



ANNUAL REPORT 2019-20



Government of India

Ministry of Environment, Forest and Climate Change





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



SOER : State of Environment Report
STP : Sewage Treatment Plants
TOF : Trees Outside Forest
UNCCD : United Nations Convention to Combat
Desertification
UNDP : United Nations Development Programme

UNEP : United Nations Environment Programme
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 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. National Compensatory Afforestation Fund Management and Planning Authority (CAMPA) was constituted vide order dated 13.8.2009 primarily to lay down guidelines for State CAMPA, monitor/assist/recommend State CAMPA and resolve issues.

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.

Subject under the Ministry of Environment, Forest and Climate Change (Paryavaran, Van Aur Jalvaayu Parivartan Mantralaya)¹

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. Environmental Health.
4. Environmental Impact Assessment.
5. Forest Development Agency and Joint Forest Management Programme for conservation, management and afforestation.
6. Survey and Exploration of Natural Resources particularly of Forest, Flora, Fauna, Ecosystems etc.

7. Bio-diversity Conservation including that of lakes and Wetlands.
8. Omitted.²
- 8A. Omitted.³
9. Wildlife conservation, preservation, protection planning, research, education, training and awareness including Project Tiger and Project Elephant.
10. International co-operation on Issues concerning Environment, Forestry and Wildlife.
11. Botanical Survey of India and Botanical Gardens.
12. Zoological Survey of India.
13. National Museum of Natural History.
14. Biosphere Reserve Programme.
15. National Forest Policy and Forestry Development in the country, including Social Forestry.
16. All matters relating to Forest and Forest Administration in the Union territories.⁴
17. Indian Forest Service.
18. Wild Life Preservation and protection of wild birds and animals.
19. Fundamental and applied research and training including higher education in forestry.
20. Padmaja Naidu Himalayan Zoological Park.
21. National Assistance to Forestry Development Schemes.
22. Indian Plywood Industries Research and Training Institute, Bangalore.
23. Afforestation and Eco-Development which shall include National Afforestation and Eco Development Board.
- 23A. Bio-fuel plantations in forest, wastelands and environmental issues concerning bio-fuels.⁵
24. Desert and Desertification.
25. Forest Survey of India.
26. Indian Institute of Bio-diversity, Itanagar.
27. Central Pollution Control Board.
28. G.B. Pant Institute of Himalayan Environment & Development.
29. Wildlife Institute of India and Indian Board for Wildlife.
30. Indian Institute of Forest Management.
31. Central Zoo Authority including National Zoo Park.
32. Indian Council of Forestry Research & Education.
33. Andaman and Nicobar Islands Forest and Plantation Development Corporation Limited.
34. Omitted.⁶
35. Omitted.⁷
36. Omitted.⁸
- 36A. Climate change and all other matters related there to.⁹
37. Omitted.¹⁰
38. Omitted.¹¹
39. Omitted.¹²
40. The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974).



41. The Water (Prevention and Control of Pollution) Cess Act, 1977 (36 of 1977).
42. The Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).
43. The Indian Forest Act, 1927 (16 of 1927).
44. The Wild Life (Protection) Act, 1972 (53 of 1972)
45. The Forest (Conservation) Act, 1980 (69 of 1980).
46. The Environment (Protection) Act, 1986 (29 of 1986).
47. The Public Liability Insurance Act, 1991 (6 of 1991).
48. The National Green Tribunal Act, 2010 (19 of 2010).¹³

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.¹⁴

1. Modified vide Amendment series no. 306 dated 31.07.2014
2. Omitted vide Amendment series no. 350

- dated 14.06.2019 (Earlier substituted vide Amendment series no.306 dated 31.07.2014).
3. Omitted vide Amendment series no. 350 dated 14.06.2019 (Earlier inserted vide Amendment series no.306 dated 31.07.2014).
4. Modified vide Amendment series no. 300 dated 26.02.2012
5. Inserted vide Amendment series no. 287 dated 12.07.2006
6. Omitted vide Amendment Series no. 349 dated 04.04.2019 (transferred to D/o Animal Husbandry and Dairying).
7. Omitted vide Amendment Series no. 349 dated 04.04.2019 (transferred to D/o Animal Husbandry and Dairying).
8. Omitted vide Amendment Series no. 349 dated 04.04.2019 (transferred to D/o Animal Husbandry and Dairying).
9. Inserted vide Amendment series no. 306 dated 31.07.2014.
10. Omitted vide Amendment Series no. 349 dated 04.04.2019 (transferred to D/o Animal Husbandry and Dairying).
11. Omitted vide Amendment Series no. 334 dated 06.07.2017.
12. Omitted vide Amendment Series no. 334 dated 06.07.2017.
13. Inserted vide Amendment series no. 334 dated 06.07.2017.
14. Inserted vide Amendment series no. 285 dated 17.03.2006.

