmental pollution. The standards are framed in consultation with the concerned stakeholders. The process is based on the best practices and techno-economic viability. The notification of standards also involves formulation of load based standards i.e. emission/ discharge limits of pollutants per unit of product obtained/ processes performed to encourage resource utilization efficiency and conservation aspects.

The standards for any industrial process / operation recommended by Central Pollution Control Board (CPCB) are subjected to stakeholder consultation including general public. The comments are compiled and technically examined by CPCB and change, if any, incorporated. The modified standards are placed before the 'Expert Committee (EC)' of MoEF&CC for approval. The EC of MoEF&CC comprises of representatives from

industry associations, subject experts, and concerned Ministries of the industrial sectors, besides the officials of MoEF&CC and CPCB. The EC recommended standards for approval and legal vetting are published in Gazette of India. During the year, Standards in respect of following category of Industries have been notified:

Emission Standards for SO₂ & NO_x for five industries i.e Ceramic, Foundry, Glass, Lime-Kiln and Reheating furnace G.S.R. 1267(E), dated 22/03/2018: Ministry has notified emission standard for SO₂ & NO_x for five industries i.e Ceramic, Foundry, Glass, Lime-Kiln and Reheating furnace G.S.R. 1267(E), dated 22/03/2018. The emission standard for all five Industries was proposed based on present emission levels, emission standards prescribe by SPCBs/PCCs, available technology for control of SO₂ and NO_x, control efficiency, cost, international standards and actual sample data results by CPCB.

Ambient Air Quality Standards with respect to Airport Noise Zone G.S.R. 568(E), dated 18/06/2018: The Ministry has notified environment standard for Ambient Air quality



standard with respect to Airport Noise Zone vide No.G.S.R. 568(E), dated 18/06/2018. Before finalization of the aforesaid notification the Ministry has taken detail consultation with lined Ministries / Departments i.e. DGCA, MoCA, AAI DIAL, Ministry of Housing and Urban Affairs, Ministry of Health and Family Welfare Central Pollution Control Board. The notification envisages noise level limits for Busy Airports Limits in day time is 70 dB(A) Leq and for night time is 65 dB(A) Leq and for all other Airports excluding proposed Airports Limit is 65 dB (A) Leq and for night time is 60 dB (A) Leq.

Thermal Power Plants (TPPs) Amendment, Gazette Notification S.O. 593(E) dated 28/06/2018: The MoEF&CC has notified amendment Notification of Environmental Standards for Thermal Power Plants (TPPs) vide G.S.R 593 (E), dated 28th June, 2018 of the revised standard for TPPs on 07/12/2015. The amendment of notification includes: specific water consumption shall not exceed maximum of 3.0 m³/MWh for new plants installed after 1st January, 2017 and these plants shall also achieve zero waste water discharge. The above specific condition shall not apply to plants which are using sea water. The criteria for Stack Height have been prescribed for TPPs with wet Flue Gas Desulphurization. For TPPs Power generation capacity 100 MW and above the Stack Height should be 100 m minimum and TPPs less than 100 MW the Stack Height should be 30 m whichever is more. These standards shall apply to coal / lignite based Thermal Power Plants.

Effluent and Emission Standards for Man-

Made Fibre Industry, G.S.R. 1025(E), dated 09/11/2018: The MoEF&CC has notified revised environmental standards for Man-Made Fibre Industry vide G.S.R. 1095(E), dated 09/11/2018 for effluent and emissions including Wastewater Generation Standards and Load/Mass based Standard. In the notification effluent standards covers mainly the permitted pH range of treated effluent is 6.0-8.5, Suspended Solids is 100 mg/l for all type of discharge (Inland Surface Water, Land for Irrigation and Marine Discharge). The Bio-Chemical Demand is 30 mg/l for Inland Surface Water and 100 mg/l for Land for Irrigation and Marine Discharge etc. The Emission Standards for Volatile Organic Compounds including Dimethyl Formamide and Acrylonitrile (applicable for Acrylic for Acrylic Fibre Units Only) is 50 mg/Nm³ etc. In the notification the Wastewater Generation Standards and Load / Mass based Standard also amended.

Further six draft notifications have been issued as per Environment (Protection) Act, 1986 inviting public consultation that includes: Brick Kiln Industry, Paint Industry, Coffee Processing Industry, Automobile Service Station Bus Depot, Fermentation Industry and Tannery Industry.

Recognition of Environmental Laboratories under Environment (Protection) Act, 1986: The successful implementation of environmental protection programmes essentially requires identifying and quantifying the pollution sources and pollutants, conducting baseline survey, laying down standards and building up of monitoring systems. Environmental laboratories are required to have all necessary

instruments and equipments and also expertise and capability of its staff for monitoring all parameters including water, air, noise, hazardous waste, soil, sludge etc. to meet these requirements. Under the provisions of Section 12 of Environment (Protection) Act, 1986, the Central Government recognizes Environmental Laboratories to carry out the functions entrusted to an environmental laboratory and under Section 13 of Environment (Protection) Act, 1986 the Central Government appoints Government Analyst(s) for carrying-out analysis of samples under Environment (Protection) Act, 1986. The Ministry has been recognizing Environmental Laboratories and Government Analyst(s) under Environment (Protection) Act, 1986 with the aim of increasing facilities for analysis of environmental samples.

The present Guidelines for recognition of the laboratories were laid down in 2008 with emphasis on quality assurance and quality control. These revised Guidelines are available on the website of the Ministry (www.moef.nic.in). The recognition is granted on the basis of a scrutiny and recommendation by an Expert Committee constituted for this purpose.

Recognition of fifteen (15) private and two (02) Government Laboratories have been notified and another thirty (30) laboratories were approved/ recommended for recognition under Environment (Protection) Act, 1986 during 2018-19.

Environmental Health: Ministry has been supporting research on environmental health. Four (4) projects sanctioned in 2016-17 have been extended financial assistance to continue

during 2018-19. In addition, a commissioned project titled National Environmental Health Profile study was initiated for evaluating the health impacts of air pollution in 20 identified cities. Financial supports have been extended to 16 cities.

4.2 Central Pollution Control Board

Under the provisions of The Water (Prevention & Control of Pollution) Act, 1974, the Central Government constituted the 'Central Board for the Prevention and Control of Water Pollution' on September 23, 1974. The Central Pollution Control Board (CPCB) has been entrusted with the added responsibilities of Air Pollution Control since May, 1981 under the provisions of the Air (Prevention and Control of Pollution) Act, 1981. The enactment of the Environment (Protection) Act, 1986, which is umbrella legislation for enforcement of measures for protection of environment and several notifications of Rules under the Act widened the scope of activities of the Central Board.

The CPCB has been continuously playing a key role in abatement and control of pollution in the country by generating, compiling and collating data, providing scientific information, rendering technical inputs for formation of national policies and programmes, training and development of manpower and through activities for promoting awareness at different levels of the Government and Public at large.

Functions of the Central Board: The main functions of CPCB, as spelt out in The Water (Prevention and Control of Pollution) Act, 1974, and The Air (Prevention and Control of Pollution) Act, 1981, are:



- To promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution; and,
- To improve the quality of air and to prevent, control or abate air pollution in the country.

In addition to the main functions of promoting cleanliness of streams and wells, improving the quality of air and to prevent, control or abate air pollution, CPCB has been assigned following National Level functions:

- Advise the Central Government on any matter concerning prevention and control of water and air pollution and improvement of the quality of air;
- Plan and cause to be executed a nation wide programme for the prevention, control or abatement of water and air pollution;
- Co ordinate the activities of the State Boards and resolve disputes among them;
- Provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water and air pollution, and for their prevention, control or abatement;
- Plan and organise training of persons engaged in programmes for prevention, control or abatement of water and air pollution;
- Organize through mass media, a comprehensive mass awareness programme on prevention, control or abatement of water and air pollution;
- Collect, compile and publish technical and statistical data relating to water and air pollution and the measures devised for their effective prevention, control or abatement;
- Prepare manuals, codes and guidelines relating to treatment and disposal of sewage and trade effluents as well as for stack gas cleaning devices, stacks and ducts;
- Disseminate information in respect of matters relating to water and air pollution and their prevention and control;
- Lay down, modify or annul, in consultation with the State Governments concerned, the standards for stream or well, and lay down standards for the quality of air;
- Establish or recognize laboratories to enable the Board to perform, and;
- Perform such other functions as and when prescribed by the Government of India.

Functions of the Central Board as State Board for the Union Territories:

- Advise the Governments of Union Territories with respect to the suitability of any premises or location for carrying on any industry which is likely to pollute a stream or well or cause air pollution;
- Lay down standards for treatment of sewage and trade effluents and for emissions from automobiles, industrial plants, and any other polluting source;
- Evolve efficient methods for disposal of sewage and trade effluents on land;
- Develop reliable and economically viable methods for treatment of sewage,

trade effluents and air pollution control equipment;

- Identify any area or areas within Union Territories as air pollution control area or areas to be notified under The Air (Prevention and Control of Pollution) Act, 1981; and
- Assess the quality of ambient air and water, and inspect wastewater treatment installations, air pollution control equipments, industrial plants or manufacturing processes to evaluate their performance and to take steps for the prevention, control and abatement of air and water pollution.

Schemes/Programmes:

- Coordinating activities of State Pollution Control Boards/Pollution Control Committees for prevention & control of pollution;
- Development of industry specific national minimal effluent and emission standards and industry specific environmental guidelines and documents;
- Implementation of CREP Compliance of Standards for major polluting industrial sectors,
- Action plans for improvement of environment in critically polluted areas/clusters and monitoring their implementation;
- Action plans for monitoring air quality in polluted cities;
- National water quality monitoring and publishing annual water quality reports;

- National ambient air quality monitoring and publishing annual air quality reports;
- National Ambient Noise Monitoring and publishing annual noise monitoring report.
- Carrying out and sponsoring research activities relevant to environmental protection
- Publishing material relevant to environment protection.

National Water Quality Monitoring

Programme: CPCB in association with the State Pollution Control Boards (SPCBs)/ Pollution Control Committees (PCCs) is regularly monitoring water quality of aquatic resources across the country through a network of 3500 monitoring locations including 1821 monitoring locations on rivers, 473 monitoring locations on lakes/ponds/tanks, 52 monitoring locations on creeks/sea water/coastal, 53 monitoring locations on canals, 52 monitoring locations on drains, 50 monitoring locations on STP, 10 on water treatment plant and 989 monitoring locations on wells under the National Water Quality Monitoring Programme (NWMP).

Pollution Inventorization, Assessment & Surveillance on River Ganga (PIAS): The “Pollution, Inventorization, Assessment & Surveillance on River Ganga (PIAS)” project is funded by the Ministry of Environment, Forests & Climate Change for 5 Years.. The project is completed and the Completion Report is submitted to NMCG.

A new project entitled “Pollution, Inventorization, Assessment & Surveillance on River Ganga (PIAS)” is sanctioned on 9th



November, 2017 effective from 29.09.2017 which is funded by the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR) for 3 Years.

Under these projects, NGRBA Cell, CPCB has carried out different activities under monitoring, surveillance of Water quality of River Ganga from its origin to confluence to Bay of Bengal such as in-depth monitoring of Grossly Polluting Industries (GPIs), Sewage Treatment Plants (STPs), Common Effluent Treatment Plants (CETPs) and major drains falling into the river of River Ganga and its tributaries, River Ramganga, River Kali East & River Pandu.

The objective of the project is to inventorise the pollution sources (both point and non-point) and to assess the pollution load being discharged into the River Ganga directly or indirectly through tributaries, namely Ramganga and Kali-East.

Real Time Water Quality Monitoring System (RTWQMS) on River Ganga and Yamuna: 36 Real Time Water Quality Monitoring Stations (RTWQMS) are being operated on river Ganga to assess the water quality on continuous basis.

National Ambient Air Quality Monitoring Programme: CPCB is executing a nation-wide National Air Quality Monitoring Programme (NAMP). Presently there are 731 operating stations in 312 cities/towns in 29 States and 6 Union Territories of the country.

Growth of Continuous Ambient Air Quality Monitoring Station (CAAQMS): CPCB, SPCBs and PCCs are monitoring ambient air quality of different cities and publish real-time data in

public domain for taking corrective measures in time. Presently about 121 Continuous Ambient Air Quality Monitoring stations (CAAQMS) are operating in the country.

National Ambient Noise Monitoring Network: CPCB in association with State Pollution Control Boards has laid down National Ambient Noise Monitoring Network covering 07 metropolitan cities i.e. in Mumbai, Delhi, Kolkata, Chennai, Bangalore, Lucknow and Hyderabad and installed 70 Noise Monitoring System (10 stations in each city).

Development of Environmental Standards: The Ministry of Environment, Forest & Climate Change (MoEF&CC) formulates and notifies standards for emission for discharge of environmental pollutants viz. Air pollutants, water pollutants from industries, operations or processes with an aim to protect and improve the quality of the environment and abate environmental pollution. The standards are framed in consultation with all concerned stakeholders for the benefit of environment. The process is based on the best practices and techno-economic viability. The notification of standards also aims to encourage resource utilization efficiency and conservation aspects.

During 2018-19, standards for 3 industrial sectors i.e. Airport Noise, Man-made Fiber (revision) and Thermal Power Plant (water consumption and stack height) have been notified. Further, draft notification for Paint, Brick Kiln (revision), Fermentation, Coffee Industry (revision) and Tannery Industry (revision) have been published during the year 2018-19.

Standards for Pulp and Paper Industry (revision), Diesel Locomotives, Automobile Service Stations and Bus Depots, Iron and Steel Industry (revision) and Pharmaceutical Industry (revision and addition) have been presented before the Expert Committee of MoEF&CC and are under the process of finalization.

Municipal Solid Waste Management: Status of the Solid Waste Management in the 16 States based on the information provided by the SPCBs & PCCs, is given below:

- Solid Waste Generation: 54417.385 TPD
- Solid Waste Collection: 45082.15TPD
- Treated I: 15386.81 TPD
- Landfilled: 22904.70 TPD
- Total Landfill Sites operational : 21NOs

It has been observed that the waste processing and disposal facilities in majority of States are not working effectively. It is observed that after span of 2 years of notification of the Solid Waste Management Rules, 2016; State policy and strategy for implementation of the Solid Waste Management Rules, 2016, has not been formulated by most of States/UTs. There is lack of coordination between UDDS, ULBs & State Pollution Control Boards and other concerned agencies, who are involved in Implementation of SWM Rules, 2016. It has been observed that most of the States/UTs have not carried out monitoring of ground water quality and ambient air at Waste Processing and Landfill Sites to comply the Solid Waste Management Rules, 2016. It has been observed that most of the dumpsites are unscientific and operating without following SWM, Rules. The mixed

MSW is dumped on dumpsites causing environmental & health hazards and often lead to open-fires. Besides, as per SWM Rules, 2016 Landfill sites should preferably be used for depositing inert waste and rejects.

Bio-Medical Waste Management: The annual report information on bio-medical waste management for the year 2017 has been received from 34 nos. of SPCBs/PCCs & DGAFMS except Andaman & Nicobar, and Lakshadweep. As per the compiled annual report information for the year 2017, there are 2, 38,170 no. of Health Care Facilities (HCFs) having 20, 93,759 beds and generating bio-medical waste at about 557 Tonnes per day. 84,402 no. of HCFs have granted authorization under the BMWM Rules. There are 198 no. of CBWTFs in operation (24 under construction) and 9,830 no. of HCFs are having captive bio-medical waste treatment and disposal facilities, which are involved in treatment and disposal of 518 Tonnes out of 557 Tonnes per day bio-medical waste.

Plastic Waste Management: Approximately 8 million tons of plastic products are consumed every year, which results into nearly 25940 tons of plastic waste is generated per day in India. It is a fact that plastics waste constitutes a significant portion of the total Municipal Solid Waste (MSW) generated in India.

Due to non-compliance of Rules by majority of towns/cities, open dumping and burning of plastics waste is continued in public places, religious and historical places. Still plastic manufacturing/recycling units are running in non-conforming/residential areas causing



environmental pollution. Also, <50µm plastic carrybags/films are being manufactured, stocked, sold and used in cities/towns. Besides, plastic waste is littered in public places and dumped on open drains, river, banks, sea beaches, etc. thereby eaten by cattle's specially cows leads to death.

Remediation of Contaminated Dumpsites:

Rapid urbanization and industrialization has led to generation of large quantities of solid waste involving industrial hazardous wastes in many cities in the country, beyond the handling capacity of civic bodies, responsible for collection and disposal of the wastes. There are several contaminated dumpsites in various parts of India where hazardous and other wastes were dumped historically, which resulted in contamination of soil, groundwater and surface water thereby posing health and environmental risks. Most of the contaminated sites were created when industrial hazardous wastes were disposed by occupiers in unscientific manner or in violation of the rules prescribed. Some of the sites were developed historically when there was no regulation on management of hazardous wastes. In some instances, polluters responsibility for contamination have been either closed down their operations or the cost of remediation is beyond their capacity, thus the sites remain a threat to the environment. These contaminated sites need to be remediated on priority to levels that are acceptable considering the human health risks and by adopting appropriate remediation technologies.

Remediation of contaminated sites involves cleaning of contaminated media i.e. soils,

groundwater, surface water and sediments by adopting various in-situ or ex-situ clean-up technologies, up to a predefined remediation target levels for each identified constituent. These site specific remediation target levels (SSTLs) are decided for each site, separately adopting either the risk based assessment approach or standard based approach. SSTLs for remediation of contaminated sites are calculated based on quantitative human health risk caused by constituents of concern on a particular contaminated site. SSTL for a site is decided after considering various factors such as; cost of remediation, type of intended future land use, feasibility of a remediation technology, etc.

4.3 Hazardous Substance Management (HSM)

The Hazardous Substances Management Division (HSMD) is the nodal point within the Ministry for management of waste, hazardous substances and ensuring chemical safety. The main objective of the Division is to promote safe management and use of hazardous substances including hazardous chemicals and hazardous wastes, in order to avoid damage to health and environment. The activities of the division are carried out in main thrust areas, viz., Management of Hazardous Wastes, e-waste, Municipal Solid Waste, Plastic Waste, Bio-medical Waste, C & D waste, Fly Ash Utilization and Chemical Safety.

Major programmes/activities are as follows:

- i. Implementation of the following Waste Management and Chemicals Safety Rules:
 - **Solid Waste Management Rules, 2016:**

Solid Waste Management Rules, 2016 have been notified on 8th April, 2016 and applicability has been extended beyond municipal areas to urban agglomerations, census towns, notified industrial townships, etc. The source segregation, door to door collection of waste has been mandated to channelize the waste for useful purposes such as recovery, reuse and recycle.

- **E-Waste (Management) Rules, 2016:** E-Waste (Management) Rules, 2016 have been notified on 23 March 2016 and applicability has been extended to manufacturer, dealer, refurbisher, e-retailer and Producer Responsibility Organization (PRO) to address leakage of e-waste to informal sector at any stage of the chain.
- **Hazardous Waste Management:** The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 has been notified on 4th April 2016 incorporating waste management hierarchy in the sequence of priority i.e. prevention, minimization, reuse, recycling, recovery, co-processing and safe disposal. This rules shall apply to the every occupier of the facility who is engaged in handling, generation, collection, storage, packaging, transportation, use, treatment, processing, recycling, recovery, pre-processing, utilisation, offering for sale, transfer or disposal of hazardous and other wastes.

- **Bio-Medical Waste Management Rules, 2016:** Bio-Medical Waste Management Rules, 2016 have been notified with the objectives to improve segregation, collection, processing, treatment and disposal of infectious bio-medical waste in an environmentally sound and safe manner. These rules are applicable to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, ayush, hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs.
- **Plastic Waste Management Rules, 2016:** Plastic Waste Management Rules, 2016 have been notified on 18th March, 2016. These rules apply to the manufacture, import stocking, distribution, sale and use of carry bags, plastic sheets or multilayered packaging etc. The jurisdiction of applicability of the rules have been expanded from municipal area to rural areas as well. For the first time, responsibility of waste generators has been prescribed. Individual and bulk generators like offices, commercial establishments, industries are to segregate the plastic waste at source, handover segregated



waste, pay user fee as per bye-laws of the local bodies.

- **Construction & Demolition (C&D) Waste Management Rules, 2016:** For the first time the Government has notified Construction & Demolition Waste Management Rules, 2016. The rules apply to everyone who generates construction and demolition waste such as building materials, debris, and rubble waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organization or authority.
- **Fly Ash Notifications:** Ministry of Environment, Forest and Climate Change has issued first Notification on 14th September, 1999 which has subsequently been amended in 2003, 2009 and 2016. Fly ash notification mandates the use of fly ash for the purpose of manufacturing ash-based products such as cement, concrete blocks, bricks, panels or any other material or for construction of roads, embankments, dams, mines backfilling/stowing, agriculture etc.
- **Chemical Safety:** The Ministry of Environment, Forest and Climate Change notified the Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 and the Chemical Accidents (Emergency Planning, Preparedness and Response) (CAEPPR) Rules, 1996 for ensuring chemical safety in the Country.

ii. **International Conventions:** The Division

is also the nodal point for the following four International Conventions viz. Basel Convention on Control of transboundary movement of Hazardous waste and their disposal; Rotterdam Convention on Prior Informed Consent Procedure for certain Chemicals and Pesticides in International trade; Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury and Strategic Approach to International Chemicals Management.

iii. **Implementation of scheme namely the “Creation of Management Structure for Hazardous Substances”:** HSM Division has formulated a scheme namely the “Creation of Management Structure for Hazardous Substances”. The sub-schemes envisaged under this scheme are as under:

- SAMPATTI - ‘Sustainable Management of Pre-owned Asset through Trade Initiatives’: Innovative solutions for municipal solid waste segregation, handling and treatment.
- Capacity building of government agencies/organizations/department/civil society/institute with respect to environmentally sound management of chemicals and wastes.
- Organizing awareness program with various stakeholders for implementation of various waste and chemicals management rules.
- Innovative technologies for environmentally sound management of chemicals and wastes.

- Setting up facilities for management of biomedical waste (CBMWTF) and treatment, storage and disposal of hazardous waste (TSDF).

Activities Undertaken:

- The E-Waste (Management) Rules 2016 have been amended on 22nd March 2018. The amendment has been done with the objective of channelizing the e-waste generated in the country towards authorized dismantlers and recyclers in order to formalize the e-waste recycling sector. The collection targets under the provision of Extended Producer Responsibility (EPR) in the rules have been revised.
- The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 have been amended on 11th June, 2018 and 1st March, 2019. The amendment provides white category industries are now exempted from requiring authorization under the Hazardous Wastes Rules. White category industries have to hand over hazardous wastes generated to authorized users, waste collectors or disposal facilities. Electrical and electronic assemblies/ components if manufactured in and exported from India, do not require permission from Environment Ministry for import of their defective items.
- Bio-Medical Waste Management Rules, 2016 have been amended vide notification GSR 234 (E) dated 16th March, 2018, GSR (128E) dated 19th February, 2019 and GSR 360 (E) dated 10th May, 2019. As per amendment, bio-medical waste generators will have to phase out chlorinated plastic bags (excluding blood bags, urine bags, effluent bags, abdominal bags and chest drainage bags) and gloves by 27th March, 2019. Bar coding and global positioning system for handling of bio-medical to be done by 27th March, 2019.
- The Plastic Waste (Amendment) Rules, 2018 have been notified on 27th March, 2018.
- Guidelines were issued on the elimination of 'Single Use Plastic' in all States.
- To tackle the problem of marine littering a Steering Committee with stakeholders from all the concerned Ministries and Departments has been constituted by MoEF&CC.
- MoEF&CC has issued notification on Regulation on Persistent Organic Pollutants Rules, 2018. The purpose of the said rule is to prohibit the manufacture, trade, use, import and export of the seven POPs viz. (i) Chlordecone, (ii) Hexabromobiphenyl, (iii) Hexabromodiphenyl ether and heptabromodiphenyl ether (commercial octa-BDE), (iv) Tetrabromodiphenyl ether and pentabromodiphenyl ether (commercial penta-BDE), (v) Pentachlorobenzene, (vi) Hexabromocyclododecane and (vii) Hexachlorobutadine.
- Draft amendment to fly ash notification issued on 25.02.2019 inviting comments/ suggestions from affected persons.
- Expert Committee led by MoEF&CC made recommendations for enhanced utilisation



for fly ash in the sectors namely mines, roads, bricks, cements etc.

- The Government of India ratified the Minamata Convention on Mercury on 18 June 2018. The Convention came into force on 16 September 2018. India as a party participated in the second meeting of the Conference of the Parties to the Minamata Convention held from 19 to 23 November 2018.
- India was the global host of World Environment Day 2018. The theme of this year edition is “Beat the plastic pollution”. In this regard, the Ministry conducted several programmes and activities. On 5th June 2018 which is World Environment Day all the success of activities was showcased along with other exhibits and functions at Vigyan Bhawan, New Delhi.
- During the meeting of Persistent Organic Pollutant Review Committee under Stockholm convention held during the September 17-21, 2018 in Rome, Italy, MoEF&CC, as per approved country

position secured the specific exemption for Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds through technical intervention.

- During the meeting of Chemical Review Committee under Rotterdam convention held during the September 10-14, 2018 in Rome, Italy, India intervened in technical matters including update of CRC Handbook.
- The MoEF&CC implemented the World Bank aided “Capacity Building for Industrial Pollution Management (CBIPM) Project” from October 2010 to March 2018. The project supported closure and containment of two identified polluted sites in Andhra Pradesh (Kadapa) and West Bengal (Dhapa), on pilot basis. West Bengal State Pollution Control Board is carrying out remediation of waste dumpsite of 12.14 hectare at Dhapa with the project cost of Rs. 57.44 Crore. Andhra Pollution Control Board is implementing closure and containment of dumpsite of 10.38 acre at Kadapa with the project cost of Rs. 30.17 Crore.



Dump Site at Dhapa (Then)



Dump Site at Dhapa (Now)

- Regional stakeholder consultation meetings on waste management have been conducted in Bangalore, Ranchi and Chandigarh.
- MoEF&CC has awarded project titled “Capacity building of academic institutions to support remediation initiatives” to IIT Delhi under the HSM Scheme. The project has the following five components: (i) Establish National Network of Resource Persons; (ii) Establish International Network of Resource Persons; (iii) Procurement of Advanced Field Equipment; (iv) Demonstration Project; and (v) Research Activities.
- KPMG, a consultancy firm, hired to suggest ways and means to further improve the e-waste management and implementation of the rules.
- M/s Ernst & Young, a consultancy firm, is engaged to suggest measures for improving C&D waste management and implementation of notified rules.

Regulatory Acts/Rules/ governing the programme and promulgation of new Acts, if any, alongwith the details

- E-Waste (Management) Amendment Rules 2018
- Plastic Waste Management (Amendment) Rules 2018
- Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules, 2018
- Hazardous and Other Wastes (Management and Transboundary Movement)

Amendment Rules, 2019

- Bio-medical Waste Management (Amendment) Rules 2018
- Bio-medical Waste Management (1st Amendment) Rules 2019
- Bio-medical Waste Management (2nd Amendment) Rules 2019

4.4 Development and Promotion of Clean Technology and Waste Minimization Strategies

Clean Technologies, are distinct from “end-of-pipe” abatement technologies, minimizing the generation of waste streams in the production processes and utilize waste from other consumption goods and production processes, rather than treating the waste after generation. In general, clean technologies are less intensive in use of raw materials and energy, than conventional technologies, which rely on pollution abatement after generation. For this reason, they may also offer significant cost advantages to the producer.

The main objective of waste minimization is to optimize the consumption of raw materials and also reduce waste generation by adopting production techniques which are cleaner in nature and which can be adopted by the existing units without necessarily changing the production processes or unit operations. The approach to the problem is towards utilizing the existing production facilities in an optimal manner. The purpose of the scheme was to assist primarily the Small and Medium Scale units which do not have access to the requisite technical expertise.



Objectives:

- Identification of priority areas and development of appropriate economically viable clean technologies and waste minimization strategies for small scale and medium scale industries through interface with industry, R&D establishments and academic institutions.
- Promotion and adoption of clean technologies and waste minimization strategies by the industry/industrial clusters through setting up of pilot/demonstration projects on prototype development,
- Absorption and up-gradation of imported clean technologies and their demonstration through pilot projects.

The Scheme was reviewed by Evaluation Committee on Review of Plan Schemes implemented in XIIth Five Year Plan and has been discontinued by the Ministry on the basis of committee recommendations and funding to only ongoing projects is to be provided. The emphasis of the Division is to complete the ongoing projects under the Scheme.

This scheme comes under the umbrella scheme of Pollution Abatement.

Achievements and Progress:

- Under the Scheme, during year 2018-2019 the progress of ongoing projects was monitored and the Project Monitoring Committee meetings under the demonstration projects were organized to review the projects followed by field

visits. Separate site visits of demonstration projects have been done by MoEF&CC and CPCB officials to expedite the completion of project and emphasis has been laid on expediting the completion of ongoing projects.

- A workshop on demonstration project entitled “A novel system for absorbing and separating suspended gaseous impurities from effluent gases and thereby recovery of value added products from Jaggery unit” was organized in Ministry during Clean Air Campaign in February, 2018.
- The following four projects have been completed till date during this financial year:

- “Waste Minimization Studies in Moradabad Brassware Industry Cluster” by The Energy Research Institute, New Delhi.
- “Promotion of Cleaner & environment friendly technology in highly polluting small scale Glass Industry in Firozabad, UP” was sanctioned to M/s Winrock International India (presently M/s Inspire), Gurgaon, Haryana.
- Waste Minimization in small scale industries by National Productivity Council, New Delhi.
- “Waste minimization studies in Electroplating Operation in Imitation jewelry Units at Machlipatnam, Krishna District, Andhra Pradesh by M/s Apitco Limited.

Conservation of Water Bodies

CHAPTER

05





5.1 National River Conservation Directorate (NRCD)

The National River Conservation Directorate, functioning under the MoEF&CC is providing financial assistance to the State Governments for conservation of rivers, lakes and wetlands under the Centrally Sponsored Schemes of 'National River Conservation Plan (NRCP)' and 'National Plan for Conservation of Aquatic Ecosystems (NPCA)'.

5.2 National River Conservation Plan:

The river conservation programme was initiated with the launching of the Ganga Action Plan (GAP) in 1985. The Ganga Action Plan was expanded to cover other rivers under National River Conservation Plan (NRCP) in the year 1995. The objective of NRCP is to improve the water quality of rivers, which are major water sources in the country, through implementation of pollution abatement works in various towns along identified polluted stretches of rivers on cost sharing basis between the Central & State Governments.

The pollution abatement works taken up under the NRCP include:

- Interception and diversion works/ laying of sewerage system to capture raw sewage flowing into the rivers through open drains and diverting them for treatment.
- Setting up of Sewage Treatment Plants (STPs) for treating the diverted sewage.
- Construction of Low Cost Sanitation Toilets to prevent open defecation on river banks.
- Construction of Electric Crematoria and

Improved Wood Crematoria to conserve the use of wood.

- River Front Development works, such as improvement of bathing ghats.
- Public participation & awareness and capacity building, etc.

Presently NRCP (excluding Ganga and its tributaries) has covered polluted stretches of 33 rivers in 76 towns spread over 15 States at a sanctioned cost of Rs.4801.57 crore (Annexure). An amount of Rs. 2337.73 crore has been released to various State Governments for implementation of various pollution abatement schemes and a treatment capacity of 2520.43 million litres per day (mld) has been created so far under NRCP (excluding Ganga and its tributaries).

The following rivers are covered under NRCP:

Sl. No.	River
1	Adyar
2	Beas
3	Bhadra
4	Brahmani
5.	Cauvery
6	Cooum
7	Devika
8	Diphu & Dhansiri
9	Ghaggar
10	Godavari
11	Krishna
12	Mahanadi
13	Mandovi
14	Mindhola
15	MulaMutha
16	Musi

17	Narmada
18	Pennar
19	Pamba
20	Panchganga
21	Rani Chu
22	Sabarmati
23	Satluj
24	Subarnarekha
25	Tapti
26	Tapi
27	Tunga
28	Tungabadra
29	Tamrabarani
30	Tawi
31	Vaigai
32	Vennar
33	Wainganga

As per amendment to the Government of India (Allocation of Business) Rules, 1961 notified vide Gazette Notification SO No. 1986(E) dated 31st July, 2014, the work relating to Ganga and its tributaries had been allotted to Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD&GR). Accordingly the rivers namely Ganga, Yamuna, Gomti, Damodar, Mahananda, Chambal, Beehar, Khan, Kshipra, Betwa, Ramganga and Mandakini have been shifted to MoWR, RD & GR along with the National Mission for Clean Ganga (NMCG).

Major works taken-up under National River Conservation Plan (Non-Externally Aided Projects):

Pollution Abatement of Rivers Satluj, Beas & Ghaggar in Punjab: Under Phase-I of NRCP, pollution abatement works in 6 towns namely

Ludhiana, Jalandhar, Phagwara, Phillaur, Kapurthala and Sultanpur Lodhi amounting to Rs.215.71 crore were sanctioned for pollution abatement of rivers Satluj and Beas. Under these projects, 8 STPs having total capacity of 461.2 mld have been created in the above mentioned towns. These STPs are being maintained by the State Government agencies, as operation and maintenance of the assets created under NRCP is the responsibility of the concerned State Governments and their agencies.

Under Phase-II of NRCP in Punjab, works for pollution abatement of rivers Satluj & Beas amounting to Rs. 501.61 crore in 11 towns have been sanctioned and the targeted STP capacity of 187 mld has been created. These towns are Banga, Bholath, Dasuya, Hoshiarpur, Moga, Mukerian, Nawanshehar, Tanda as well as the Phase-I towns of Phagwara, Phillaur and Jalandhar.

Projects amounting to Rs. 57.10 crore have also been sanctioned for pollution abatement of river Ghaggar in 4 towns, namely Patran, Moonak, Lehragaga and Khanauri and creation of 15 mld treatment capacity has been envisaged under these projects. The project is under implementation and expenditure of Rs. 44.65 crore has been incurred.

Sabarmati River Conservation Project at Ahmedabad, Gujarat: For conservation of river Sabarmati in Ahmedabad, projects amounting to Rs. 365.01 crore were sanctioned under Phase-I of NRCP works. All the works sanctioned under this Phase stand completed and a total sewage treatment capacity of 232 mld has been



created in 2 STPs alongwith other sewerage infrastructure facilities, including community toilet complexes at various locations in the town.

The ongoing Sabarmati River Conservation Project Phase-II at Ahmedabad has been sanctioned at a cost of Rs.444.44 crore. Under this phase, works related to laying of new sewers, strengthening/rehabilitation of the existing sewerage system, construction of sewage pumping stations and 4 STPs having a total treatment capacity of 210.5 mld is envisaged. The project is under implementation and expenditure of Rs. 116.86 crore has been incurred till 31/03/2018.

Pollution Abatement of River Mindhola at Surat, Gujarat: Under the project for 'Conservation of river Mindhola at Surat', works relating to sewerage networks, sewage pumping stations along with creation of sewage treatment capacity of 53 mld has been sanctioned at a cost of Rs.262.13 crore. Under the project, a STP of 53 mld has already been commissioned along with other sewerage infrastructure facilities and river front development works.

Pollution Abatement of Rivers Devika & Tawi at Udhampur, Jammu and Kashmir: The Project of 'pollution abatement of rivers Devika & Tawi at Udhampur' was sanctioned in September, 2018 at an estimated cost of Rs.186.74 crore. The works taken up under the project include setting up of new STP of 13.06 mld capacity and allied sewerage works.

Pollution Abatement of River Mula-Mutha at Pune, Maharashtra (Externally Aided Projects):

The project of "Pollution abatement of River Mula- Mutha at Pune" has been sanctioned in January, 2016 at a cost of Rs.990.26 crore. Loan assistance of 19.064 billion yen is being provided by Japan International Cooperation Agency (JICA) for the project. The project cost will be shared between Govt. of India and State Government/Pune Municipal Corporation (PMC), the implementing agency for the project, in 85:15 ratio respectively. The project is scheduled for completion by January, 2022.

The major components proposed under the project include construction of 11 new Sewage Treatment Plants (STPs) which will result in creation of additional treatment capacity of 396 mld (over & above the existing treatment capacity of 477 mld), laying of 113.6 kms of sewer lines and renovation/rehabilitation of 4 existing intermediate pumping stations. On completion of the project, the total STP capacity available in Pune would be 873 mld, which would be sufficient to cater to sewage generation for the year 2027. The project also includes installation of Central Supervisory Control and Data Acquisition (SCADA) system for centralized monitoring of functioning of STPs, construction of 24 units of community toilet facilities in slum and fringe areas, public participation and awareness programme, GIS mapping of sewerage facilities for better asset management, etc. Funds amounting to Rs. 57.74 crore have been released to the State Government for the project, so far.

National River Conservation Plan works in North Eastern States:

Sikkim: Under NRCP, 7 projects were sanctioned for conservation and pollution

abatement of rivers Rani Chu and Roro Chu in Sikkim at a cost of Rs. 181.09 crore in 2 towns namely Gangtok, Ranipool and Singtam. The works sanctioned under the projects pertain to interception & diversion of sewage, sewage treatment plants, rehabilitation of sewer mains, low-cost sanitation, river front development and improved wood crematoria. Sewage treatment capacity of 20.12 mld is envisaged to be created in these towns. Works on 6 projects have been completed and 18.52 mld sewage treatment capacity has been created so far.

Nagaland: For pollution abatement of rivers Diphu and Dhansiri at Dimapur, Nagaland, works have been sanctioned under NRCP at an estimated cost of Rs.82.80 crore. The works envisaged under the project pertain to construction of sewage treatment plant having treatment capacity of 25.43 mld and other allied sewerage works, low-cost sanitation, afforestation, etc. The scheme is presently under implementation.

Measures for improved implementation:

Several measures have been taken to improve implementation of projects under NRCP, which include; (i) Signing of Tripartite Memorandum of Agreements (MoAs) with the State Governments/Urban Local Bodies, (ii) Independent Appraisal of Detailed Project Reports by reputed professional/ academic institutions, (iii) Third Party Inspection for projects.

New Initiative: Revised river conservation and rejuvenation strategy

The primary focus and emphasis of river conservation under NRCP has been so far on

implementation of schemes of interception, diversion and treatment of municipal sewage falling out into the river. Non-core works such as river front development (mainly for renovation of existing bathing ghats) and low-cost community toilets, crematoria, public participation & awareness, etc are also being taken up under the programme, even though they constitute a small component of the total project cost.

However, issues like environmental flow, catchment area treatment, micro and mini storage projects in tributaries and main river, development of suitable vegetative cover along the river banks, appropriate ground water recharge in the river flood plains and catchment, interventions for non-point pollution mitigation, especially agricultural runoff, awareness campaign on adoption of organic farming & efficient irrigation systems, implementation of low discharge model for industries to prevent extra drawl of surface and/or ground water, etc. have not been addressed adequately under the NRCP.

To achieve more focused results in conserving our rivers, this Ministry is in process of revamping its river conservation & rejuvenation strategy. A Draft Concept Note was prepared and circulated to concerned Ministries and the State Governments for their valuable suggestions and comments. Comments from a few States and concerned Ministries were received, on the basis of which action has been initiated for preparation of a draft Action Plan for trying out the integrated approach on a few polluted river stretches in the country covering the basin/sub-basin of



the river. This new approach would involve carrying out comprehensive basin assessment studies for preparation of river rejuvenation plans for the respective stretches followed by preparation of DPRs, undertaking pollution abatement works, implementation of watershed management and plantation works along river stretches, constitution of State level River Basin Authorities in the concerned States for implementation of the integrated river rejuvenation plans, etc. Convergence with various Ministries like Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD&GR), Ministry of Housing & Urban Affairs, Ministry of Agriculture & Farmers Welfare, Ministry of Rural Development would be necessary to achieve the desired results.

Progress/Achievements

Sewage Treatment Capacity of 187 mld was targeted to be created under NRCP during the year 2018-19 (September, 2018) against which, 48.00 mld has been created so far during the year.

Continuation of on-going Centrally Sponsored Scheme of National River Conservation Plan (NRCP) for the period 2017-18 to 2019-20 have been approved.

NRCP has also been identified as one of the four core Centrally Sponsored Schemes (CSS) of the Ministry approved by the Cabinet.

5.3 National Plan for Conservation of Aquatic Eco-systems (NPCA)

Ministry is currently implementing a centrally sponsored scheme namely, National Plan for Conservation of Aquatic Eco-systems (NPCA)

for conservation and management of identified lakes and wetlands in the country on cost sharing basis between Central Government and respective State/UT Governments (60:40 percentage sharing between Central Govt. and State Govt., 90:10 percentage sharing between Central Govt. and North Eastern States and 100% Central Govt. funded for Union Territories).

The scheme covers various activities such as interception, diversion and treatment of wastewater, shoreline protection, lake front development, in-situ cleaning i.e. desilting & dewatering, storm water management, bioremediation, catchment area treatment, lake beautification, survey & demarcation, biofencing, fisheries development, weed control, biodiversity conservation, education and awareness creation, community participation, etc.

Activities Undertaken:

Regional workshops on Conservation and Management of Wetlands were held for Wetlands Managers & Stakeholders to sensitise them about the new actions being taken by the Ministry and expectations from them in implementing the same.

- National level celebration of World Wetlands Day (WWD) is organised each year on 2nd February in collaboration with the concerned State Governments to raise awareness among all sections of the society about values and functions of wetlands and utilization of their resources. On this occasion, various events are organized, which include panel discussions,

cultural programmes, exhibitions/painting competitions/slogan contests/quiz at different levels, with the involvement of experts, policy planners, students from schools/colleges/universities and other stakeholders.

- National level celebration of World Wetlands Day, 2019 was organized by MoEF&CC in collaboration with the Department of Forests, Government of Odisha at Bhitarkanika wetland in Odisha, on 2nd Feb, 2019.
- The first meeting of National Wetlands Committee constituted under the Wetlands (Management and Conservation) Rules, 2017 was convened under the Chairmanship of Secretary (EF&CC). The issues discussed in the meeting were related to (i) the permissions sought by the Government of West Bengal with respect to East Kolkata Wetlands and (ii) inclusion of wetlands as legitimate and distinguished land-use category.
- The 13th meeting of the Conference of Contracting Parties (COP-13) to the Ramsar Convention on Wetlands of International Importance was held on the theme “Wetlands for a Sustainable Urban Future”. In the COP-13 Meeting, Indian delegation comprising of Additional Secretary (Head of delegation), Joint Secretary, Scientist ‘F’ participated.
- The ‘Convention on Wetlands’, signed in Ramsar, Iran in 1971 is an intergovernmental treaty which provides the framework

for national action and international cooperation for the conservation and wise use of wetlands and their resources. India became a party to the Convention on 01.02.1982 and has designated 27 wetlands under the List of Wetlands of International Importance. The Contracting Parties meet every three years to assess progress in implementing the Convention and wetland conservation, share knowledge and experience on technical issues and plan for the next triennium.

- Sundarban wetland in West Bengal was designated as the 27th Ramsar Site of India under the Ramsar Convention of Wetlands on 30.01.2019.
- Five meetings for online updation of Ramsar Site Information sheets (RSIS) of Ramsar sites of India were convened in the Ministry wherein updation of RSIS of 15 Ramsar sites have been completed and submitted online to Ramsar Secretariat.
- A one day Brainstorming workshop for developing a National Policy Framework for wetland conservation and wise-use was organized by the Ministry under the chairmanship of Additional Secretary, MoEF&CC. The workshop was attended by eminent experts and ex-officio members from various States working in the field of wetland conservation.
- Guidelines for implementation of the NPCA scheme were finalised for use by all the stakeholders

Regeneration and Eco-development

CHAPTER

06





6.1 National Afforestation and Eco-Development Board (NAEB)

In order to promote afforestation, tree planting, ecological restoration and eco-development activities in the country, the National Afforestation and Eco-Development Board (NAEB) was set up in August 1992. Special attention is also given by NAEB to the regeneration of degraded forest areas and lands adjoining forest areas, national parks, sanctuaries and other protected areas as well as the ecologically fragile areas like the Western Himalayas, Aravallis, and Western Ghats etc.

NAEB operates the following two major schemes:

- A. National Afforestation Programme (NAP) Scheme
- B. Eco-Development Forces (EDF) Scheme

A. National Afforestation Programme (NAP) Scheme: National Afforestation Programme (NAP) is a major Afforestation scheme of the NAEB in the Government of India. Launched in 2000-02, the scheme has acquired a Pan India ambit over the last sixteen years of its implementation and was being implemented by 28 states of the country through a twin institutional set up of Forest Development Agencies (FDAs) at the forest division level and Joint Forest Management Committees (JFMCs) at the village level. From the year 2010-11, State Forest Development Agency (SFDA) has been constituted at the State level to smoothen the fund flow to the FDAs. The programme is now implemented

through a three tier system of State Forests Development Agency (SFDA) at the state level, Forest Development Agency (FDAs) at the district/forest division level and Joint Forest Management Committees (JFMCs) at the village level. Under Entry Point Activities, community assets are created with a 'care and share' concept.

Objectives:

- Protection and conservation of natural resources through active involvement of the people.
- Checking land degradation, deforestation and loss of biodiversity.
- Ecological restoration and environmental conservation and eco-development.
- Evolving village level people's organization which can manage the natural resources in and around villages in a sustainable manner.
- Fulfillment of the broader objectives of productivity, equity, and sustainability for the general good of the people.
- Improve quality of life and self-sustenance aspect of people living in and around forest areas.
- Capability endowment and skill enhancement for improving employability of the rural people.

Activities undertaken: 28 SFDA Projects have been operationalised in the country at an expenditure of Rs. 3874.02crore to treat an area of 21.92 lakh hectares since inception of the NAP scheme till 2018-19. During the year

2018-19, Rs. 95.39 crore has been released to carry out committed liabilities of plantation activities taken up during previous years under the NAP scheme. Advance work of 15086 hectare has been sanctioned for new afforestation. The funds are being routed through State Governments under Central Assistance to State Plan (CASP) and from State Governments the funds are released to State Forest Development Agencies.

B. Eco-Development Forces (EDF) Scheme:

Eco-Development Forces Scheme was established in 1980s as a scheme implemented through Ministry of Defence for ecological restoration of terrains, rendered difficult either due to severe degradation or remote location or difficult law and order situation. The scheme of Eco-Development Forces is based on twin objectives of ecological regeneration

in difficult areas, and promotion of meaningful employment to ex-servicemen.

Under this scheme, the establishment and operational expenditure on the Eco Task Force (ETF) Battalions raised by Ministry of Defence is reimbursed by Ministry of Environment and Forests while the inputs like sapling, fencing, etc. and also the professional and managerial guidance is provided by the State Forest Departments. In ETF battalions, the Ministry of Defence deploys its ex-servicemen, preferably from within the area of operation, whereas the nuclear core of the force is constituted of regular servicemen. Some of the ETF Battalions have undertaken successful eco-restoration of highly degraded sites, for example the limestone mining areas in the Mussoorie Hills.

The progress of ETF Battalions: during the year 2018-19

Batallion	Location	No. of plants planted(in lakh)	Area Covered (in ha.)
1	2	3	4
127 Inf. Bn (TA) Eco	District TehriGarhwal (Uttarakhand)	4.00	400
128 Inf. Bn (TA) Eco	ShriMohangarh, District Jaisalmer (Rajasthan)	2.40	280
129 Inf. Bn (TA) Eco	BahuPurmandalProject, Samba (J&K)	1.11	160
130 Inf. Bn (TA) Eco	Pithoragarh (Uttarakhand)	5.00	500
134 Inf. Bn (TA) Eco	Sonitpur District (Assam)	2.82	246.5
135 Inf. Bn (TA) Eco	Chirang Res. Forest, Kokrajhar, (Assam)	2.85	284
Total		18.18	1870.5



Six ETF battalions are being supported by the Ministry under the EDF Scheme in the States of Uttarakhand, Rajasthan, Jammu & Kashmir and Assam.

All ETF Battalions have undertaken works like raising nursery and plantation and protection measures to protect the plantation area. They have also constructed stone dams and also other soil and moisture conservation works.



NAP Planting in Progress



Eco-restoration under NAP

6.2 National Mission for a Green India (GIM)

The National Mission for a Green India (GIM), one of the eight Missions under the National Action Plan on Climate Change aims at protecting and enhancing India's forest

cover to counter the perils of climate change. It envisages a holistic view of greening and focuses on multiple ecosystem services along with carbon sequestration and emission reduction as co-benefit.

Objectives:

- To increase forest/tree cover to the extent of 5 million hectares (mha) and improve quality of forest/tree cover on another 5 mha of forest/non-forest lands;
- To improve/enhance eco-system services like carbon sequestration and storage (in forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, and timber and non-timber forest produces (NTFPs); and
- To increase forest based livelihood income of about 3 million households.

Activities undertaken:

- The National Executive Council of GIM has approved new Perspective Plans of four States namely Sikkim, Maharashtra, Madhya Pradesh and Himachal Pradesh. Funds have been disbursed to three States (Sikkim, Maharashtra and Madhya Pradesh) in addition to other States where Perspective Plans had already been approved.
- Green India Mission (GIM) has launched World Bank funded Ecosystems Services Improvement Project on 13th July, 2018 which is being implemented in two States namely Chhattisgarh and Madhya Pradesh. Indian Council of Forestry Research

and Education (ICFRE), Dehradun to set up Project Implementing Unit and Implementation of ESIP activities.

- The State Government of Madhya Pradesh has organized the National Level Implementation Workshop under ESIP.
- GIM participated in 4th India International Science Festival at Lucknow jointly organized by Ministry of Science and Technology and Ministry of Earth Sciences and About 10,000 saplings were distributed to the visitors during the Festival.



Progress/Achievements:

The State-wise details are given in the table below:

S. No.	States	Physical Target (Area in ha.)		
		Advance Work	Creation Work	Maintenance Work
1	Andhra Pradesh	2203	-	534
2	Chhattisgarh	-	-	19128
3	Manipur	-	-	8798
4	Karnataka	600	-	760
5	Odisha	6965	-	2094
6	Mizoram	-	19643	-
7	Madhya Pradesh	11914	-	-
8	Maharashtra	6766.4	-	-
9	Sikkim	1509.2	-	-
Total		29957.6	19643	31314

Research

CHAPTER

07





7.1 Research in Environment

The R&D Scheme is an important Decision Support System for Policy and Planning of the Ministry's programmers and activities incorporating the key objectives for addressing environmental problems and measures for conservation and protection of environment by building indigenous capacities and strengthen manpower in multi-disciplinary aspects and new and emerging areas of environment and ecology, generating information for taking policy decisions, preparedness and basis for international negotiations, supporting basic and applied research in environment, ecology and related fields, and to facilitate database management on Research projects undertaken under the Scheme on relevant thematic areas of the Ministry.

Major objectives:

- To generate information and knowledge required for developing policies, strategies, action plans from outcomes of R&D projects. This also includes technologies and methodologies including pilot studies and demonstration projects for better environmental management and conservation of natural resources.
- The outputs/outcome of the projects would be used to prepare a Road Map/Action Plan for implementation of the findings in the field/communities for improving quality of life and for sustainable livelihoods.
- To find practical solutions to problems of environmental protection and management (e.g. Eco-regeneration of degraded areas, management of wastes,

bioremediation of contaminated sites, conservation of ecologically sensitive areas and landscapes, etc.).

- To build indigenous capacities and strengthen scientific manpower in multidisciplinary and emerging areas of environment and ecology and sustainable development.
- To conduct R&D in cleaner technologies and production including the 3Rs, Resource Efficiency, Waste minimisation and management etc.
- To generate, document and analyse information for taking policy decisions relating to environment and natural resources, and Action Plans of GOI, including preparedness for international negotiations on Conventions, Treaties, Protocols, Laws, etc.
- To support basic research which leads to applied research in the areas of environment and ecology with the aim of development of management and policy interventions. Adoption of successful technologies, demonstration projects in Industry and in other sectors, and to find cost-effective solutions to environmental problems.
- Creation of MIS-Portal in Ministry website for database management at one single point in the Ministry.

The major thematic areas for funding are:

- i. Biodiversity Conservation
 - a. Alien and invasive species
 - b. Human-wildlife Interface

- ii. Ecosystems Conservation & Management (Mountain, Forest, Coastal, Wetlands, Pastoral, etc) and Evaluation of Ecosystem Services.
- iii. Socio-economic issues of environment and Sustainable Development.
- iv. Conservation and Management of Landscapes and Ecologically sensitive areas including issues of sustainable livelihoods.
- v. Sustainable Management of Natural Resources.
- vi. Climate Change: Vulnerability & Risk Assessment, Process, Mitigation and Adaptation.
- vii. Pollution prevention - Clean Technologies and Processes, Cleaner Production, 3Rs, Resource Efficiency, Waste Minimisation and Management, Environmental health, etc.
- viii. Use of remote sensing technology for inventorisation, assessment and monitoring of country's natural resources such as land, water, forests, wetlands, glaciers etc. for environmental conservation and protection.

Activities undertaken:

- i. Revamping of MIS portal
- ii. Convening the Steering Committee and the Technical and Financial Appraisal Committee Meetings for review of Annual Progress Reports/Final Technical Reports of the R&D Project and appraisal of new R&D proposals.
- iii. Releasing next installment of Grants for

ongoing R&D projects.

Progress/ Achievements:

Physical Progress:

- i. MIS portal of the RE division- <https://repismoef.nic.in/> has been revamped;
- ii. One Meeting of Technical & Financial Appraisal Committee (TFAC) and Five meetings of the Steering Committee on R&D Scheme have been convened during the year;
- iii. Final Technical Reports (FTRs) of ~29 R&D projects, whose tenure got completed during the XI & XII Five-Year Plan, and the Annual Progress Reports (APRs) of ~20 ongoing projects of XII Five-Year Plan were considered in the above referred Committee Meetings. Minutes of the Meetings available at <https://repismoef.nic.in/>.
- iv. 19 new R&D projects were placed before the Technical & Financial Appraisal Committee (TFAC) for their appraisal. Minutes of the Meetings available at <https://repismoef.nic.in/>.

Guidelines for revised scheme on Research & Development (R&D) for Conservation & Development (2017-2020) were brought out in April, 2018 (available on <https://repismoef.nic.in/>).

Committees and their work during the year:

The appraisal and sanction of research projects is done through a two-tier process. In the first tier, the Technical and Financial Appraisal Committee (TFAC) reviews the technical and financial aspects of the proposal and provide its



recommendations to the Steering Committee. The TFAC also reviews the annual progress and final technical report of the projects.

In the second tier, the proposals recommended by the TFAC are placed before the Steering Committee which is the highest body in the Ministry for approval of the research projects based on the recommendation of the TFAC. The Steering Committee, inter alia, provides overall direction to the research endeavor of the Ministry; ensures synergy and linkages in the research efforts of various arms of the Ministry/research carried out under National Missions, etc. (e.g., BSI, ZSI, WII, GBPIHED, ICFRE) and avoids duplication of efforts amongst them, serves as a think tank acting as a symbiotic link/bridge/conduit between research findings and their implementation by research managers and other stakeholders.

One Meeting of the Technical & Financial Appraisal Committee (TFAC) and five meetings of the Steering Committee have been convened in financial year 2018-19. Composition of the Committees and Minutes of Meetings are available on <https://repismoef.nic.in>.

SDG implementation progress in respect of Scheme of the Division: SDG 14(Conserve and sustainably use the oceans, seas and marine resources for sustainable development) and 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss) are addressed under the R&D Scheme.

7.2 Eco-Sensitive Zone

The National Environment Policy, 2006 defines Eco-Sensitive Zones as areas/zones, 'with identified environmental resources having incomparable values which require special attention for their conservation'. The purpose of declaring Eco-sensitive Zone (ESZ) is to create some kind of "Shock Absorber" for specialized Ecosystems such as Protected Areas which include National Parks and Wildlife Sanctuaries. The ESZs act as transition zones for areas requiring high protection to areas where development may be permitted.

Notifying Eco-Sensitive Zones around the Protected Areas is an important objective of MoEF&CC for sustainable development and for conservation of Wildlife and Biodiversity around Protected Areas. As part of Wildlife Conservation Strategy, in the year 2002 it was decided that an area around each Protected Area (National Park, Biosphere Reserve, Wildlife Sanctuary, Tiger Reserve etc), requires to be notified as Eco-Sensitive Zone for creating a buffer as further protection around Protected Areas (PAs).

Ecologically Sensitive areas are "areas with identified environmental resources having incomparable values which require special attention for their conservation." The ecologically sensitive areas notified by the Ministry includes Dahanu Taluka, Mahabaleshwar-Panchgani, Matheran, Mt. Abu, Bhagirathi, Doon Valley and Western Ghats etc. ESZ-Division provides Grants-in aid to Dahanu Taluka Environment Protection Authority,

Mumbai through PL Division for protection and conservation of Dahanu Taluka.

As on 31.03.2019, out of total 651 Protected Areas (PAs), 406 proposals with 552 PAs have been received in ESZ Division. ESZ Division has published 189 Final Notifications covering 306 PAs and 177 Draft Notification covering

202 PAs. Remaining is at different stages of approval and publication of notification.

For the protection of Western Ghats a draft Eco-Sensitive Area (ESA) notification was republished on 03.10.2018 covering an area of 56825 sq km in the State of Goa, Maharashtra, Karnataka, Tamil Nadu, Gujarat and Kerala.

The status of draft and final ESZ Notifications issued by the Ministry as on 01.01.2018-31.03.2019 is as follows:

Final ESZ Notifications Published in 2018-2019
(1st January 2018 to 31st March 2019)

S. No.	States/UTs	Name of final Notification	Date of Publication
1.	Andaman &	Saddle Peak NP, Andaman & Nicobar Islands	11.05.2018
2.	Nicobar Islands	Mount Harriet National Park, Andaman & Nicobar Islands	04.02.2019
3.		Cuthbert Bay Sanctuary, Andaman & Nicobar Islands	27.02.2019
4.	Gujarat	Porbandar WLS, Gujarat	07.05.2018
5.		Khijadiya WLS, Gujarat	19.06.2018
6.		Wild Ass Sanctuary, Gujarat	04.10.2018
7.		Kutch Bustard Sanctuary, Gujarat	11.12.2018
8.		Rattan Mahal Sanctuary, Gujarat	30.01.2019
9.		Jambugodha Sanctuary, Gujarat	11.03.2019
10.	Himachal Pradesh	Inderkila National park, H.P.	17.01.2018
11.	Madhya Pradesh	Orchha WLS, Madhya Pradesh	03.01.2018
12.		Kheoni WLS, Madhya Pradesh	14.05.2018
13.		Narsinghgarh WLS, Madhya Pradesh	27.07.2018
14.	Maharashtra	Tipeshwar WLS, Maharashtra	19.09.2018
15.		Anerdam WLS, Maharashtra	03.01.2019
16.		Yawal WLS, Maharashtra	08.03.2019
17.	Odisha	Sunabeda WLS, Odisha	08.03.2019
18.	Rajasthan	BondhBaretha WLS, Rajasthan	26.12.2018
19.		Nahargarh WLS, Rajasthan	08.03.2019
20.		Jamwaramgarh Sanctuary, Rajasthan	18.12.2018
21.	Uttarakhand	Nanda Devi NP, Uttarakhand	04.10.2018



S. No.	States/UTs	Name of final Notification	Date of Publication
22.	Uttar Pradesh	Patna Bird Sanctuary, UP	11.09.2018
23.		Hastinapur Sanctuary, Uttar Pradesh	19.09.2018
24.		Bakhira WLS, Uttar Pradesh	01.01.2019
25.		Chandraprabha Sanctuary, U.P.	08.01.2019
26.		Jai Prakash Narayan (Surahatal) BS, UP	11.03.2019
27.	West Bengal	Chintamani Kar Bird Sanctuary, West Bengal	15.01.2019
28.		Raiganj Sanctuary, West Bengal	26.11.2018
29.		Senchal Sanctuary, West Bengal	15.01.2019

Draft ESZ Notifications Published in 2018-2019
(1st January 2018 to 31st March 2019)

S. No.	States/UTs	Name of final Notification	Date of Publication
1.	Andhra Pradesh	Sri PenusilaSanctuary,A.P	03.01.2018
2.		Sri Venkateshwara NP & Sanctuary, A.P	24.01.2019
3.	Andaman & Nicobar	Mount Harriet National Park, Andamans	26.02.2018
4.	Arunachal Pradesh	Kamlang WLS, Arunachal Pradesh	Afresh Draft Published on 23.05.2018
5.		Mehao WLS, Arunachal Pradesh	Afresh Draft Published on 22.02.2018
6.		Mouling National Park, Arunachal Pradesh	Afresh Draft Published on 25.05.2018
7.	Assam	DibruSaikhowa NP, Assam	Afresh Draft Published on 22.05.2018
8.		Hollongapar Gibbon Sanctuary, Assam	07.05.2018
9.		Nameri NP, Assam	Afresh Draft Published on 04.02.2019
10	Chhattisgarh	Achanakmar Sanctuary, Chhattisgarh	16.04.2018
11		Kanger Valley National Park, Chhattisgarh	16.04.2018
12	Gujarat	Kutch Bustard Sanctuary, Gujarat	15.01.2018
13		Wild Ass Sanctuary, Gujarat	16.01.2018
14		Kutch Desert Sanctuary, Gujarat	11.09.2018



S. No.	States/UTs	Name of final Notification	Date of Publication
15	Jharkhand	Hazaribagh WLS, Jharkhand	Afresh Draft Published on 16.02.2018
16		Palamau Tiger Reserve WLS, Jharkhand	Afresh Draft Published on 22.02.2018
17		Udhwa Lake Bird SanctuaryJharkhand	09.02.2018
18		KedermaSanctuaryJharkhand	22.02.2018
19		PalkotSanctuaryJharkhand	22.02.2018
20		Gauatam Buddha SanctuaryJharkhand	22.02.2018
21		Parasnath And Topchanachi Sanctuary, jharkhand	26.02.2018
22		Lawalong Sanctuary, Jharkhand	21.02.2018
23	Karnataka	Daroji Bear WLS, Karnataka	Afresh Draft Published on 19.09.2018
24		SharavathiValley WLS, Karnataka	Afresh Draft Published on 19.09.2018
25		Biligiriranganaswamy Tiger Reserve, Karnataka	Afresh Draft Published on 19.09.2018
26		Chinchioli Sanctuary, Karnataka	Afresh Draft Published on 04.10.2018
27		Banerghatta National Park, Karnataka	Afresh Draft Published on 02.11.2018
28	Madhya Pradesh	Pench NP and PenchMougali Sanctuary (Pench Tiger Reserve), Madhya Pradesh	22.05.2018
29		Kanha National Park &Phen Sanctuary, Madhya Pradesh	05.11.2018
30	Maharashtra	Anerdam WLS, Maharashtra	Afresh Draft Published on 22.02.2018
31		Tadoba Tiger NP and Andhari WLS, Maharashtra	Afresh Draft Published on 13.07.2018
32		Tipeshwar WLS, Maharashtra	Afresh Draft Published on 17.01.2018
33		Tungareshwar Sanctuary, Maharashtra	24.12.2018
34		Great Indian Bustard Sanctuary	14.01.2019
35	Meghalaya	Nokrek NP, Meghalaya	Afresh Draft Published on 07.05.2018



S. No.	States/UTs	Name of final Notification	Date of Publication
36	Mizoram	Thorangtlang Sanctuary, Mizoram	15.01.2018
37		Lengteng Sanctuary, Mizoram	15.01.2018
38		Murlen National Park, Mizoram	15.01.2018
39		Dampa Tiger Reserve, Mizoram	02.02.2018
40	Odisha	Badrama and Khalasuni Sanctuary, Odisha	11.05.2018
41		Nandankanan Sanctuary, Odisha	05.07.2018
42		Simlipal Tiger Reserve and Hadagarh Sanctuary, Odisha	29.01.2019
43	Rajasthan	BondhBaretha WLS, Rajasthan	Afresh Draft Published on 31.05.2018
44		ShergarhWLS, Rajasthan	Afresh Draft Published on 09.07.2018
45		Jamwaramgarh Sanctuary, Rajasthan	02.02.2018
46		KeoladeoWLS, Rajasthan	Afresh Draft Published on 28.11.2018
47	Tamil Nadu	Chitrangudi Bird Sanctuary, Tamil Nadu	25.05.2018
48		Karaivetti Bird Sanctuary, Tamil Nadu	25.05.2018
49		Udayamarthandapuram Bird Sanctuary, Tamil Nadu	19.06.2018
50		Koonthankulam Bird Sanctuary, Tamil Nadu	19.06.2018
51		Mudumalai Tiger Reserve, Tamil Nadu	29.06.2018
52		Therthnagal Bird Sanctuary, Tamil Nadu	05.07.2018
53		Sakkarakottai Bird Sanctuary, Tamil Nadu	09.07.2018
54		Srivilliputhur Grizzled Squirrel Sanctuary, Tamil Nadu	09.07.2018
55		Kanjirankulam Bird Sanctuary, Tamil Nadu	13.07.2018
56		Vettangudi Bird Sanctuary, Tamil Nadu	13.07.2018
57		Vallanadu Blackbuck Sanctuary, Tamil Nadu	13.07.2018
58		Melaselvanur - Kelaselvanoor Bird Sanctuary, Tamil Nadu	20.07.2018
59		Kanyakumari Sanctuary, Tamil Nadu	20.07.2018
60		Gulf of Mannar National Park, Tamil Nadu	27.07.2018
61		Megamalai Sanctuary, Tamil Nadu	11.09.2018



S. No.	States/UTs	Name of final Notification	Date of Publication
62	Tamil Nadu	Gangaikondan Spotted Deer Sanctuary, Tamil Nadu	05.11.2018
63		Point Calimere Sanctuary (including Block B), Tamil Nadu	05.11.2018
64		Nellai Sanctuary, Tamil Nadu	26.11.2018
65		Kodaikanal Sanctuary, Tamil Nadu	26.11.2018
66		Vaduvor Bird Sanctuary, Tamil Nadu	08.03.2019
67		Oussudu Sanctuary, Tamil Nadu	08.03.2019
68	Telangana	Kawal Tiger Reserve, Telangana	13.03.2018
69		Amrabad Tiger Reserve, Telangana	13.03.2018
70		Siwaram Crocodile Sanctuary, Telangana	25.05.2018
71		KesuBrahmananda Reddy National Park, Telangana	Afresh Draft Published on 05.11.2018
72	Tripura	Gumuti WLS, Tripura	Afresh Draft Published on 31.05.2018
73		Trishna WLS, Tripura	11.09.2018
74	Uttarakhand	Gangotri NP, Uttarakhand	16.04.2018
75		Rajaji National Park, Uttarakhand	22.05.2018
76		Binsar Sanctuary, Uttarakhand	05.12.2018
77		Askot Sanctuary, Uttarakhand	30.01.2019
78	Uttar Pradesh	Bakhira WLS, Uttar Pradesh	Afresh Draft Published on 30.01.2018
79		Nawabganj Bird Sanctuary, Uttar Pradesh (Saheed Chandra Shekhar Azad name changed)	Afresh Draft Published on 11.09.2018
80		Chandraprabha Sanctuary, U.P.	15.01.2018
81		Patna Bird Sanctuary, UP	31.01.2018
82		Jai Prakash Narayan (Surahatal) BS, UP	31.01.2018
83		Hastinapur Sanctuary, Uttar Pradesh	02.02.2018
84		Vijay Sagar Bird Sanctuary, UP	16.04.2018
85		National Chambal Sanctuary, U.P	16.04.2018
86		Soor Sarovar Bird Sanctuary, U.P.	24.04.2018
87		Sandi Bird Sanctuary, U.P.	Afresh Draft Published on 05.11.2018



S. No.	States/UTs	Name of final Notification	Date of Publication
88	Uttar Pradesh	Lakh Bahosi Bird Sanctuary, Uttar Pradesh	Afresh Draft Published on 05.12.2018
89		Samaspur WLS, Uttar Pradesh	Afresh Draft Published on 21.12.2018
90	West Bengal	Chapramari Sanctuary, West Bengal	22.02.2018
91		Ramnabagan Sanctuary, West Bengal	19.09.2018
92		Bibhutibhushan WLS, West Bengal	04.10.2018

The statutory provisions for declaring ESA/ESZ include- (i) Section 5 C (1) of the Wildlife Protection Act, 1972 (ii) Section 3 (2) (V) of the Environment (Protection) Act, 1986 and (iii) Section 5 (1) of the Environment (Protection) Rules, 1986. Considering the above provisions, the ESA/ESZ Notifications are published by the ESZ Division of this Ministry.

In 2011, the Wildlife Division has prepared the Guidelines for preparation of ESZ proposals to support the State Governments. The Guidelines include an indicative list of activities that are Prohibited/Regulated and Promoted. Later on 1st August, 2012, an Expert Committee was constituted with tenure of five years which was re-constituted in the year 2017 under the Chairmanship of Special Secretary /Additional Secretary of this Ministry for recommending the ESZ Proposals.

The current multi-disciplinary Expert Committee was re-constituted on 07.08.2017 which has a tenure of 5 years from date of constitution.

The multi-disciplinary Expert Committee is for considering the ESZ proposals those completed 60 days in public domain. Members of the Expert committee are provided details

of the proposal, comments received from stakeholders and observations of the ESZ Division in advance. The deficiency in the proposals of State Govt. is deliberated during the meeting of the Expert Committee.

During 2018-19, six meetings of ESZ Expert Committee were convened. In addition, two meetings to discuss the draft Notification of the Ecologically Sensitive Areas (ESA) of the Western Ghats were convened.

7.3 National Natural Resources Management System (NNRMS)

The Scheme “National Natural Resources Management System (NNRMS)” of the Ministry was a part of an umbrella scheme of the erstwhile Planning Commission-Planning Committee-National Natural Resources Management System (PC-NNRMS) and is in operation since, 1985.

The prime objective of PC-NNRMS was utilization of Remote Sensing Technology for Inventorization, Assessment and Monitoring of country’s natural resources.

The NNRMS scheme was earlier carried out as a separate scheme. However, this scheme has now been merged with the R&D scheme under RE division as such, there will be only one R&D

Scheme in the Ministry for conservation and development, which will include the schemes R&D and NNRMS.

The procedure for evaluating and sanctioning of the proposals under this scheme are executed through the Technical and Financial Appraisal Committee (TFAC) and Steering Committee.

Objectives of the Scheme:

- Utilization of remote sensing technology for inventorization, assessment and monitoring of country's natural resources such as land, water, forest, wetlands, glaciers, etc. for environmental conservation and protection.
- Identification and addressing the GIS and Remote Sensing data and knowledge gaps in various scientific disciplines for conservation and sustainable utilization of bio resources & environment.
- Promotion of infrastructure facilities in the scientific organizations for undertaking research and generation of documents/information for taking policy decisions relating to environment and natural resources.
- Generation of time series geo-spatial data on different environmental variables, which could be used in policy formation and devising effective strategies for conservation of bio resources and addressing the key environmental issues of the country.
- The NNRMS scheme helps in addressing gaps in ongoing activities/schemes/objectives of the Ministry i.e. conservation

and protection of environment in respect of forest cover, land degradation, snow cover, ocean and marine biodiversity.

- It also helps in taking appropriate course correction in policy making for conservation and management of natural resources.

Activities were undertaken:

- Technical and Financial Appraisal Committee (TFAC) was constituted.
- The 1st meeting of TFAC was held on 21st January, 2019 and Final Technical Report submitted for respective project was evaluated.
- The ongoing research projects are being processed for funding.
- Monitoring of a project "Biodiversity Assessment of Central Gujarat using Geospatial and Conventional Approach with Emphasis on Conservation of important Threatened Taxa" was carried out.
- A workshop was conducted under a project "Biodiversity Assessment of Central Gujarat using Geospatial and Conventional Approach with Emphasis on Conservation of important Threatened Taxa" at MSU, Vadodra, Gujarat, sponsored by MoEF&CC under NNRMS scheme.
- A workshop "Eco tourism & its role in the development of tourism industry in Gujarat" was organized on 8th March, 2018 at M. G. Science Institute, under a project Natural Resources Assessment of selected Eco-tourism sites of Gujarat and its associated environments using Remote



Sensing and GIS” sponsored by MoEF&CC under NNRMS scheme.

- A National workshop on Forest Ecosystem Services was held on 15th March 2019 at Indira Gandhi National Tribal University, Amarkantak, MP, sponsored by Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi.
- Monitoring of a project “Application of RS & GIS for Integrated Management of Hasdeo River Watershed (A tributary of Mahanadi River) in Chhattisgarh” was carried out.

Progress/Achievements:

Physical Progress: There are about 16 ongoing projects under NNRMS scheme. During the time period, the final technical reports (FTRs) of the following projects were submitted by the concerned PI. These FTRs were considered in the 1st meeting of TFAC on 21st January, 2019 for their final physical/financial settlement.

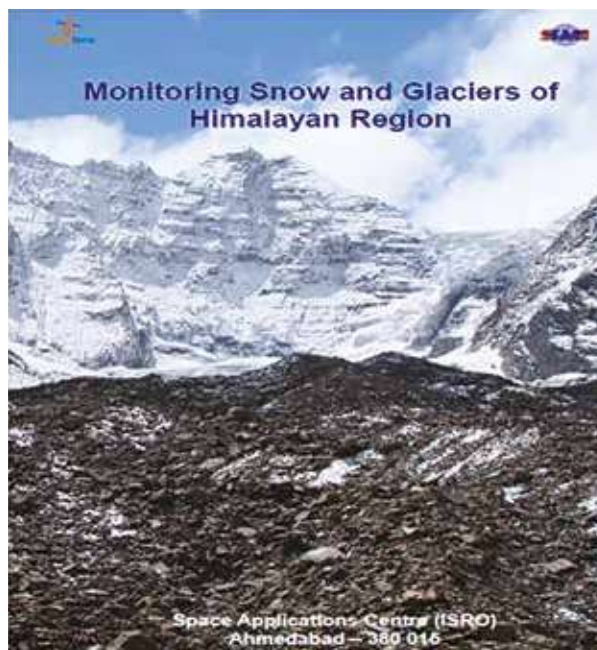
- Natural Resources Assessment of selected Eco-Tourism sites of Gujarat and its associated environments using remote sensing and GIS, Geology Department, M.G. Science Institute, Dadasaheb Mavalanker Campus, Navrangpura, Ahmedabad, Gujarat.
- Development of knowledge based decision tool to simulate mechanism of vegetation change due to climatic change in Western Himalayan Eco-region (part of Uttarakhand)-a precursor to understanding responses to climate change and developing scenarios for adaptive, Department of Natural Resources TERI University, 10 Institutional Area, Vasant Kunj, New Delhi.
- Inventorisation and Monitoring of Biosphere Reserves in India using RS and GIS Technology, G.B. Pant Institute of Himalayan Environment & Development, Kosi-Katarmal, Almora, Uttarakhand.
- Development of a Decision Support System (DSS) for Management of coastal wetlands- A case study of Point Calimere of Cauvery Basin in TamilNadu. Karunya University, Karunya Nagar, Coimbatore- 641114, Tamil Nadu.
- Forest Fire Risk Zonation Mapping In Representative Wildlife Habitats Of Madhya Pradesh Using Remote Sensing Technique and Geographic Information System, M.P. Council of Science and technology, Vigyan Bhawan, Nehru Nagar, Bhopal.
- Monitoring of Snow and Glaciers of Himalayan Region – Phase-II, Space Application Centre (SAC), Ahmedabad.
- Application of Remote Sensing for Integrated Land use, Water and Energy Management in Rural Areas: Exploring Energy Plantation Opportunities, Public Systems Group, Indian Institute of Management Ahmedabad, Vastrapur, Ahmedabad.
- Soil and Water quality appraisal in the Salt Affected Land Forms of Nagapattinam District, Tamil Nadu using Remote Sensing and GIS techniques, Water Technology Centre, Tamil Nadu Agricultural University, Coimbatore.
- Desertification Status Mapping of

India, Space Applications Centre (SAC), Ahmedabad

- Development of Biodiversity Spatial Data Infrastructure for Western Ghats, India, Open Source Geospatial- India, Lab for Spatial Informatics, International Institute of Information Technology, Gachibowli, Hyderabad.
- To develop a management systems of wildlife sanctuaries and national parks – Arunachal Pradesh using remote sensing & GIS technology (phase II), Indira Gandhi Conservation Monitoring Centre, World Wide Fund, Lodhi Road, New Delhi.
- Application of RS & GIS for Integrated Management of Hasdeo River Watershed (A tributary of Mahanadi River) in Chhattisgarh

Some Major Achievements:

- **Desertification Status Mapping (1:50,000 SCALES) of India:** A “Desertification and Land Degradation Atlas of India” was released by SAC, ISRO, Ahmedabad under a national level project on “Desertification Status Mapping of India”, sponsored by MoEF&CC under NNRMS scheme. This Atlas was appreciated by (United Nations Convention on Combating Desertification (UNCCD) Headquarters, Bonn, Germany.
- Snow and Glacier Studies of Entire Himalaya (1:250,000 SCALE): An Atlases on “Snow Covers” were prepared under a project “Monitoring Snow and Glaciers of Himalayan Region-Phase II”, jointly funded by MoEF&CC (under NNRMS scheme) and ISRO/DOS.



- A “Resource Atlas” was prepared by Indira Gandhi Conservation Monitoring Centre, WWF, India under a project “To develop a protected area management information system in Arunachal Pradesh using Remote Sensing and GIS Technology” sponsored by MoEF&CC under NNRMS scheme.

List of Publications brought out under NNRMS scheme: Based on Annual progress report submitted by the concerned Principal Investigator under this scheme, following publication under different project were published:

- Chakraborty, A., Saha, S., Sachdeva, K., Joshi, P. K., 2018. Vulnerability of forests in the Himalayan region to climate change impacts and anthropogenic disturbances: a systematic review. Regional Environmental Change, 1–17.
- Chakraborty, A., Shukla, R., Sachdeva, K., Joshi, P. K., 2018. Perception-based



evidences for climate change policies. Economic and Political Weekly, 53(6), 24–28.

- Shukla, R., Chakraborty, A., Sachdeva, K., Joshi, P. K. 2018. Agriculture in Uttarakhand - an asset turning into a liability. Development in Practice, 28(2), 318-324.
- Nandkeolyar N, Sandhya Kiran G. 2019. A climatological study of the spatio-temporal variability of land surface temperature and vegetation cover of Vadodara district of Gujarat using satellite data. International journal of remote sensing 40(1), 218-236.

7.4 G.B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD)

G.B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD) was established in August 1988 by the MoEF&CC, as an autonomous Institute, with a mandate of achieving sustainable development and environmental conservation in the Indian Himalayan Region (IHR). The Institute attempts to execute its mandate through its Headquarters at Kosi-Katarmal, Almora (Uttarakhand), and five regional center located at Mohal - Kullu (Himachal Pradesh), Srinagar-Garhwal (Uttarakhand), Pangthang (Sikkim), Itanagar (Arunachal Pradesh) and the Mountain Division (housed at MoEF&CC, New Delhi). The Institute designs and implements R&D activities on priority environmental problems; develops and demonstrates best practices and delivers technology packages for improved livelihood options for the people of IHR. The four centers namely: (i) Center for Land

and Water Resource Management (CLWRM); (ii) Center for Socio-Economic Development (CSED); (iii) Center for Biodiversity Conservation and Management (CBCM); and (iv) Center for Environmental Assessment and Climate Change (CEA&CC) are working on the different thematic areas, while R&D activities on regional priorities are being conducted by regional centers; (i) Himachal Regional Centre; (ii) Garhwal Regional Centre; (iii) Sikkim Regional Centre; and (iv) North-East Regional Centre. To look into mountain issues more holistically and bring in mountain perspective in plans and policies, the fifth center, Mountain Division Regional Centre is established at MoEF&CC. Research, demonstration and dissemination are essential underlying elements of all R&D activities in the Institute.

Objective

- To undertake in-depth research and development studies on environmental problems of the Indian Himalayan Region;
- To identify and strengthen the local knowledge of the environment and contribute towards strengthening researches of regional relevance; and
- To evolve and demonstrate suitable technology packages and delivery systems for sustainable development of the region in harmony with local perceptions.

Progress/Achievements:

A. Centre for Land and Water Resource Management (CLWRM)

- The centre aims at assessment of land and water resources and devise sustainable use strategy of these resources and provides

solution for access and conservation of resources utilizable by the programme/policy people.

- In order to develop management planning for the land and water resources in the Pancheswar dam area, (Kumaun Himalaya, Uttarakhand) primary survey of 134 villages in Pancheswar area likely to be affected by construction of proposed dam was carried out. Also, secondary data on river flow and discharge at certain points (TawaGhat), water scheduling and flow management, etc. were collected. Base maps such as, slope map, drainage map, river stream ordering map, map of area/villages to be submerged in the dam areas and digital elevation model of the river Kali Watershed were prepared for assessment of expected loss of land, house/property, and infrastructure, etc.
- To understand the glacial retreat various geo-morphological characteristics of Chipa glacier (Uttarakhand) were mapped using multi spectral 4-band Sentinel 2A data at 10m resolution, Planetscope 3B Satellite data at 3m resolution, and DEM at 30 m (ASTER and SRTM data) for preliminary classification and DEM differencing between 2011 and 2014 and several spectral indices like NDVI, NDWI, NDGI, NDSI, NDSII were generated using sentinel 2A imagery for statistical applications and extraction of different feature classes. Supervised and Hierarchical Knowledge based classifications were performed for Chipa and Khangri glacier of (Arunachal Pradesh).