CHAPTER

01



Natural Resources - Survey and Exploration



1.1 Zoological Survey of India (ZSI)

The Zoological Survey of India (ZSI) is a premier research organization functioning under the Union Ministry of Environment, Forest and Climate Change. ZSI has been actively involved since its inception in 1916, in the survey, exploration and research leading to the expansion of our knowledge on the immensely rich faunal diversity of our country. ZSI Headquarters is located in Kolkata and has 16 Regional Centers spread across the country. The primary and secondary objectives are as follows:

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.

- Publication of results including Fauna of India and Fauna of States.

Secondary objectives:

- Environmental Impact Studies.
- Maintenance and Development of Museum at Headquarters and Regional Stations.
- Development of ENVIS and CITES Centres.
- Research Fellowship, Associate-ship and Emeritus Scientist Programmes.
- Collaborative research programmes on Biodiversity with other Organizations.
- GIS and Remote Sensing studies for animal diversity as well as for selected threatened species.
- DNA Barcoding of important taxa

Activities undertaken:

- **Faunal Surveys:** 55 surveys have been completed during the period: 20 surveys were conducted to in Protected Areas; 15 were conducted in States and Union Territories; 13 to different ecosystems: two status surveys of endangered species and five surveys for Taxonomic studies were undertaken.
- **Species Identification:** 6866 species have been identified by the scientists of ZSI.
- **New Discoveries:** 39 species have been described by the scientists of ZSI comprising 2 species of Crustacea, 1 species of Diptera, 1 species of Hemiptera, 4 species of Hymneoptera, 1 species of Lepidoptera, 1 species of Odonata, 3 species of Amphibia, 1 species of Nematoda, 1 species of Collembola, 15 species of Coleoptera,

1 species of Mollusca, 1 species of Orthoptera, 4 species of Pisces, 1 species of Reptilia and 2 species of Ephemeroptera.

- **Publications:** Include 18 Books under different themes, 49 papers in SCI journals, 59 chapters in Books and 190 papers in National and Foreign journals.
- **Digital Sequence Information (DSI) on Indian Fauna:** 1000 barcodes have been submitted on BOLD and GenBank comprising 330 barcodes of Mammals, 2 for Birds, 18 for Reptiles, 100 barcodes for Fishes, 275 barcodes for Lepidoptera, 130 for Thysanoptera, 5 for Mollusca and 140 for Araneae.
- **Training and Extensions:** One International workshop, one Asian Symposium five training workshops and three seminars were conducted for the benefit of students, researchers and teaching faculties. More than 200 students and researchers were trained.
- **Wildlife Forensics and Crime Control:** 12 cases of Wildlife Forensics were received and attended pertaining to mammals and 16 cases of confiscated Wildlife Material were attended.

Progress/Achievements:

- **Species Identifications:** So far, about 101,682 species of animals have been documented. A total of 6866 species have been identified by the scientists of ZSI Headquarters and Regional Centers during the reference period
- **Publications:** Altogether 1,550 documents (Books and monographs) and 10,500 scientific papers have been published by ZSI till 2016; of which, over 160 documents and 1800 scientific papers have been published during the last four years. During the reference period, 316 publications have been completed.
- **Digital Sequence Information (DSI) of important Taxa:** ZSI is enriching the information on DNA barcodes and solving many taxonomic queries and generated 4418 barcodes. 1000 DNA barcodes have been submitted to BOLD/GenBank during the reference period.
- **New Discoveries:** 5017 new species have been described by the scientists of ZSI since its inception. Another 39 new species have been described during the reference period.
- **Status surveys of threatened species:** 109 species including 20 species of Mammals, 10 of Birds, 25 of Reptiles, 4 of Amphibians, 3 of Arthropods, 45 of Echinoderms and 2 of Mollusca have been assessed.
- **Monitoring of Biodiversity Plots:** Supporting State Forest & Wildlife Department for conservation and management of PAs – Permanent Monitoring of Biodiversity Plots in Andaman & Nicobar Islands, Lakshadweep, Himalayas, Sundarbans W.B., Gulf of Kutch and Sindhudurg, Maharashtra for the last five years.
- **International Participation:** ZSI scientists have actively participated in several



international meetings, symposia etc. which includes 13th International Coral Reef Symposium at Honolulu, Regional Joint Preparatory Meetings for CITES and CBD Meetings of COP, IUCN-World Conservation Congress 2016, 17th Conference of Parties to the CITES, COP-22-UNFCCC, COP-13 & CoP-MoP-2 on CBD, 29th Meeting of the Animals Committee under CITES, Indian Scientific Expedition to Arctic, IPBES expert group meeting and 30th meeting of the Animals Committee (AC30) of the CITES.

This year's participation include Arctic Expedition, 8th International Barcode of Life Conference, 18th meeting of the Conference of the Parties to CITES (CoP18) and 2019 International Symposium on Galliformes.

- **Training and Extension:** ZSI is regularly organizing Training programmes, Symposia, Seminars etc. on different topics like Hands-on-Trainings of different Fauna, Taxidermy, Wildlife crime, Biodiversity conservation etc. for researchers, students, forest personnels, faculties of in house as well as other institutes. More than 50 training programmes have been completed.
- **Digital ZSI:** Achievements include Digital Archive of Publication of ZSI; ZSI Library Repository and ZSI Type Specimens Repository.
- **Identification of Confiscated Wildlife Material:** Queries related to confiscated wildlife materials of different animals or parts of the body for the benefit of Court of Law to culminate wildlife crime were attended which are received from different

departments like Office of commissioner of Customs , Forest Departments, Crime Branch Police, Wildlife Crime Control Bureau (WCCB) and Criminal Investigation Department.

Important Conferences organized in India or International conferences:

- 6th Asian Lepidoptera Symposium, held at ZSI HQ, Kolkata from 17-21 September 2019.
- International workshop on Social Network of Animals in Extreme Environment of Antarctica with Special Reference to Penguins including Field Studies during 22nd - 24th April 2019 at ZSI, Andaman and Nicobar Regional Centre, Port Blair.

MEAs, agreement with countries, international organizations, compliance:

MOU with Natural History Museum, London has been submitted to MEA for vetting.

List of publications:

- Fauna of Maharashtra
- Fauna of Punjab
- Current Status of Faunal diversity of Mangroves in India
- A taxonomic monograph of some little known Cucujoid & Tenebrionoid Beetles from North-East India
- Fauna of Namdapha Tiger Reserve
- Analysis of diversity indices and seasonal abundance of Horse Flies,
- Orthoptera diversity of Indian Bio-geographical Zones .
- Moths of Bihar & Jharkhand.

- Handbook on Morphological and Molecular identification of southern Indian Mayflies.

In addition, scientists of ZSI published 49 papers in SCI journals, 59 chapters in Books and 190 papers in National and Foreign journals.

1.2 Botanical Survey of India (BSI)

Botanical Survey of India (BSI) is a premier research organization of the country under the Ministry of Environment, Forest and Climate Change, Govt. of India and actively involved in carrying out taxonomic and floristic studies on wild plant resources of the country. Established on 13th February, 1890 with its headquarters at Kolkata, Sir George King, the then Superintendent of the 'Royal Botanic Garden' Calcutta was appointed as First ex-officio Honorary Director of the BSI. After independence, the department was reorganized in 1954 under the leadership of Dr. E.K. Janaki Ammal and presently it has 15 Regional Centres / Units / Laboratories spread all over 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.
- Environment Impact Assessment of areas assigned by MoEF.
- Develop and maintain Botanical Gardens, Museums and Herbaria.
- Preparation of Seed, Pollen and Spore Atlas of Indian Plants.