B. Centre for Socio-Economic Development (CSED)

- This centre aims at ecological and economic security and sustainable development of IHR through R&D activities focusing on poverty, out-migration, natural resources management, technology development and demonstration of environment-friendly low-cost eco-technologies. Village level development issues and farming system related problems, climate change impacts on the resources, and need of technological interventions were identified for 'model village' development through pilot surveys of 32 villages (population=13949) were conducted in Almora district of Uttarakhand. Preliminary survey reveals that the community demanded training and material support for adopting protected cultivation (49%) and other income generating measures (38%). Thus, based on the primary data, a broad framework for model village was developed for Bhetuli Malera villages of two developmental blocks of Uttarakhand.
- Rich indigenous knowledge of natural resources conservation among the Apatani tribe of Arunachal Pradesh such as five land and soil fertility management was replicated through a network programme "Convergence of traditional knowledge system for sustainable development of Indian Himalaya", among rural communities of Arunachal Pradesh.



C. Centre for Biodiversity Conservation and Management (CBCM)

- This centre aims at to assess and monitor Himalayan biodiversity and transform data and information into knowledge products useful for decision making on biodiversity conservation by planners and policy makers. In view of the ongoing global warming and climate change this center has established four long-term ecological monitoring (LTEM) plots (1 ha size) in the different altitude range and different forest types in kumaun Himalaya along an altitudinal gradient (680-1860 masl) using standard protocol of MoEF&CC. The four forest types (Mixed broadleaf to conifer) are being monitored for various eco-physiological, phenological, vegetation and soil aspects. Similar, LTEM is also carried out in alpinine sites of the region using GLORIA protocol. Also, timberline vegetation of IHR (Kashmir, Uttarakhand and Sikkim) is being investigated for certain ecological response as an impact of climate change.
- To complement the aims of the centre R&D projects on (i) conservation of floral diversity through restoration; (ii) conservation of MAPs through participatory approaches; and (iii) ex-situ conservation initiatives for rare and threatened Himalayan important plants are being executed across various localities in IHR.
- As coordinating Institute for three transboundary initiatives, Institute continued to contribute for Regional cooperation through scientific researches.

For Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI), the Institute completed the first phase of the project and as an extension a project from National Mission on Himalayan studies was received to continue the phase II activities of the project. Implementation Phase of Khangchendzonga Landscape Conservation and Development Initiative (KLCDI)-India and Landscape Development Initiative for Far Eastern Himalayan (Hi-Life) has been started and various research activities like stakeholders consultation, promotion of livelihood improvement, skill and capacity building, promotion of ecotourism, etc. are initiated and some field based data collection are started.

D. Centre for Environmental Assessment and Climate Change (CEA&CC)

- This centre focuses on response of various ecosystem components as and impact of climate change to achieve its mandate. Studies on vulnerability assessment of mountain ecosystems due to climate change were carried out through establishing permanent sites for long-term monitoring of tree line vegetation in Pindar Valley of Uttarakhand State. Vegetation mapping in alpine areas using high resolution landsat 8 image of 2015 was carried out for *Rhododendron campanulatum* in Pindar valley Uttarakhand (beyond timberline). Timberline in the state runs 2750 km in the mountains. In rare locations of the state, high altitude timberline may occur between 2600m asl altitude (negligible but present) and may ascend upto 4,365 m asl.

Nearly one third of the total timberline in the region occurred between 3400m and 3600m altitude.

Regional Centers:

Himachal Regional Centre: This centre focused its R&D efforts on solid waste management in Himachal Pradesh- a priority environmental problem. Secondary data relevant to project activities were collected from Kullu, Manali, Mandi, Bilaspur and Hamirpur from relevant Government Departments i.e., Municipal council, Department of Tourism and Civil Aviation, State Pollution Control Board and Town and Country Planning.

Garhwal Regional Centre: The thrust R&D area of this centre for the reporting period is sustainable tourism. Towards documenting pilgrimage potential for tourism development in the sacred landscape of Garhwal Himalaya, this Center developed checklist for resource inventory and impact assessment (environmental, economic, and socio-cultural) before and after 2013 disaster in Kedar valley and assessed sustainable tourism development needs. Literature and secondary data/information collection such as number of tourist visited and percentage change at two points of time before and after 2013 disaster, listing/ identification of model eco-trekking/ eco-expedition routes in few potential sites was carried out.

Sikkim Regional Centre: This centre is engaged primarily to develop grided biodiversity database (vegetation) of Sikkim Himalaya using grid-based inventorization. The grids with prominent vegetation types were sampled

(7 transects) depending upon the similarity of terrain, accessibility and other geographical and socio-political factors that cover moist-deciduous, oak-mixed and sub-tropical evergreen forests of West Sikkim ranging in elevation 2000m to 2700m asl. The sampled transects contained 3,267 individuals of about 96 woody species, where 52 species identified using regional flora and e-flora.

North-East Regional Centre (NERC): North east region is rich in biodiversity and associated traditional knowledge on conservation and sustainable use of biodiversity. The indigenous communities are heavily dependent on bio-resources around them for sustenance. However, documentation of the indigenous knowledge is essential for its replication and up scaling. Towards enhancing eco-cultural livelihoods in biodiversity rich areas of Arunachal Pradesh stakeholder's consultation workshops at Ziro, Lower Subansiri District (A.P.) was organized in which issues such as: (i) promotion of organic farming practices, (ii) capacity building on vermi-composting, etc. (iii) promotion of ecotourism as an alternative livelihood opportunity; (iv) training and capacity building on home-stay development, tour guides, trekking/hiking, etc. were discussed and future prospects were decided. A low-cost rural technology centre (RTC) at lower Subansiri Dist. Established where various low-cost technologies are demonstrated.

Mountain Division Regional Centre: A GIS Based Land use modelling, future projection and dynamic impact on IHR was initiated and Pixel based and objects based classifications were adopted to perform the Land Use Land Cover



classification to carry out the change detection study between 2005 and 2013. The built-up expansion map has been prepared using the change analysis. Dispersion of settlement based on the elevation of the region has also been performed to observe the dynamics of change pattern with respect to elevation. Two mountain cities (growing townships) Almora and Sikkim are being studied in detail and topographic maps (Slope, Aspect, Hill shade, contours) have been prepared for both cities using the Digital Elevation Model (DEM) at 30 m and 12.5 m. to estimate the topographical changes due to urbanization and its linkage with potential landslide disasters.

Application of R & D Outputs in Demonstration and Dissemination:

- The Institute organized various Green Skill Development programmes at HQs Kosi-Katarmal, Almora and all the Regional Center towards building skill of diverse group of stakeholders. These skill building programme included, preparation of people's biodiversity register; monitoring of environmental parameters and their interpretation; forest resources and plant biodiversity, nature interpretation etc.
- Towards promoting research and developmental activities across IHR, the Institute through Integrated Eco-development Research Programme (IERP) supports location-specific/action-oriented projects to different Universities/Institutions/NGOs/Voluntary agencies. During the year nine new projects were funded and currently a total of 59 projects are under operation through IERP.

The ENVIS RP on Himalayan Ecology, collects, collates and compiles information on various aspects of Himalayan Ecology. The collected information is being disseminated to various stakeholders/users including all the District Information Centers (operating in the Himalayan states of the country), ENVIS Hubs/RPs and other user agencies/groups through print and electronic media.

- Central Laboratory facilities in the Institute has been strengthened for the analysis of physico-chemical, biological, heavy metal of drinking and waste water and quantification of volatile compounds of soil and plant samples. The Institute has extended these services for other organizations (NGO's and other Government Organization) on payment basis.
- Under National Mission on Himalayan Studies (NMHS), a total of 29 projects were sanctioned in the various organizations of 12 Indian Himalayan States. Also 31 Himalayan Fellowships were granted to Universities/Institutions in the IHR There are, actively involved in various demand driven research and development issues.

7.5 National Mission on Himalayan Studies (NMHS)

Recognizing the importance of Himalaya, the Government of India, National Mission on Himalayan Studies (NMHS), a Central Sector Grant-in-aid Scheme, with a vision "to support the sustenance and enhancement of the ecological, natural, cultural and socio-economic capital assets and values of the

Indian Himalayan Region (IHR)”, was launched in the year 2015-16 and the responsibilities for its execution and implementation were entrusted with the GBPNIHESD as a Nodal Institute under the Ministry of Environment, Forest and Climate Change (MoEF&CC), New Delhi. The jurisdiction of NMHS includes all IHR states with a broad Vision “to support the sustenance and enhancement of the ecological, natural, cultural, and socio-economic capital assets and values of the IHR”. The mission is to launch and support innovative studies and related knowledge interventions with strategy to focus on enhancing livelihoods of local communities, in line with the National Environment Policy, 2006 of the Government. The Mission has been revamped in 2017-18 and focus sing on Demand-Driven Action Research on the Thematic Areas: (i) Water Resource Management (ii) Livelihood Options and Employment Generation (iii) Biodiversity Conservation and Management (iv) Skill Development and Capacity Building (v) Infrastructure Development (vi) Physical Connectivity and (vii) Handling of Hazardous Substances.

Objectives:

- To build a body of scientific and traditional knowledge through demand driven action research and technological innovations along with institutional strengthening & capacity building;
- To strengthen technological innovations leading to sustainable management of natural resources of Himalaya for ensuring the ecological, water, livelihood security at the local, regional and national levels;
- To create science-policy-practice connect through a network of policy makers and practitioners (individual and institutions) engaged in working solutions to problems in the thematic areas;
- To demonstrate workable/implementable/replicable solutions to the problems in the priority thematic areas.

Functions of the Scheme:

- Under the guidance of MoEF&CC during 2018-19, NMHS has convened one (1) meeting of Steering Committee (SC), three (3) Scientific Technical Advisor Meetings (STAG), two (2) meetings of Working Groups and two (02) Screening Committee meetings for smooth implementation of the scheme. In addition, four (04) Brainstorming sessions and one (01) Him-NLC Monitoring and Evaluation Session was also organized under the scheme.
- NMHS-PMU has received total 420 demand driven action research project proposals and 32 Himalayan Fellowship proposals from different organization which were screened through Screening Committees and selected projects were placed in 9th and 10th STAG meetings and 7th SC meeting for approval. Total 33 Projects under distinct large, medium and small grant categories and 18 Himalayan Research Fellowships with 9 IHR Institution/ Universities and 01 State Govt. Projects were sanctioned under NMHS to study Himalayan Ecosystem related issues.
- Additionally, all 103 ongoing projects and 101 Himalayan fellowships were



monitored and reviewed through Seminar cum -Monitoring and Evaluation workshop and two (02) Himalayan Researcher Consortiums (HRsC), respectively.

Achievements:

- Under the different projects, total 241 intervention sites (spring rejuvenation, watershed development, installation of surface-weather stations, etc.) are being studied in different IHR states. For identifying and geo tagging of natural springs, total 107 no. spring have been identified in Uttarakhand (72 no), Jammu & Kashmir (20 no) and Sikkim (15 no.). Till date total 1234 springs are identified, of these maximum was recorded in Kosi-watershed, Uttarakhand.
- Total 11 technological Innovation models are developed or in progress in different IHR States to address the different Himalayan issues, which include Riverbank Filtration model-Uttarakhand-(02 No.); “Low Cost Solar Water Heater”-Himachal Pradesh (100 No.); “Real-time monitoring and detection of water leakage model”-Meghalaya, “Low-cost and durable Model Housing Structures” –Assam (02 No.), “Low cost Landslide Early Warning System” –Uttarakhand; “Earth Quake Resilient Housings Model”-Tripura (03 No.); Sustainable Road Pavement Model in High altitude-Himachal Pradesh (01 No.); “SWAYMBHU-WRM-2021 (Turning Plastic Waste into High-value Graphene)”-Uttarakhand (01 No.), etc.



Low cost Solar Heating systems Installed at Himachal Pradesh

- Strengthening and enhancing the livelihood options: total 40 small enterprises are initiated under Livelihood Theme using the sustainable use of different Himalayan bio-resources like Non timber forest products, Agriculture and livestock; Floriculture/ horticulture; Eco-tourism; etc. Some of the developed region specific small enterprises are “Processing the Wild edible to Nutritional Products”-Uttarakhand; ‘Chir-Pine Needles Processing’ –Uttarakhand (Fig. 5), ‘Cut Flower and Bulb production’ – Jammu & Kashmir; ‘Agave Fiber Processing’ –Uttarakhand, ‘Cultivation of High Value Medicinal Plants’–Uttarakhand, etc., and have been successfully benefitted more than 140 village beneficiaries.



Processing the Wild edible to Nutritional Products- Uttarakhand

- Assessing and monitoring the floral and faunal biodiversity of Himalaya: total 126 Long Term Monitoring Plots (112 no. for floral and 14 no for faunal) are established in Jammu& Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, Meghalaya and West Bengal. For strengthening the Himalayan database, total 2799 Species (1450 plant specimen; 1200 zoological samples; 49 lichens) are collected and identified from the IHR. Further, 04 plant taxa has been reported first time from India i.e. *Bistortalongispicat*, *Sabia campanulata* subsp. *Ritchieae*, *Corallo-discus cooperi* and *Codonopsis bhutanica*. Moreover, a new Huntsman spider *Pseudopodacheppe* sp. is discovered from India thru NMHS projects.
- Strengthening the community empowerment and livelihood options: More than 25 Skill development/Training Programme have been conducted in different projects on several important issues like Management of NTFP, Medicinal plant cultivation, Cultivation of Cut Flower, Post harvest Method, Rural Technologies, Bio-waste conversion, Fish farming, Disaster Risk Reduction (DRR), Promotion of Organic Farming, etc (>14000 beneficiaries from IHR State).
- For disseminating the technology as well as the awareness, total 18 Workshop and Awareness Programme have been conducted on different issues like Spring Rejuvenation, Organic farming, Biodiversity Conservation, Disaster Bamboo Treatment

Method, Restoration of ecosystem services etc., for different stakeholders (>18000 participants) of IHR states.

7.6 Forestry Research

Research & Training Division (RT) is a nodal division for a major central sector plan schemes namely “Forestry Training and Capacity Building”. This division looks after the administrative, financial and other matters of five research & training institutions viz. Indira Gandhi National Forest Academy (IGNFA)-Dehradun, Directorate of Forest Education (DFE)-Dehradun, Indian Plywood Industries Research and Training Institute (IPIRTI) - Bangalore, Indian Institute of Forest Management (IIFM)- Bhopal, Indian Council of Forestry Research & Education (ICFRE)-Dehradun.

Indian Council of Forestry Research and Education (ICFRE), Dehradun: Indian Council of Forestry Research and Education (ICFRE), an apex body in the national forestry research system, has been undertaking the holistic development of forestry research, education and extension covering all aspects of forestry. The Council deals with solution based forestry research in tune with the emerging issues in the sector, including global concerns such as climate change, conservation of biological diversity, combating desertification and sustainable management and development of resources.

Objectives:

- To undertake, aid, promote and coordinate forestry research, education and extension leading to scientific and sustainable



management of forest resources in the country.

- To align forestry research programs in the council with national priorities including achievement of Sustainable Development Goals and combating climate change.
- To provide scientific advice and policy support to the central and state governments aiding informed decision making in forestry matters of national importance and international commitments.
- To act as a repository of scientific knowledge related to forestry, environment and climate change, and disseminate such knowledge to various stakeholders including forest dependent communities and also provide consultancy and capacity building services in environment and forest sector.
- To provide technical assistance and support to states, forest-based industries, tree growers, farmers and others for forest

protection, afforestation, agro- forestry and allied activities.

- To develop appropriate forest based technologies, processes and products for sustainable resource use, livelihoods and economic growth.
- To promote forestry education in the country and facilitate universities in improving quality through technical and financial support including development of uniform curricula.
- To conduct other activities incidental and conducive to attainment of forestry related objectives, which the council may consider necessary.

Progress/Achievements:

- Prepared, published and submitted National REDD+ Strategy on behalf of Ministry of Environment, Forest and Climate Change, Government of India. The same was accepted by the ministry and uploaded on the website of the ministry.



Release of National REDD+ Strategy by Hon'ble Minister for Environment, Forest and Climate Change

- Prepared third Biennial Update Reports on Mitigation Actions, Constraints, Gaps and related Financial, Technical and Capacity Needs to Address Climate Change Concerns in Forest Sector in India under Third National Communication under the 'Preparation of Third National Communication and other new information to the UNFCCC' Project and submitted to the NATCOM Project Management Cell of MoEF&CC.
- Successfully executed ICIMOD/GIZ funded "REDD+ Himalaya Project REDD+ Himalaya: Developing and Using Experience in Implementing REDD+ in the Himalayas". 13 publications were brought out under the project during the year 2018-19.
- Initiation of Ecosystem Services Improvement Project (ESIP): Project Implementation Unit has been established at ICFRE Hqs. Two trainings were organized under ESIP. Socio-economic surveys were conducted in ESIP villages of Chhattisgarh and Madhya Pradesh and draft reports shared with the World Bank, MoEF&CC and SFDs of CG and MP for their inputs and comments.
- The institutes under ICFRE have submitted some 22 proposals on Green Skill Development Programme (GSDP) for the Financial Year 2018-19. Till now 13 training programmes have been completed and of 374 candidates successfully trained at different ICFRE institutes



GSDP Participant learning cross cutting of bamboo (Bamboo Crafts, FRI, Dehradun)

- Prakriti, a scientist – student connect programme, was envisaged and accordingly ICFRE entered in to MoUs with Kendriya Vidyalaya Sangathan (KVS) and Navodaya Vidyalaya Samiti (NVS). The programme is now operational across the ICFRE institutes throughout the country. The activities include visit of Kendriya Vidyalaya (KV) and Navodaya Vidyalaya (NV) students and teachers to respective ICFRE institutes in which they are being sensitized about the general functioning of the institute and being exposed to the laboratories models and other exhibits. So far, over 6200 students and staff belonging to 27 KVs & 10 JNVs situated in different parts of the country have been sensitized through 32 programmes spreading over 36 days.



Students and Staff of KV-Bangana, Una, H.P participating in Prakriti

- ICFRE has signed MoUs with various organizations including Navodya Vidyalaya Samiti (NVS), Noida, Kendriya Vidyalaya Sangathan (KVS), New Delhi, Indian Council of Agricultural Research, New Delhi etc. to expand its outreach with a collaborative approach.
 - During 2018-19 a total of 13 consultancy projects (12 ongoing projects + 01 new project) were handled in EM Division, Directorate of Extension, ICFRE, Dehradun funded by HPPCL, Govt. of H.P, Shimla; UJVNL, Govt. of Uttarakhand, Dehradun; THDCL, Rishikesh, NTPC Ltd, Noida; CIL, Kolkotta; SCCL, Kothagudam; NMDC, Hyderabad; MoEF&CC, GoI, New Delhi; CMPDI, Ranchi; Govt. of Karnataka. A total of 39 draft and draft final reports were prepared and submitted to the project authorities.
- Forest Research Institute (FRI), Dehradun:**
- Research:**
- Concept of drying kiln quilt was explored for minimizing heat losses. The results indicate that the glass wool kiln quilt helped in reducing the heat losses from the solar kiln.
 - “Trichoderma virens (GenBank Accession Number: KX014717) was found effective against Shisham wilt pathogen in laboratory and greenhouse experiments”.
 - Quaternisation of guar gum was done under semidry conditions. The reactions are of industrial importance.
 - Three populations of *Myrica esculenta* grown in the Mussoorie Forest Division were characterized for the first time for total phenolic contents (TPCs) determined in their bark.
 - 727 species of beetles were digitized and about 1350 photographs of about 650 species were edited and stored. Database was updated for editing species.
 - Successful conversion of pre-treated baggase residue to pulp has been achieved after optimum extraction of reducing sugars. A significant pattern of pulp yield was observed which correlates pre-treatment conditions to that of pulping

conditions. The residual reducing sugar content from the black liquor obtained after pulping of pre-treated bagasse and untreated bagasse were compared. The sugar content of the former is highly diminished from the later.

- Three wild populations (AP3, AP4 and AP5) of Valerianajatomansi collected from Arunachal Pradesh were characterized for the first time for their volatile constituents determined in their rhizomes.
- Principal Component Analysis (PCA) of 7 populations of Rhododendron arboreum and 5 populations of Betula utilis grown in the Uttarakhand forests was carried out with respect to their total flavonoid contents and total tri-terpenoid contents (TTCs), respectively. Different clusters of these populations were distinguished.

- Recorded data reveals higher CO₂ emissions from soils in Sal vegetation as compared to Chirpine vegetation cover. The higher values of carbon dioxide emission correspond to the higher soil temperature and soil moisture. Slightly higher organic carbon was observed in Chirpine vegetation as compared to the Sal vegetation cover. However, the level of significance is yet to be statistically checked and validated.

Extension:

- Forest Research Institute, Dehradun celebrated International Day of Forests-2019 on 19th March, 2019 with the theme "Forests and Education" to sensitize the public and to spread awareness towards the importance of forests in human life. Secretary, Ministry of Environment, Forests & Climate Change, Govt. of India was Chief Guest of the event.



Celebration of International Day of Forests 2019 at FRI, Dehradun

- Participated and put a stall in the Exhibition organized during World Environment Day celebrations from 2nd to 5th June, 2018 at Vigyan Bhavan, New Delhi.

Institute of Forest Genetics & Tree Breeding, Coimbatore:

Research

- DNA barcodes have been generated for



species differentiation in *Pterocarpus marsupium* and *P. santalinus*.

- Genetic maps have been generated for eucalypts and Quantitative Trait Loci positions for adventitious rooting traits have been identified.
- Promoter sequences and regulatory elements of the salt responsive sodium transporter gene *EcHKT1;1* gene along with genome editing target regions spanning the promoter region and the coding sequence were also identified.
- Tara red - a natural colourant developed from Red tamarind, *Tamarindus indica* var. *rhodocarpa* has been used in the production of Jam, lipstick and dyeing cotton and silk fabrics. The products were stable for 10 months. However, its use in textile dye was not effective.
- Orthopteran diversity in seven agroclimatic zones of Tamil Nadu revealed 82 species belonging to 55 genera under 21 subfamilies with 4 families. Maximum richness was observed in forestlands (49 spp. / 59.75%) followed by grasslands (35 spp. / 42.68%), arable lands (32 Spp. / 39.02%) and wastelands (24 Spp. / 32.92%), irrespective of the agroclimatic zones.
- Vegetable and flower waste were composted and mixed with the base product "Tree Rich Biobooster", a nutritionally enriched potting mixture for use in home, kitchen garden and similar applications to grow vegetables, floriculture and ornamental plants.
- Potential oil sources of *Simarouba*

glauca were identified in Tamil Nadu and Karnataka. The extracted oils showed good antifeedant effect against defoliators of *ailanthus* and teak. Similar studies were carried out with *Semecarpus anacardium*.

- Docking of active compound isolated from *H. pentandra* along with co-crystal ligand and standard drug (Azadirachtin A) gave significant docking score, glide energy and hydrogen bonding interaction with non-vertebrate actin.
- Exploration, study the status of natural populations, flowering, regeneration, selection of populations and superior trees for in situ and ex situ conservation, documentation and molecular characterization have been carried out for teak in Tamil Nadu and Kerala.

Extension:

- MoEF&CC Sponsored Trainings on "Popularizing Trees Outside Forest" to the KVK Scientists and "Biodiversity Conservation & Nature Education" to the teachers of Eco-Club schools of Coimbatore district were organized.
- Special postal cover on Gass Forest Museum - Department of Posts released a special postal cover on the century old Gass Forest Museum on the occasion of the Postal Circle Cultural Meet in Coimbatore.
- A mobile App 'Forest Tree Diseases' was released which deals with 16 major forest nursery and plantation diseases. This mobile App aims to address the queries of researchers, forest department officials and farmers.



Release of Special cover on "Gass Forest Museum"

Institute of Wood Science & Technology, Bengaluru:

Research:

- Near Infrared Spectroscopy (NIRS) for evaluation of wood quality parameters and identification of timber species - NIR spectra of large number of wood samples of three commercially important timber species, namely *Tectonagrandis* (Teak wood), *Pterocarpus santalinus* (Red sanders) and *Shorearobusta* (Salwood) were collected. Robust linear predictive models with high values of correlation coefficients were developed between NIR estimated values and measured parameters such as density, modulus of rupture-MOR, modulus of elasticity-MOE, compressive strength, anatomical and chemical properties of these species.
- **Phenotyping of Wood properties** - Phenotyping of wood property traits namely wood density, acoustic velocity and wood stiffness in inter-specific hybrid of eucalyptus raised in three locations indicated significant differences in wood density and stiffness between clones (120

clones). Clones with high girth (>22 cm), high air dry density (>0.667 g/cc) and modulus of elasticity (>14.00 GPa) have been identified as the potential superior clones for wood properties.

- **Transparent wood** - A flexible and biodegradable transparent wood-polymer composite was fabricated using polyvinyl alcohol and wood veneer. The transparent wood has high optical transmittance, high haze and excellent light diffusing property. The new transparent wood composite material has potential application in light-transmitting smart buildings, electronic devices, optics, photonic and energy devices.



Transparent wood composite

- New formulations of thermoplastic composites using bio-based polymers - New formulations of natural fiber reinforced completely bio-based



thermoplastic composites have been developed in collaboration with industrial partner for injection molded consumer goods products. These composites are expected to be completely compostable under specific conditions making them more eco-friendly.



Product made from bio-based composite

- **Weathering resistance and biodegradation of WPC:** Natural weathering of wood-polypropylene thermoplastic composites indicated the need for incorporation of a UV stabilizer to protect the composite from discolouration and loss in mechanical properties on prolonged exposure to outdoor condition. Inorganic pigments were found to be effective in protecting the composites from weathering effects. The composite were found to be termite and fungal resistant
- A natural wood preservative formulation from Coconut Shell Pyrolytic oil (CSPO) has been developed and the product with process has been submitted for patenting.
- Nano Zinc oxide is found to be an effective wood preservative against fungus and termites. The nanoparticles were found to distribute uniformly throughout the ultrastructure of wood and gets fixed well (92% fixation) on pressure treatment. The research has provided a new way of extending the life of wood with less amount of chemical.
- Application of VAM (vasicular arbuscular mycorrhizae) and PSB (Phosphate solubilising bacteria) at the nursery stage of indigenous seedlings were found very effective in enhancing the survival rate and increasing the growth rate of transplanted seedlings in reclamation of mine dump soils.
- Identified genic molecular markers for pilodyn penetration and acoustic velocity (indirect measures of wood density and modulus of elasticity respectively) for *Melia dubia*. The markers can potentially be used in early selection of superior genotypes for wood traits.
- The pattern of change in tree species across rural urban transitional gradient in Bengaluru was assessed which indicated decrease in tree species richness from urban to rural area of both southern and northern transect. Tree species like *Cocos nucifera*, *Mangifera indica*, *Azadirachta indica*, *Artocarpus heterophyllus*, *Tectona grandis*, *Pongamia pinnata*, *Grevillea robusta* and *Eucalyptus* hybrid were predominantly found along both the transects.

Extension:

- Initiated One Year Diploma Course on Advanced woodworking in collaboration with M/s Biesse, India (16 students including two from Overseas).
- Organized 14th National Silviculture Conference (~ 350 delegates) during 3-5 December, 2018.

- Carried out Wood Balance studies for Andhra Pradesh and Maharashtra.
- Organised 33 short term trainings (about 77700 trainees) on various aspects of Wood Utilisation, Forestry, Green skill development etc.
- Organised 06 demonstrations cum training programme for farmers in villages.
- Organized 14 trainings (97 trainees) on Conventional woodworking, 13 trainings (45 trainees) on CNC and 4 training (13 trainees) on Pytha Software at Advance Woodworking Training Centre.
- NABL Accreditation awarded to three testing Laboratories of IWST.



14th National Silviculture Conference organized at IWST Bangalore during 3-5 December 2018

Tropical Forest Research Institute, Jabalpur: Research:

- Carbon sequestration through afforestation at Rourkela Steel Plant (RSP), Odisha: Intangible benefits of plantations raised at RSP were quantified by Contingent Valuation Method for pollution control, soil conservation & remediation and improvement in underground water table and average WTP was calculated to be Rs. 840.70. Documentation of insect fauna and flora of mangrove ecosystems in Odisha: Surveyed 05 localities-Bhitarkanika National Park, Rajnagar Forest Division; Hawakhana, Kujang Range, Rajnagar, Mangrove (WL) Division, Mohanpura and Kantipur,

Basudevpur Range, Bhadrak Mangrove (WL) Division and Bichitrapur-Jaleshwer Range, Balasore Mangrove (WL) Division Odisha. Regarding insect fauna, 13 species belong to butterflies, 04 species of moth, 01 species of beetle, 02 species of wasp and 01 species of bug were documented.



Mangrove plant, *Bruguiera cylindrica* Growing of *Piper betle* under *Gmelina* based agroforestry system at TFRI, Jabalpur (M.P.)



- Clonal fidelity testing services were provided to Chhattisgarh Forest Department for Eucalyptus clonal stock procured under Hariyali Prasar Yojna to ascertain purity/admixture using molecular markers. The monomorphic pattern of ISSR profiles observed for the ramets of the respective clones in comparison with their mother plant confirmed the genetic purity. This demonstrated the application of molecular marker technology for quality control in social forestry plantations in addition to generating revenue for the council.
- Studies were conducted to standardize Piper betel cultivation under the Gmelina arborea based agroforestry system in Madhya Pradesh and it was grown well.
- Impact assessment of Agroforestry system existing in the farmer's field of Seoni district was carried out and found that maximum farmers have adopted Butea monosperma based system followed by M. indica and Citrus species, Eucalyptus based silvi-agri system and A. nilotica system in their field.

Extension:

- During the year 2018-19 TFRI Jabalpur and FRC-SD Chhindwara had organized 43 training programmes including 05 training programmes funded by MoEF&CC under GSDP for 198 working days. In these training programmes 1943 persons including unemployed youths, students, farmers, frontline staff of forest department and other stakeholders were trained.
- A two day training programme was organized by the TFRI, Jabalpur in VVK

Maharashtra at Jalna during 11-12 Dec. 2018 to disseminate technical knowhow related to research and developments of commercially important tree species to staff of Maharashtra Forest Department as well as farmers, NGOs and general public. More than 150 stakeholders attended the training programme. Regular routine activities were carried out in Demo village at Moiya Nallah.

- Participated in 10th Agrovision at Nagpur during 23-26 November, 2018.

Rain Forest Research Institute, Jorhat:

Research

- Performance evaluation of native plant growth promoting rhizobacteria for crop productivity enhancement in jhum fields of Nagaland: Native PGPR isolates *Bacillus* sp. *Pseudomonas* sp. and *Azospirillum* sp. were applied in jhum and wet terrace paddy crop and significant improvement in grain yield (3856.67 kg/ha) was recorded in consortium inoculation compared to the 2036.19 kg/ha in the control. The grain yield in individual treatments was also higher than the control. The tested PGPR isolates are also being used in RFRI nursery for mass multiplication of *Bambusa tulda* planting material.
- Under the Coordinated programme on *Aquilaria malaccensis* Lamk, about 30,000 seedlings were raised from the fruits collected from 294 families belonging to 14 provenances of North east India. Provenance Resource Stand (PRS) was established at RFRI campus with the

selected seedlings from these provenances. Agar-based agro-forestry models are established at Namti in Sivasagar district of Assam and at FRCBR, Aizawl.

- Standardization of inoculation technique for Agarwood Formation in *Aquilaria malaccensis* Lamk. In Khasi and Garo Hills of Meghalaya: Artificial inoculation was carried out in 4 districts of Meghalaya viz., South West Khasi Hills, North Garo Hills, West Garo Hills and South West Garo Hills. All total, 139 nos. of *Aquilaria malaccensis* trees were inoculated with three different

types of fungal cultures. Data on formation of agarwood was recorded at monthly interval at the site of artificial inoculation. Hands on training on artificial induction of agarwood was also imparted to the farmers of Anangpara (West Garo Hills).

- Assessment, Documentation and Characterization of Lichen Diversity in Tripura, North – East India”: A total of 67 lichen species have been identified. Some lichens of common occurrence in Tripura are given below.



Dirinaria aegialita and *Cryptothecia striata*

- Micro-propagation of rare and endangered species of Orchids of Mizoram and re-introduction in wild: In vitro seedlings of different orchids viz., *Dendrobium primulinum*, *D. transparens*, *D. chrysanthum*, *Aerides odorata*, *Renanthera imschootiana*, *Cymbidium aloifolium*, *Paphiopedilum villosum* and *P. spicerianum* were produced at FRCBR, Aizawl.
- Exploration and utilization of wild mushroom diversity in Mizoram: Field surveys were conducted at Reiek, Sialsuk, Zongaw, Kawrthah, Ngengpui and Murlen

forest division. Market survey were conducted at Sirphir, Ilawng, Thuampui, Treasury, Mission Veng, Melriat, Seling, Keifang, kelsih, Hmuifang, Lengte, Lengpui, College veng, Project veng, Gosenveng, and Electric veng village market. A total number of 123 mushroom species belonging to 13 order 32 families and 35 genera were identified and documented from the different districts of Mizoram. Out of which, 77 species have been newly recorded from Mizoram. Out of 77 mushroom species, thirteen species were recorded for the first time from India.



Cookeinatricholoma

Extension:

- RFRI, Jorhat organized a Regional Research Conference for North Eastern states at Guwahati on 17th May 2018 for 50 participants.
- Stakeholder consultation workshop for preparation of State REDD+ Action Plan for Mizoram organized by FRC-BR, Aizawl for 60 participants
- During the year 2018-19 RFRI, Jodhpur and centres had organized 40 Training on various forestry aspects. Including training on 'Bamboo value addition' held at VVK hall, FRC-BR, Aizawl in collaboration with BDA, Mizoram and CBTC, Burnihat from 20.8.18 to 18.9.18 for 25 participants.

Arid Forest Research Institute, Jodhpur:

Research

- *A. nilotica*, *A. indica*, *P. juliflora* and *T. aphylla* prefer increased quantity of irrigation water, whereas *E. camaldulensis*, *S. persica*, *S. oleoides* and *T. undulata* respond better to nutrients added through wastewater application in the project

'Phytoremediation of soil for productivity enhancement during land disposal of effluent'. *Azadirachta indica*, *Acacia nilotica*, *P. juliflora*, *E. camaldulensis* and *S. persica* are better adapting and high biomass producer, *T. aphylla* is medium and *P. cineraria*, *T. undulata* and *S. oleoides* are least biomass producer under treated wastewater irrigation. Thus irrigation with treated wastewater is suggested for improving soil fertility as well as to ease pressure on the fresh water in the water scarce dry areas.

- Under the project, Development of tissue culture protocol for economically important bamboo- *Schizostachyum dulloo* (kite bamboo / dolu bamboo), sterilized explants were inoculated on Murashige & Skoog Medium supplemented with different hormones resulting in shoot proliferation which were excised and transferred to the medium where *In vitro* shoot multiplication was achieved. Large scale plantlets of dolu bamboo can be produced through tissue culture technique once the protocol is developed.

- Work on Clonal propagation, characterization and biochemical analysis of *Leptadenia reticulata*– a threatened medicinal plant was carried out. A high (80-90%) bud break response with 2-3 shoots proliferated from nodal segments on modified MS medium was achieved. Organogenesis in callus raised by leaves was found to be best as compared to the internodal callus. Callus obtained from flowers and immature seeds resulted in somatic embryogenesis. Germination of somatic embryos was best obtained on hormone free MS medium.
- Work on screening of DNA markers to Distinguish Male and Female *Ailanthus excelsa* trees for higher biomass production was carried out. Genomic DNA was extracted from leaf samples of 52 (26 Male and 26 female) *Ardu* trees. Out of 42 RAPD and 20 ISSR primers screened 13 RAPD and 6 ISSR primers were found polymorphic. Morphological parameters such as clear bole height and specific leaf area (SLA) were studied for 20 male and 20 female trees. Identification of gender specific morphological and DNA markers in this species will help in the improvement of fodder and timber production.
- Studies on phenology, molecular analysis and wood properties of *Tecomella undulate* with respect to three flower colormorphotypes are underway. Phenological data (pod size, leaf size, flowering pattern and percentage) were also recorded with respect to different flower colour morphotypes. Leaf samples were collected from 45 marked trees and genomic DNA was isolated and purified for DNA fingerprinting studies.
- Under the project Multilocational clonal trials of *Casuarina* species for multiple end uses in Gujarat state, three field trials of clones of *Casuarina* were established in Rajkot, Habatpur and Hathab in Gujarat. The clonal trails were established with total 30 clones of which thirteen clones belonged to *Casuarina equisetifolia*, twelve clones belonged to *Casuarina junghuhiniana* and five clones belonged to hybrid between these two species. The initial assessment revealed that clones of inter specific hybrids between *Casuarina equisetifolia* and *C. junghuniana* are performing better in all three places.

Extension:

- Two trainings for stakeholders and two trainings for personnel of other services were organized under the umbrella scheme of capacity building programme of MoEF&CC.
- One training programme on “NTEP (Plant origin): Value Addition & Marketing” was organized under ‘Green Skill Development Programme’ for two weeks from 23.07.18 to 08.08.2018. Total 20 Trainees from Jodhpur & Nagour districts of Rajasthan attended this training programme.
- One training programme on “Management of Small Botanical Gardens” was organized under GSDP from 15th January to 13th February 2019 (30 days). 11 participants from different states attended the training.



- Organized 11 workshops under different programmes were organized at AFRI, Jodhpur.

Himalayan Forest Research Institute, Shimla: Research

- Amecorrhizalfungi (*Scleroderma polyrhizum*) identified in Neoza pine (*Pinus gerardiana*) forests in Kinnaur district, Himachal Pradesh was found to induce better growth in artificially inoculated seedlings. This will help in reducing the retention period of the seedlings in nurseries and better survival in the field. The outcome is useful for the State Forest Departments in large-scale production of seedlings in the nursery and having successful plantations in the field.



Scleroderma polyrhizum: Mycorrhizal fungi of Neoza pine

- Thysanoplusia orichacea* (F.) recorded to cause 70-80 per cent defoliation and 40 per cent reduction in productivity of Kuth (*Saussurea costus*). This problem can be effectively managed with inter cropping of garlic in Kuth crop, use of cabbage as Trap crop for attracting the pest and controlling its population and application of a bacterial entomopathogen, *Bacillus cereus*.

Extension:

- Training on Seed and Nursery Techniques

of Juniper and Important Medicinal Plants of Cold Desert Region, in collaboration with the Jammu & Kashmir Forest Department, was organized at Field Research Station-cum-Van Vigyan Kendra, Leh during 20 - 21 August 2018 for the frontline field staff of Leh&Kargil Forest Divisions of Jammu & Kashmir Forest Department and progressive farmers of Leh region.

- Training on Cultivation practices of medicinal and aromatic plants for the benefit of farmers of Kathua region of Jammu and Kashmir was organized in collaboration with Krishi Vigyan Kendra (KVK), Kathua on 12 March 2019, which was attended by 50 farmers of the Jammu region.



Training at VVK, Leh



Training at KVK, Kathua

- One week Compulsory Training Course for the Indian Forest Service officers on Conservation and Development of Medicinal Plants and Benefits sharing with Local Communities, sponsored by the MoEF&CC, Govt. of India, was organized at HFRI, Shimla from 10 to 14 September 2018 in which 24 IFS officers from thirteen different states of the country participated.
- Training on Planting Stock Improvement Programme for Enhancement of Productivity funded by MoEF&CC, Govt. of India, New Delhi, was organized for other stakeholders during 29 -31 October 2018. Thirty participants representing JFMC, NGOs, Panchayats, Eco-task force, Block Development Offices, Education department, and agriculture and horticulture department participated in the training.
- Training on Cultivation of Important Temperate Medicinal Plants: an option for Diversification and Augmentation of Rural Income funded by MoEF&CC, Govt. of India, New Delhi was organized from 19 to 21 November 2018 for other stakeholders, which was attended by 34 participants representing Ward members of panchayats, Mahila Mandals, Eco-Task Force, Gardeners from ITBP, Teachers, NGO's, Media Persons, Panchayat Secretary and officials of BDO Office.



Training on Cultivation of Important Temperate Medicinal Plants

- Training on Eco-restoration of mined out areas and wastelands sponsored by MoEF&CC, New Delhi, was organized from 12-14 December 2018 in which 30 participants from other stakeholders viz., Ward members, Mahila Mandals, Eco Task Force, Gardeners from ITBP, Students and Teachers of St. Bedes College and Kendriya Vidyalaya Jakhoo, NGO's, Media Persons, Panchayat Secretary and officials of BDO Office participated.
- HFRI, Shimla organized the North India Regional Research Conference (RRC) on 20 April 2018 – a new initiative of Indian Council of Forestry Research & Education, Dehradun to bring all the research organizations working in various fields of forestry at one platform and also to share their research issues with a specific objective to look forward for the possibilities of collaboration with each other and to formulate coordinated research programmes in a holistic manner.