Progress/Achievements:

i. Botanical exploration and inventorisation of phytodiversity:

- **Field Tours:** During the financial year 2019–20, BSI has undertaken 74 field tours under 66 projects for collection of plant specimens/materials for floristic, ethnobotanical and pharmacognostical studies on flowering and non-flowering plants covering various phytogeographical regions of the country viz. Western Himalaya, Eastern Himalaya, North–East India, Arid – Semi Arid, Gangetic Plains, Deccan Peninsula, Western Ghats, Coastal Region and Andaman & Nicobar Islands. During these field tours, ca 28,628 plant specimens were collected and 24,390



specimens were identified into 11,358 taxa (species, subspecies and varieties).

- **Herbarium Consultation Tours:** 38 herbarium consultation tours under 74 projects were undertaken into different herbaria / institutions of the country for the study of deposited plant specimens, literature and references.
- **New Discoveries and New Records:** During this period, BSI discovered 12 new plant species from various phytogeographical regions of the country.
- **New Records:** Scientists of BSI have recorded 36 new plant records, of which 13 plants are recorded as new to India. Whereas, 23 taxa are recorded as new to the flora of various regions / states of the country.
- In addition, two generic records viz. *Elatostemma* of the family *Urticaceae* and *Soliva* of the family *Asteraceae* have been reported for the flora of Rajasthan and Jharkhand (erstwhile Bihar) respectively for the first time.

ii. Documentation of phytodiversity:

- **National Flora (Flora of India):**
 - Completed the taxonomic description of 218 taxa under different families for various volumes of the Flora of India.
 - Completed taxonomic description of 192 taxa of following revisionary projects on other than Flora of India.
- **Regional/State Flora/District:** Completed taxonomic description of 1254 taxa for

various regional flora in the country.

- **Flora of Protected Areas:** Completed taxonomic description of 1278 plant species from Floristic Studies of various National Parks, Wildlife Sanctuaries, Biosphere Reserves etc.
- **Ex-situ Conservation:**
 - 60 live plants including mangroves have been introduced in the nursery of Acharya Jagadish Chandra Bose IBG, Howrah.
 - 276 rare, endemic, endangered, medicinal and economical plant species have been introduced and maintained in other associated botanic gardens of different Regional Centres. Phenological studies (flowering and fruiting) of all these maintained taxa are done regularly.
- iii. **Micropropagation and conservation of threatened species:** Multiplication and maintenance of germ plasm (seeds, seedlings, cuttings etc.) of are maintained and conserved through tissue culture.
- iv. **Documentation of indigenous knowledge of plant resources:** 178 ethnobotanical information like uses of local plants in the form of medicines, food, fodder, small timber, insect repel, dye etc. from various tribal populated regions of Bihar, West Bengal and Odisha have also been recorded.
- v. **Phytochemical screening of wild edible plants of northeast India:** DPPH radical

scavenging activity of flowers / fruits of 18 plant species have been carried out using parameters like proximate composition, mineral content and antioxidant activities.

vi. Other activities undertaken:

- **Maintenance and enrichment of Herbaria in BSI:** During the period, 14628 specimens mounted, 7,628 herbarium specimens remounted, 18,652 herbarium sheets dusted and fumigated, 16,980 herbarium sheets poisoned and 8,695 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 20,722 type specimens and 3508 general herbarium specimens were completed.
- **Public 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 34,218 visitors, including scientists, research scholars, students, teachers and VIPs, visited different botanic gardens, herbaria and museum of BSI. 146 queries on plant distribution and nomenclature were attended; 2056 specimens belonging to angiosperms, pteridophytes, bryophytes, fungi and algae received from students / scientists outside BSI have been identified.

• **Programs / Extension observed:**

- Observed International Day for Biological Diversity on 22 May, 2019 with the theme “Our Biodiversity, our Food, our Health” and organized a 2 days Global Conference in which 350 delegates including participants from Nepal and Bangladesh attended the program.
- Observed “World Environment Day” on June 5th, 2019 with the theme “AIR POLLUTION”
- In commemoration of 162nd Birth Anniversary of Acharya Jagdish Chandra Bose, his bust was unveiled at the AJCB Indian Botanic Garden, Howrah on 30th November, 2019.
- BSI actively participated in CoP 14 meeting at India Expo Mart, Greater Noida New Delhi from 2-9 Sept. 2019 and organized a side exhibitions on the important achievements of BSI.