DG, ICFRE addressing Regional Research Conference at HFRI, Shimla on 20th April 2018

- HFRI, Shimla in collaboration with Regional research station, Jachh, Nurpur district Kangraorganised one day Kisan Mela on 7 December 2018. The Kisan Mela

was attended by 157 farmers of Kangra region. The exhibition stall of agriculture, horticulture and forest departments were also on display during this Kisan mela.



Kisan Mela at Kangra on 7thDecember 2018

Institute of Forest Productivity, Ranchi:

Research:

- Risk Assessment of Lantana camara using Spatial Distribution Modeling Approach in Latehar district- The survey work for collection of occurrence data of L. camara along with associated species has been completed for 92 random grids of Size 10km x 10 km. Further, 6 quadrates drawn of size 1m x 1m) and collected sampled points in each quadrate representing 924

grids of entire Jharkhand state. LULC map for Jharkhand state has been generated and validated with ground truth data points. Data compilation work for entire Jharkhand has been completed. Chemical and genetic diversity of Moringa oleifera (Sahjan, Munga, Drum Stick) for value addition in eastern India as food supplement. Existing Moringa germplasm bank houses 14 accessions form Bihar, Jharkhand and West Bengal and out of these 7 accessions

showed strong phylogenetic relationship among them and revealed closeness. However, sufficient genetic diversity was present despite the species primarily being clonal propagated. 12 New SSR markers have been evolved for amplification and the methods for estimation of alkaloids, flavanoid and phenolic compound have been standardized. The final chemical and genetic analysis work is under progress to identify best accessions with high chemical content and showing significant genotypic differences suitable for growing in eastern India states.

Extension:

- 11 Agroforestry exposure visit were organized in different forest divisions of Bihar under Agroforestry Capacity Building Project of Bihar during 2018 for 203 farmers and forest officials.
- Certificate course of seven weeks under the Green Skill Development programme on the topic entitled “Bamboo Propagation and Management” from 14.03.2019 to 29.03.2019 under GSDP for 45 students of Jharkhand, Odisha and Maharashtra.
- GSDP courses on Value Addition of NTFPs (Animal Origin): Lac &Tasar Cultivation from 01-08-2018 to 30-09-2018 for 12 participants.
- 66 local level one day trainings were organized in different forest divisions of Bihar under Agroforestry Capacity Building Project of Bihar during the year for 2263 farmers and forest officials.

**Institute of Forest Biodiversity, Hyderabad:
Research**

- Productivity improvement in *Pterocarpus santalinus* L.f. through mass selection and selective breeding: Twenty one candidate plus trees (CPTs) have been selected in *Pterocarpus santalinus*. Progenies of these selected trees are being raised for genetic evaluation.
- Recovery programme for *Syzygium alternifolium* – an endangered species from Eastern Ghat: Extensive survey was conducted in the natural ranges of *Syzygium alternifolium*. Seed germplasm has been collected for establishing ex situ gene conservation stand. Genetic material has been collected for genetic diversity and structure analysis.
- Impacts of nutrient loading from droppings of nesting migratory waterfowl in the wetland ecosystem of Nelapattu bird sanctuary, Andhra Pradesh: Nelapattu Bird Sanctuary spreads over an area of 458.92 ha (1133 acres) in SPSR Nellore district of Andhra Pradesh. It encompasses an area of 376.37 ha of Kalluru Reserve Forest and the Nelapattu water tank of an area of 82.56 ha. The forest stands located in and around the freshwater body provides nesting as well as roosting grounds for a significant number of migratory waterfowl. The sediment samples collected from three different locations were analyzed. The pond samples and Nutrient water irrigated samples are comparatively having



the same values of N (213.15 kg/ha), P (49 kg/ha), K (287.63 kg/ha) and OC (1.4). Whereas Normal water irrigated sediment samples are slightly differ in N (184.5 kg/ha), P (47.62), K (253.72 kg/ha) and OC (1.28) with the pond and nutrient irrigated water samples. During the winter season the pond water has slightly alkaline (PH =6-6.5) and having high Orthophosphate (0.05-1.13 mg/L) due to high population of migratory birds drops their fecal matter in to the pond. The water lettuce grows predominantly in this season due to the excessive richness of pond water because of the bird droppings. The water lettuces keep the pond free from the algae.

Extension:

- One Day Training Programme on “Cultivation and Techniques” on Medicinal Plants, Pterocarpus Santalinus, Santalum album and Melia dubia” Under Van Vignan Kendra on 06 – 03 – 2019.
- Organized Environmental awareness programme for Students of Kendriya Vidyalaya, Begumpet Hyderabad under Van Vigyan Kendra on 19.12.2018.
- Organized environmental awareness programme for 60 Students of National Science Fair academy, Hyderabad under Van Vigyan Kendra on 17.11.2018.
- Two day training programme on “cultivation of medicinal plants and techniques on Pterocarpus Santalinus, Santalum Album and Melia Dubia” under Van Vigyan Kendra was organized by IFB on 15-11-2018 to 16-11-2018.
- Use of Fly Ash in Forestry Applications and Rejuvenation of Waste/Degraded Lands on 19th January 2019.

Indian Institute of Forest Management (IIFM), Bhopal:

The Institute, as a sectoral management institute, imparts education in forest management, which is a judicious mixture of forestry, social, and management science. The Institute constantly endeavours to keep in touch with the problems of people, especially the forest dwellers and undertakes need-based research. The Institute tries to serve as a reservoir of knowledge in the area of forest management and ensures proper integration of external and indigenous knowledge suitable to Indian context.

The specific objectives of the Institute are:

- Education and Training.
- Research and Consultancy.
- Dissemination of research-based information/knowledge.
- To maintain relevant Databases and Information Systems for policy formulation, project planning and strategy development in forestry, environment and allied sectors.
- To function as a national ‘think tank’ on forestry and environment aimed at developing appropriate policies and strategies.
- To play an advocacy role in the sectors of concern to promote adoption of appropriate policies and to safeguard the genuine interests of the disadvantaged stakeholders whenever necessary without

compromising national interests.

Activities undertaken:

- Conducted Educational Programmes:
 - Post Graduate Diploma in Forestry Management (PGDFM) Programme.
 - M Phil Programme in Natural Resource Management (NRM) Programme.
 - Fellow Programme in Management (FPM).
 - Ph D Programme (FRI-DU).
- Conducted of Management Development (MDP) Programmes.
- Carrying out Research and Consultancy Activities.
- Publications.

Progress/Achievements:

Education: The Institute offers two academic programmes, Post Graduate Programme in Forestry Management (equivalent to Master's Degree) and M.Phil. (Natural Resource Management) affiliated to Saurashtra University. The Institute is also recognized as a Nodal Centre for Research by Forest Research Institute, Deemed University (FRI), Dehradun for Doctoral programme. The details of students admitted in the Academic programmes are as under:

S. No.	Academic Programme	Batch	No. of students
01.	Post Graduate Diploma in Forestry Management	2018-20	113
02.	M. Phil(NRM)	2018-19	11

03.	FRI-DU Ph. D students	2018-22	06
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Ph.D. Programme: The Institute functions as one of the research centers of the FRI Deemed University for higher studies leading to Doctor of Philosophy. During the year 2018-22, 06 students enrolled for the programme and currently a total of 14 candidates are pursuing doctoral programme and 06 are awarded Ph.D.

Research: Research constitutes one of the core activities of the Institute. The Institute carries out its research agenda through the following Centres of Excellence:

- International Centre for Community Forestry (ICCF).
- Center for Ecological Services Management (CESM).
- Center for Sustainable Forest Management & Forest Certification (SFM & FC).
- Center for Livelihood Management.
- Center for Climate Change Studies.
- Centre for Policy Studies.
- Center for Application of Management Techniques and Tools in Government.
- Regional Center for National Afforestation and Eco-Development Board (RCNAEB).
- Geo-informatics Centre for Forestry, Climate Change and Livelihood support.
- Center of Excellence for IIFM – Industry Interface for Sustainable Development.

During the period under report the Institute has completed one Externally Funded Research Project.



Training: The Institute has been organizing short-term training courses, seminars and workshops to transfer technical and managerial skills being generated by faculty areas of the institute. The focus of these programmes is on evolving, analyzing and synthesizing various management techniques/ tools, ideas and concepts relevant to the forestry and allied sector. During the year under report the institute conducted 125 Management Development Programmes and a total of 365 persons were trained and 05 workshops/ seminars were conducted in which 127 delegates participated.

Consultancy: Faculty members of the Institute undertake consulting assignments to provide solutions to the sector-specific problems and as inputs for policy making. During the period under report the Institute has completed 07 consultancy assignments and currently the Institute is having 03 consultancy projects in the area of Economic Valuation, Wildlife Management Plan etc.

Publications: The Institute continues to disseminate its research findings to the larger audience through its own publications and also by publication of research papers in reputed journals, books and also by presentation of papers in national and international conferences.

Awards & Recognition Received by IIFM: IIFM achieved 60th Rank Overall under the National Institutional Ranking Framework (NIRF), Ministry of Human Resources Development, Government of India Ranking 2018.

Other Major Activities:

- The 13th Convocation of the Institute was conducted on 13th April, 2018.
- The Orientation programme for PGDFM students was held from 26th to 30th June, 2018.
- Conducted Two weeks “Hindi Pakavada” consisting of various programmes on Hindi i.e. Essay Writing Handwriting, Slogan writing, translation, typing etc., for encouraging the use of Official language in the Institute. The programme was concluded on 14th September, 2018.
- The PGDFM students organized a two day’s annual conclave “Coalescence” on 21st and 22nd September, 2018 on the theme “Triple Bottom Line: issues, solutions, adventure & beyond” encompassing panel discussions with the theme-“sustainable development at grassroots : an integrated inclusive approach to achieve SDGs” & “Forest Rights”. Expert talks on industrial sectors requiring deliberation on environmental aspect in the same were also conducted. It was an annual all India management conclave aimed to bring together the stakeholders such as policy makers, corporate houses, PSUs, NGOs, the academia and most of all the students.
- The PGDFM students conducted a 3-day “Environmental Literacy Campaign from October 26-28th 2018.
- As part of the campaign students organized NukkadNaatak, Cleanliness Drive, Plogging, exhibitions etc. in different parts of the City.

Campus Placement: IIFM placed all the students of Post Graduate Diploma in Forestry Management (PGDFM) well before the end of the course, thus, ensuring its impeccable record of 100% placements yet again, and strengthening its position further as a leader in sectoral management in the country.

Indian Plywood Industries Research & Training Institute (IPIRTI), Bangalore:

IPIRTI is a Society registered under the Karnataka Societies Registration Act, 1962; Union Minister for Environment & Forests is the ex-officio President of the Society. Statutory members include Secretaries to Government of India in Ministries of Environment, Forest & Climate Change, Agriculture, Science & Technology and Planning Commission, Director General of Forests-MoEF&CC, Chief Secretary- Government of Karnataka, Director General-ICFRE and representatives of scientific organizations like CSIR and regulatory bodies like BIS. Membership is also open to industries. It is recognized (since 1989) as a Scientific & Industrial Research Organization by the Government of India under the Department of Scientific and Industrial Research Scheme, 1989. It is also recognized (since 1999) as a nodal centre by Forest Research Institute, Dehradun for pursuing Research programme for award of Ph.D. degree.

IPIRTI is continuously engaged in Research & Development, Training & Education, Testing & Standardization and Extension on all aspects related to plywood and panel products from wood, bamboo and other lignocellulosic materials.

Activities Undertaken:

Research: During the period 69 projects have been undertaken which includes 42 institute projects, 08 sponsored projects and 19 consultancy projects.

Training and Education:

- During the period, 29th batch Training Course for One Year Post-Graduate Diploma in Wood and Panel Products Technology for graduates in Science and Engineering was conducted with 33 candidates. Training for 30th batch Course for One Year Post-Graduate Diploma in Wood and Panel Industries Technology for graduates in Science and Engineering was started from Nov, 2018 and the course is in progress with 29 candidates.

12 Short Term Training Courses for industry personnel, Forest Officials, local entrepreneur, local community and other stakeholders was conducted with the participation of 136 candidates.

- Testing of Samples will be conducted as per relevant Bureau of Indian Standards (BIS) and International standards.
- Extension and outreach activities for industry, community and other endeavours is taken up by IPIRTI.

Progress/Achievements:

As desired in addition to other Instruments/ Machineries, the following extension projects were taken up to promote sustainable use of bamboo products and housing.



- Design and Construction of Hexagonal Bamboo Experience Centre equipped with solar electricity (Bamboo Solar Hut) at Tees January Marg, New Delhi.



- Design and Construction of Octagonal Bamboo Mini Rotunda at Lodhi Estate, New Delhi.



Bamboo demo house at New Delhi.

- Keeping in view the huge untapped potential of the bamboo sector and in order to boost

the value addition of bamboo resources of the country, IPIRTI has organised an International Conference on “Bamboo Composites” Bangalore, India during 11th-12th February 2019. In conjunction with the above international conference an exhibition on “Bamboo Composites” was also organized at IPIRTI, Campus during 09th-12th February 2019. This exhibition offered to provide a comprehensive overview of the latest innovations and the manufacturing technologies in the field of bamboo based composites, crafts, jewellery, construction etc.

- **Nature of participation:** It was one of the flagship events of IPIRTI which brought in the finest talents/experts of the world together to chalk out the strategies for giving a big boost to sustainable growth of the bamboo industry and disseminate the information on the latest advances and future prospects for bamboo development pan global. There were 27 registered participants from international organizations based in 16 countries mainly from Asia, Africa, Europe and Latin America such as Afghanistan, Austria, Bangladesh, Brazil, Ethiopia, Ghana, Guatemala, Italy, Jordan, Malaysia, Nigeria, Sri Lanka, Tajikistan, Tanzania and Zimbabwe. There were about 100 participants from across the country representing different stakeholders viz. farmers, artisans, industry, government officials, research institute and university.

- There were a total of 26 stalls in the exhibition to showcase the items of artisans, furniture manufactures, industry and institutes. This expo targeted to be a sound platform for bamboo based furniture, craft items, machinery and tools, etc. in the interest of architects, interior designers and general public at large.
- **Major Publications:** Following 9 Research Reports have been published during 2018-19.

R.R No.	Project Title
RR-205	Study on Acoustic and Thermal efficiency of panel products made from agro residues.
RR-206	Development of Bamboo Strip Based Composites with Epoxy Resin.
RR-207	Keratin Modified Urea Formaldehyde Resin for Particle Board and Plywood and Study on Durability Panel Products.
RR-208	Development of composites from beverages tetra packs wastes.
RR-209	Development of New and improved extender for plywood adhesive having Extender - Scavenger dual function to make less toxic and more eco-friendly.
RR-210	Preparation of block board with fire retardant nano chemicals.
RR-211	Anatomical evaluation of adhesive penetration of timber.
RR-212	Study on processes to increase yield of bamboo for composite by chemical and mechanical methods.

RR-213	A study on the effect of high temperature treatment on the dimensional stability, color, water repellency and strength of bamboo scrimber.
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Indira Gandhi National Forest Academy (IGNFA), Dehradun: Indira Gandhi National Forest Academy (IGNFA) was constituted in the year 1987 by renaming the erstwhile Indian Forest College, which was originally established in 1938 for training senior forest officers. IGNFA is currently functioning as the Staff College for the officers of the Indian Forest Service (IFS). The primary mandate of the Academy is to impart knowledge and skills to the professional foresters and help them to develop competence for managing the country forest and wildlife resources on a sustainable basis. In the Academy training is provided at different levels of seniority in the Indian Forest Service besides training the new entrants to the service.

Activities undertaken:

Training Activities

- IFS Professional Training Programme:
 - 85 IFS Probationers of 2016 Batch have been trained as per IFS course curriculum and sent to respective state cadres.
 - 95 IFS Probationers of 2017 Batch are undergoing their training from Dec. 2017 as per IFS course curriculum and will pass out during April, 2019.
- 4 Mid-Career Training (MCT) Programme were conducted for in-service IFS Officers.



- One Professional Skill Up-gradation Course (PSUC) was conducted (Induction Training Programme for officers inducted into IFS from SFS).
- 4 Senior Foresters' Workshop (SFW) were conducted.
- Orientation Module for 27 IRTS Probationers was conducted.
- Best Practices in Forestry, One-week Compulsory Course sponsored by MoEF&CC was conducted.

Progress/Achievements:

2016-18 batch consisting of 85 IFS Probationers completed its professional forestry training at IGNFA. Convocation was held on 25.04.2018. Regarding infrastructure development extension of executive Hostel (40 rooms) is being carried out through CCU, approval for construction of all-weather Swimming Pool has been received and work will start shortly.

Training of IFS Officers: The MoEF&CC have been organizing 39 In-service training courses of one week for IFS Officers in various disciplines in various institutions in the country. The basic aim of the in-service training courses is to upgrade their managerial skills in the changing socio-economic scenario of the country as also expose them to the recent developments in the field of forestry and allied subjects to enable them to handle their present duties and future needs better. The training courses also provide a forum for the IFS officers serving in different regions of the country for sharing of experiences for efficient discharge of Government duty. Officers are also sponsored for long-term training courses.

In addition to sponsoring short-term refresher courses, the MoEF&CC have been sponsoring 17 In-service 1-3 day training workshops and seminars on emerging topics of regional, national and international importance. The training workshops/seminars are sponsored in the premier institutions/organization in the country depending upon their expertise in a particular field/discipline.

Training of Personnel of Other Services: The component provide awareness programs through short-term trainings, workshops, and study tours for the personnel of various Departments such as Police, Revenue, Customs, etc.

Foreign Training of Forestry Personnel: The component is aimed at encouraging specialization amongst the forestry personnel by sponsoring them for various short-term and long-term training courses at various Institutions overseas.

Training of other Stakeholders: The component provides awareness programme through study tours, workshops and seminars for these stakeholders i.e. Panchayat members, elected representatives, teachers, nature clubs/eco-clubs and social activists, NGOs, and media persons.

JICA Aided Project on "Capacity Development for Forest Management & Training of Personnel (ID-P.199)": The Ministry has implemented a JICA Aided project on "Capacity Development for Forest Management & Training of Personnel (ID-P.199)". It is an unique project in which the Ministry of Environment, Forest & Climate Change, Government of India has obtained a soft loan from Japan International

Cooperation Agency (JICA) and transferring the funds to the participating states for improvement of the training infrastructure as well as training in general meant for the cutting edge Frontline Staff of the Forest Department. This Externally Aided Component have been implemented in thirteen states namely Assam, Arunachal Pradesh, Bihar, Chhattisgarh,

Jharkhand, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Nagaland, Uttarakhand, and West Bengal and also included four Central Academy for State Forest Service (CASFoS) at Dehradun, Coimbatore, Burnihat & Kurseong.

Photographs of Works executed under the JICA Project:



Academy Building, CASFoS, Burnihat, Assam



Newly constructed Academic cum Administrative Building, SFTI, Makum, Assam



Forest Training Institute, Shahapur, District – Thane



Newly Constructed Academic Building, SFTI, Aizwal, Mizoram



Academic-cum-Administrative Building, Hijli.



Construction of Executive Hostel under JICA project in CASFoS, Coimbatore.



Executive Hostel cum Guest House, CASFoS, Burnihat

State Forest Service and Rangers College:

The Directorate of Forest Education (DFE) under the Ministry is responsible for imparting professional/technical training to direct recruit State Forest Service (SFS) Officers and Forest Range Officers (FROs). The Directorate also supplements the efforts of various States for the training and capacity building of the Forest Frontline Staff (Deputy Rangers, Foresters and Forest Guards) through the respective Forest Training Institutes. There are 4 (four) Academies under the Directorate. The names and intake capacity (Per batch) of these Academies are as under:

• Central Academy for State Forest Service, Dehradun	40
• Central Academy for State Forest Service, Coimbatore	40
• Central Academy for State Forest Service, Burnihat	40
• Central Academy of Forest Education, Kurseong	40



Shri Saibal Dasgupta, IFS, Additional DGF (FC), MoEF&CC inaugurated the Executive Hostel cum Guest House, CASFoS, Burnihat on 20.12.2018 in presence of Ms Ranjana Gupta, PCCF, Assam, Dr.SuneeshBuxy, DIGF (RT), Sh. R.P. Singh, DFE, Dehradun, Sh. Roshan Horo, Principal CASFoS.

Besides this Directorate also conducts Forest Range Officers induction training through Forestry Training Institute/Academy under the control of State Government viz.:

- Uttarakhand Forest Training Academy, Haldwani, Uttarakhand.
- Telangana State Forest Academy, Dulapally, Hyderabad.
- Forest Training Institute and Rangers College, Sunder Nagar, Himachal Pradesh.
- Tamil Nadu Forest Academy, Coimbatore, Tamil Nadu.
- Kundal Academy of Development, Administration and Management (Forest), Maharashtra.
- Gujarat Forest Rangers College, Rajpipla, Gujarat.
- Karnataka Forest Academy, Gungargatti, Dharwad.
- Odisha Forest Rangers College, Angul.

Objectives:

- To cater to the training needs of SFS Officers and FROs of States/Union Territories in the Country.
- To ensure standard and quality of training being imparted to SFS Officers and FROs.
- To develop appropriate and relevant training contents and evaluation standards for Forestry training at various levels.
- To suggest training policy for effective Human Resource Management and Development.
- To supplement the efforts of State Governments in the training of Forest Frontline Staff (Forest Guards, Foresters and Deputy Rangers).

Activities undertaken/Achievements:

- Five (05) batches of State Forest Service Officers are undergoing training.
- Two (02) batches of State Forest Service Officers are passed out.
- Eleven (11) batches of Range Forest Officers are undergoing training.:
- Thirteen (13) batches of Range Forest Officers are passed out.:
- Refresher Course/Theme based Workshops for In-service State Forest Service Officers and Senior Forest Range Officers.
- Organizing One Week Thematic Courses for the Frontline Staff (Deputy Rangers/Foresters/Forest Guards) of the State Departments in different States during the calendar year = 51 courses.

7.7 Wildlife Institute of India (WII)

Wildlife Institute of India (WII) was established in 1986 as an autonomous institute of the Ministry of Environment, Forest & Climate Change, Government of India. The Institute has emerged as a premier training and research institution in the field of wildlife and protected area management in South and South East Asia. Its primary mandates are to: (i) carry out scientific and applied research on various issues of wildlife and biodiversity conservation, (ii) develop wildlife science as a discipline through academic activities, (iii) build capacity in the field of wildlife management and conservation planning, (iv) provide technical inputs to MoEF&CC and other stakeholders. The Institute has been generating quality information and knowledge products in the field of wildlife science through research and mainstreaming it in capacity building programmes for various target groups.

Activities undertaken:

• Research

Research Projects: Wildlife research at the Institute is predominantly multidisciplinary in nature covering ecological, biological and socio-economic aspects across various ecosystems in the country. The research projects generate valuable scientific information relevant to the Indian conditions, and also create a cadre of trained field biologists, socio-economists and wildlife managers. The scientific information generated is utilized for wildlife conservation and management. Research also enables the Institute's faculty to keep abreast of the current field situations, management needs



and research trends in the field and thus constantly enhance its professional skills and update its teaching inputs. The research agenda is guided by the Training, Research Advisory Committee (TRAC) comprising eminent conservationists, academicians and representatives of scientific organizations as well as state wildlife organizations, which ensures that research conforms to the national conservation priorities.

Research Projects:

• Projects funded by WII's Grants in Aid	11
• NTCA funded projects	14
• Externally aided projects	74
• Department of Science & Technology	9
• MoEF&CC/ NMHS	9
Total	117

• Higher Education and Academic Activities:

16th M.Sc. Course in Wildlife Science: The XVI batch of the 2 year M.Sc. in Wildlife Sciences (2017-19) began on the 26 June 2017 at WII. A total of 20 students joined the course after a rigorous selection process. The course is at present being offered in collaboration with the Saurashtra University, Rajkot (Gujarat), which awards the degree while all teaching is done at WII at Dehradun and at various field sites around the country.

• Training Programmes:

- XXXIX P.G. Diploma Course in Advanced Wildlife Management Concluded, 1st September, 2017 to 30th June, 2018

- The Management Tour (Foreign Component: South Africa) was conducted from 12th April to 27th May, 2018.
- XL P.G. Diploma Course in Advanced Wildlife Management commenced, Dehradun, 1st September, 2018 – 30th June, 2019 with 13 officer trainees.
- XXXIII Certificate Course in Wildlife Management concluded, Dehradun, 1st November 2017 to 31st January 2018 and 13 officer trainees of the rank of Range Forest Officers and equivalent levels underwent the training course.
- XXXIV Certificate Course in Wildlife Management Concluded, Dehradun, 1st November, 2018 to 31st January, 2019:
- Apart from the classroom teaching, the officer trainees were taken to Chilla for Orientation-cum-Technique Tour on 16-28 November 2018 for thirteen days to learn various techniques pertaining to wildlife management.

• Workshops, Seminars, Meetings and Other Activities:

- 2nd Ten-day Orientation Workshop on Wildlife & Health Management, Dehradun, 15-24th January, 2018
- 5th Course on Wildlife Conservation for Wildlife Enthusiasts, Dehradun, 15-24th January, 2018: The Wildlife Institute of India conducted a course on Wildlife Conservation for wildlife enthusiasts. A total of 20 participants (16 men and four women) attended the course.

- Two-day Training Programmes, Periyar Tiger Reserve, 19-20th January, 2018 and Parambikulam Tiger Reserve, Kerala, 22-23rd January, 2018 was conducted.
- Training Workshop conducted on Animal Census, Wildlife Forensics, and Wildlife Health, Spiti WL Division, WII, Dehradun, 2-4th February, 2018



- Short Course for the Project Personnel of the All India Tiger Monitoring Programme (2017-19)', Dehradun, 15-28th February 2018
- Training Programme on Monitoring of Outstanding Universal Value of Natural



World Heritage Sites for Frontline staff, Dehradun, 6-8th February, 2018 and Manas Wildlife Sanctuary, Assam, 16-17th February, 2018

- The second training programme was conducted at Manas National Park, Assam in which 40 frontline staff of the site alongwith local NGOs and EDC members participated.
- Consultative Workshop on Preparation of India's Sixth National Report to Convention on Biological Diversity and Progress achieved on India's National Biodiversity Target-6 (NBT 6).
- Special Courses for Wildlife Officials from Sri Lanka, Dehradun, 8-22nd March 2018, 2-9th April, 2018 and 23rd May-13th June, 2018: Wildlife Institute of India (WII) organised the special courses for a total of 62 officials and frontline staff in the Department of Wildlife Conservation, Government of Sri Lanka in three batches.





- Training of Trainers Workshops on 'Wildlife Estimation along with All India Tiger Estimation 2018', Palamau Tiger Reserve.
- Sensitization Workshops on Managing Aquatic Macro-Fauna along Ganga River, Dehradun, 26-28th April 2018 and 27-29th June, 2018
- Workshop on Status of Tiger Habitat in High Altitude Ecosystems in Bhutan, India and Nepal, Dehradun, 27th April 2018.
- Workshop on "Integrating Precipitation Forecasts and Climate Predictions with Basin-Scale Hydrological Modeling in the Himalayas", Dehradun, 2-4th May 2018.



- Workshop conducted on 'Public Participation in Generating Biodiversity Information', Dehradun, 20-21st June, 2018.
- Certificate Course on 'Nature Interpretation for Rural Youth under GSDP, Manas Tiger Reserve, Assam, 8-28th July, 2018.
- Consultative Workshop on 'Standardization of the Process of Preparation of State Biodiversity Strategy and Action Plan (SBSAP) and Development of Resource Mobilization Strategy for Implementation of SBSAP' Dehradun, 20th July, 2018.
- Certificate Course on 'Ganga Prahari Livelihood Enhancement' under GSDP, Sarnath, Uttar Pradesh, 23rd July – 12th August, 2018.
- Training Workshop on "Management Effectiveness Evaluation (MEE) of Protected Areas" for IFS Officers, Dehradun, 2-3rd August, 2018.
- Capacity Building-cum-Planning Workshop on Ecotourism and Visitor-Use Management in Protected Areas', Dehradun, 8-10th August, 2018.
- Inception Workshop on WII-GIZ Human-Wildlife Conflict Project, Dehradun, 24th August, 2018.
- National Consultation Workshop for 'Recommending the Future Status of Sea Cucumber Conservation in India', Dehradun, 3rd September, 2018.

- 3rd Himalayan Research Seminars of the Institute, Dehradun, September 2018 was conducted.
- Meeting of Chief Wildlife Wardens of States and Union Territories of Government of India, Dehradun, 21-22nd September, 2018.
- 2018 Ecosystem Services Partnership (ESP) Asia Conference, Dehradun, 9-12th October, 2018.
- Two-day Writing Workshop for the Development of the Structure and Framework of the National Human-Wildlife Conflict Mitigation Strategy and Action Plan (N-HWCM-SAP) and Standard Operating Procedure (SOPs), Dehradun, 15-16th October 2018.
- Training Programme on Dossier Preparation for Natural World Heritage, Mixed and Cultural Landscapes Nomination of World Heritage Sites, Dehradun, 23rd October, 2018.
- Symposium on Culture-Nature Journey: Beyond Borders in Asia and the Pacific, Dehradun and New Delhi, 24-26th October, 2018.
- The BIOFIN Technical Partner's Meeting, UNDP, New Delhi, 25th October 2018.
- Planning Meeting Regional Expert Committee (REC) for Management Effectiveness Evaluation (MEE) of National Parks and Wildlife Sanctuaries in 2018-19, New Delhi, 31st October, 2018.
- National Training Workshop on Biodiversity Conservation and Ganga Rejuvenation of Ganga States", Dehradun, 14-18th November, 2018.
- Two-day Training Workshop on "Mainstreaming Biodiversity in Impact Assessment", Dehradun, 15-16th November, 2018.
- Interaction Meeting for Management Effectiveness Evaluation (MEE) of Fourth Cycle of Tiger Reserves in India, New Delhi, 20th November, 2018.
- Stakeholders' Workshop on "Forests for Water", Dehradun, 28th November, 2018.
- One Week Compulsory Training Programme for IFS Officers on "Illegal Trade in Wildlife and Role of Wildlife Forensics in Dealing with Wildlife Crime", Port Blair, 3-7th December, 2018.
- Inception Meeting on UNDP Project SECURE Himalaya, Dehradun, 11th December, 2018.
- Training Program on Monitoring of Outstanding Universal Value of Natural World Heritage Sites, Kudremukh National Park, 14-15th December, 2018.
- Three-day Module on 'Wildlife Management' for IFS officers, Dehradun, 26-28th December, 2018.
- Consultation and Field Survey in Garo Hills Conservation Area, Meghalaya, 9th January 2019.



- Seminar on 'Indigenous Urbanism', Dehradun, 8-9th January, 2019.
- 3rd Ten-day Orientation Workshop on Wildlife & Health Management, Dehradun, 16-25th January, 2019.
- One-week Compulsory Training Course for Indian Forest Service Officers on "Management of Coastal and Marine Biodiversity in India: Challenges and Prospects", Port Blair, Andaman and Nicobar Islands, 4-8th February, 2019.
- Consultation Meeting on Nomination Document of Kailash Landscape as a Proposed World Heritage Site, Dehradun, 4th February, 2019.
- 6th Course on Wildlife Conservation for Wildlife Enthusiasts, Dehradun, 18-27th February, 2019.
- Meeting on 'Action Taken' on the Findings of Management Effectiveness Evaluation (MEE) Exercise Conducted during 2017-18 and Release of the 'MEE of PAs 2017-18' Report, New Delhi, 20-21st February, 2019.
- Launch of WII Products and Services, New Delhi, 27th February 2019: In an event on Clean Ganga Movement held at New Delhi, WII's products and services of the project "Biodiversity Conservation and Ganga Rejuvenation" were launched.
- Professional Development Programme (PDP) for Enhancing EIA Effectiveness, Dehradun, 25th February 2019 – 8th March 2019.

Education and Awareness

CHAPTER

08





8.1 Environmental Education, Awareness and Training

Under Environmental Education, Awareness and Training (EEAT) scheme, there are five programmes namely:

- National Green Corps (NGC) – “Ecoclub” Programme
- National Nature Camping Programme (NNCP)
- Capacity Building Activities (CBA) on EEAT scheme
- Global Learning and Observations to Benefit the Environment (GLOBE)
- Green Good Deeds (GGDs)

EEAT scheme is central sector scheme launched during financial year 1983-84 and aims to promote environmental awareness and mobilize student’s participation for environment conservation.

Activities undertaken:

National Green Corps (NGC) Programme: MoEF&CC embarked upon a major initiative for creating environmental awareness among children by formulating National Green Corps (NGC) in 2001-02. There are around 1,00,000 Eco-clubs across the country. A financial assistance of Rs 5,000/- per school and college is provided under this programme. The following activities are undertaken:

- Awareness on solid waste management through waste segregation (biodegradable and non-biodegradable) and on concept of 4Rs i.e. ‘Reduce, Reuse, Recycle and Recover’ amongst students through

establishing 2-Bins in schools– (1) Blue Bin for dry waste like Paper waste, Glass waste, E-waste and (2) Green Bin for wet waste.

- Celebration of important environmental days in schools such as World Environment Day, World Wetland Day, Earth Day, etc. by organising debates, quiz, slogan competitions, drawing/poster competitions etc, on the related theme.
- Plantation drives in and around the school campus, organised in the district/locality, preferably during the monsoon season.
- Cleanliness drives to be conducted twice a year i.e. October and December (preferably post examination period during October & December holidays).

The students also participate in “Prakriti Khoj” – online Environment Quiz which is a fun filled interactive learning mode for triggering a sense of awareness towards environment protection and conservation. A separate web-portal www.pkeq.nic.in containing information on the quiz has been developed by Ministry.

National Nature Camping Programme: The ‘Nature experience’ to children and teachers has huge potential to trigger the sensitivity towards nature appreciation and conservation, leading to positive environmental actions at different levels. Under this programme field visits (nature camps) are organised in different protected areas/ Nature parks/Tiger Reserves of the country for 3 days to create awareness amongst school/college students on environment and nature. The following activities are undertaken:

- 'Apna ParyavaranJaniye' (Know your Environment) by preparing small checklist of flora and fauna seen/spotted by them in the nature trail,
- Bird watching
- Trekking
- Green Pledges
- Group Discussion involving record/sharing of experiences and
- Other nature based activities

Capacity Building Activities: The objective of this programme is to support capacity building activities and to impart skills to students (schools and colleges) and teachers of Eco-club on various thematic areas like Bio-diversity conservation, Waste Management and concept of 4Rs – Reduce, Reuse, Recycle & Recover; 17 Sustainable Development Goals, Climate Change related issues with focus on Adaptation and Mitigation, Control of pollution and any other related theme of MoEF&CC.

Globe Programme: The Global Learning and Observations to Benefit the Environment (GLOBE) Programme – an international Science and Education programme – provides a unique opportunity to the school students to carry out various measurements so that they can learn about scientific protocols and perform environmental learning activities. GLOBE provides grade level appropriate, in disciplinary activities and inventions about the atmosphere, biosphere, hydrosphere and pedosphere, which have been developed by the scientific community and validated by teachers.

The GLOBE programme not only helps the students to appreciate the contents of the textbooks through better understanding but also assists them in gaining comprehensive knowledge of environment. This programme was started in 2000 after India signed the agreement with the United States of America. The programme which focuses on Hands- on-approach based environmental learning and has tremendous potential in enhancing the quality of Environment Education.

Green Good Deeds: Green Good Deed movement is a social movement with an aim to bring about mass environmental awareness among society. Ministry intends to reach every citizen in the country who shall adopt green good deeds in his daily life. With this preamble, the GGDs shall be initiated through schools/colleges under National Green Corps “Eco-club” programme of Ministry. As a part of the above programme and to undertake the implementation of Green Good Deeds in a mission mode, the Ministry has developed broad thematic areas as detailed below. The ten - point agenda programme includes the following thematic areas:

- Plantation drive:** Under this activity, school and college children are encouraged to undertake plantation on identified areas within their institutional, premises or residential area in identified open spaces.
- Plastic free National Parks/Sanctuaries:** The tourists are advised to carry waste paper bags so that they can collect the waste in the bags and return them to the forest official after visiting the national parks.



iii. **Adoption of beach/river/lakes/parks:**

Each of the school/institution is encouraged to identify a river or a park or a lake/pond adjacent to their institutions and adopt them so that they can clean up the area and also teach the children about water conservation and importance of water bodies.

iv. **Garbage management:** The children are educated and encouraged to segregate waste, collect them and use the biodegradable as compost which can

be further used for the plantation drive being undertaken by the schools. Non biodegradable wastes such as metals and plastics are collected and are sold to the waste recyclers. Thus through this mechanism, children not only learn about recycling of waste but also adopt them as a part of their lives.

v. **Promote renewable energy:** Schools and institutions are encouraged to adopt renewable energy including conservation of energy in the schools.



vi. **Air pollution:** Children are encouraged to adopt cleaner and greener celebration of various festivals including Diwali. Ministry has issued advisories encouraging school children to promote Harit Diwali that include activities such as gifting plants, distributing seeds, distributing old clothes/used clothes to shelter homes, etc.

vii. **Awareness of open defecation:** As part of the Swachh Bharat Abhiyan, initiative by the Hon'ble Prime Minister, the Ministry has initiated steps to provide for suitable toilets and water facility. The mechanism is being worked out with the Ministry of Drinking Water and Sanitation.

viii. **Hygiene and Sanitation:** Awareness programmes shall be taken up as it is our endeavour to provide adequate toilets and water facilities to all schools and colleges in the country with.

ix. **Adoption of village for clean habitation:** Schools and colleges are encouraged to adopt nearby villages and educate the villagers with regard to cleanliness, open defecation, clean water, waste segregation etc. Through these process, the children not only learn about rural areas their lifestyle, but also encourage the villagers to adopt environment friendly methods in their daily lives.



- x. **Plastic free schools and colleges:** Each of the Eco-club is advised to make their schools plastic free and such schools which have been declared as plastic free are provided with certificates issued by Hon'ble Minister of Environment, Forest and Climate Change.

Progress/Achievements:

Clean Air Campaign: Hon'ble Union Minister,

EF&CC, launched a joint campaign, with Delhi Government, NDMC, CPCB and other municipal agencies, for clean air in Delhi from 10-23 Feb 2018. The campaign aimed to sensitise ground-level functionaries and general public to enforce the habit of environmental protection. 66 teams were formed led jointly by one officer each from the Ministry of Environment, Forest and Climate Change and one officer from the State Government of Delhi. These officers were assisted by officers from Central Pollution Control Board (CPCB), DPCC and respective municipal corporations. The teams were provided with check lists focussed on activities on mitigation of pollution, including effective measures for dust mitigation, solid waste management and prevention of garbage burning. Keeping in view of the success of the campaign, a second round was also initiated for 10 day in held on November 2018.





Harit Diwali: Ministry undertook a “Harit Diwali - Swasth Diwali” campaign which was launched on 22.10.2018 in MoEF&CC wherein around 500 students from schools in Delhi/NCR region participated. Advisories were issued

to Nodal agencies implementing the Eco-club programme to celebrate environmental-friendly Diwali include cleaning of houses, renovating and decorating homes with diyas, lighting up candles, lamps; donating clothes/books to needy; making colourful rangoli etc.



Celebration of World Environment Day 2018 through Eco-clubs in States/UTs. Some of the major activities undertaken were includes cleaning of identified beaches, river stretches and Mini-marathon on 3.6.2018. In consultation with State Nodal Agencies implementing the Eco-club programme 24 beaches and 24 river stretches were identified for intensive cleaning drives which began with a mega inaugural ceremony at Goa on 14.5.2018 inaugurated by Additional Secretary, MoEF&CC. Students

from various schools and colleges participated in this drive. Various cultural programmes, quiz competition, debate, awareness rallies etc were organized. Besides the above mentioned cleanliness drives, Mini Marathon was held at Vinay Marg, New Delhi on 3.6.2018 to spread awareness on proper utilization of plastic. The marathon attended by around 10,000 Eco-club students from Delhi- NCR. Also mini-marathons were also organized in other five cities namely Bengaluru, Ahmedabad, Gangtok, Bhopal and Bhubaneswar.



Green Good Deeds Initiative: Students under Eco-clubs are implementing the Green Good Deeds (GGDs) initiative which seeks to transform the people's behaviour into Green Good Behaviour and fulfil Green Social Responsibility. A ten point agenda has been developed to implement the GGDs through Nodal agencies in State/UTs implementing the Eco-club programme. Various activities covered under GGDs like cleanliness drives within the school campus, carry out waste segregation into biodegradable and non-biodegradable, paper re-cycling and conducting tree plantation drives etc are being implemented across the country by the students.

Further GREEN GOOD DEEDS event was successfully organised on 6.10.2018 at India International Science Festival (IISF) 2018 held at Indira Gandhi Prathishthan, Lucknow. Event was inaugurated by Additional Secretary, MoEF&CC. Exhibition showcasing the success stories under Eco-club programme was displayed. Around 200 Eco-club students from Uttar Pradesh participated in the Drawing and Essay competitions.



Trainings provided to Eco-club Coordinators on ZIKA virus under GLOBE programme:

Global Learning and Observations to Benefit the Environment (GLOBE) programme is an international science and education programme that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment.

Under the GLOBE, three trainings have been provided in Delhi, Madhya Pradesh and Gujarat to the Eco-club Coordinator on Zika virus.

8.2 Swachh aur Swastha Bharat Cell

Swachh AurSwasth Bharat Cell of the Ministry is involved in raising awareness on Swachh Bharat Abhiyan through Information, Education and communication (IEC) activities. To implement IEC a Swachhta Action Plan has been prepared and is being implemented in States/UTs through State Nodal Agencies. The aim is create awareness on Swachh Bharat with respect to the mandate of the Ministry which is environment conservation and protection. The achievement of the current financial year is given below.

i. Creation of Swachhta Action Plan Budget Head.

- Ministry has created a separate budget head with 96 generic code for expenditures related to Swachh Bharat Abhiyan.

ii. Clean Air For Delhi Campaign:

- To combat the decreasing Air Quality of Delhi, Ministry in association with State



Govt. of NCT Delhi, Central Pollution Control Board and Delhi Pollution Control Board launched “Clean Air For Delhi” campaign during 10-23 Feb 2018.

- This was awareness cum implementation campaign wherein 66 teams were formed with members from each of the above mentioned organisation.
- These teams visited different parts of Delhi to oversee the implementation of

Solid Waste Management, Air Act, Dust Mitigation Act etc.

- Penalty to the tune of Rs 8.85 crores were imposed on the violators.
- School and college students along with the scientific community, technopreneurs, industry also participated in various awareness and workshops to bring in a relevant improvement in air quality of Delhi.



Launching ceremony of “Clean Air For Delhi” campaign

iii. Implementation of Swachhta Action Plan in 13 States.

- For the first time with the specific Swachhta budget, Swachhta Action Plan of this Ministry is being implemented in thirteen states.

S. No.	State/UT(s)	Financial Aid for SAP implementation during 2018-19 (Rs.)
1	Andhra Pradesh	10,00,000
2	Chandigarh	10,00,000

3	Gujarat	10,00,000
4	Goa	10,00,000
5	Himachal Pradesh	10,00,000
6	Karnataka	10,00,000
7	Kerala	10,00,000
8	Madhya Pradesh	10,00,000
9	Maharashtra	10,00,000
10	Manipur	10,00,000
11	Odisha	10,00,000
12	Sikkim	10,00,000
13	Tamil Nadu	10,00,000
	Total	1,30,00,000

iv. Riverfront and Beach Cleaning

- During World Environment Day Celebration 2018, Ministry of Environment, Forest and Climate Change undertook riverfront and Beach Cleaning activities in 19 States.
- 24 beaches and 24 riverfronts were cleaned.
- The cleaning activity was carried out during 15th May -5th June 2018.
- The Ministry involved school students, NGOs, RWAs in this activity.
- This initiative helped in making people aware on keeping water bodies clean and the importance of Aquatic Flora and Fauna. The list of river front and beaches cleaning given below:

Riverfront Cleaning

S. No.	States	Riverfront
1	Andhra Pradesh	Godavari
2	Bihar	Ganga
3	Goa	Mandovi
4	Gujarat	Sabarmati Tapti
5	Haryana	Ghaggar
6	Himachal Pradesh	Beas Satluj
7	Karnataka	Pennar Cauvery
8	Kerala	Bharatpurra
9	Madhya Pradesh	Narmada
10	Maharashtra	Krishna, Mulamutha
11	Odisha	Mahanadi
12	Punjab	Satluj

13	Rajasthan	Chambal In Kota
14	Sikkim	Rani Chu
15	Tamil Nadu	Vaigai
16	Telangana	Musi
17	Uttar Pradesh	(Kanpur) Ganga, (Varanasi) Ganga
18	Uttarakhand	Ganga
19	West Bengal	Hooghly

Beach Cleaning

S. No.	States	Beaches
1.	Andhra Pradesh	Mypadu Pulicate Lake Kothakoduru
2.	Goa	Calangute Miramar Colva
3.	Gujarat	Veraval Porbandar Mangrol
4.	Karnataka	Panambur Malpe Gokarna Karwar
5.	Kerala	Kanur Calicut
6.	Maharashtra	Mirya Ganpatipule
7.	Odisha	Puri Paradip
8.	Tamil Nadu	Palavakkam Kanyakumari Thiruvotriyur/ Ennore
9.	West Bengal	Bakkhali Tajpur



Students participated in Beach cleaning at Paradip, Odisha



Students participating in Rani chu riverfront cleaning in Sikkim

v. Mini- Marathon on 3.06.2018 in five cities -namely Delhi, Bhubaneswar, Ahmedabad, -Bengaluru and Gangtok

- Envithon spreading awareness, ensuring concern and ownership about World Environment Day 2018 was organized in five cities on June 03, 2018 (New Delhi, Ahmedabad, Bhubaneswar, Bengaluru, Gangtok) to spread awareness on plastic pollution. More than 25000 students participated across five cities participated in these mini-marathons along with the members of civil societies, NGOs, NCC, Scout & Guides and paramilitary forces.
- In New Delhi alone 10000 school students participated in the mini-marathon “Envithon” which was celebrated along with the “Cyclothon” on the eve of World Bike Day i.e. 3rd June 2018. Dr. Harsh Vardhan, Hon’ble Minister for Environment Forest and Climate Change flagged off the Marathon and Cyclothon from Vinay Marg. Students from Delhi Eco schools performed nukkadnataks and songs on the theme of plastic pollution.



Hon'ble Minister, EF&CC addressing the participants of Envithon 2018



Students of Delhi, participating in Mini- Marathon “Envithon”

8.3 Media Cell

MoEF&CC is the nodal agency in the administrative structure of the Central Government for planning, promotion, coordination and overseeing the implementation of environmental and forestry programs and policies.

Ministry's main activities include conservation and survey of flora, fauna, forests and wildlife, prevention and control of pollution, afforestation and regeneration of degraded areas, protection of the environment and research related to these activities. Media Cell of MoEF&CC is mandated with taking up awareness campaigns using print, electronic and other mass media to enhance awareness about various environmental issues which would in turn facilitate better compliance with environmental regulations.

Objectives of Media, Publicity and Information:

- Creation of Environment awareness at all levels.
- Information dissemination about all

Environment and Forest programmes and Biodiversity conservation.

- People are made aware of their responsibilities towards environment.

Activities undertaken:

- World Environment Day:** The World Environment Day (WED) is celebrated globally on 5th June every year. During 2018, the theme of World Environment Day was 'Beat Plastic Pollution'. India was global host. Various Programmes were organised on this occasion. The main event was organized in Delhi and included a series of conferences in Vigyan Bhawan, a mega exhibition in Rajpath Lawns behind Vigyan Bhawan and the concluding event was graced by the Hon'ble Prime Minister and dignitaries from UN also attended the event. Considering India's global leadership in environmental protection and climate change sectors, the UNEP had chosen India to be the global host for World Environment Day on 5th June, 2018. This WED, 2018 focused on "Plastic Pollution" which is one of the most challenging environmental concerns today.





- b. Production of audio-video creatives to spread message on protection of environment. Audio-Visual Creatives have been prepared by Media Cell and uploaded on MoEF&CC's website at link:<http://moef.gov.in/green-goods-deeds-videosaudio/>
- c. **Airing of audio-visual creatives:** MoEF&CC is running media campaign through various audio-visual creatives on topics like save water, no plastic, green good deeds on Lok Sabha TV, Prasar Bharti, Doordarshan, TV News Channels and on Digital Cinemas.
- d. Calendar printing for 2018 on the theme of Waste Management. It was done for the first time in the Ministry.
- e. Organise visits of students/professions of different educational institution to Indira Paryavaran Bhawan to explain its green features.
- f. **Kumbh Mela:** A space of 4200 sq ft had been taken at Prayagraj for exhibition at Kumbh Mela 2019. Ministry had set up an

exhibition there showcasing exhibits from the following attached/ subordinate offices of this Ministry:

- National Centre for Sustainable Coastal management (NCSCM)
- GB Pant Institute of Himalayan Environment and Sustainable Development (GBPIHESD)
- Botanical Survey of India (BSI)
- Zoological Survey of India (ZSI)
- Forest Survey of India (FSI)
- Central Pollution Control Board (CPCB)
- Indian Council for Forestry Research and Education (ICFRE)
- Wildlife Institute of India (WII)
- National Tiger Conservation Authority (NTCA)

Exhibition at Kumbh Mela had been a great success. It was visited by more than 4.50 lakh from 19.01.2019 to 04.03.2019 (45 Days).



Exhibition at Kumbh Mela 2019 in Prayagraj

8.4 National Museum of Natural History (NMNH)

The National Museum of Natural History, a subordinate office of Ministry of Environment, Forest and Climate Change, Government of India, was opened to public on 5th June, 1978 at Mandi House, coinciding symbolically with the World Environment Day with an objective to create environmental awareness on nature and environment through non-formal medium such as thematic galleries, exhibitions, film shows and educational activities to all masses of society in order to promote environmental awareness.

Objectives:

The objectives of NMNH are to develop the NMNH in the country's capital to achieve the highest level of quality to promote environmental education on a national level; to develop Regional offices (Regional Museum of Natural History) in various regions of the country in order to extend its activities at the regional/local levels; to develop museum-based educational projects at the level so as to help school curriculum on environmental education (EE); to develop EE resource materials (such as

audio-visual aids, low-cost teaching aids, school loan kits, etc.) to promote environmental education (EE); to undertake museum and collection based research component with the scope and resources of the museum; to extend professional help to the other agencies/organisations regarding natural history collections/museums; to develop national and international cooperation/collaboration with other organisations/professional bodies/Museums related to Natural History/EE.

Regional office of NMNH: NMNH, New Delhi has extended its geographical range by establishing its 4 Regional Museums of Natural History (RMNH) in different parts of the country viz. Karnataka (Mysuru), Madhya Pradesh (Bhopal), Odisha (Bhubaneswar) and RGRMNH at Rajasthan (Sawai-Madhopur). Another RMNH at Sikkim (Gangtok) is under construction.

Achievement/ Progress:

Educational activities undertaken: The NMNH and its Regional Centres have undertaken environmental educational programmes/activities throughout the year to all masses of the society during environment related days



and other occasions such as International Day for the Disabled, World Wetlands Day, World Forestry Day, World Day for Water, Earth Day, International Museum Day, Summer Vacation Programme, World Environment Day, Van Mahotsav, International Tiger Day, Orientation Workshop for Teachers, International Day for the Preservation of the Ozone Layer, Wildlife Week, World Heritage Week, International Mountain Day, Youth Nature Camp, etc.

In addition, the NMNH has excelled in Communication, Education and Public Awareness (CEPA) programmes/activities in Biodiversity, Green Good Deeds and Clean

Air Campaign, etc. It has also developed thrust areas on Museum Accessibility (Social inclusion) and Traditional Knowledge about Biodiversity for Persons with Special Needs and Under-Privileged children.

NMNH and its regional centres have exhibited about 37 thematic temporary exhibitions on topics viz., Tribes of India, Seeds of India, Heritage sites of India, Textiles of India, Pollution, Conservation of Sacred Grooves of India, Fossils, Green Good Deeds, Wetland Habitat, Birds of Karaji Lake, etc. and opened to the general public to enhance their knowledge on environment and to encompass common public in environmental conservation.

Physical achievement:

Programmes of National Museum of Natural History (NMNH) & Regional Museum of Natural History (RMNH)

Sl. No.	Head	Particulars	Physical Targets	Target				
				NMNH, New Delhi	RMNH, Mysore	RMNH, Bhopal	RMNH, Bhubaneswar	Rajiv Gandhi RMNH, Sawai-Madhopur
1.	Exhibitions	Temporary Exhibitions	08	15	04	08	04	06
		Exhibit of the Month		60	12	12	12	12
2.	Educational Programme	Environmental awareness programme	12	36	12	18	12	16
		Summer Vacation Programme	01	05	01	01	01	01
		Winter Nature Programme	01	05	01	01	01	01
		Teachers training workshop	04	25	04	06+02	04	01

Sl. No.	Head	Particulars	Physical Targets	Target				
				NMNH, New Delhi	RMNH, Mysore	RMNH, Bhopal	RMNH, Bhubaneswar	Rajiv Gandhi RMNH, Sawai-Madhopur
		Development of new popular publications (including e-copies)	08		12	02	08	04
		Programme for underprivileged children	04	12	03	03	04	04
		Mass Awareness campaign through street Play	04	17	03	04	04	01
		Monthly school biodiversity	12	12	11	03	12	04
		Interact with scientific	12		16		12	
		Be the change programme	12		12		12	
		E-Newsletter	12	01	04		12	3
		Programme for children with special needs	02	20	02	02	02	05
3	Development	Development of new website of NMNH		Under Progress				
4	Collaborative Programmes					14		
5	Regional Outreach						04	
6	Gallery							01
7	Total Footfall				170106	73410	191491	165464

Programmes / Activities undertaken

Some of the signature programmes/activities of NMNH: World Environment Day, Young Environmentalist of the Year Award, World Heritage Day, Van Mahotsav, International Tiger Day, Summer Vacation Programme,

Winter Nature Camp, Wildlife Week, Teachers Training Workshops, Programme for the Under-Privileged children, Programme for Specially-Challenged (Divyang) children, School Biodiversity Programme, Swachh Bharat Mission Programme in Schools.



NMNH and its Regional Centres also conducted various environmental awareness programmes on theme such as Plastic Pollution, Clean Air and Green Good Deeds etc. with the help of NukkadNatak (Street Plays), Debates, Quiz and Declamation Contests, Essay writing, Poster making, Painting, Slogan writing, Poem writing competitions etc. Under Mass awareness campaign, activities such as Rallies, slogan raising, Green Pledge in schools and neighbourhood colonies, Cleanliness drive under Swachh Bharat Mission etc. were undertaken.



Painting Competition IIFS-2018

In addition to this NMNH and its Regional Centres actively organised various orientation workshops for teachers, National Conferences, School Biodiversity Programme, Lectures, Collaborative Programmes with different institutions/NGOs/Government Departments, etc. for the betterment of users.

NMNH has organised various programmes of the Ministry (MoEF&CC) like Swachhta Hi Sewa Campaign, Harit Diwali-Swasth Diwali Campaign, Mini Clean Air Campaign at IIFS-

2018 – Lucknow, Green Good Deeds Exhibition (ParyvaranKhumb) at Varanasi and UNCCD.

Asia Pacific Regional Workshop organised by Desertification Cell. NMNH was involved with “Behtar India”, an initiative of DHFL Pramerica Life Insurance in association with Republic TV and CAF India was involved for Pan India initiative with schools and students for making cities cleaner, greener and healthier. NMNH was one of the partners along with UNDP, WCCB during World Wildlife Day activities. NMNH is providing guided tours of the Indira Paryavaran Bhawan-Green Building.

Achievement:

- A total ~32000 Students/General masses have been sensitized in the programmes/activities organised by NMNH.
- During Harit Diwali–Swasth Diwali Campaign NMNH sensitized ~ 3.5 lacks school children through Green Pledge during morning school assemblies.
- More than Fifteen popular article/brochures/leaflets/posters have been developed/published during Jan-2018-March-2019.
- Annually nearly 6 lacs students/general public have been visited regional museums from January 2018 to March 2019 to see exhibits of Indian Natural Heritage and participated in various competition and mass awareness campaign to conserve our nature.

Centre of Excellence

CHAPTER

09





Centre of Excellence

SACON was set up by the MoEF&CC under the Scheme on “Centre of Excellence” during November, 1988 and commenced its functioning from June 1990 in Coimbatore, Tamil Nadu.

Objectives: For conservation of avian biodiversity their habitats and ecosystems.

Major Programmes Undertaken: (1) Conservation Plans of Critically endangered/threatened avifauna and their ecosystems, (2) Conservation and Management Plans of Wetlands in States, (3) Environmental Awareness and Nature Camps for Schools, (4) Projects and Programmes on Climate Change Mitigation and Adaptation for Conservation of Biodiversity particularly avifauna, (5) National Certification Agency for prevention of Illegal Trafficking of Endangered species of Birds (6) National Toxicity Centre for evaluation of toxicity (including autopsy) involving avifauna and in ecosystems.

Progress/Achievements:

As part of Medium Term Expenditure Framework (2017-2020), the following major projects were initiated/undertaken/completed:

- A Conservation Genetics Laboratory has been established during 2017 which is equipped to conduct basic molecular analysis on contemporary samples (e.g. tissue, scat, blood, saliva, feathers).
- A GIS Laboratory has been set up by SACON equipped with Work Station, Server, Q-GIS Software and Data Set (Topo sheets, satellite data and thematic layers).

- Construction of PG Students Hostel and Class Room on campus has been completed.
- The construction of Central Instrumentation Laboratory at a cost of Rs. 62.64/- lakhs on the campus has been completed.
- A National Avian Forensic Laboratory has been established by SACON at a cost of Rs. 8.00 Cr. to identify avian species from their remains, to facilitate Wildlife Crime Control Bureau, Airports/Ports Authority of India and other law enforcement agencies in preventing illegal bird trafficking.
- A National Ornithological Databank (NOD) Cell has been established at SACON to serve as a national repository of resources in Ornithology and Natural History. So far, Completed Indexing of 378 ornithological theses and dissertations (259 Ph.D., 15 M.Phil. and 104 M.Sc.) along with abstracts, including collections from Madras University and Wildlife Institute of India, Dehra Dun.
- Initiated a regular and fully residential M.Sc. course in “Ornithology and Conservation Biology” from the academic Year 2018. Also, and set up a National Ornithological Databank (NOD) Cell to serve as a single-window clearing house for information on Indian Ornithology and Natural History.

MoEF&CC's funded Projects:

SACON conducted overall 28 projects of which 21 projects were ongoing including 10 projects sponsored by the MoEF&CC, and completed 07 projects.



A total of 10 projects have been funded by MoEFCC under MTEF 2017-2020. These include:

- Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization.
- Conservation plans for Critically Endangered avifauna and biodiversity: Assessing the distribution, population and habitat use of three endangered species to develop conservation plan for species and their habitats.
- Developing Conservation and Management Plans for Select Important Bird and Biodiversity Areas (IBAs) of the Country.
- National Centre for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds in India.
- Establishment of National Avian Forensic Laboratory at SACON for National Certification for Illegal Trafficking of Birds.
- Assessment of status, distribution and threats to the population of threatened

Sarus Crane *Antigone antigone* in Gujarat, India (Phase 1).

- Assessment of status, distribution and threats to the population of threatened Sarus Crane *Antigone antigone* in Uttar Pradesh, India (Phase 2).
- Developing a conservation action plan for Forest Owlet (*Heteroglaux blewitti*), a Critically Endangered species endemic to central India.
- In-situ and Ex-situ conservation of Endemic Andaman Edible-nest Swiftlet in the Andaman and Nicobar Islands.
- A study on bird hazards in select Indian civil airfields.

The progress made on the research projects funded by MoEF&CC is given below:

- I. SACON continued its studies on Critically endangered avifauna in different landscapes across the country viz. (1) Forest Owlet (*Heteroglaux blewitti*), Manipur Bush-quail (*Perdiculamanipurensis*), Swamp Grass-babbler (*Laticillacinerascens*) and Black-bellied Tern (*Sterna acuticauda*) for the preparation of Conservation Plans.



- II. SACON has initiated a comprehensive study to assess the bird hazards in three civil airfields; (1) Coimbatore International Airport, Coimbatore, Tamil Nadu (2) Sardar Vallabhbhai International Airport, Ahmedabad, Gujarat and (3) Kannur International Airport, Kannur, Kerala with a view to provide strategies to mitigate them to the extent possible.
- III. A countrywide study on assessing the population status of synanthropic bird species including House Sparrow and House Crow and their response to urbanization is currently underway.
- IV. As part of its long-term programme on the conservation of endemic Edible-nest Swiftlet in the Andaman and Nicobar Islands, SACON continued its work for the implementation of in-situ and ex-situ conservation of the species.
- V. For proposing long-term strategies for conservation of Sarus Crane (*Antigone antigone*), a threatened species, the current status, seasonal distribution pattern, habitat use and also the impact of pesticide contamination on Sarus Crane in the States of Gujarat and Uttar Pradesh were studied.

In addition, the following programmes/ activities were taken up:

- 02 Conservation Genetics Workshops during June 2017 and January 2019.
- Training Programme on “Ornithology and Wildlife Conservation” during June, 2017.
- 03 workshops on Conservation and Management of Wetlands for (1) Wetland Managers and Stakeholders of Southern States during March, 2017, (2) Forest officials of Uttarakhand State during January, 2018 and (3) Southern States during September, 2018.
- Organized 45 Nature Camps for school children / college students/ Teachers, Salim Ali Trophy Competition and World Environment Day Programmes).
- Hands on workshop on biological sample collection for the forest officials of Tamil Nadu Forest Department at Satyamangalam Tiger Reserve in October, 2018.
- As part of the MoEFCC’s Swachh Bharat Abhiyan Programme SACON conducted a



Cleanliness awareness programme in the Coimbatore Forest Divisions of Palamalai and Siruvani areas for two days i.e. 11th and the 12th January 2018. Local and tribal people of the area, college students and Volunteers participated in the programmes.

- As part of World Environment Day celebrations on the theme of “Beat Plastic Pollution”, two water bodies at Coimbatore were cleaned up during 26th and 27th May 2018.
- SACON has signed a MoU with Smithsonian Conservation Biology Institute (SCBI), USA with effect from 29th March, 2019. The proposed collaboration between the organizations would enhance contribution in scientific research, training and capacity building programmes using the expertise and facilities available with both SACON and SCBI.
- Signed a MoU for getting the sponsorship for 03 candidates for pursuing the PG Course at SACON, with one each from (1) Wildlife Trust of India, New Delhi, (2) Raptor Research & Conservation Foundation, Mumbai and (3) World Wide Fund for Nature – India, New Delhi.
- Signed a MoU with WWF-India on undertaking Wetland Conservation in Noyyal and Bhavani River Basin.
- Signed a MoU with UNDP for effective implementation of India High Rang Mountain Landscape Project where UNDP is the implementing partner.
- Initiated collaboration with Copperbelt University, Zambia during December, 2018 under certain thematic areas such as Postgrad student exchange and to provide input to National Park Authority of Zambia through exchange programme.
- SACON participated in a research collaborative meeting of S.P.E.C.I.E.S held in California, USA during April, 2018 to develop research collaborations and to develop internship programmes between SACON and S.P.E.C.I.E.S where students from both USA and India can work under various ongoing research projects.
- Conducted a workshop at the University KwaZulu-Natal, South Africa during November, 2017 on occupancy modeling for the symposium of Contemporary Conservation Practice and to develop further research collaborations between both parties.

Environmental Information

CHAPTER

10





10.1 Environmental Information System

ENVIS, a Central Sector Scheme is being implemented through a network of 68 ENVIS Hubs and Resource Partners (RPs) of which 32 Hubs dealing with “State of the Environment and Related Issues” are hosted by the respective State Government /UT Administration and 36 RPs are hosted by environment-related governmental and non-governmental organizations/ institutes of professional excellence, with varied thematic mandates pertaining to environment, forests, climate change, pollution abatement, health/hygiene etc. The primary mandate of the scheme to collect and disseminate information relating to a variety of themes associated with Environment, Forest, Wildlife and Climate Change sectors has been expanded after the termination of the XII Five Year Plan period in 2016-17 to include skilling in ‘green’ sectors, Community based sustainable development of villages, District level grid based survey for sustainable management of natural resources, etc.

Activities undertaken

- i. **Green Skill Development Programme (GSDP)** – It aims at skilling youth in the country and creating a green work force. Under the pilot of GSDP launched in June, 2017, the Advance Course on Para-taxonomy, concluded in March, 2018. Based on the success of the pilot, the programme was expanded to an all India level with 43 Courses to be conducted across 87 centres in 2018-19.
- ii. Under another initiative, select ENVIS Hubs and RPs designed 4 modular courses for skilling local youth along either side of the banks of the River Ganga and a pilot programme was launched on **River Life Management**, in one of the most polluted stretches of River Ganga, between Patna and Danapur.
- iii. **National Environment Survey (NES)-a Grid-based Resource Information and Decision Support System (GRIDSS) for sustainable management of natural resources:** During the World Environment Day 2018, Hon’ble MEF announced that the Ministry would be undertaking a National Environment Survey. In order to ascertain the status of environment at district level and facilitate policy decisions, the ENVIS Hubs/Resource Partners would carry out environmental survey of the country through a grid-based approach, depending on the requirement, for effective survey of various environmental parameters such as flora & fauna; pollution/emission inventory, inventory of waste generated, etc. The ENVIS Hubs and RPs have identified 82 Districts in the first phase of NES-GRIDSS.
- iv. **Community-driven Environmentally Sustainable Village Program (CESVP)-** Under the programme, Delhi based 7 ENVIS RPs [hosted by Jawaharlal Nehru University (JNU), World Wide Fund for Nature– India (WWF), International Institute of Health and Hygiene (IIHH-Sulabh), Central Pollution Control Board (CPCB), Centre for Media Studies (CMS), School of Planning and Architecture (SPA)

and The Energy Resources Institute (TERI)] carried out coordinated activities since October, 2017 till March 2018 aimed at creation of awareness about major environmental issues covering pollution, waste management, water management, setting up of community driven projects, such as solar energy, health status, etc. in three villages, viz., Dheerpur, Ghoga and Singhola in Delhi. Further, a preliminary Preliminary Survey was undertaken by these RPs in April, 2018 in three villages – Neemka (Gautam Budh Nagar, UP), Oledha (Bulandshehar, UP) and Kachaida (Gautam Budh Nagar, UP) and a report was prepared.

v. **Information and Knowledge Products of**

ENVIS: ENVIS regularly brings out value-added information products relating to Environment, Forest, Wildlife and Climate Change which include theme based newsletters, special publications, e-newsletters, thematic bulletins, technical reports, Discussion Forum, mobile apps, directories of information at State/regional/ National level, Bibliography, information products developed on parks and sanctuaries, desertification maps, flora and fauna species distribution maps.

- vi. On the occasion of World Environment Day, various programmes such as Paryavaran Sanrakshan Rally, Green Pledge, Nature Walk, Plantation Drive, Slogan Writing, Nukkad Natak, Debate Competition, Film Shows on Environment Conservation, etc., were organized by ENVIS Hubs and RPs, across the country.

- vii. For FY 2018-19, Regional Evaluation Workshops-cum-training programme on GIS/Geo- mapping for ENVIS Hubs and RPs based on the bio-geographic zones - namely, Himalayan; North-Eastern; Gangetic Plains; Semi-Arid/Desert; Western Ghats, Islands & Coastal; and the Deccan Peninsula) were conducted during November-December, 2018. Some photos may be given here.

- viii. ENVIS Hubs and RPs were actively involved in the promotion of Swachh Bharat Abhiyaan in their respective areas. They had undertaken various activities during this period - cleanliness and sensitization drives, planting tree saplings, collection of garbage, litter and trash, administering Green Pledge, etc.

Progress /Achievement:

- i. **GSDP:** Under the pilot of GSDP, 154 Trainees successfully completed the Advance Course on Para-taxonomy. Based on the success of the pilot, the programme was expanded to an all India level with 43 Courses in 2018-19. Hon'ble Minister, EF&CC launched the full-fledged programme as well as the Mobile app on GSDP. The app (gsdp-envis) contains all basic information about the training programmes being conducted under GSDP. Skilling was provided by ENVIS Hubs, RPs as well as subordinate offices /autonomous and statutory bodies functioning under the purview of MoEF&CC, located across the country. Overall, 135 courses were conducted at 87 locations throughout the country covering diverse fields. During 2018-19, 2315 youth joined the 'Green Skilled Workforce'.



Launch of GSDP Mobile app by Hon'ble Minister, EF&CC



Tribal Community under GSDP programme with lantana stems and the finished products



Honey Bee produced and packed by GSDP trainees under Certificate Course on Wild Beekeeping & Processing



GSDP trainee employed as Museum Guide at Indian Museum, Kolkata explaining the faunal diversity and its importance to visitors at Indian Museum Kolkata

ii. **NES-GRIDSS:** For Convergence and Ease of data collection:

- There are 723 districts in the country. Biogeographic region wise allotment of the rest of the districts to all ENVIS Hubs and RPs was done. Each ENVIS Hubs/RP thus got an idea of the number of districts under its jurisdiction for the purpose of carrying out the environment survey.
- The NES schedule was updated with inputs from Divisions concerned in the Ministry and other experts, from 17 modules with 49 sub-modules covering 337 parameters to 110 sub modules covering 617 parameters at the State/ District level.
- A meeting was held with different stakeholders under chairpersonship of Principal Adviser, MoEF&CC on Jan. 8, 2019 to discuss the convergence of available data/ information for NES. All have agreed to share relevant data/ information/ maps with MoEF&CC.

iii. During the reference period, ENVIS Network printed, published and uploaded more than 650 Knowledge products including newsletters, books, theme based special publications, e-books, e-bulletins,

booklets, environment calendars, brochures, pamphlets, DVDs, CDs, Mobile Apps, etc.

- iv. During the reference period, one new ENVIS Hub on “Status of Environment and related issues” was for the State of Haryana in Department of Environment and Climate Change, Haryana. The ENVIS Hubs at Bihar State Pollution Control Board and Rajasthan State Pollution Control Board were revived.
- v. A significant increase has been witnessed in the number of visitors to the ENVIS websites during the year. The total number of visitors on the websites of ENVIS Hubs/ RPs put together, witnessed about 3 crore hits till March 2019.
- vi. ENVIS Focal Point at the Ministry and its partners together responded to more than 3 lakh queries till March, 2019 on various subject-areas of environment and provided substantive information to users as far as possible, on climate change, ozone layer, environmental conservation, water and air pollution, water management, waste management, environmental standards, applicable laws, environmental education and awareness, etc. Wherever information was not readily available, “Referral Service” was provided to the users concerned.

List of ENVIS Hubs and Resource Partners (RPs)

S. No.	ENVIS Resource Partners	Subject Area
1.	Central Pollution Control Board (CPCB), Delhi	Control of Pollution (Water, Air and Noise)
2.	National Institute of Occupational Health (NIOH), Ahmedabad, Gujarat	Environmental and Occupational Health



S. No.	ENVIS Resource Partners	Subject Area
3.	Centre for Ecological Sciences - Indian Institute of Science (IISc), Bengaluru, Karnataka	Western Ghats Ecology and Biodiversity
4.	Centre for Advanced Study in Marine Biology (CASMB), Parangipettai, Tamil Nadu	Estuaries, Mangroves, Coral Reefs and Lagoons
5.	Zoological Survey of India (ZSI), Kolkata, West Bengal	Biodiversity
6.	Centre for Mining Environment (CME)-IIT-Indian School of Mines (ISM), Dhanbad, Jharkhand	Environmental Problems of Mining
7.	G.B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD), Almora, Uttarakhand	Himalayan Ecology
8.	Botanical Survey of India (BSI), Howrah, West Bengal	Biodiversity
9.	Forest Research Institute (FRI), Dehradun, Uttarakhand	Forestry and Forest Related Livelihoods
10.	Wildlife Institute of India (WII), Dehradun, Uttarakhand	Wildlife and Protected Area Management
11.	State Council of Science and Technology for Sikkim (SCSTS), Gangtok, Sikkim	Eco-Tourism
12.	Central Arid Zone Research Institute (CAZRI), Jodhpur, Rajasthan	Combating Desertification
13.	Department of Zoology - University of Madras (DzUM), Chennai, Tamil Nadu	Micro-organisms and Impact on Public Health
14.	Institute for Ocean Management (IOM), Anna University, Chennai, Tamil Nadu	Coastal Regulation Zone Management and Coastal Shelter Belts
15.	Indian Institute of Tropical Meteorology (IITM), Pune, Maharashtra	Acid Rain and Atmospheric Pollution
16.	Indian Institute of Chemical Technology (IICT), Hyderabad, Telangana	Climate Change and Public Health
17.	National Botanical Research Institute (NBRI), Lucknow, Uttar Pradesh	Indicators of Plant Pollution
18.	Gujarat Cleaner Production Centre (GCPC), Gandhinagar, Gujarat	Cleaner Production & Technology
19.	Department of Environmental Sciences (DES), Kalyani University, Nadia, West Bengal	Environmental Biotechnology

S. No.	ENVIS Resource Partners	Subject Area
20.	School of Planning and Architecture (SPA), Delhi	Human Settlements and their Impact on Environment
21.	School of Environmental Sciences (SES), Jawaharlal Nehru University (JNU), Delhi	Geo-diversity and Impact on Environment
22.	Environment Protection Training and Research Institute (EPTRI), Hyderabad, Telangana	Ecology of Eastern Ghats
23.	Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore, Tamil Nadu	Forest Genetic Resources and Tree Improvement
24.	Thiagarajar College of Engineering (TCE), Madurai, Tamil Nadu	Plastic Waste Management
25.	The Energy Resources Institute (TERI), Delhi,	Renewable Energy and Climate Change
26.	World Wide Fund for Nature – India (WWF), Delhi	Wildlife Conservation (including species and habitats) using geospatial techniques
27.	Asian Development Research Institute (ADRI), Patna, Bihar	Water Management and Climate Change
28.	Lucknow University, Lucknow, Uttar Pradesh	Biodiversity & Traditional Knowledge
29.	Bombay Natural History Society (BNHS), Mumbai, Maharashtra	Avian Ecology
30.	Consumer Education and Research Centre (CERC), Ahmedabad, Gujarat	Environment Literacy – Eco-Labeling and Eco-Friendly Products
31.	CPR Environmental Education Centre (CPREEC), Chennai, Tamil Nadu	Conservation of Ecological Heritage and Sacred Sites in India
32.	International Institute of Health and Hygiene (IIHH), Delhi	Hygiene, Sanitation, Sewage Treatment Systems and Technology
33.	Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore, Tamil Nadu	Wetland Ecosystem (including inland wetlands)
34.	Madras School Of Economics (MSE), Chennai, Tamil Nadu	(i) Valuation of Ecosystem Services at District, State and National levels, and (ii) Environmental Performance Index (EPI) - Ranking of districts on their environmental performance.
35.	National Environmental Engineering Research Institute (NEERI), Nagpur, Maharashtra	Hazardous Waste Management including E-Waste
36.	Amrita Vishwa Vidyapeetham (AVV), Coimbatore, Tamil Nadu	Science based management of biological invasion/invasive alien species in India.



S. No.	ENVIS Hubs (State Government)	Subject Area
1.	Environment Protection Training and Research Institute (EPTRI), Hyderabad, Telangana	Status of Environment and Related Issues
2.	East Godavari River Estuarine Ecosystem (EGREE) Foundation, East Godavari District, Andhra Pradesh	Status of Environment and Related Issues for the State
3.	Assam Science, Technology and Environmental Council (ASTECC), Guwahati, Assam	Status of Environment and Related Issues
4.	Bihar State Pollution Control Board (BSPCB), Patna, Bihar	Status of Environment and Related Issues
5.	Chhattisgarh Environment Conservation Board (CECB), Raipur, Chhattisgarh	Status of Environment and Related Issues
6.	Goa State Council of Science & Technology, Bardez, Goa	Status of Environment and Related Issues
7.	Gujarat Ecology Commission (GEC), Gandhinagar, Gujarat	Status of Environment and Related Issues
8.	Himachal Pradesh Council for Science, Technology and Environment (HIMCOSTE), Shimla, Himachal Pradesh	Status of Environment and Related Issues
9.	Department of Ecology, Environment and Remote Sensing, State Government of J&K, Srinagar, J&K	Status of Environment and Related Issues
10.	Forests & Environment Department, Govt. of Jharkhand, Ranchi, Jharkhand	Status of Environment and Related Issues
11.	Environment Management & Policy Research Institute (EMPRI), Bengaluru, Karnataka	Status of Environment and Related Issues
12.	Kerala State Council for Science, Technology and Environment (KSCSTE), Thiruvananthapuram, Kerala	Status of Environment and Related Issues
13.	State Environment Department, Mumbai, Maharashtra	Status of Environment and Related Issues
14.	Directorate of Environment, Dept. of Forests and Environment, Govt. of Manipur, Imphal (East), Manipur	Status of Environment and Related Issues
15.	Mizoram Pollution Control Board (MPCB), Aizawl, Mizoram	Status of Environment and Related Issues

S. No.	ENVIS Hubs (State Government)	Subject Area
16.	Centre for Environmental Studies (CES), Forest & Environment Department, Government of Odisha, Bhubaneswar, Odisha	Status of Environment and Related Issues
17.	Punjab State Council for Science and Technology (PSCST), Chandigarh, Punjab	Status of Environment and Related Issues
18.	Rajasthan State Pollution Control Board (RSPCB), Jaipur, Rajasthan	Status of Environment and Related Issues
19.	Forests, Environment & Wildlife Management Department, Gangtok, Sikkim	Status of Environment and Related Issues
20.	Department of Environment, Govt. of Tamil Nadu, Chennai, Tamil Nadu	Status of Environment and Related Issues
21.	Tripura State Pollution Control Board (TSPCB), Agartala, Tripura	Status of Environment and Related Issues
22.	Uttarakhand Environment Protection & Pollution Control Board (UEPPCB), Dehradun, Uttarakhand	Status of Environment and Related Issues
23.	Department of Environment and Forest - Andaman and Nicobar, Port Blair, Andaman and Nicobar (U.T.)	Status of Environment and Related Issues
24.	Forest Department (Wildlife Division), Union Territories of Dadra & Nagar Haveli and Daman & Diu (U.T.)	Status of Environment and Related Issues
25.	Department of Environment – Chandigarh, Chandigarh (U.T.)	Status of Environment and Related Issues
26.	Puducherry Pollution Control Committee, Puducherry (U.T.)	Status of Environment and Related Issues
27.	Nagaland Pollution Control Board (NPCB), Dimapur, Nagaland	Status of Environment and Related Issues
28.	Department of Environment & Forests, Itanagar, Arunachal Pradesh	Status of Environment and Related Issues
29.	Department of Environment & Forests – Kavaratti, Lakshadweep (U.T.)	Status of Environment and Related Issues
30.	Department of Forest, Lucknow, Uttar Pradesh	Status of Environment and Related Issues
31.	Department of Forest, Madhya Pradesh	Status of Environment and Related Issues
32.	Department of Environment – Govt. of Haryana, Chandigarh, Haryana	Status of Environment and Related Issues



10.2 Statistics Division

The increased prominence of evidence based approaches to informing policy decisions emphasize the need for high quality statistics in support of the policy making process. With countries now on the path of 2030 agenda for sustainable development, the ambit of environment statistics needs to cover all components of environmental issues. The Division also coordinates with the Ministry of Statistics and Programme Implementation (MoSPI) and Central Statistics office to provide technical inputs on development of official Statistics in line with the Fundamental Principles of Official Statistics. The Division supports MoSPI in publishing ENVISTATS which is a Compendium of Environment Statistics and published annually.

Environment statistics support evidence-based policy making by enabling the identification of environmental issues and the objective quantification of measures and impacts of policy initiatives. The scope of environment statistics covers biophysical aspects of the environment and those aspects of the socio-economic system that directly influence and interact with the environment. The main products of environment statistics are – (a) detailed environment statistics series; (b) environmental accounts; and (c) environmental indicators.