Important conferences organized in India or International conferences:

- BSI participated in Indian Delegation in CITES CoP 18 held in Geneva Switzerland w.e.f. 19 - 28 Aug., 2019 and also served as a panel member in the side events on NDF of plants and provided inputs to improve the 9-step guidelines.
- BSI participated in the 38th Indian Scientific Expedition to Antarctica (ISEA) and “Ecology and Taxonomy of psychrolithic benthic and lithic algae from inland Antarctica”



- Sci 'E' participated into 20 days training program on Botanical Garden Management at Shanghai China w.e.f. 19th August – 7th September, 2019.

MEAs, Agreement with countries, international organizations, compliance:

- BSI signed an MoU with Chaudhari Charan Singh University (formerly Meerut University), Meerut, U.P. on 31st August, 2019 in order to promote and exchange scientific information.
- BSI has entered into making MoUs with ICFRE, Dehradun and NBPGR, New Delhi.

List of publications:

- Plant Discoveries, 2018
- Orchids of India: A Pictorial Guide

(These two books were released by the Hon'ble Minister, MoEF&CC during World Environment Day, 2019 at New Delhi).

- Flora of Shaheed Chandra Shekhar Azaad Bird Sanctuary, Uttar Pradesh.

- Nelumbo, Vol. 60
- Flora of India, Fascicle 29 (Araceae).
- Flora of India, Fascicle 30 (Apocynaceae) – (in press).
- Flora of India, Fascicle 31 (Bignoniaceae) – (in press).
- Checklist for the Flora of India: Monocot - (in press).
- (It includes 47 families, 701 genera and 5269 taxa of monocots).
- Flora of Karnataka – vol. 3. Monocot – (in press).
- Flora of West Bengal – vol. 4. – (in press).
- Balsams of Eastern India – (in press).

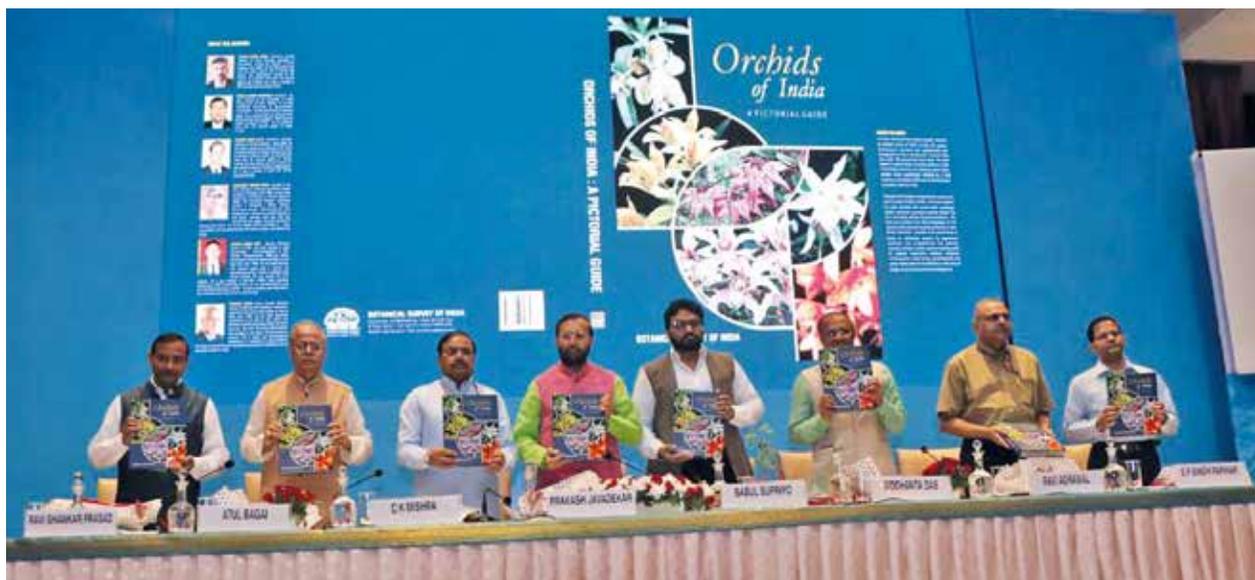
In addition, the scientist of BSI published / finalized 11 books and 92 scientific research papers, of which 22 were published in the international journals, 67 in the national journals and 3 as book chapters in various books.