The functional responsibilities of the Statistics Division are as follows:

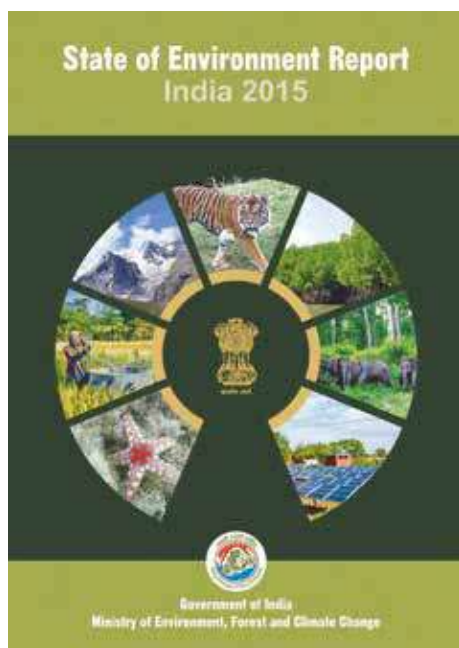
- Identification of existing data gaps and advice on bridging them in order to strengthen the process of planning, monitoring and decision-making in the Ministry.
- Development and management of an efficient centralised statistical database on environment and forestry sectors with the assistance of various Divisions of the Ministry and Environment Centres, with a view to meeting the requirements of various Divisions and other overall requirements.
- Liaison with Ministry of Statistics & Programme Implementation and other Ministries on all types of statistical matters.
- Liaison with State Governments and UT Administrations, and where necessary, subordinate and attached offices and autonomous bodies of Ministry of Environment & Forests to strengthen the processes of data collection, validation, processing and interpretation of statistical data.
- Rendering advice to all Divisions on statistical matters and providing interpretations of statistical data and implementation of statistical components of various Conventions and Agreements.
- Preparation of State of Environment Report (SoER) for States/UTs/Hotspots and at national level. It is envisaged that the State of Environment Report (SoER) for each State/UT will be published with a periodicity of two years followed by a national SoER.
- To coordinate and represent the Ministry in UN/UNEP's consultations on Global Environment Outlook, System

of Environmental Economic Accounting (SEEA), Ecosystem Accounting, FDES, SDG Global indicator development and data flow and other environment statistics related matters and surveys.



Activities undertaken:

- The State of Environment Report (SoER) aims to provide concrete guidance for environmental action planning, policy setting and resource allocation for the coming decades, based on a sound integrated analysis of the state and trends of the environment. It also clearly selects key issues and set priorities from the range of environmental concerns that the State is facing. It is envisaged that the State of Environment Report (SoER) for each State/ UT will be published with a periodicity of two years followed by a national SoER.
- State of Environment Reports for the States of Karnataka, Mizoram, Tamil Nadu and Telangana were completed.
- The India State of Environment Report was released by the Hon'ble Minister during the World Environment Day Celebration.
- Annual Report of the Ministry for the year 2017-18 was compiled and submitted to the Parliament.
- Brief Statement of Activities for the year 2018 was compiled and submitted to the Parliament.
- The Annual publication on Environment Statistics is published by Ministry of Statistics and Programme Implementation (MoS& PI). The revamped publication EnViStats 2018 incorporating various data on Environment and Climate Statistics has been compiled and published by MoS&PI. The Ministry supported MoS&PI in compilation of the various environment related data for the publication.
- It also provides information for periodic publications produced as per the recommendations of the National Statistical Commission and Statistical Abstracts and other publications of Central Statistical Organization (CSO).
- Rendered advice to other Divisions on statistical matters and providing interpretations of statistical data and implementation of statistical components of various Conventions and Agreements.



10.3 SDG Coordination Unit

SDG Coordination Unit under Statistics Division coordinates the implementation of SDGs and related frameworks in the Ministry.

Implementation and Monitoring of Environment related SDGs

The 2030 agenda for Sustainable Development with 17 Sustainable Development Goals (SDGs) and 169 associated targets is a comprehensive developmental agenda integrating social, economic and environmental dimensions. Environmental, social and economic sustainability is key to the 2030 agenda. Environmental protection has been recognised today as the crucial factor in any sustainable development. It was also recognised that sustainable development on all fronts required the preservation of environment, especially irreplaceable natural resources and bio-diversity. Social Sustainability promotes social development, seeking

cohesion between communities and cultures to achieve satisfactory levels in quality of life, health and education. Thirdly, economic sustainability focuses on equal economic growth that generates wealth for all without harming the environment.

The SDGs and the 2030 Agenda are bringing an integrated, holistic perspective to sustainable development. They link the environment with other dimensions of sustainable development in order to take advantage of synergies and minimize trade-offs between them. They also represent a major change from the Millennium Development Goals (MDGs). Not only are the SDGs universal and challenging all countries, they also offer a broad sustainability agenda, giving equal attention to social, economic and environmental issues; by contrast, the MDGs had a greater focus on the social agenda, paying insufficient attention to economic and environment issues. Thus, the environment is incorporated into the SDGs more extensively than it was into the MDGs.

Environment is represented in all the SDGs. More than half have a direct environmental focus or address the sustainable use of natural resources. Many goals are directly related to the quality of the physical environment, e.g. water (SDG 6), climate (SDG 13), oceans (SDG 14) and land and biodiversity (SDG 15). Other goals are more indirectly related to the physical environment, e.g. via natural disasters (SDGs 1 and 11), food, hunger and agriculture (SDG 2), human health (SDG 3), energy (SDG 7), economic growth and employment (SDG 8), industry (SDG 9) and cities (SDG 11). For

example, SDG 8 emphasizes sustainable economic growth and decent jobs, while one of its targets calls for decoupling economic growth from environmental degradation and improving global resource efficiency in consumption. SDG 12 on sustainable consumption and production, SDG 16 on peace, justice and strong institutions, and SDG 17 on means of implementation are cross-cutting goals that support all other goals and their environmental dimensions. Clearly, the SDGs cannot be achieved without fundamental environmental progress. This is recognized in the 2030 Agenda, which directly calls for an integrated approach to sustainable development.

Implementation of SDGs in MoEF&CC

The Ministry of Statistics and Programme Implementation (MoSPI) has developed the National Indicator Framework (NIF) which will help in monitoring the progress of the SDGs and associated targets. As per the National Indicator Framework 25 targets have indicators with data source as MoEF&CC. The NIF has 43 indicators for monitoring the 25 targets. A mapping of the 25 targets with the respective nodal implementation Divisions, national indicators and data source agencies was approved by Secretary, MoEF&CC. The remaining targets for which indicators are yet to be identified are to be addressed subsequently. The purpose of mapping was to identify Divisions/Sections of the Ministry that will take lead in implementation of the target and also to set up a data flow mechanism for the each of the indicators. In the first Steering Committee meeting on SDG Implementation in

the Ministry on 31.1.2019, a road map for SDG implementation was finalized and role and responsibilities defined.

I. Role and Responsibilities of the Nodal Division

- Implementation of the target.
- Aligning various schemes/Programmes/ International agreements with the targets.
- Coordination within the Ministry and other Ministries for implementation.
- Coordination with State Governments.
- Revamping existing schemes to achieve SDGs at grass root level.
- Coordination with data source agencies.
- Coordination of development of metadata, baseline data and periodical progress reporting with data sources.
- Timely data flow for national reporting.
- Proposal for addition/ deletion/ modification of national indicators.
- Technical inputs in the development of global indicators and data on the global indicators for global reporting.

II. Role and Responsibilities of the Data Source Division

- Ensuring regular data collection and data flow
- Providing disaggregated data
- Preparation of Metadata
- The existing data collection systems



are to be re-oriented to meet the data requirements for SDGs. Data requirements are huge as disaggregated data required on regular basis. A massive re-orientation in terms of efforts for collection, compilation and dissemination.

- Coordination with nodal Divisions

III. Role and Responsibilities of the SDG Coordination Unit, MoEF&CC.

- Overall coordination of SDG implementation in the Ministry.
- Coordination of metadata, baseline data and data flow with Divisions.
- Coordination with NITI Aayog, MoSPI
- Participating in High Level Committee of MoSPI for SDG indicator refinement.
- Capacity Development
- Technical support for metadata and refinement of indicators.
- Publication of Ministry's SDG reports.
- Parliament questions on SDGs.

A need was felt to refine or modify certain Indicators keeping in mind the relevancy of the Indicator to monitor the target and the availability of data on regular basis for the indicators. A comprehensive refinement proposal of the Ministry has been prepared based on the inputs received from various Divisions concerned. This proposal will be submitted to Ministry of Statistics and Programme Implementation (MoSPI) for consideration by the High Level Steering

Committee for refinement of SDG Indicators chaired by Chief Statistician of India.

Present Status of SDG Implementation and Monitoring in the Ministry:

All the Divisions of the ministry have been requested to prepare an implementation plan for the respective targets. The Ministry has many schemes/programmes which address the various SDG targets. While formulating the implementation plan and setting targets, the existing schemes and programmes of the Ministry will be suitably adapted to the SDG requirement and if required revamped appropriately so that the impact of the progress reach to the lowest segment of the population consistent with SDG principle of “no one is left behind”. The data flow from the respective data source agencies will also be coordinated to ensure timely data input for national and international SDG monitoring. State/UT Governments also will be involved in the process.

Baseline data for 12 MoEF&CC indicators have been submitted to MoSPI. Metadata has been finalized in respect of around 30 indicators. The remaining indicators are primarily qualitative in nature and hence methodology needs to be framed for such indicators. Efforts are underway to bridge the data gaps. Efforts are on to evaluate the data gaps and develop systems to bridge the gaps through a comprehensive SDG data plan.

10.4 Non-Governmental Organization (NGO) Cell

A Non-Governmental Organization (NGO) Cell has been set up in the Ministry to handle

various policy matters relating to the NGOs Working in diverse field of environment. The basic functions of the Cell are:

- Liaison with the NITI Aayog and other Government Ministries in respect of various guidelines/directions concerning NGOs.
- Formulating replies to Parliament Questions.
- Responding to various Public Grievances received from PMO, Cabinet Secretariat, Individuals etc.
- Handling RTI applications.

As per the directives of NITI Aayog an IT software for end-to-end processing of applications for sanction/release of grants/financial assistance to NGOs has etc. under various schemes of this Ministry has been developed. It has been

linked with NITI Aayog NGO-DARPAN Portal for the Non-Governmental Organization (NGOs) with the objective of bringing in transparency in their operations. About 75 NGOs have registered on this portal so far.

PDs for concerned schemes/programme have been given passwords for uploading the information about the grants, before releasing the same, on this portal, which is integrated with DARPAN portal of NITI Aayog. This portal portrays the figures of grants/funds released from the Ministry to different NGOs that can be assessed by NITI Aayog and other authorized functionaries which in turn result in transparency of fund flow and initiation of corrective measures, if required.

For proper functioning of this portal, a proposal to out-source the man power is under consideration in IT Division.

Legislation and Institutional Support

CHAPTER

11





11.1 Policy and Law

The Policy and Law Division is allocated funds under “National Green Tribunal” and the budget under this is allocated to

- National Green Tribunal,
- Loss of Ecology Authority,
- Dahanu Taluka Environment Protection Authority.

However, only administrative issues of NGT are dealt in this Division and ESZ and CP Division are administrative in charge of Dahanu Taluka Environment Protection Authority and Loss of Ecology Authority respectively.

11.2 National Green Tribunal (NGT)

The National Green Tribunal was set up on 18th October, 2010 under the NGT Act, 2010, for the purpose of effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for damages to persons and property and for matters connected therewith or incidental thereto.

NGT has five places of sitting i.e., the Principal Bench at New Delhi and Zonal Benches at Pune, Kolkata, Bhopal and Chennai.

During the period 1.1.2018 to 31.03.2019 a total of 5084 cases were instituted before the National Green Tribunal out of which 4810 cases have been disposed of and 2901 were pending before the various benches of the NGT.

Legal Monitoring Cell (LMC): A Legal Monitoring cell was constituted to monitor the progress of court cases and also to act as an

effective coordinator with various Divisions of the Ministry regarding court cases. The total no of cases in which the Ministry is a Party in matters pending before the Supreme Court of India, High Courts, National Green Tribunal (all Benches), Central Administrative Tribunal etc. as on 31.03.2019 is 2108 and no reply was pending beyond three months, for filing.

Eco-labelling Scheme: Ecomark Scheme was launched in 1991 by Ministry of Environment, Forest & Climate Change vide Government of India Resolution dated 21.02.1991. A Steering Committee to be chaired by Secretary, MoEF&CC was constituted vide Ministry's order dated 06.03.1991 to decide the products to be taken up for labelling as environmental friendly and to formulate the strategies for the promotion and future development of the scheme.

The Eco-labelling Scheme has been given an impetus to align it with emerging market demands and increased environmental awareness among the consumers and producers/ manufacturers. Self Certification has been initially envisaged for enabling faster Eco-labelling process. The products are required to adhere to compulsory quality standards specified by BIS, as a pre-requisite to Eco-labelling. The composition of the Steering Committee was substituted by Resolution dated 19.12.2016.

A Technical Committee to be chaired by Chairman, CPCB was also constituted vide Ministry's order dated 06.03.1991 to identify the specific products to be selected and the individual criteria to be adopted. The Technical Committee was reconstituted vide Ministry's

order dated 17.01.2017. Ecomark Scheme is administered by BIS under the BIS Act, 1986 with support of Central Pollution Control Board (CPCB) to assess and certify the products.

The main Objectives of the Ecomark Scheme/ Criteria are: -

- To provide an incentive for manufacturers to reduce adverse environmental impact of products.
- To reward genuine initiatives by companies to reduce adverse environmental impact of their products and processes.
- To assist consumers to become environmentally responsible by providing sufficient information to take account of environmental factors in their purchasing decisions.
- To encourage citizens to purchase products, which have less harmful environmental impact.

Ecomark Scheme initially launched the following 17 product categories: -

- Soaps and Detergents
- Paints
- Paper
- Plastic
- Cosmetics
- Textiles
- Batteries
- Wood Substitutes
- Propellants and aerosols
- Food items (edible oils- including Vanaspati, tea and coffee)
- Electrical and electronic goods
- Packing/packaging materials
- Lubricating/speciality oils

- Drugs
- Food preservatives and additives
- Pesticides
- Leather

Consequent to the decisions taken in the Steering Committee meeting held on 11.05.2016 under the chairmanship of Secretary (EF&CC) the Ministry vide its order dated 15.06.2016 constituted a Sub-Committee of the Steering Committee to identify product categories to be included in the first phase and to develop criteria/guidelines for the identified product categories for further consideration of Steering Committee.

MoEF&CC had published the Ecomark criterion for coir and coir products vide gazette notification dated 01.05.2003. The Ministry of MSME and the Coir Board requested the Ministry of EF&CC to review the criterion laid down in 2003. It was referred to a duly constituted Technical Sub-Committee. The Technical Sub- Committee in its meeting held on 23.03.2018 reviewed the Ecomark Criterion on Coir and Coir products and recommended modifications.

The Steering Committee on Ecomark held a meeting on 3rd August, 2018 under the Chairmanship of Secretary, EF&CC for consideration and finalisation of Ecomark Criterion on Coir and Coir Products recommended by the Technical Committee, based on the recommendations of the Technical Sub-Committee. The Steering Committee approved the criteria after deliberating on it. The Notification for the revised Ecomark Criterion on Coir and Coir Products was published in the Gazette of India dated 18.09.2018.



Regulatory Acts/Rules governing the programme:

PL Division notified the National Green Tribunal (Recruitment, Salaries and Other Terms and Conditions of Service of Senior Accountant) Rules, 2018 vide G.S.R. No. 589(E) on 26.06.2018.

Justice Shri Adarsh Kumar Goel, Judge of the Supreme Court of India was appointed as the Chairperson of the National Green Tribunal with effect from 06.07.2018 for a period of five years or till he attains the age of seventy years, whichever is earlier, vide Notification dated 06.07.2018.

The process of last round of selection of Judicial and Expert Members in NGT commenced in February, 2017. The Judicial Members appointment process was completed after joining of Justice K. Ramakrishnan, former Judge Kerala High Court to the post of Judicial Member in the NGT w.e.f. 19.11.2018. However, the appointment of Expert Members in the NGT is still under process.

In compliance of the direction of the Hon'ble Supreme Court of India in the matter of W. P. (C) No. 1235 of 2017 – titled NGT Bar Association (WZ) vs. Union of India & Ors. issued on 14.2.2019, the Ministry issued an advertisement on 1.3.2019 for inviting applications for the 6 vacant posts of Judicial Members, NGT from eligible candidates as per NGT Act, 2010 with closing date 29.3.2019.

11.3 Economic Division

Economic Division of the Ministry is responsible for the following areas of work:

- Nodal Division for matters referred by the

Department of Economic Affairs, including Notes for Cabinet/ Cabinet Committee/ Committee of Secretaries.

- All matters having a bearing on internal and external economic management in the Ministry and reforms in the environment and forest sectors.
- Appraisal of environment friendly proposals related to fiscal incentives and recommending appropriate proposals for inclusion in the Union Budget.
- Providing inputs/ material for the Economic Survey to the Department of Economic Affairs.
- Nodal Division to monitor implementation of specific announcements in the Union Budget concerning Ministry of Environment, Forest & Climate Change.
- Secretariat for the Sectoral Committee to Review the Release and Utilization of the Grants-in-Aid for State Specific Needs recommended by the Thirteenth Finance Commission/Fourteenth Finance Commission.
- Compliance under the Fiscal Responsibility and Budget Management Act, 2003.
- Parliament Questions on policy matters.

Activities undertaken:

- Drafted and finalised comments on different economic and environmental issues, particularly on Cabinet Notes, EFC Memos, parliament matters, NITI Aayog references etc.
- Coordinated and contributed comments on Cabinet Notes and different Memorandum

of Understanding documents referred to the Ministry by the Ministry of Finance. Most prominent amongst these include the Cabinet Note on Socio Economic and Caste Census 2011 (SECC 2011) Data from Ministry of Rural Development.

Trade & Environment

Trade and Environment Division of the Ministry has the following areas of responsibility:

- Coordinating formulation of Ministry's views/ position on trade-related matters referred to it by other Ministries, including issues related to Regional/ Bilateral/ Multilateral Trade Agreements on environmental, ecology, wildlife and forestry issues, Trade Policy Review of India by WTO.
- Acting as Nodal Division within the Ministry to deal with references received from M/o Commerce & Industry relating to Trade & Environment including Cabinet/ Cabinet Committee/ Committee of Secretaries matters.
- Coordinating MoEF&CC inputs on Bilateral investment agreements/investment protection agreements/ international negotiations and other trade related matters referred to MoEF&CC.
- Representation in Committees set up by Department of Commerce on Bilateral/ Plurilateral/ Multilateral negotiations in Environmental Goods and Services.
- Coordinating matter related to relevant areas considered/reviewed by National Committee on Trade Facilitation (NCTF) headed by the Cabinet Secretary, wherein

Secretary, EF&CC is a member.

Activities undertaken:

- The Division furnished comments/inputs on behalf of the Ministry on action points of National Trade Facilitation Action Plan (NTFAP) and also coordinated meetings related to NCTF headed by the Cabinet Secretary.
- The Division has been actively engaged with DIPP, M/o Commerce and Industry in consultations regarding OECD Investment Policy Review. The Division also consolidated inputs on certain items related to environment and forest sector, identified by Ministry of Commerce which involves high value of imports and contribute to trade deficit.
- The Division also coordinated and contributed comments on Cabinet Notes and different Memorandum of Understanding documents referred to the Ministry by the Ministry of Commerce and Industry. Most prominent amongst these include the Cabinet Note on National Logistics Policy and Industrial Policy.

Direct Benefit Transfer (DBT) Cell

Direct Benefit Transfer (DBT) is a major reform initiative launched by the Government of India to re-engineer the existing cumbersome delivery processes using modern Information and Communication Technology (ICT). This programme aims to transfer benefits directly into the Aadhaar seeded bank/ postal accounts, of targeted beneficiaries. A DBT Cell has been created in the Ministry to carry out the implementation of DBT. The DBT Mission, Cabinet Secretariat has launched a DBT Bharat



Portal for overall monitoring of the progress of the schemes, on-boarded, Ministry-wise. The functions of DBT Cell are as follow:

- DBT Cell constantly engages with the DBT Mission, Cabinet Secretariat for making schemes of the Ministry DBT compliant.
- The Cell spearheads the work of on-boarding various schemes on DBT Bharat Portal (www.dbtbharat.gov.in).
- DBT Cell is responsible for ensuring the following for the DBT Applicable schemes of the Ministry:
 - 100% Electronic transfer of benefits
 - 100% Aadhaar based transfers
 - Capture and maintenance of MIS for all DBT schemes of the Ministry
 - Curbing pilferage and duplication
- It is responsible for managing strict deadlines and coordinates with all Divisions in the Ministry for regular updation.
- Officers of the Cell attend regular interactive sessions and review meetings with the DBT Mission on Aadhaar Act and DBT on-boarding. It also organizes interactive meetings in the Ministry with the members of the DBT Mission on reporting of progress, requirement of database of beneficiaries etc. for officials in the Ministry handling the on-boarded Schemes.

Activities undertaken:

- MIS has been prepared for all DBT on-boarded Schemes.
- Test level integration of all DBT on-boarded Schemes has been completed.

- Integration of one DBT on-boarded Scheme with DBT Bharat Portal has been completed.

Goods and Services Tax (GST) Cell

The Goods and Service Tax (GST) has been implemented in the country w.e.f. July 1, 2017. As per the directions of the Cabinet Secretary, a 'GST Facilitation Cell' has been created in the Ministry under the Economic Adviser, to serve as the first point of contact for addressing issues being faced by any sector related to the Ministry. It consists of members from CS-III Division, Wildlife Division, Project Elephant and SU Division as well as Wildlife Crime Control Bureau (WCCB) and National Biodiversity Authority (NBA). The functions of the GST Cell are as follows:

- The GST Cell is responsible for examining requests received on increase/ decrease of applicable tax rates in the post-GST period compared to the pre-GST tax regime and taking up the same with GST Council.
- The GST Cell consolidates comments on representations received from various industries, associations, institutes and organizations. The proposals are examined in the Ministry by the Divisions concerned and recommendations are forwarded to GST Council for consideration.
- The Cell also offers support/ training material for GST that may be requested from time to time by various stakeholders and acts as a liaison between the Ministry and GST Council/ Department of Revenue.

Climate Change

CHAPTER

12





12.1 Climate Change

India is a Party to the United Nations Framework Convention on Climate Change (UNFCCC), Paris Agreement and Kyoto Protocol. The MoEF&CC is the nodal Ministry for international climate change negotiations under UNFCCC. The Climate Change Division of the Ministry looks after the issues related to climate change and the related domestic policies and actions. The Division is also responsible for submission of National Communications (NATCOMs) and the Biennial Update Reports (BURs) to UNFCCC. In order to create and strengthen the scientific and analytical capacity for assessment of climate change in the country, different studies have been initiated under the Climate Change Action Programme (CCAP), including National Carbonaceous Aerosols Programme (NCAP), Long Term Ecological Observatories (LTEO) Programme, and GHG Modelling Studies.

India's climate action and estimates show a positive trend. India had taken a voluntary pledge in 2009 to reduce the emissions intensity of its GDP by 20-25% from 2005 levels by 2020 and is already on path to achieve this goal. According to India's second BUR, India's emissions intensity of its GDP has decreased by 21% between 2005 and 2014.

The sixth meeting of the Executive Committee on Climate Change (ECCC) was held on 18th March, 2019 under the chairmanship of Principal Secretary to the Prime Minister.

The estimates also indicate that India's forest cover has increased from 21.23% in 2013 to 21.54% in 2017.

Achievements:

- Under the National Solar Mission, 26.2 GW of grid-connected solar generation capacity and 0.804 GW of off-grid solar generation capacity have been installed (January 2019);
- 31 million tonnes of CO₂ eq emissions have been avoided due to 1st cycle of PAT Scheme;
- 7 million tonnes of CO₂ eq. emissions have been avoided in 2016-17 due to increase in no. of supercritical thermal power plants;
- Annual growth rate of renewable energy capacity is 29% compared to 9% annual growth rate of coal based electricity generation;
- Around 137 million tonnes of CO₂ eq has been sequestered due to National Horticulture Mission from 2010 to 2016.

In year 2018, Hon'ble Prime Minister of India, was bestowed with Champions of the Earth Award 2018, UN's highest environmental honour, for pioneering the International Solar Alliance (ISA) and for his leadership in the fight against plastic pollution in India.

National communication and Biennial Update Report submitted to the UNFCCC: India furnished its second Biennial Update Report (BUR-1) on 31st December 2018 containing information on National Circumstances, National Greenhouse Gas Inventory, Mitigation Actions, Domestic Monitoring, Reporting and Verification (MRV) arrangements, Finance, Technology and Capacity Building Needs, and Support Received.

Currently the Ministry is preparing India's Third National Communication to be submitted to UNFCCC.

National Action Plan on Climate Change (NAPCC): Government of India is implementing the National Action Plan on Climate Change (NAPCC), launched in 2008, formulated in the backdrop of India's voluntary commitment to reduce emission intensity of its GDP by 20-25% by 2020 over 2005 levels. It was also meant to focus on key adaptation requirements and creation of scientific knowledge and preparedness for dealing with climate change. NAPCC encompasses eight core missions on specific areas of Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustaining the Himalayan Ecosystem, Strategic knowledge for Climate Change, Green India and Sustainable Agriculture which are anchored by Ministry of New and Renewable Energy, Bureau of Energy Efficiency (Ministry of Power), Ministry of Urban Development and Housing Affairs, Ministry of Water Resources, River Development and Ganga Rejuvenation, Department of Science and Technology, Ministry of Environment, Forests & Climate Change, and Ministry of Agriculture and Farmers Welfare respectively.

All national missions were approved by the Prime Minister's Council on Climate Change (PMCCC) and are being implemented now. The Missions are under constant review by the Prime Minister's Council on Climate Change. An Executive Committee on Climate Change (ECCC) under the Chairmanship of Principal

Secretary to Prime Minister has been set up for assisting the Prime Minister's Council on Climate Change in evolving a coordinating response to issues relating to climate change with regular monitoring of the eight National missions along with other initiatives on Climate Change and coordinating with various agencies.

At the sixth meeting of the ECCC, held on 18th March, 2019 under the chairmanship of Principal Secretary to the Prime Minister, the Committee took stock of the progress of the eight national missions under the National Action Plan on Climate Change. Secretary, EF&CC also briefed the Committee on the strategy for implementation of India's commitments under the Paris Agreement, stating that the eight national missions will continue to be the main thrust.

State Action Plan on Climate Change (SAPCC): With the formulation of the NAPCC, it became imperative to achieve coherence between the strategies and actions at national and sub-national level. Therefore, the Ministry motivated the State Governments to prepare their State Action Plans on Climate Change (SAPCC) based on the broad objectives of NAPCC. So far, 33 States/UTs have put in place their SAPCCs with an attempt to mainstream climate change concerns in their planning process.

In year 2018, the States/UTs have been requested to revise their SAPCCs to re-orient their ongoing action to facilitate the achievement of country's post 2020 targets.



National Adaptation Fund on Climate Change

(NAFCC): National Adaptation Fund on Climate Change (NAFCC) was launched in 2015 with an initial outlay of Rs. 350 crore to meet the cost of adaptation to climate change for the State and Union Territories of India that are particularly vulnerable to the adverse effects of climate change. The overall aim of the fund is to support concrete adaptation activities which are not covered under on-going activities through the schemes of State and National Government that reduce the adverse effects of climate change facing community, sector and states. The Scheme will be continuing beyond 12th Five Year Plan till 31st March, 2020. The Fund is meant to assist National and State level activities to meet the cost of adaptation measures in areas that are particularly vulnerable to the adverse impacts of climate change. The Scheme has been taken as Central Sector Scheme with National Bank for Agriculture and Rural Development (NABARD) as the National Implementing Entity (NIE). Till date 30 projects have been approved.

Climate Change Action Programme (CCAP):

Climate Change Action Programme (CCAP) is a central scheme which was approved by the Cabinet in January 2014 for duration of five years. Its objective is to create and strengthen the scientific and analytical capacity for assessment of climate change in the country, putting in place appropriate institutional framework for scientific and policy initiatives and implementation of climate change related actions in the context of sustainable development. Some of the components of the CCAP scheme include the National

Carbonaceous Aerosols Programme (NCAP), Long Term Ecological Observatories (LTEO), and Coordinated Studies on Climate Change for North East Region (CSCCNER).

India's post-2020 climate goals: For post-2020 period, in response to the decisions of the Conference to the Parties, India submitted its Nationally Determined Contribution (NDC) to the UNFCCC on 2nd October, 2015, outlining the climate actions intended to be taken under the Paris agreement. The eight goals put forth by India in its NDC are:

- To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation.
- To adopt a climate friendly and a cleaner path than the one followed hitherto by others at corresponding level of economic development.
- To reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level.
- To achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including from Green Climate Fund (GCF).
- To create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030.
- To better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to

climate change, particularly agriculture, water resources, Himalayan region, coastal regions, health and disaster management.

- To mobilize domestic and new & additional funds from developed countries to implement the above mitigation and adaptation actions in view of the resource required and the resource gap.
- To build capacities, create domestic framework and international architecture for quick diffusion of cutting edge climate technology in India and for joint collaborative R&D for such future technologies.

The period of implementation for India's NDC is 2021-2030. For preparing the roadmap for implementation of India's NDC in post-2020 period, MoEF&CC is holding inter-Ministerial consultations through an NDC Implementation committee Chaired by Secretary, EF&CC, and six thematic Sub-committees, involving key Ministries and Departments of the Government of India. The committee and sub-committees are working on to identify specific policies and actions aimed at achieving the NDC goals. They are also working on to indicate the financial outlays and technology interventions needed from domestic and international sources at various stages to achieve these goals.

To support the work of the sub-committees, MoEF&CC has launched a number of studies, to be conducted by research institutions/ organizations working in climate change domain and expertise, for developing roadmaps for NDC goals.

International Negotiations: The year 2018-19 witnessed a number of bilateral and multilateral meetings on climate change where Hon'ble Minister, Environment, Forest and Climate Change and senior officials of the Ministry participated. These meetings were crucial in run up to the 24th Conference of Parties to UNFCCC.

Delegates participated in the UNFCCC Subsidiary Bodies Inter-sessional meetings; Like Minded Developing Countries (LMDC) meeting held; 26th BASIC Ministerial Meeting on Climate Change; Ministerial meeting on Climate Action; 9th Petersberg Climate Dialogue held; and Pre-COP 24 Ministerial Meeting of the UNFCCC held on 23rd– 24th October, 2018 in Krakow, Poland. Ministry of Environment, Forest and Climate Change also hosted international meetings of group the of LMDC on 1st– 2nd November, 2018 and BASIC (Brazil, South Africa, India and China) on 19th– 20th November, 2018.

The 24th Session of the of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 24) was held in Katowice, Poland on 02nd–15th December 2018. The conference was a significant one which focused on key issues including finalization of guidelines for the implementation of Paris Agreement in the post 2020 period. Dr. Harsh Vardhan, Hon'ble Minister, EF&CC led an inter-ministerial delegation that participated in the COP 24. A number of bilateral meetings were also held during the COP 24 including with Poland, European Union, United States of America,



Philippines, United Kingdom, and Australia etc. India participated in the meetings with a constructive and positive approach with the aim to protect India's long-term interests and its developmental priorities. India also underscored the importance of fulfilling the commitment of developed countries to achieve the goal of mobilizing USD 100 billion annually by 2020 and further scaling up thereafter.

Decisions on various elements under Paris Agreement Work Programme (PAWP) were adopted in COP 24. The adopted decisions recognize different starting points of developed and developing countries and need for support to developing countries for implementation of Paris Agreement; provides flexibilities for developing countries and gives consideration to principles of equity, Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) etc. The work on setting up a new collective finance goal also progressed and Parties agreed to initiate in November 2020 deliberations on setting a new collective quantified goal from a floor of USD 100 billion per year.

Cooperation with bilateral and multilateral donors on climate change: The Ministry has been implementing several projects with the assistance of bilateral and multilateral funding agencies such as Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, The Department for International Development (DFID) and United Nations Development Programme (UNDP).

Clean Development Mechanism (CDM): The Clean Development Mechanism (CDM) has

been a flagship programme addressing climate change mitigation and simultaneously giving an opportunity to developing countries in meeting their sustainable development objectives. CDM allows emission reduction or removal projects in developing countries to generate carbon offset credit, each equivalent to one tonne of carbon dioxide. These certified emission reduction credits (CERs) could be traded, sold and used by industrialized countries to meet part of their emission reduction targets under Kyoto Protocol.

The Government of India has set up a National CDM Authority (NCDMA) in December 2003 with Secretary, Environment, Forest and Climate Change as the Chairman and it consists of various Secretaries, such as of External Affairs, Finance, Power, Industrial Policy and Promotion, New and Renewable Energy, Planning Commission, and Department of Science and Technology as Members to consider various projects for grant of Host Country Approval (HCA) from Sustainable Development point of view. Some of India's achievements in CDM are:

- As on 23rd April, 2019, 1668 out of total 7805 projects registered by the CDM Executive Board are from India, which so far is the second highest in the world.
- As on date, Certified Emission Reductions (CERs) issued to Indian projects is 247 million (12.42%) of the total 1988 million CERs issued.
- The National CDM Authority (NCDMA) in the Ministry has accorded Host Country Approval to 3028 projects. These projects

are in the sectors of energy efficiency, fuel switching, industrial processes, municipal solid waste, renewable energy and forestry spread across the country (covering all states in India).

- Most of the CDM projects are developed by private sectors which has facilitated huge private sector investments in the country.
- The NCDMA started first paperless operation for the approval of the CDM projects in July 2010.

World Bank Partnership for Market Readiness (PMR): India's proposal to develop a voluntary carbon market was approved under Partnership for Market Readiness (PMR). The PMR Project aims to support and incentivize a market and piloting new approaches that allow emission reductions in a cost effective manner, while also addressing other priorities such as incentivizing waste, energy security, growth and development in the country.

The 8 million US Dollar grant allotted to India under the PMR Project will be utilised to develop voluntary carbon market in waste management and Micro, Small and Medium Scale Enterprises (MSME) sectors with carbon credits. These sectors have been identified to have significant mitigation potential and the ability to contribute to India achieving its NDC targets. Background work regarding the same has been initiated, and the Project is aimed to be completed in 2020.

12.2 Ozone Layer Protection

The stratospheric ozone layer is present from 10 to 50 kms above the Earth's surface. The

stratospheric ozone layer acts as a shield and protects us from harmful ultraviolet-B (UV-B) radiation from the sun. Ozone Depleting Substances (ODSs) such as Chlorofluorocarbons (CFCs) depletes the ozone layer. Depletion of Stratospheric Ozone Layer has the potential to cause skin cancer, eye cataract, suppress body's immune system, decrease crop yield etc., which led to the adoption of the Vienna Convention for the Protection of the Ozone Layer in 1985 and the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987. The Montreal Protocol has been recognized as the most successful international environmental treaty in history enjoying universal ratification from all the 197 United Nations Member countries and has led to phase out of 98 % of ODSs globally.

The MoEF&CC has set up the Ozone Cell as a National Ozone Unit (NOU) to render necessary services for effective and timely implementation of the Protocol and its ODSs phase-out program in India. The Empowered Steering Committee (ESC) constituted by the Ministry and chaired by the Secretary (EF&CC) is responsible for overall implementation of the Montreal Protocol in the country.

In order to comply with the requirements of the Montreal Protocol, the Ministry had brought out comprehensive Ozone Depleting Substances (Regulation and Control) Rules, 2000 under the Environment (Protection) Act, 1986 for phasing out of various ODSs. The ODS Rules have been amended in 2001, 2003, 2004, 2005, 2007 and 2014 to implement ODS phase-out activities in the country.



Implementation of Hydrochlorofluorocarbons (HCFC) Phase-out Management Plan (HPMP)

Stage II: The phase out of HCFCs is ongoing under the Montreal Protocol through the implementation of HPMP Stage II. The Local Project Appraisal Committee, chaired by Department of Economic Affairs, Ministry of Finance has given “in principle” approval for HPMP Stage-II.

Memorandum of Agreements have been entered with some enterprises after third party verification and recommendation of UNDP in Refrigeration and Air Conditioning (RAC) and foam manufacturing sector for conversion from HCFC to non-HCFC technologies.

The request for second tranche of approximately USD 18 million was submitted by UNDP on behalf of India for the consideration of 82nd meeting of the Executive Committee (Ex-Com) of the Multilateral Fund (MLF). Based upon the discussions held in 82nd meeting of the Ex-Com in December, 2018 the second tranche of US \$18,190,815 was approved under HPMP Stage-II.

Kigali Amendment to the Montreal Protocol

- Energy Efficiency: India piloted Decision XXIX/10 in the 29th Meeting of Parties (MOP) on Issues related to energy efficiency while phasing down hydrofluorocarbons (HFCs), which was a significant first step in dovetailing energy efficiency and refrigerant transition under the Montreal Protocol resulting in

enhancement of overall climate benefit.

Based upon the inputs provided by the Indian delegation during the 40th Open Ended Working Group (OEWG) held in Vienna in July 2018 on the report of the Technology and Economic Assessment Panel (TEAP) of the Montreal Protocol, the Updated final report of TEAP presented in the 30th MOP acknowledged that by the use of more energy-efficient equipment during phase down of HFCs will lead to doubling the total reduction of greenhouse gases emissions both from direct and indirect sources.

Upskilling air-conditioner service technicians under Pradhan Mantri Kaushal Vikas Yojana:

A Memorandum of Understanding (MoU) was signed between the Ministries of Environment, Forest and Climate Change and Skill Development and Entrepreneurship on 2nd August, 2018 in the presence of Hon'ble Ministers Dr. Harsh Vardhan and Shri Dharmendra Pradhan. Under the MoU, upskilling and certification of 100,000 RAC service technicians on good servicing practices and knowledge of alternative refrigerants to ozone-depleting chemicals would be carried out under the Skill India Mission - Pradhan Mantri Kaushal Vikas Yojana (PMKVY). The skilling and certification of technicians under PMKVY will have twin benefits of significant environmental benefits and a positive influence on the livelihoods of technicians.



Signing of Memorandum of Understanding between Ministry of Environment, Forest and Climate Change and Ministry of Skill Development and Entrepreneurship in the presence of Hon'ble Ministers Dr. Harsh Vardhan and Shri Dharmendra Pradhan

Competency Enhancement of System Houses and Micro, Small and Medium enterprises (MSMEs) in foam manufacturing sector.

A Memorandum of Agreement (MOA) has been signed between the Central Institute of Plastics Engineering & Technology (CIPET), Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India and the Project Management Unit, Ozone Cell, Ministry of Environment Forest and Climate Change (MoEF&CC), Government of India for Competency Enhancement of System Houses

and foam manufacturing enterprises especially MSMEs participating in HPMP. The agreement between CIPET and Ozone Cell, MoEF&CC shall facilitate the smooth and sustainable phase out of HCFC 141 b in the foam manufacturing sector of the country by 1.1.2020.

Awareness generation and consultation

Activities: Ozone Cell has made available awareness generation material to the public on its website. Instructional training videos for RAC service technicians in 6 different languages viz. English, Hindi, Bengali, Kannada, Tamil



and Gujarati have also been made available. Separately, as part of awareness generation and information dissemination activities the ozone cell has set up YouTube channel, Facebook and Twitter pages.

The Ozone Cell, MoEF&CC along with UNDP, UN Environment and GIZ participated in ACREX 2018, one of the largest international industry exhibition in HVACR sector in South Asia in February, 2018. In addition, the Ozone Cell, MoEF&CC had also set up a separate stall on Protection of Ozone Layer at the exhibition held in the lawn of India Gate as part of World Environment Day 2018 celebrations.

Several consultative meetings were organized on a regular basis for interaction with industry, Government departments etc., on issues relating to Montreal Protocol Implementation.

24th World Ozone Day, 2018: The following publications were launched by the Hon'ble Minister on the occasion (i) Booklet on "Montreal Protocol : India's Success Story", posters, stickers are published every year on the occasion of International Day for the Preservation of the Ozone Layer giving latest information on ODS phase-out in the country and technologies adopted for phasing-out of ODSs, (ii) refurbished website and Management Information System (MIS) for Ozone Cell, (iii) Guide for Integration of Topics related to HCFC Phase Out and Energy Efficiency in Architectural Curriculum, (iv) Technicians and Trainers Handbook for Good Service Practices and Installation of Room Air-conditioners with HCFC-22 and Flammable Refrigerants.



Address of Hon'ble Minister during "24th World Ozone Day for the Preservation of the Ozone Layer" function held on 17th September, 2018 at New Delhi, India



Launch of a refurbished website during "24th World Ozone Day for the Preservation of the Ozone Layer" function held on 17th September, 2018 at New Delhi, India

Launch of India Cooling Action Plan (ICAP):

India is the first country in world to develop a Cooling Action Plan, which addresses cooling requirement across sectors and lists out actions which can help reduce the cooling demand. On 8th March, 2019, Dr. Harsh Vardhan, Minister of Environment, Forest and Climate Change (MoEF&CC) released the India Cooling Action Plan (ICAP). The ICAP aims to reduce both direct and indirect emissions. The thrust of the ICAP is to look for synergies in actions for securing both environmental and socio-economic benefits. The overarching goal of ICAP is to provide sustainable cooling and thermal comfort for all while securing environmental and socio-economic benefits for the society.

The 30th Meeting of the Parties (MOP) to the Montreal Protocol was held from 5th to 9th November, 2018 in Quito, Ecuador. The following are the major achievements:

India submitted a Conference Room Paper (CRP) along with other proponents on the

progress by the Executive Committee of the Multilateral Fund in the development of guidelines for financing the phase-down of hydrofluorocarbons. India piloted the Decision XXX/4 of the Meeting of Parties for the Executive Committee to keep presenting the progress in the development of the guidelines to the Parties annually and also obtain comments and views of the parties before finalization of the guidelines.

The Indian Delegation played an important role in finalization and approval of Data Reporting formats to be used under the Kigali Amendment to the Montreal Protocol for production, export, import etc.

In the recent adjustment to the Montreal Protocol agreed by the Parties during the 30th MOP, India was able to secure the same end uses of HCFCs for the developing countries as were proposed for the developed countries in the 2.5% service tail of HCFCs to come into effect in 2030 for developing countries after technical review by Technology and Economic Assessment Panel of the Montreal Protocol.



Launch of India Cooling Action Plan by the Hon'ble Minister of Environment, Forest and Climate Change on 8th March, 2019 at New Delhi, India

Activities related to the implementation of ODS Rules, 2000 and its amendments and Montreal Protocol: Activities related to the implementation of ODS Rules, 2000 and its amendments were carried out inter alia including registration, Regulation of export/import, issuance of production quota, monitoring and reporting. The statutory reporting under the Montreal Protocol under Article 7 has been completed and the Country Program Progress Report (CPPR) submitted to the Secretariat of the Multilateral Fund for the implementation of the Montreal Protocol. The Indian delegation actively participated in the following Montreal Protocol meeting during the year (i) Open Ended Working Group, (ii) Meeting of parties, and (iii) Executive Committee of the Multilateral Fund.

12.3 United Nations Convention to Combat Desertification

Desertification was addressed for the first time in 1977 in the United Nations Conference

on Desertification, held in Nairobi, Kenya. In 1992, an intergovernmental negotiating committee was established and the United Nations Convention to Combat Desertification (UNCCD) Convention was adopted in Paris on 17th June 1994, which is commemorated as the World Day to Combat Desertification, Land degradation and Drought (DLDD). The Convention entered into force in December 1996. It is one of the three Rio Conventions along with United Nations Framework Convention on Climate Change (UNFCCC) and Convention on Biological Diversity (CBD).

The main objective of the convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, involving long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to

improved living conditions, in particular at the community level.

India became a signatory to the Convention on 14 October 1994 and ratified it on 17 December 1996. The Ministry of Environment, Forest and Climate Change (MoEFCC) is the nodal Ministry to co-ordinate all issues pertaining to the Convention.

Activities undertaken:

- The four-day Asia Pacific Regional Workshop of the UNCCD jointly hosted by the UNCCD Secretariat and the MoEF&CC to build the capacity in the Asia Pacific Region to monitor and report on land degradation was held during 24th to 27th April 2018. The Workshop trained the participants in the use of an innovative land degradation monitoring tool for the reporting process of the UNCCD. This could significantly increase access to large amounts of Earth observation data and make it available in a comprehensible form for decision-makers at national and state level, thereby contributing in achieving the objectives underlined in the Convention. The training also focused on the use of new data and methods to estimate the extent and severity of land degradation, and shed light on the declining condition of India's land resources and its impact on livelihoods. The data presented in the land degradation Tool will be used for reporting to the UNCCD and as part of the indicator framework for the Sustainable Development Goals.
- In continuation and during the last quarter of the year, the first National Workshop on Land Degradation Neutrality – Target Setting Programme (LDN-TSP) jointly organized by the MoEFCC and UNCCD was held on 4th -5th December 2018. This two-day national expert group workshop was organized to set the national Land Degradation Neutrality (LDN) targets. Over 60 participants including senior policy makers, national stakeholders including governmental agencies at the national and state level, research institutes, civil society organizations, intergovernmental organizations and the private sector participated and contributed towards developing the national strategy for LDN.
- The country is a signatory to UNCCD which is in alignment with the sustainable development goals. Keeping in view the Future Strategic Framework of the Convention (2018-2030), the country is committed to achieve the Land Degradation Neutrality under the LDN-TSP. The Ministry is in the process of setting baseline for LDN.
- Through the trends in the three indicators viz. land-use, soil organic carbon and land productivity obtained from NRSC and SAC, the land degradation has been calculated as 27.62 % i.e. this much of India's land is degraded and the country needs to set in targets to neutralise this. However the degradation status as per the Land Degradation Atlas prepared by Space Application Centre and National Remote Sensing Centres are 29.32 % and 27 % respectively.



- Hon'ble Minister has also confirmed the hosting of conference of Parties-14 of UNCCD in October-2019.

India will be taking away the presidency of Conference of Parties of UNCCD from China for the year 2019-2020. The Indian team headed by the National Focal Point will be participating in the seventeenth session of the Committee for the Review of the Implementation of the Convention (CRIC17) taking place in Georgetown, Guyana from 25th to 30th January 2019.

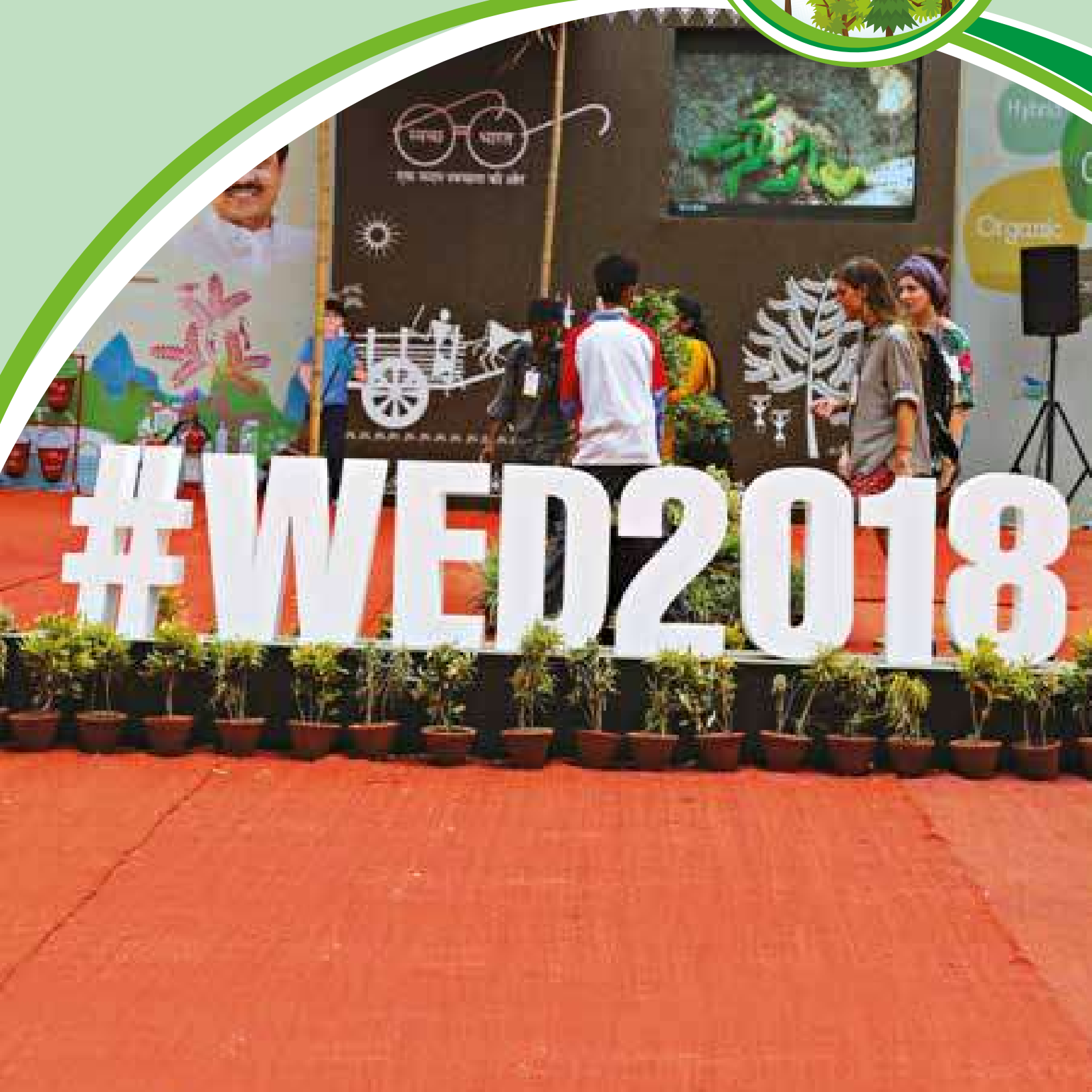
Progress/Achievements:

UNCCD National Reporting 2018: Through the trends in the three indicators viz. land-use, soil organic carbon and land productivity obtained from NRSC and SAC, the land degradation has been calculated as 27.62% i.e. this much of India's land is degraded and the country needs to set in targets to neutralize this. However, the degradation status as per the Land Degradation Atlas prepared by Space application Centre and National Remote Sensing Centres are 29.32% and 27% respectively.

International Cooperation

CHAPTER

13





13.1 International Cooperation

International Cooperation (IC) Division of the Ministry coordinates matters related to international environmental cooperation (both Bilateral as well as Multilateral), Resource Efficiency, Global Environment Facility (GEF) and Partnership for Action on Green Economy (PAGE).

Multilateral Matters

The Division within the MoEF&CC is the nodal Division for the United Nations Environment Programme (UNEP), Global Environment Facility (GEF) and GEF Agencies, International Resource Panel (IRP), the World Bank (WB) and regional bodies like Economic & Social Commission for Asia & Pacific (ESCAP), Brazil-Russia-India-China-South Africa (BRICS); South Asian Association for Regional Cooperation (SAARC), South Asia Cooperative Environment Programme (SACEP), Association of South-East Asian Nations (ASEAN), Asian Development Bank (ADB), European Union (EU), India-Brazil-South Africa (IBSA) Summit on Environment amongst others. The Division supports annual contributions to various UN and other international bodies working on environmental matters. Important multi-lateral activities:

- i. UN Environment Programme (UNEP): India is a member of UNEP and provides annual financial contribution of USD 100,000 to UNE Environment Fund. The Ministry is a member of the International Resource Panel (IRP) Steering Committee. IRP supports UNE's Resource Efficiency/Sustainable Consumption and Production (SCP) sub-programme and is carrying out

assessments of the world's most critical resource issues with a view to developing practical solutions for government policymakers, industry and society. The 23rd meeting of International Resource Panel (IRP) and Steering Committee was held and the Ministry represented in both the meetings.

- ii. The fourth Session of the United Nations Environment Assembly (UNEA) was held in Nairobi, Kenya during 11-15 March, 2019 which focused on "Innovative solutions for environmental challenges and sustainable consumption and production".
- iii. **World Environment Day, 2018 (WED 2018):** India was declared the global host for celebration of World Environment Day, 2018 (WED 2018) by the United Nations Environment Programme. India's leadership in the field of environment & its conservation was showcased in a grand manner. World Environment Day has always been a day of special importance to India. The day has been celebrated as rededication of national efforts for sustainable development and mainstreaming environmental concerns in the national developmental agenda.



(India: the Global host for World Environment Day, 2018)

- The theme for World Environment Day, 2018 was “Beat Plastic Pollution”. The World Environment Day is celebrated globally on 5th June every year as an important vehicle to stimulate worldwide awareness of the environment with a view to give human face to environmental issues, promote an understanding that communities are pivotal to changing attitudes towards environmental issues.
- The WED 2018, at international level, was celebrated through the UN Environment Programme and Indian Embassies across the globe. Pan India activities were celebrated involving various stakeholder Ministries/Departments, all States and UTs, districts, local bodies, organizations, civil societies etc. across the length and breadth of the country, thus giving it the widest possible geographical and demographic coverage.
- Among other pan India activities, the entire celebration of WED 2018 was divided in

following events:

- Plenary Session on 5th June, 2018 in Vigyan Bhawan, New Delhi.
- The Knowledge Coalition-Thematic Sessions, 1-4 June, Vigyan Bhawan, New Delhi.
- Sambandh” – People & Environment-The Technology Exhibition, 2-5 June 2018, Vigyan Bhawan Back Lawns.
- ‘Green India’-State Ministers Conference, 4th June, 2018, Vigyan Bhawan.
- ENVITHON - The Green Run on 3rd June, 2018.
- Cultural Programme “Wave Upon Wave” 4-5 June, 2018 Back lawns of Vigyan Bhawan, New Delhi.
- **Main event on 5th June, 2018 in Vigyan Bhawan, New Delhi:** The Plenary Session on 5th June, 2018 was presided over by the Hon’ble Prime Minister of India. The Prime Minister addressed the Nation on the



(Hon’ble Prime Minister and Hon’ble Minister for Environment, Forest and Climate Change lighting the lamp at Vigyan Bhawan on 5th June, 2018)



occasion of World Environment Day and emphasized on achievements on various environmental parameters. The Hon'ble Prime Minister also appealed to the nation to understand the importance of the day, to understand the theme, say no to the use of single-use plastic and save our planet from ill-effects of plastic pollution.

- On this occasion, the Hon'ble Prime Minister released the following books:
 - Compendium of Traded Indian Medicinal Plants
 - Plant Discovery 2017
 - Single Use Plastics: A Roadmap for Sustainability



(Book Release event on the occasion of World Environment Day, 2018)

- The Hon'ble Prime Minister also released a set of commemorative postage stamp on 'Beat Plastic Pollution' in presence of Hon'ble Minister for Environment, Forest and Climate Change, Hon'ble Minister of

Communications & IT, Hon'ble Minister of State for Environment, Forest and Climate Change, Secretary, Ministry of Environment, Forest and Climate Change.



- The Plenary session was attended by more than 3000 individuals including State Ministers, Secretaries of Union Ministries/ Departments, Resident Commissioners, Diplomats, Counsellors, UN Agencies, officers & staff of MoEF&CC, its attached and subordinate offices, representative of Research Institutes, Civil Societies, Academicians, NGOs, PSUs, industries & business world and various other invitees.
- **The Knowledge Coalition-Thematic Sessions, 1-4 June, Vigyan Bhawan:** During the celebration of the World Environment Day, 2018, a number of thematic sessions/ conferences / workshops were organized on different thematic areas over four days from June 1-4 June, 2018 at Vigyan Bhawan, New Delhi. The four days thematic conferences covered a wide spectrum of the thematic areas on environment for knowledge sharing and showcasing of case studies and best practices with stakeholders from Business & Industry, Research Institutions, Multilateral & Bilateral organizations, Media, NGOs,

Universities and others.

17 Sessions focusing on following thematic areas on the importance of environmental conservation were covered:

- **“Sambandh” – People & Environment – The Technology Exhibition was staged during 2-5 June 2018, Vigyan Bhawan Back Lawns at Rajpath:** to provide a platform for the National and International level technology and equipment manufacturers to explore new business opportunities worldwide. The main aim of the event was to raise awareness for the environment, efficient and effective use of technologies for environmental protection and scope for research & development for new environmental protection technologies. The event also provided a platform in sharing perspective with the Government – Centre and State level on their programmes, projects and schemes. The exhibition gave an opportunity for entrepreneurs across India’s various industries to show their innovative solutions towards a pollution free planet.





This Ministry also put a Theme Pavilion in the Exhibition. 18 other Ministries/ Departments put their exhibitions. 8 States and 11 NGOs participated in the event. There was participation from over 98 exhibitors comprising a mix of participants.

- **'Green India'- State Ministers' Conference, 4th June, 2018, Vigyan Bhawan:** State Ministers' Conference titled "Green India" was convened on 4th June, 2018 at Vigyan Bhawan, New Delhi. The State Environment Ministers' Conference comprised four themes – State Action Plan on Climate Change; Environment Impact Assessment; Waste to Wealth and National Clean Air Programme.
- **Envithon–The Green Run on 3rd June, 2018:** To raise awareness towards environment among the masses with particular focus on children, a mini-marathon titled "ENVITHON" was organized on 3rd June, 2018.

The same was inaugurated by Hon'ble Minister, MoEF&CC. Over 10,000 children from nearly 200 schools of Delhi-NCR participated.
- **Cultural Programme "Wave Upon Wave" 4-5 June, 2018 Back lawns of Vigyan Bhawan, New Delhi:** On the occasion of World Environment Day, 2018, a cultural programme "Wave Upon Wave" was organized at Vigyan Bhawan back lawns from 7-9 PM on 4-5 June, 2018.

- **Enviro Quiz:** On this occasion Enviro Quiz was organized by the Ministry in collaboration with ENVIS RPs in TERI, CMS and TCE. Students from 150 Schools of Delhi-NCR participated in Enviro Quiz competitions, out of 150 only eight schools were selected for the final round of Quiz competition. Hon'ble Minister for Environment, Forest and Climate Change distributed the Enviro Quiz Award to the winners.
- **Films on World Environment Day:** The following films were produced on the occasion of World Environment Day, 2018:
 - PrakritiPrakritiRakshatiRakshita
 - Sambandh
 - Green India

Bilateral Matters

The Division within the Ministry of Environment, Forest & Climate Change is the nodal Division for bilateral (country-to-country) cooperation in the field of environment. This year the Ministry entered into four new Agreements / Memorandum of Understanding / Cooperation (MoUs / MoCs) with BRICS (Brazil-Russia-India-China-South Africa), Japan, Cyprus and France, now making it a total of 25 Agreements/MoUs/MoCs with countries/associations on various environmental issues of mutual benefits. Most of these MoUs/agreements are operated through the Joint Working Groups (JWGs) thus, providing an opportunity for dialogue and to work with international community on environmental matters. A number of Joint Working Groups (with Germany, European Union, Finland, etc.) have also been constituted

which flows from Agreements / MoUs / Joint Statements entered into by other Ministries.

Activities:

- **Memorandum of Understanding (MoU) among BRICS Nations on Environment:** An MoU was signed among BRICS Nations and exchanged on 26.07.2018 during the Hon'ble Prime Minister's visit to the 10th BRICS Leadership Summit in Johannesburg, South Africa. The MoU shall facilitate exchange of experiences, best practices and technical knowhow through both public and private sectors among the participating BRICS nations and shall contribute to sustainable development, protection and preservation of Environment. The Memorandum of Understanding also provides the possibility to have projects in areas of mutual interest.
- **India-Cyprus Memorandum of Understanding (MoU):** An MoU between the Ministry of Environment, Forest and Climate Change of the Government of the Republic of India and the Ministry of Agriculture, Rural Development and Environment of the Government of the Republic of Cyprus on Cooperation in the areas of Environment was signed on 3rd September, 2018.
- **India-Japan Memorandum of Cooperation (MoC):** An India-Japan Memorandum of Cooperation (MoC) in the field of Environmental Cooperation was signed on 29th October, 2018 during the visit of Hon'ble Prime Minister of India to Japan in the last week of October, 2018.



- **India-France Memorandum of Understanding (MoU):** An MoU between the Minister of Environment, Forest & Climate Change of the Government of the Republic of India and the Ministry for the Ecological and Inclusive Transition of the French Republic in the field of Environment was signed on 10th March, 2018.
- **India-France Joint Working Group meeting:** The 1st meeting the India-France Joint Working Group on Environment (JWGe) was held during 27-28 September, in Paris, France. Presentation on respective thematic areas viz. Climate Change, Air Quality, Biodiversity and Protected Areas were made during the 2 day meeting. Two projects were envisaged to be supported by AFD, the French Development Agency: (i) Second phase of Assam Project on Forest and Biodiversity Conservation (APFBC); and (ii) a project on Air Quality within the ambit of NCAP.
- **India-Denmark Joint Working Group meeting:** The 1st India-Denmark Joint Working Group meeting was held from 29-31 October, 2018 in Denmark. The priority areas included: (i) Waste water, (ii) Air Pollution, (iii) Solid Waste Management, (iv) Circular Economy/Resource Efficiency. Both countries agreed to promote mutually beneficial partnership on environmental sustainability. They noted the environmental degradation and recognised the urgency to find cost effective and lasting solutions on environmental issues in particular in the field of waste-water, air pollution and solid waste. Both sides agreed for collaboration

in waste water management. The two countries agreed to promote mutually beneficial partnership on environment sustainability.”

The Hon’ble Minister of Environment, Forest and Climate Change as also the Hon’ble Minister of State, Environment, Forest and Climate Change encouraged dialogue with the international community to invite investment, knowledge and cooperation to meet country’s environment-related priorities and needs. The Hon’ble Ministers met with the following Ministers/dignitaries, among others, and discussed environmental issues:

- Mr. Nikolai Astrup, Hon’ble Minister of International Development, Ministry of Foreign Affairs, Norway
- Mr. Mukhtar Babayev, Hon’ble Minister, Ministry of Ecology and Natural Resources, Government of Azerbaijan
- Mr. João Pedro Matos Fernandes, Hon’ble Minister of Environment, Government of Portugal
- Mr. Tsukasa Akimoto, Hon’ble State Minister of Environment, Japan

Bilateral Technical Cooperation Projects / Initiatives:

- **Sustainable and Environment-friendly Industrial Production (SEIP) project:** The project is being implemented under the Indo-German Development Cooperation. The project has aduration of March 2015 to February 2019 with a funding of 6.5 million EUR. The overall objective of the project is, “Private and public actors jointly implement strategies for an efficient, environment and

climate-friendly industrial development.”
A **National Conference on SEIP Project (November 15-16, 2018)**: To disseminate results, successful models and experiences

of the SEIP project and to enable their replication by concerned agencies across the country, a two-day National Conference was conducted. The workshop showcased outcomes of project.



- **One day Roundtable on “National Clean Air Programme (NCAP) to combat Air Pollution in India” with technical support from Germany, November 26, 2018**: In its efforts to combat air pollution, Ministry has taken one more step by joining hands with German Government and conducted high level deliberations to take stock of planning and implementation of NCAP and for information exchange on international experiences in combatting air pollution. The roundtable brought together over

70 experts from Germany, Mexico and several governmental as well as national and international organisations. Major takeaways from roundtable were – India is ready to take off the National Clean Air Programme in a big way; Germany, jointly with Mexico offered to support exchange of experiences to support implementation of NCAP; and several national and international organizations have expressed solidarity to contribute to the implementation of NCAP.





- **India-EU Resource Efficiency Initiative (EU-REI): EU and India 'Circular Economy Mission' from September 4-7, 2018:** A Joint Declaration of Intent was signed between MoEF&CC and the European Union Delegation to India for implementation of its Resource Efficiency Initiative (EU-REI) on June 2, 2018. European Union's Resource Efficiency Initiative (EU-REI) for

India is a three-and-a-half year project (until July 2020), and aims to support India in the implementation of the United Nations Global Sustainable Consumption and Production (SCP) agenda by way of adapting international standards and best practices in business on resource efficiency and fostering the efficient and sustainable use of natural resources.



The Global Environment Facility (GEF) India: India is a founder member of the Global Environment Facility (GEF). Set up in 1991, GEF is the designated multilateral funding mechanism of 183 countries to provide incremental finance for addressing global environmental benefits which are also identified national priorities. The Ministry of Environment, Forest and Climate Change is India's GEF Operational Focal Point (OFP) responsible for all in-country coordination. The Department of Economic Affairs (DEA) is India's GEF Political Focal Point. India is both a donor and recipient of GEF grant.

This Ministry organized the National Dialogue on GEF, for initiating the GEF-7 programming cycle for 2018-22. The objective of the National

Dialogue was to deliberate the efforts taken under the previous GEF programs and other initiatives by different bodies, to demonstrate the direct- indirect causes and effects and to further project the potential solutions to be considered under the GEF-7 Impact Programs. During the event, Secretary, MoEF&CC, highlighted that India is the first nation to kick-start this National Dialogue Globally and put a spotlight on the two critical elements - Resource and Technology, for development and better implementation of programmes. Ms. Naoko Ishii, CEO, GEF participated in the National Dialogue and also had detailed one to one discussions with HMEFCC, Hon'ble MoS, Secretary (EF&CC) regarding India's national priorities in the field of environment vis-à-vis GEF projects.

Partnership for Action on Green Economy (PAGE): With respect to SDG 12, MoEF&CC had submitted the application for country support to India to Partnership for Action on Green Economy (PAGE). India's application to PAGE got approved. The inception workshop for PAGE was held on 29-30th November, 2018. The objective of the inception workshop was to engage national stakeholders, donors and UN agencies regarding priority policymaking and capacity building activities that, with the support of PAGE, can make substantial contributions to India's national targets

regarding Inclusive Green Economy, Nationally Determined Contributions to the Paris Agreement, Sustainable Development Goals (SDGs) initiatives. The Partnership for Action on Green Economy (PAGE) is a joint initiative of five UN Agencies: UN Environment, the International Labour Organization (ILO), the United Nations Industrial Development Organization (UNIDO), the United Nations Institute for Training and Research (UNITAR) and the United Nations Development Programme (UNDP).



Resource Efficiency:

This Ministry constituted a **Resource Efficiency Cell (RE Cell)** under International Cooperation Division in October, 2018 to institutionalize resource efficiency for sustainable consumption and production in policy and practice. Key functions of RE Cell are knowledge management, policy formation, capacity building and mainstreaming of resource efficiency.

To find a balance between developmental needs and minimizing negative impacts associated with resource use, there is a need to promote Resource Efficiency and Secondary Resource Material Strategy and hence, Ministry

of Environment, Forest & Climate Change is in the process of formulating a **National Resource Efficiency Policy (NREP)**. The National Resource Efficiency Policy envisions a future with environmentally sustainable and equitable economic growth, resource security, healthy environment (air, water and land), and restored ecosystems with rich ecology and biodiversity.

13.2 Externally Aided Projects

Externally Aided Projects Division of the Ministry deals with Forestry related Externally Aided Projects in coordination with the State Governments, donor agencies (JICA, French Development Agency, GIZ, KfW, World Bank



etc.) other line ministries in the Government of India such as Ministry of Finance, Ministry of Home Affairs, Ministry of External Affairs, NITI Aayog, etc.

At present, there are 12 Externally Aided Projects under implementation in the country by the respective State Governments. The broad objectives of these forestry projects are increasing forest cover, biodiversity

conservation, rehabilitation of degraded forest areas, Soil & Moisture Conservation measures, Capacity Building of Forest Officials and other stakeholders, creation of income & livelihood opportunities to fringe area forest village people and other measures for Sustainable Management of Forest and its resources.

Lists of ongoing forestry based projects are given below:

S. No.	Name of Projects	States	Funding Agency
1	Assam Project on Forest and Biodiversity Conservation	Assam	AFD
2	West Bengal Forestry and Biodiversity Conservation Project	West Bengal	JICA
3	Rajasthan Forestry and Biodiversity Project (Phase-II)	Rajasthan	JICA
4	Tamil Nadu Biodiversity Conservation and Greening Project	Tamil Nadu	JICA
5	Sikkim Biodiversity Conservation and Forest Management Project	Sikkim	JICA
6	Odisha Forestry Sector Development Project Phase-II	Odisha	JICA
7	Uttarakhand Forest Resource Management Project	Uttarakhand	JICA
8	Japanese Technical Cooperation Project for Natural Disaster Management in Forest Areas of Uttarakhand	Uttarakhand	JICA
9	Himachal Pradesh Forest Eco-Systems Climate Proofing Project	Himachal Pradesh	KfW
10	Himachal Pradesh Forest Ecosystem Services (HPFES) – Technical Cooperation Project	Himachal Pradesh	GIZ
11	Himachal Pradesh Forest Ecosystem Management & Livelihood	Himachal Pradesh	JICA
12	Nagaland Forest Management Project	Nagaland	JICA

The following forestry projects are under consideration:

- Punjab Biodiversity & Natural Resources Conservation Project.
- Sustainable Management of Community Forests and Biodiversity Conservation Project for Livelihoods Improvement Project, Meghalaya .
- Karnataka Sustainable Forest Management and Biodiversity Conservation Project Phase-3.
- Uttar Pradesh Biodiversity Conservation & Community Development Project.
- Gujarat Forestry Development Project-Phase-III.

Administration and Civil Construction

CHAPTER

14





14.1 Administration

There are three sections in Administration viz. P-I, P-II and P-III. Section-wise brief description is given hereunder:-

P-I Section

- Cadre Management of scientific posts of the Ministry and 10 Regional Offices, creation of scientific posts of Ministry. Establishment/service matters of all scientific posts of the Ministry (Main) viz. appointment, promotion, work allocation, court cases, leave cases and retirement benefits (only of those posted in Ministry Main). Disciplinary proceedings of Group 'A' 'B' and 'C' officials of Ministry other than IFS officers under Central Staffing Scheme of the Ministry;
- Cadre management of Technical posts of the Ministry viz. creation, appointment, promotion, work allocation, establishment/service matters, Recruitment Rules, court cases, retirement benefits and leave cases (only of those posted in Ministry Main);
- Cadre management of canteen staff of the Ministry viz. creation, appointment, promotion, establishment/service matters Recruitment Rules, leave cases, retirement benefits, court cases, etc;
- Maintenance of ACRs/APARs of Group 'A' 'B' and 'C' officials of MoEF&CC other than IFS officers of the Ministry;
- Processing of LTC, GPF, House Building Advance, Computer Advances of all personnel of the Ministry;
- Issue of Foreign Deputation Orders in

respect of Environment Wing of the Ministry;

- Processing of medical advance and reimbursement cases of scientific, technical and canteen staff;
- Processing and finalization of complaints, suspension cases and disciplinary proceedings having administrative angle;
- Framing of training policy for Scientists and 360 degree evaluation policy;
- Internship Scheme of Ministry of Environment, Forest and Climate Change; and
- Review of services under FR 56(j).

P- II Section

- Cadre management of CSS/CSSS/CSCS;
- Establishment/service matters of Secretariat Group 'A', 'B' and 'C' posts (except Officers working at the strength of IFS, NRCD and NAEB Divisions) viz. appointment, review cases, leave cases, retirement and retirement benefits, medical claims, tuition fee reimbursement, leave encashment, children education allowance, court cases etc.;
- Training cases of All India Services and Central Secretariat Services Officers;
- Personnel matters relating to Minister's staff.

P-III Section

- Recruitment of Group 'A' Scientists in the Ministry, including regional and attached/subordinate offices;
- Review/assessment of Group 'A' Scientists for promotion under Flexible

Complementing Scheme in the Ministry, including regional and attached/subordinate offices;

- Framing/Amendment of Recruitment Rules relating to Ministry of Environment, Forest and Climate Change, Group 'A' Scientific Posts; and
- Policy matters of Group 'A' Scientific Posts in connection with Flexible Complementing Scheme.

Activities undertaken during 2018-2019:

During the year 2018-2019, the major activities undertaken by Administration Division are as under:-

• Promotion:

The details of cases considered for in situ promotion of Scientists of the Ministry

under Flexible Complementing Scheme, including its attached/subordinate offices, during the year 2018-19, are hereunder:-

- 01 case of promotion from the grade of Scientist 'E' to 'F'.
- 57 cases of promotion from the grade of Scientist 'D' to 'E'.
- 11 cases of promotion from the grade of Scientist 'C' to 'D'.
- 18 cases of promotion from the grade of Scientist 'B' to 'C'.

• Recruitment:

The details of Direct Recruitment of Group 'A' Scientists undertaken in various grades in the Ministry, including its Regional and attached/subordinate offices, during the year 2018-19 have been tabulated hereunder:-

Grade	Ministry (Main)	BSI	ZSI	NMNH	NRCD	Total
Scientist 'B'	01	-	03	-	01	05
Scientist 'C'	04	-	-	-	-	04
Scientist 'D'	01	-	-	-	01	02
Scientist 'E'	-	-	-	-	01	01
Scientist 'F'	04	-	-	-	-	04
Scientist 'G'	-	01				01
Total	10	01	03	Nil	03	17

- Services of 150 officers (32 Group 'A', 38 Group 'B' Gazetted, 30 Group 'B' Non-Gazetted and 50 Group 'C') has been reviewed under FR 56(j) till 31.03.2019;
- Introduction of online recording of APARs in SPARROW platform in respect of all officers of CSS/CSCS/CSSS Cadres initiated for the year 2018-19.
- Sanction Orders of 87 delegations of foreign

tours of Minister and officers were issued;

- Formulation of "Internship Scheme" of Ministry and implementation of "Summer Internship schedule" - 2018-19 wherein 35 students in 22 disciplines joined the Ministry. For "Winter Internship schedule"- 2018-19, a total of 43 interns were shortlisted in 22 disciplines out of which 25 joined the Ministry;



- The process of filling up of 7 posts of Research Investigator (Forestry), 8 posts of Research Officer (Environment) Grade II, 6 posts of Research Assistant (Environment) and 1 post Technical Assistant is under process..

14.2 Indian Forest Service (IFS) Cadre Management

MoEF&CC is the Cadre Controlling Authority for the Indian Forest Service (one of the three All India Service). IFS division deals with all cadre Management related matters. The total authorized cadre strength of the Indian Forest Service as on 1st January, 2018 is '3191' (three thousand one hundred ninety one) which includes '2224' Direct Recruits and '967' Promotion posts. The Total Senior Duty Posts (SDP) in the Indian Forest Service are 1960 and remaining under various reserves. Besides serving the 31 Forest Departments in the States and Union Territories managing the country's natural resources, a large number of the IFS officers are in various Ministries and institutions both in the State and at the Cadre.

Activities of IFS Division:

- Determination of vacancies and framing of rules for Direct Recruitment through Union Public Service Commission and allocation of cadres to IFS probationers.
- Determination of vacancies for induction of State Forest Service Officers by promotion into Indian Forest Service, Coordination of Selection Committee Meetings, Notification of Select List and year of allotment to officers inducted in Indian Forest Service.
- Review of cadre and revision in the composition and strength of IFS in various cadres.
- Selection/ appointment of IFS officers to various posts under Central Staffing Scheme of the Ministry and cadre clearance for appointment to various autonomous bodies including Indian Council of Forestry Research & Education, Dehradun, Indian Institute of Forests Management, Bhopal and Wildlife Institute of India, Dehradun.
- Facilitation of Selection /Appointment of IFS officers against the Central Staffing Scheme of Department of Personnel & Training (DoPT).
- Finalization of various service matters like inter-cadre transfers, Inter cadre deputation, Cadre clearance for placements/training and post-retirement benefits to the officers.
- Management of AGMUT cadre including promotions, transfers, postings and other service matters.
- Publication of Civil List of IFS Officers.
- Confirmation of IFS officers in Service.

Achievements:

- Vacancy determination and Cadre Allocation for Indian Forest Service(IFS) Examination, 2017 is under process. However, vacancies for induction of State Forest Service officers into Indian Forest Service have been determined in respect of 13 cadres during the year 2018.
- Cadre review completed in respect of Andhra Pradesh during January

to December, 2018. Cadre Review of Karnataka, Himachal Pradesh and Chhattisgarh are under process for approval of Department of Personnel & Training.

- Smart Performance Appraisal Report Recording Online Window (SPARROW) implementation for online filing of PAR in respect of around '1900' IFS Officers has been processed.
- Up-to- date Civil List of IFS officers as on 01.01.2018 is available on the website of this Ministry at <http://www.ifs.nic.in>. The website also has updated information pertaining to the vacancy/deputation (under CSS-MoEF) circulars, training programme circulars, Rules and Regulations concerning IFS. Further, website also has Performance Appraisal Report (PAR), availability status of IFS officers which can be accessed by concerned officer. Each and every members of the Service has been provided facility to have his unique Email account through NIC on this site and members of Service have been provided facility to update data relating to their posting details online for periodical up gradation.
- The re-structuring of the Content Management Based IFS Website (<http://www.ifs.nic.in>) has been completed and will be launched shortly.
- Fifty-four State Forest Service officers were included into the Indian Forest Service under IFS (Appointment by Promotion) Regulations, during January– December, 2019.

- 24 (Twenty-four) IFS officers joined at various levels under the Central Staffing Scheme of the Ministry and 21 (Twenty-one) IFS officers joined under the Central Staffing Scheme of the Department of Personnel & Training. 64(Sixty-four) IFS officers have been empanelled at the level of Joint Secretary and equivalent at the centre.
- Around '12' Court Cases pending in various Courts across the Country were liquidated.

14.3 Vigilance Division

- The Vigilance Division interact with Central Bureau of Investigation (CBI) in various matters and facilitate CBI for obtaining the information/documents from various Divisions of the Ministry.
- Vigilance complaints regarding misconduct of Officers and officials (including all IFS officers) under MoEF&CC received from the General Public/Organisations/Central Vigilance Commission (CVC)/PMO's office etc. During the period 01.01.2018 to 31.03.2019, 212 complaints were received and examined and 258 complaints were closed/filed including old ones.
- Conducting and appointing of Inquiry Officer (I.O.) and Presenting Officer (P.O.) for Preliminary Information and Inquiry. During the period, 2 (Two) Inquiry Officers were appointed.
- Identification of Sensitive Posts and to ensure periodical rotation of staff holding such sensitive posts. Matter is under process.
- Disciplinary proceedings (involving



vigilance angle) against all retired Officers and officials under the MoEF&CC including all IFS officers.

- Disciplinary proceedings (involving vigilance angle) against all IFS officers of AGMUT Cadre and other Officers and officials under the MoEF&CC. 2 (Two) disciplinary proceeding cases were disposed of during the period.
- Examination of cases of imposition of major penalties of dismissal/compulsory removal etc. (involving vigilance angle) on IFS officers referred to by State Governments.
- Appeals (including appeals against suspension) Review preferred by officers/officials under the MoEF&CC including all IFS officers. 3 (Three) Appeals have been disposed of during the period.
- All Court cases having vigilance angle.
- Sanction of Prosecution including those under the Prevention of Corruption Act (PC Act), 1988 against IFS Officers and Officers/officials serving/retired from service under the MoEF&CC. 3 (three) cases of sanction for prosecution were disposed of during the period.
- According clearance from vigilance angle in respect of officers and officials of the Ministry. 1624 vigilance clearance were accorded during the calendar year.
- Receipt and Scrutiny of Annual Immovable Property Returns (AIPRs) of All Officers and officials (including IFS officers) of MoEF&CC.
- Permission/Intimation of Movable/

Immovable property under Conduct Rules, 1964 and All India Service (Conduct) Rules, 1968.

- Prevention Measures to check corruption.
- Organizing Vigilance Awareness Week as per CVC directions.
- Introduction of Single Window System in the MoEF&CC for receiving proposals of disciplinary proceedings/appeal/revision/review and sanction for prosecution cases of IFS officers/Scientists, etc. w.e.f. 15.08.2018.

14.4 Parliament Section

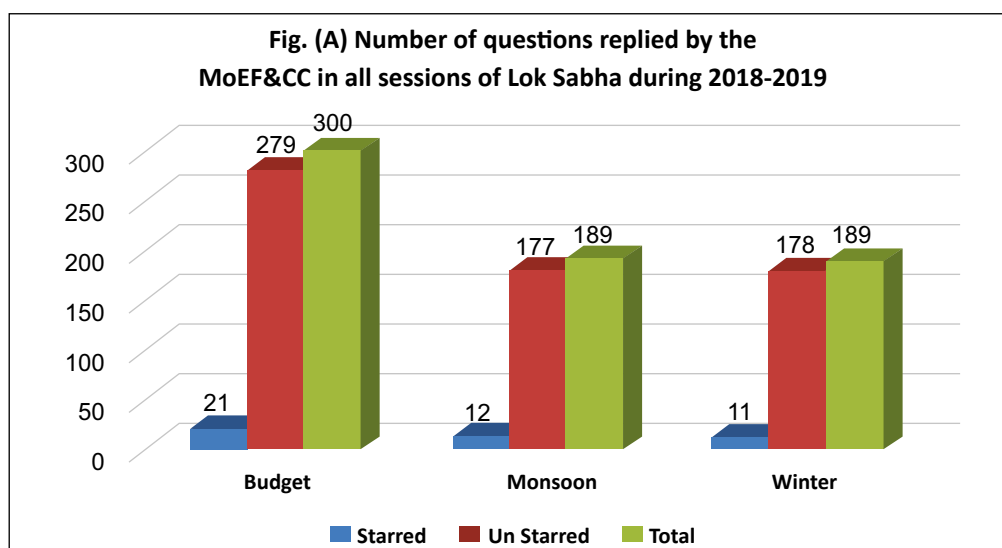
The Parliament Division in the Ministry is responsible for co-ordination of all parliament matters related to the Ministry of Environment, Forest and Climate Change (MoEF&CC). During the year 2018-19, a total number of 1180 Parliament Questions pertaining to various aspects of environment were answered by the Ministry (724 questions in the Lok Sabha, out of which 45 were starred and 679 were un-starred. A total of 456 questions were asked in the Rajya Sabha, out of which 44 were starred and 412 were un-starred). The information including up to 31st March, 2019. The questions covered a wide range of issues with which the Ministry is concerned, prominent among them being questions related to Pollution, Wildlife Management, Forest Conservation, Environmental Conservation, Climate Change, Waste Management, Environment Impact Assessment, Environmental Education, Freshwater and Marine Conservation, Water Management, Biosafety, Medicinal Plants and Disaster Management etc.