Phanera murthyi



BSI exhibition at 'Kisan mela avam Krishi Navachar Diwas' held at Jodhpur



Release of BSI publication- Orchids of India on World Environment Day, 2019

1.3 Survey & Utilization

The Survey & Utilization Division deals with matters related to Forest Survey of India (FSI) except (Establishment matters), Trade Policy, sandalwood & red sanders related matters, regulation of export & import of forest produce as per the Export and Import (EXIM) policy, State Forest Development Corporations, all matters relating to Andaman and Nicobar Islands Forest Plantation Development Corporation Limited, International Organizations International Tropical Timber Organization (ITTO), International Network for Bamboo & Rattan (INBAR), Minor Forest Produce, forestry trade tariff and related issues for Bilateral/Multilateral Trade Negotiations, Wood Based Industries, Bamboo Cell.

Highlights of some works of SU Division:

Forest Survey of India: Forest Survey of India (FSI) is a premier national organization under the union Ministry of Environment, Forests and Climate Change, Government of India and

is responsible for assessment and monitoring of the forest resources of the country on regular basis. In addition, it is engaged in providing training, research and extension services in the forestry sector. Established on 1st June 1981, Forest Survey of India 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. In its report in 1976, the National Commission on Agriculture (NCA) recommended for the creation of a National Forest Survey Organization for a regular, periodic and comprehensive forest resources survey of the country leading to creation of FSI. After a critical review of activities undertaken by FSI, Government of India redefined the mandate of FSI in 1986 in order to make it more relevant to the rapidly changing needs and aspirations of the country.



FSI has its headquarter at Dehradun and four zonal offices at Shimla (Northern zone), Kolkata (Eastern zone), Nagpur (Central zone) and Bangalore (Southern zone). Recently, a sub centre of Eastern zone has been established and made operational in Burnihat, Guwahati.

Objectives:

- To prepare State of Forest Report biennially, providing assessment of latest forest cover in the country and monitoring changes in these.
- To conduct inventory in forest and non-forest areas and develop database on forest tree resources.
- To 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 SFDs and other organisations on project basis.

Major activities for FSI include:

- Biennial assessment of Forest Cover using remote sensing technology.
- Inventory of Forest areas.

- Inventory of Trees Outside Forests (Rural & Urban).
- Inventory data processing.
- Methodology Design.
- Training and Extension.
- Projects and Consultancies.
- Works on the activities and programme directed by Ministry and Hon'ble Court.

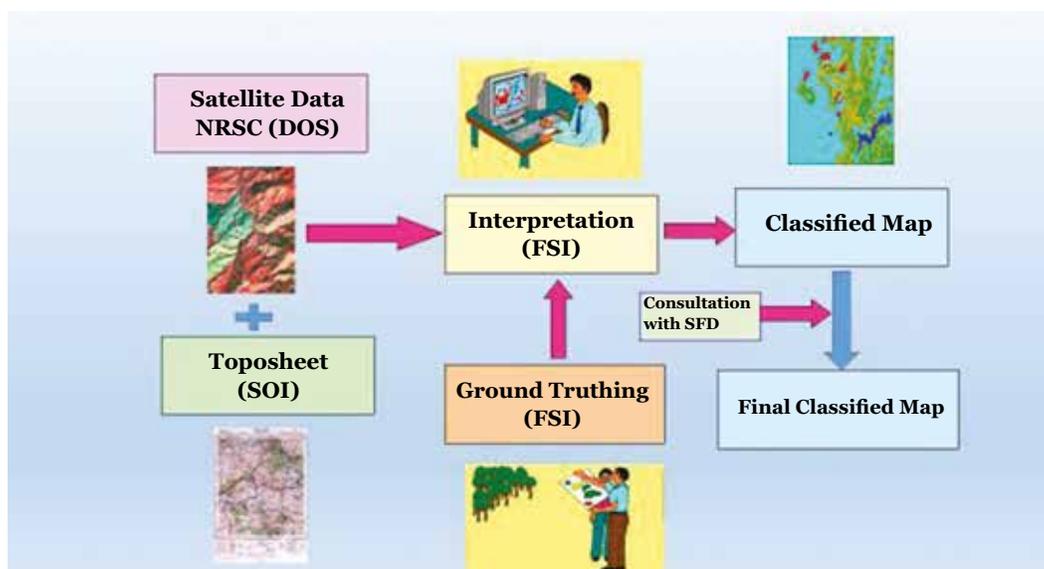
Forest Cover Mapping & Tree Cover: Forest Survey of India (FSI) is involved in forest cover assessment of the country on biennial basis by interpretation of satellite data on a two-year cycle and presents the information in the form of India State of Forest Report. So far, 16 cycles of forest cover assessment have been completed since 1987 till year 2019. 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. As per ISFR, 2019, there is an increase of 3,976 sq km in the forest cover and 1,212 sq km in tree cover of the country as compared to 2017 assessment. By November 2019, all the interpretation work as well as ground truthing work has been completed and the results have been published in the India State of Forest Report (ISFR) 2019.