Graphical representation of the Parliament Questions replied by the Ministry during 2018-19

both in Lok Sabha and Rajya Sabha in various Sessions are as given in Fig- (A) and Fig –(B):

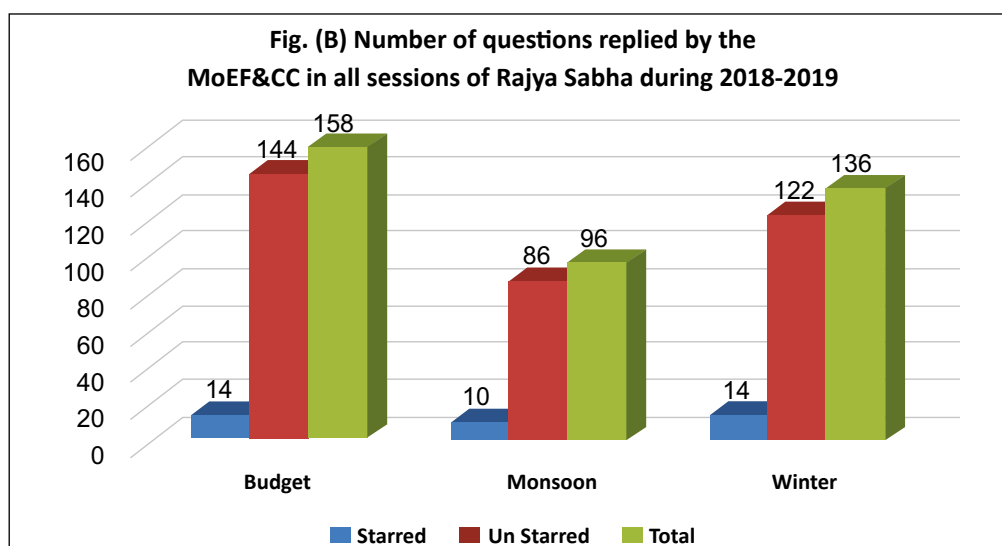
Lok Sabha

Type	Budget	Monsoon	Winter	Grand Total
Starred	21	12	11	44
Unstarred	279	177	178	634
Total	300	189	189	678



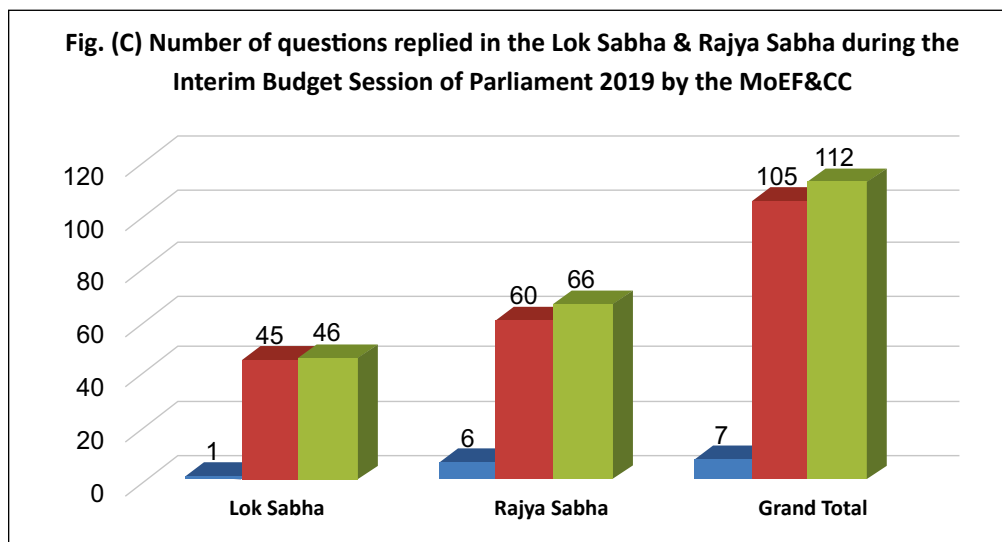
Rajya Sabha

Type	Budget	Monsoon	Winter	Grand Total
Starred	14	10	14	38
Unstarred	144	86	122	352
Total	158	96	136	390





Graphical representation of the Parliament Question replied by the Ministry during Interim Budget 2019 both in 17th Session of 16th Lok Sabha and 248 Session of Rajya Sabha respectively Fig- (C).



During the year 2018-19, Parliament Section coordinated nine meetings of Department related Parliamentary Standing Committee of Science and Technology, Environment, Forest and Climate Change and three meetings of Consultative Committee of the Ministry.

The subject matter of Deptt. Related Parliamentary Standing Committee of Science and Technology, Environment, Forest and Climate Change are as under:

- Air Pollution in Delhi/National Capital Region,
- (a) Protection of endangered/vulnerable species; and (b) Environment pollution of rivers including spring-fed rivers and its impact on ecology,
- Demands for Grants 2018-19,
- Status of Forests in India,
- Draft National Forest Policy, 2018,
- Cutting of Trees in Himachal Pradesh due to Highway expansion projects and

on Mathura Road, New Delhi for some development plan,

- Cutting of trees in Harsil, Uttarkashi, Uttarkhand,
- Pollution in major rivers of the country,
- Role of CPCB,

The subject matter of foru Consultative Committees are as under:

- Forest Cover in India and State of Forest Report,
- Biodiversity,
- Plastic Waaste Management,
- Climate Change/Global Warming

In addition, other meetings relating to Committee on Subordinate Legislation, Public Accounts Committee, Estimate Committee, Committee on Petition and Committee on Government Assurances etc. were also co-ordinated.

14.5 Information Technology (IT) and e-Governance

Government working is based on intensive knowledge and information sharing. Effective communication and sound Information and Communication Technology (ICT) go hand in hand. For speedy implementation and monitoring of various programmes / schemes and to make most of ICT to secure efficiency in working, Ministry has embarked up on a comprehensive exercise to implement various e-Governance activities / projects.

Progress/Achievements

- Continued the implementation of e-Office in the Ministry under Digital India Programme (collected details of officers and staff, Registered 1082 Users in eOffice portal, Posting and Promotion, Role Post, Setting of Workflow, Updation of Leave Balance details, Provided Training, updation in Notice Board).
- Created email IDs in @gov.in domain for all the users of eOffice.
- Management of Wi-Fi System at Indira Paryavaran Bhawan including addition/deletion of users, configuration in mobile phones, installation of certificates in iPhones.
- Management of Biometric Attendance System including sending reports to all divisional heads.
- Monitored the regular updation of material in Social Media sites (<http://twitter.com/moefcc> & <http://facebook.com/moefcc>).
- Developed and implemented Online Application inhouse for inviting applications and selection / rejection of applicants under Internship Scheme for students (<http://164.100.160.232/internship/>). This Scheme seeks to engage students with Graduation/ Post Graduation Degrees and Research Scholars enrolled in recognized University/Institution within India or abroad, as “Interns”. These “Interns” shall be given exposure to various Divisions/ Units of the Ministry. These “Interns”, in turn, would be expected to supplement the process of analyzing within Ministry through empirical collection and collation of details in-house. For the “Interns” the exposure to the functioning of the Ministry may be an add-on in furthering their future interests.
- Management of Budget Expenditure Management System for IFD, PAO, B&A, PC and other Divisions.
- Management of Online Stationary Request Management System for submitting the request for stationary.
- Management of Smart Performance Appraisal Report Recording Online Window (SPARROW) for online submission of APAR of IAS, IES, ISS, IPS, CSS & CSSS Officers.
- Management of Smart Performance Appraisal Report Recording Online Window for submission of APAR of Scientists in the Ministry.
- Arrangement of Video Conferencing System for PRAGATI and other meetings.
- IT infrastructure of the Ministry was strengthened.



- Examination of all policy issues pertaining to Information Technology.

Online Consent Management & Monitoring System

Online Consent Management & Monitoring System (OCMMS) developed for State Pollution Control Boards (SPCBs) / Pollution Control Committees (PCCs) to automate the existing workflow which allows the industries for the online submission of application for Consent to Establish (CTE) / Consent to Operate (CTO), authorization for various categories of Industries / Institutions / Hotels / Hospitals. This system helps the officials of SPCB for online processing of industries application for CTE/CTO, Authorization as well as monitoring of various activities of SPCBs/PCCs.

Online Consent Management & Monitoring System (OCMMS) has been implemented in 24 States/UTs viz. Andhra Pradesh, Bihar, Chhattisgarh, Chandigarh, Daman & Diu, Haryana, Jharkhand, Jammu & Kashmir, Kerala, Meghalaya, Odisha, Punjab, Puducherry, Telangana, Tripura, Tamil Nadu, Uttar Pradesh, Sikkim, Delhi, Goa, Himachal Pradesh, Assam, Uttarakhand and Andaman & Nicobar. Development of OCMMS is under process in Assam and Uttarakhand. The OCMMS is integrated with DIPP / State Government Single Window System for seven (10) States viz. Andhra Pradesh, Chhattisgarh, Haryana, Jharkhand, Kerala, Odisha, Tamil Nadu, Telangana and Punjab. The mobile version of OCMMS is implemented in seven (8) State of Andhra Pradesh, Bihar, Haryana, Jharkhand, Kerala, Punjab and Tamil Nadu and the same are amade available under Play Store.

Parivesh

In pursuant to the spirit of 'Digital India' initiated by Shri Narendra Modi, Hon'ble Prime Minister of India and capturing the essence of Minimum Government and Maximum Governance, a Single-Window Integrated Environmental Management System named PARIVESH (Pro-Active and Responsive facilitation by Interactive, Virtuous and Environmental Singlewindow Hub) has been launched by Ministry in August 2018.

Based on the concept of web architecture, a workflow based application has been rolled out for online submission, monitoring and management of proposals submitted by Project Proponents to the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India as well as to the State Level Environmental Impact Assessment Authorities (SEIAA) to seek various types of clearances (e.g. Environment, Forest, Wildlife and Coastal Regulation Zone Clearances) from Central, State and district-level authorities. It automates the entire process of submitting the application and tracking the status of such proposals at each stage of the processing. This system has been designed, developed and hosted on cloud environment by NIC, New Delhi.

This web-based application is unique amongst all such portals of regulatory agencies. This initiative will bring the Ministry closer to the industry and citizens alike. After the introduction of e-communication in the first phase, this is the second phase of reforms towards e-Governance in its real spirit.

The launch of 'PARIVESH' is a great propeller and revolutionary step for Ease of Doing

Business with responsibilities by bringing in utmost transparency and accountability.



Home Page of PARIVESH Portal

Objectives:

- Enhance efficiency, transparency, and accountability in the Environment, Forest, Wildlife and CRZ clearance processes.
- Sound and informed decision-making
- Enhance responsiveness through workflows automation
- Real time information about the status of applications with alerts at each of the stages through SMS and email
- Efficient and expeditious processing and decision-making leading to reduction in turnaround time
- Standardization in processing and decision-making across the States/UTs
- Enhance ease and convenience of citizens

and businesses in accessing information and services

- Real-time monitoring and adherence to timelines for verification
- User-friendly and environmentally sustainable application processes
- Improve environmental monitoring and compliances
- Leading to the era of Mobile Governance with maximum transparency

Benefits:

a. For Project Proponent/User Agency:

- Single registration and single sign-in for all types of clearances (i.e. Environment, Forest, Wildlife and CRZ)



- Unique-id for all types of clearances required for a particular project
- Single Window interface for the proponent to submit applications for getting all types of clearances (i.e. Environment, Forests, Wildlife and CRZ clearances)
- Helps the user to apply, view, track, interact and respond to the queries whenever he wants and wherever he is through web-based system. No physical interaction with the officers
- Facility to download the e-signed approval letter
- Supplemented by mobile app “PARIVESH” for Android and iOS based smart phones. The status of the application, replies to queries, agenda & minutes of meetings, approval letters can also be accessed/ downloaded anytime on a smart phone through this App
- Dashboard for accessing various analytical reports including charts/ graphs indicating pendency of information, time taken by processing authorities at each level, etc
- SMS and email alerts at all levels of application processing
- Facility for uploading the compliance reports for clearances. Facility for uploading of geo-tagged images on GIS maps
- Alerts through SMS and emails in case of non-compliances. This will help

ensuring timely compliance of clearance conditions

- Improved public image through improved environmental compliances

b. For Processing Authorities:

- A Single Window System for Central, State and District level clearances
- Auto generation of agenda (based on first come first served principle), minutes of the meetings and online generation of approval letters through digital signatures/e-Sign by competent authorities resulting in ease and uniformity in processing of clearance applications
- Accessing of information about the pendency and timeline fulfilments of various applications under consideration
- Online submission and monitoring of compliance reports including geo-tagged images of the site by regulatory body / inspecting officers even through the Mobile App for enhanced compliance monitoring
- Integration with single window clearance systems launched by DIPP and various other state governments
- Processing of files through mobile app will facilitate for expeditious decision-making
- Geographic Information System (GIS) interface for the Appraisal Committee, to help them in analyzing the proposal efficiently

- Dashboard for providing various analytical reports. Help in self assessment and improved performance
- Efficient and real time review of pendency by higher authorities with facility to review the performance of the processing officers
- Automatic alerts (via SMS and emails) at important stages to the concerned officers, committee members and higher authorities to check the delays, if any
- Automatic alerts in case of non-compliances for clearance conditions – would result into enhanced compliance leading to sustainable development
- Improved public image – from merely a regulator to more of a facilitator

c. For Citizens:

- Enhance ease and convenience of citizens and businesses in accessing information and services
- Availability of details of each project in public domain
- Access to various technical and impact assessment reports, approval letters, etc. through web portal as well as through mobile app
- Timeline for each stage is available in the public domain to bring in transparency and accountability in the system
- Data base sharing will facilitate in research and development activities
- Improved compliance, better

environmental quality

- Integration with Green Skill Development Programme-search engine for Green jobs

Modules of PARIVESH:

- Online Registration of Proponent/User Agency
- Workflow / file processing and approval management
- Alerts & Notification (SMS and email)
- e-talk
- GIS based Appraisal and Geo-tagging
- Compliance Monitoring for project proponents and regulatory authorities
- Analytical Reports
- Online Agenda Management
- Online Minutes of Meeting
- Query Module for Essential/Additional Details Sought (EDS/ADS)
- Generation of Approval letters for TOR/EC/FC/Wildlife/CRZ clearances
- Dashboard for project proponents, processing authorities and citizens
- E-Green skilled jobs
- Audit Trail
- FAQ

Android and iOS based Mobile Application “PARIVESH”

The web portal is supplemented by Android and iOS based mobile application named “PARIVESH” to facilitate the user Agencies/ Project Proponents to easily track and view



the current status of their proposals, reply the queries of processing authorities, accessing the agenda and minutes of the appraisal meetings as well as accessing to the clearance letters, etc at their palm.

This app also helps in compliance monitoring by the processing authorities, which can be done by uploading geo-tagged images of the location of the project which would help in appraisal process.

14.6 Right to Information (RTI) Cell

As per RTI-MIS Portal, the MoEF&CC has received 5531 RTI applications and 488 RTI appeals under the RTI Act, 2005 during the year 2018-19 (01.01.2018 to 31.03.2019).

The Central Public Information Officers (CPIOs) and First Appellate Authorities (FAAs) have been designated for effective implementation of the RTI Act, 2005. The notifications designating CPIOs/FAAs are revised periodically as and when there are changes in the allocation of work among CPIOs/FAAs. All the Subordinate offices/Institutions/Autonomous bodies were also requested to periodically revise the Notification for CPIOs/FAAs.

Directions from the Central Information Commission (CIC) and the Nodal Ministry/Department – DoPT, are also circulated to the CPIO/FAAs for guidance to implement the RTI Act.

Periodical reports are also sent regularly to DoPT and Central Information Commission.

14.7 General Administration (GA) Section

The General administration (GA) Division of the

Ministry is entrusted with the responsibility of providing logistics and support services to senior officers and staff for discharging their duties and smooth functioning of the Office. It includes procurement and supply of stationery, maintaining stores, disposal of obsolete materials, equipments, support services to the officials of the Ministry including provision of transport, communication and general upkeep etc. The Ministry is housed in a new building at Jor Bagh Road, New Delhi which is a green building, with net zero energy consumption. It has the unique distinction of getting LEED India Platinum & GRIHA-5 Star Green Building ratings.

14.8 Public Grievance Cell

- The Public Grievance Cell has been functioning in the Ministry of Environment, Forest and Climate Change to attend to the complaints from general public regarding various issues like environment, wildlife, forestry and other environmental matters.
- Joint Secretary (PG) is the Nodal Public Grievance Officer of the Ministry.
- During the period 1st January, 2018 to 31st March, 2019, the PG Cell had received 7299 public grievances.
- Out of this, 6926 grievances has been disposed through online and 373 grievances are pending for disposal.
- The rate of disposal of grievances received is 95% (approx). Efforts are being continued by the PG Cell to raise the disposal rate to 100% by issuing periodical reminders to the Divisions/Sections concerned for early

disposal of pending grievances, and strive for Zero pendency of grievances.

14.9 Implementation of Official Language Policy

Sustained efforts were made to ensure proper compliance of the Official Language Policy of the Union as enshrined in the Constitution of India, the Official Languages Act, 1963 (As amended, 1967), the Official Language Rules, 1976 (as amended 1987, 2007 & 2011), the Annual Programme and orders issued by the Govt. of India from time to time. All documents coming under the purview of Sec 3(3) of the O.L. Act, such as General Orders, notifications, Press Communiques/Releases, Resolutions, Rules Official Papers laid before a House or both the Houses of Parliament etc. were translated, typewritten, vetted and thereafter got issued bilingually in Hindi and English. The letters received in Hindi and representations/appeals signed in Hindi were replied to in Hindi ensuring 100% compliance of Rule 5 and Rule 7 (2) of the O.L. Rules.

Activities undertaken: Meeting of Official Language Implementation Committee -Four quarterly meetings of Official Language Implementation Committee were organized under the chairmanship of Scientist 'G' (O.L. Incharge) wherein position of implementation of Official Language Policy in the Divisions/Sections of the Ministry were reviewed.

Hindi Workshops: Hindi workshops were organized for the officers and staff to enable them to carry out their day to day work in Hindi. Officials were trained to type in Hindi with the help of Unicode so that they may do

their work originally in Hindi.

Inspections: The Committee of Parliament on Official Language inspected the attached/subordinate offices viz. ICFRE, Dehradun, IPIRTI, Bengaluru and CZA, New Delhi.

In addition to above, with a view to review the position of implementation of Official Language Policy of the Union, inspections of attached/subordinate offices under the administrative control of the Ministry of Environment, Forest & Climate Change were also carried out by officer(s) of Official Language Division of the Ministry.

Revival of Medini Award Scheme: To promote writing of books originally in Hindi 'Medini Award Scheme' has been reintroduced from 01st April, 2018.

Publication of Paryavaran Magazine: 69th issue of the Ministry's Hindi magazine 'Paryavaran', a special number dedicated to birds, launched on dated 25.03.2019.

Hindi Pakhwara: Hindi fortnight was organized in the Ministry from 01.09.2018 to 15.09.2018. During this period various Hindi competitions aimed to increase progressive use of Official Language Hindi were organised. Employees of the Ministry, NAEB, NRCD and CCU participated in these competitions.

14.10 Civil Construction Unit (CCU)

The Government of India decided that each major scientific department with a substantial annual civil work budget should have a civil engineering unit of its own for expeditious implementation of works connected with plan schemes. Accordingly the Civil Engineering



Wing (now Civil Construction Unit) was created in March, 1987 in the then Ministry of Environment and Forests (now MoEF&CC). The Civil Construction Unit (CCU in brief) headed by the Chief Engineer is a separate division under the administrative control of the MoEF&CC. The CCU mainly deals with –

- i. Planning of works including preparation of estimates in house and vetting of estimate prepared by other PWOs.
- ii. To construct major works in house or get these constructed through other PWOs.

The provisions of CPWD Code/CPWD Works Manual apply to such works. All proposals relating to policy matters of CCU are to be submitted to the Secretary, MoEF&CC.

Functions of the Division - The CCU is engaged in execution of various Civil & Electrical works of the MoEF&CC, its attached and subordinate offices and autonomous bodies funded by the Ministry. These include works of BSI, FSI, ZSI, DFE, FRI, NMNH, IGNFA, ICFRE, NZP, IIFM, GBPIHED, IPIRTI, CPCB, WII and CZA. All construction works where CCU has its own set up are executed by CCU. However, construction works at other locations are got executed through CPWD. The co-ordination and budget management for works executed by CPWD is being done by CCU. The maintenance works of National Zoological Park Delhi are also handled by the CCU.

Activities undertaken:

Important Works in progress under Civil Construction Unit:

- i. Construction of Zonal office for CPCB at Bhopal.
Sanction amount - Rs. 6.59 Cr.
- ii. Construction of Girls Hostel for FRI (Deemed) University at FRI, Dehradun
Sanction amount - Rs. 2.73 Cr.
- iii. Extension of Executive Hostel for IGNFA, Dehradun.
Sanction amount - Rs. 11 Cr.
- iv. Construction of Regional Museum of Natural History at Gangtok.
Sanction amount - Rs. 57.59 Cr.
- v. Construction of Type-III (10 nos.), Type-V (Duplex) (4 nos.) and Type-VI (Duplex) (1 nos.) residential quarters for Central Academy for State Forest Service (CASFOS) at Burnihat (Assam).
Sanction amount - Rs. 11.43 Cr.
- vi. Construction of Faunal repository of ZSI at Port Blair.
Sanction amount - Rs. 2.97 Cr.
- vii. Construction of 10 No. Residential Quarters for BSI at Dehradun.
Sanction amount - Rs. 3.66 Cr.
- viii. Construction of 7 No. staff quarters at Regional Museum of Natural History at Sawai Madhopur (Raj.)
Sanction amount - Rs. 2.74 Cr.
- ix. Remodelling of Beat No. 5 (Shangai deer Enclosure) at NZP, New Delhi.
Sanction amount - Rs. 0.96 Cr.

Development Monitoring & Evaluation, Budget and Accounts

CHAPTER

15





15.1 Development Monitoring & Evaluation

Erstwhile Plan Coordination Division has been renamed as DMED and given a new mandate. The work of DMED is associated with the Development, Monitoring, and Evaluation Office (DMEO) in NITI Aayog. It is also to function towards convergence of efforts through Government Funded Programmes to achieve Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs).

Mandate:

The work of DMED is detailed as under:

- To carry out monitoring and impact Evaluation of the Ministry's funded programmes.
- To focus on outcomes and take them into account during appraisal for continuation of the ongoing schemes.
- To constitute Evaluation Monitoring Committee (EMC).
- To prepare ToR for Evaluation Monitoring Committee (EMC).
- To get ToR vetted by Inter Ministerial Group (IMG).
- Coordination with NITI Aayog.
- Nodal Division for coordination with NITI Aayog in the matter of monitoring and evaluation of programmes of the Ministry.
- Any other matter as assigned by the competent authority in the Ministry.

Progress:

As per the guidelines issued by the Ministry of

Finance and NITI Aayog, DMED is preparing the road map and strategy to create a mechanism for monitoring and evaluating the Public funded schemes of the Ministry. The Division is also examining the evaluation methods opted for in the Ministry's schemes as per their SFC/ EFC memos, Appraisal Notes etc., finalized for continuation of the Schemes beyond the 12th Five Year Plan Period, i.e. from 2017-18 to 2019-20 so as to align this with the ongoing Fourteenth Finance Commission cycle (2015-16 to 2019-20).

An Evaluation Monitoring Committee (EMC) has been constituted vide Notification dated 7th February, 2019 to monitor the overall exercise of evaluation and monitoring. The EMC is being chaired by Principal Adviser and members are representatives of Internal Finance Division, Budget Division, Audit Wing and the JSs/IGFs/Advisers of Programme Divisions. Economic Adviser is the Member Secretary of the Committee.

DMED has also formulated a set of common Terms of References (ToRs) for conducting evaluation studies of the Schemes by drawing parameters like Financial, Physical and Implementation issues. DMED has requested the implementing Divisions to furnish the Scheme Specific ToRs to project pragmatic requirements of the Schemes. Additionally, in compliance with directions of the NITI Aayog and Finance Ministry, EMC would supervise the evaluation exercise of Central Sector Schemes only, as the Centrally Sponsored Schemes are being evaluated through the NITI Aayog. Following Central Sector Schemes are being proposed to be evaluated by Third Party

agencies before the completion of Financial Year 2019-20.

- Eco-Task Force.
- Pollution Abatement.
- Hazardous Substances Management.
- Climate Change Action Plan.
- National Adaptation Fund.
- Control of Pollution.
- National Coastal Mission.
- Forestry Training and Capacity Building.
- Environmental Education, Awareness and Training.
- Media, Publicity & Information.
- Swachhta Action Plan.
- Environmental Information Systems.
- Centres of Excellence.
- R&D for Conservation and Development.
- National Mission on Himalayan Studies.
- Combating Desertification
- Environmental Information Systems (ENVIS)

15.2 Budget and Accounts

Budget Division: Budget Division is entrusted with the planning and coordination of all Schemes and Non-schemes of the Ministry of Environment, Forest and Climate Change. It functions as the nodal Division for issues and matters related to Ministry of Finance (Department of Economic Affairs' Budget Division and the Department of Expenditure). The work handled in the Division cover preparation, monitoring and review of the Ministry's Annual Plans and the tasks associated with the Union Budget and the Outcome

Budget of the Ministry. The responsibility of monitoring of the progress in utilization of allocated funds released for implementation of various Schemes is also assigned to the Division. The work of the Budget Division is detailed as under:

- Preparation of Statement of Budget Estimates (SBE), Revised Estimates (RE), Supplementary and Re-appropriation proposals
- Preparation of Detailed Demands for Grants (DDG)
- Preparation of Saving Note
- Coordination with Department-related Parliamentary Standing Committee
- Compliance of Cash Management (MEP/QEP)
- Monitoring of Expenditure
- Preparation of Outcome-Output Framework for Schemes
- Monitoring and reporting to nodal Ministries/NITI Aayog on Scheduled Caste Sub Plan (SCSP), Tribal Sub Plan (TSP), North Eastern Region (NER), Gender and Child Budgeting
- Allocation of funds under Advances to Government Servants

Annual Plan 2018-19: The Ministry has been allocated an outlay of Rs 2675.42 crore in the Budget Estimates (BE) for the Financial Year 2018-19 and retained at the same level at Revised Estimates (RE) stage.



The financial outlays and expenditure during 2018-19 is given in the following table:

Umbrella Scheme-wise Allocation (2018-19)

(Rs in Crore)

Sl. No	Name of the Scheme	BE 2018-19	RE 2018-19	AE 2018-19
1	Environmental Knowledge and Capacity Building (CS)	82.50	141.45	141.37
2	Environment Protection, Management and Sustainable Development (CS)	235.00	233.00	225.63
3	National Coastal Management Programme (CS)	165.00	130.10	129.55
4	Decision Support System for Environmental Awareness, Policy, Planning and Outcome Evaluation (CS)	120.70	122.65	108.90
5	Control of Pollution	0.00	5.00	4.95
6	National Mission for a Green India (CSS)	210.00	210.00	223.38
7	Integrated Development of Wildlife Habitats(CSS)	555.00	555.00	527.78
8	Conservation of Natural Resources and Ecosystems (CSS)	80.50	80.50	76.58
9	National River Conservation Programme (CSS)	173.50	150.50	150.33
	Total	1622.20	1628.20	1588.47

Umbrella Non Scheme-wise Allocation (2018-19)

(Rs in Crore)

Sl. No	Name of the Scheme	BE 2018-19	RE 2018-19	AE 2018-19
1	Secretariat	131.17	136.99	131.79
2	Attached/ Subordinate offices	467.25	427.31	412.04
3	Assistance to Autonomous Bodies	301.50	316.50	326.48
4	Statutory & Regulatory Bodies	153.30	166.42	165.07
	Total	1053.22	1047.22	1035.38
	Umbrella Scheme-wise Total	1622.20	1628.20	1588.47
	Grand Total (Scheme + Non Scheme)	2675.42	2675.42	2623.85

Activities undertaken:

- Focused on Medium Term Expenditure Framework (MTEF) to give greater resource predictability to Ministry outlay.
- Focus on Scheme based Output-Outcome Monitoring Framework (OOMF).
- A new Scheme, Control of Pollution is introduced in the financial year 2018-19.

Principal Accounts Office: Under the Departmentalized Accounting System, the Secretary is the Chief Accounting Authority in the Ministry and performs duties with the assists of Financial Advisor (FA) and Chief Controller of Accounts (CCA). The role of CCA is to advise and assist the Ministry on matters relating to Budget, Expenditure Management, Accounting, Establishment Matters and Personal claims of the employees. The Accounting Organization in the Ministry under Chief Controller of Accounts includes the Principal Accounts Office, Pay and Accounts Offices (PAOs) and Drawing and Disbursing Offices (DDOs).

The Principal Accounts Office is entrusted with the responsibility of collecting receipts, making payments and maintaining accounts for the Ministry, conduct Internal Audit and Scheme Audit, ensure Cash Management System through Monthly/ Quarterly Expenditure Plan (MEP/QEP) and monitoring of Assets and Liabilities. The Internal Audit Wing (IAW) under CCA conducts Internal Audit of PAOs, DDOs, Autonomous Bodies and performance audit of Schemes of the Ministry and Reports to the Chief Accounting Authority.

The New initiatives includes implementation of

Public Financial Management System (PFMS) in the PAOs and roll out of PFMS for enabling electronic transfer of funds in the Cheque Drawing DDOs; online collection of Non-Taxes of the Ministry through Non-Tax Receipts Portal (NTRP) to eliminate delay and digitize all receipts; introduction of an online Pension Sanction and Payment Tracking System called BHAVISHYA to facilitate the retiring employee to fill the forms online and the Administrative Authority to process the online claim and communicate to Pay and Accounts Offices for issuance of Pension Payment Order (PPO). Employee Information System (EIS) has been successfully implemented in NCDDOs/CDDOs under the Ministry. Further, the roll out of Expenditure, Advance & Transfer (EAT) module for implementing agencies receiving Grants-in-aid under Central Sector Schemes/ Centrally Sponsored Schemes from the Ministry has been implemented. GPF module of PFMS has been successfully implemented in the Ministry which has made it convenient to monitor GPF account by subscriber himself. Accounting Procedure for CAMPA funds have been finalized by this office. More than 54000 Cr. of CAMPA fund have been brought to Government account from adhoc authority through NTRP module of PFMS.



List of Pending/Settled C&AG Paras

Ministry of Environment, Forest & Climate Change
List of pending C&AG Paras (up to 31st March, 2019)

SL. No.	Report No. & Year	Para No.	Brief Subject
1	21 of 2012- 13	Entire Report	Report on Compensatory Afforestation in India
2	27 of 2014	6.3	Wasteful expenditure on hiring of office accommodation
3	30 of 2015	7.1	Implementation of E-waste (Management and Handling) Rules, 2011 by Central Pollution Control Board – regarding
4	30 of 2015	7.2	Inordinate delay in completion for pilot projects for sewage treatment- regarding
5	39 of 2016	Entire Report	Environment and Sustainable Development

List of C&AG Paras settled during 2018-19

SL. No.	Report No. & Year	Para No.	Brief Subject
1	3B of 2001 CA 1 of 2001	1	Implementation of Environment Acts relating to water pollution
2	27 of 2014	6.4	Non-establishment of model facilities for management of Municipal Solid Wastes

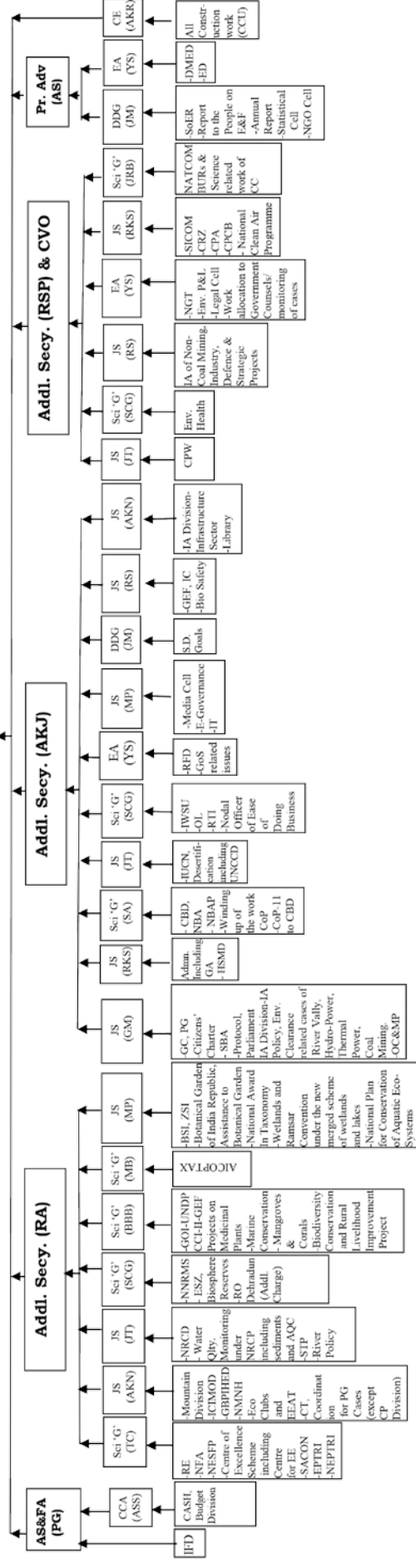
ORGANISATIONAL STRUCTURE OF MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (DIVISIONS UNDER ENVIRONMENT WINGS)

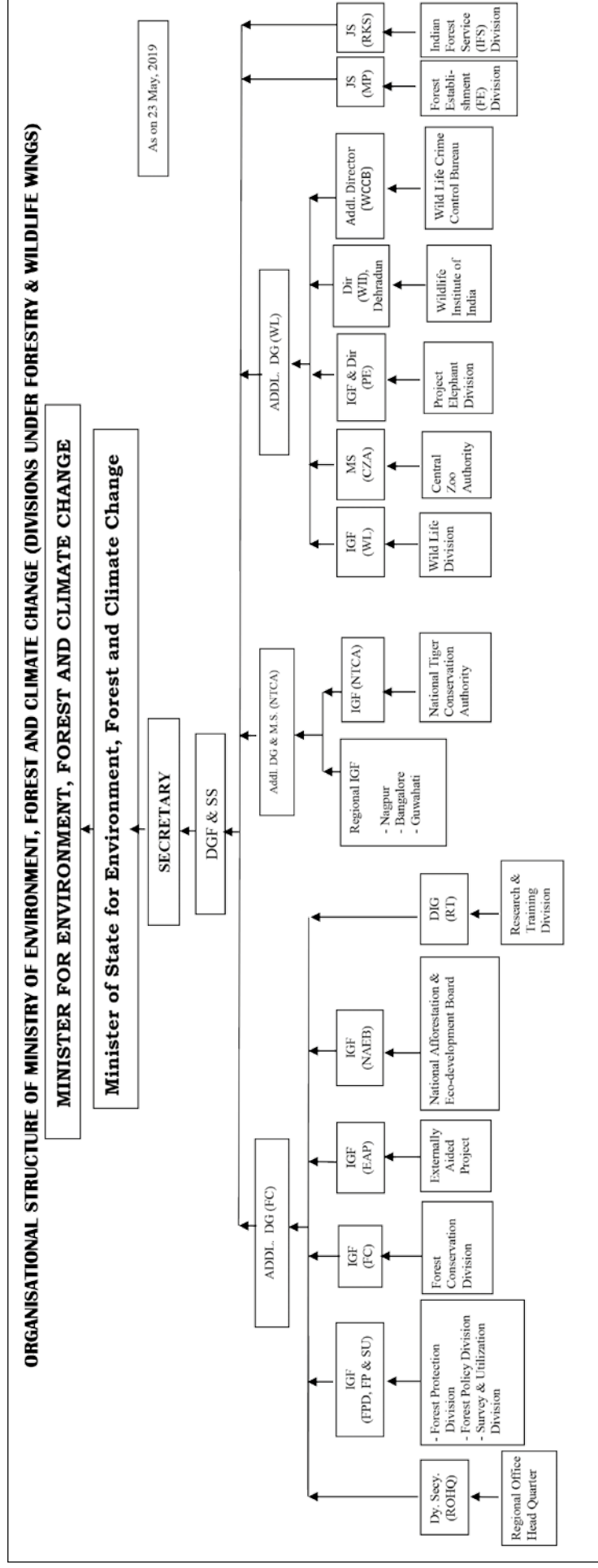
MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE

Minister of State for Environment, Forest and Climate Change

As on 23 May 2019

SECRETARY





Annexure-IV

Statewise and Townwise Details of STP Capacity Created in 75 Towns Under National River Conservation Plan (Excluding Ganga & Tributaries)

Sl. No.	State/Town	River No.	Name of River
I	Andhra Pradesh		
1	Rajamundry	1	Godavari
II	Goa		
2	Panaji	2	Mandovi
III	Gujarat		
3	Ahmedabad	3	Sabarmati
4	Surat	4	Mindhola
IV	Jharkhand		
5	Ghatshila	5	Subarnarekha
6	Jamshedpur		Subarnarekha
7	Ranchi		Subarnarekha
V	Karnataka		
8	Bangalore	6	Pennar
9	Bhadravati	7	Bhadra
10	Davangere	8	Tungabhadra
11	Harihara		Tungabhadra
12	K.R.Nagar	9	Cauvery
13	Kollegal		Cauvery
14	Nanjangud		Cauvery
15	Shimoga	10	Tunga
16	Srirangapatna		Cauvery
VI	Kerala		
17	Pamba	11	Pamba
VII	Madhya Pradesh		
18	Burhanpur	12	Tapti
19	Chapara	13	Wainganga
20	Hoshangabad		Narmada
21	Jabalpur	14	Narmada
22	Keolari		Wainganga
23	Seoni		Wainganga



Sl. No.	State/Town	River No.	Name of River
VIII	Maharashtra		
24	Karad	15	Krishna
25	Kolhapur	16	Panchganga
26	Nanded		Godavari
27	Nashik		Godavari
28	Prakkasha	17	Tapi
29	Sangli		Krishna
30	Trimbakeshwar		Godavari
31	Pune	18	MulaMutha
IX	Nagaland		
32	Dimapur	19	Diphu and Dhansiri
X	Odisha		
33	Chandbali	20	Brahamini
34	Cuttack	21	Mahanadi
35	Dharamshala		Brahamini
36	Puri		Coastal Area
37	Talcher		Brahamini
XI	Punjab		
38	Banga	22	Satluj
39	Bholath	23	Beas &Satluj
40	Dasuya		Beas &Satluj
41	Hoshiyarpur		Beas &Satluj
42	Jalandhar		Satluj
43	Kapurthala		Satluj
44	Ludhiana		Satluj
45	Moga		Beas &Satluj
46	Mukerian		Beas &Satluj
47	Nawanshehar		Satluj
48	Phagwara		Satluj
49	Phillaur		Satluj
50	Sultanpur Lodhi		Satluj
51	Tanda		Beas &Satluj
52	Khanauri	24	Ghaggar
53	Moonak		Ghaggar
54	Patran		Ghaggar
55	Lehragaga		Ghaggar



Sl. No.	State/Town	River No.	Name of River
XII	Sikkim		
56	Gangtok	25	Rani Chu
57	Ranipool		Rani Chu
58	Singtom		Rani Chu
XIII	Tamil Nadu		
59	Bhiwani		Cauvery
60	Chennai	26, 27	Adyar, Cooum
61	Erode		Cauvery
62	Karur		Cauvery
63	Kumarapalayam		Cauvery
64	Kumbakonam		Cauvery
65	Madurai	28	Vaigai
66	Mayiladuthurai		Cauvery
67	Pallipalayam		Cauvery
68	Thanjavur	29	Vennar
69	Tirunelveli	30	Tamrabarani
70	Trichirappalli		Cauvery
71	Trichy		Cauvery
XIV	Telangana		
72	Bhadrachalam		Godavari
73	Hyderabad	31	Musi
74	Mancherial		Godavari
75	Ramagundam		Godavari



INDIRA PARYAVARAN BHAWAN



Website: <http://www.moef.gov.in>
 Facebook: <https://www.facebook.com/moefcc>
 Twitter: <http://www.twitter.com/moefcc>
 Email: moefcc@gov.in