Over the years, FSI has been updating the Forest Cover Mapping (FCM) 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 2019, 306 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 (Top of Atmosphere) values. The workshop was held on 12-13th 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 10-11th 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 published by FSI. The data preparation activities have been completed and the classification work was initiated in October 2018. The results of the analysis along with other information have been published in the ISFR, 2019. The report has been released by Shri Prakash Javadekar, Hon'ble Minister for Environment, Forest and Climate Change, New Delhi. Meanwhile 64 scenes have been indented from NRSC till Dec 2019 for forest cover assessment of 17th cycle (ISFR 2021).



Forest Cover Mapping

Forest & TOF Inventory

National Forest Inventory: FSI conducts inventory of forest and TOF in selected grids of size 5kmx5km every year. Forest inventory is carried out on about 5,600 grids and TOF

inventory is carried out on 8,000 grids every year.

Till October 2019, a total of 1,529 grids have been inventoried in forest area and 1,981 grids have been inventoried in TOF area. Data entry



work of Forest Inventory (FI) on 944 grids and TOF (R & U) on 896 grids have been completed.

Biodiversity study for Forest Type Group:

Assessment of biodiversity in forests is important since it provides an indicator to represent the state of conservation of forest ecosystems and helps in evaluating and monitoring sustainability of biological resources. It also helps in comparative evaluation of stability, productivity and ecosystem functions of forests in temporal and spatial scales. A rapid assessment of plant biodiversity in all the 16 forest type groups has been carried out by FSI as a part of the current exercise of refinement of forest types map of India. In the context of this exercise, biodiversity of trees, shrubs and herbs in different forest type groups in natural forests of different States have been assessed through survey on the sample plots as per the standard statistical design.

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

FSI is attempting to estimate the dependence of people in forest fringe villages in the country. A methodology has been developed for carrying in the study. About 1000 villages with 30 households in each village are selected for the survey for collection of data on fuelwood, fodder, small timber and bamboo. Forest Fringe Villages (FFVs) have been defined as those villages which fall within five kilometers from the periphery of Recorded Forest Area (RFA) or Green Wash area where boundaries of RFAs are not available in digital form. Vector layer of boundaries of RFA/ Greenwash area in GIS has been used to select the FFVs.

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 and e-Green watch applications.

A field exercise for assessing biodiversity indices for herbs and shrubs across major forest type groups has been completed and for the nomenclature of herbs and shrubs, samples have been sent to Botanical Survey of India (BSI) centers across India. Names of most of the species have been identified.

The interpretation of data and ground validation has been completed. The compilation of the report for FTM project is in progress. It will be released within a short time.

Forest Fire

Near Real Time Monitoring of Forest Fire:

Forest Survey of India has been alerting State Forest Departments of forest fire locations detected by the MODIS (Moderate Resolution Imaging Spectro-radiometer) sensor on-board Aqua and Terra Satellites of NASA since 2004. Since then, there has been continuous upgradation in the forest fire alert systems. The FSI Forest Fire Alerts System (FAST) has undergone periodic changes to facilitate not

only foresters but also common people in a better way. The fully automated FSI forest fire alerts system version 2.0 with near real time SNPP-VIIRS data was made operational in 2017. A new faster, quicker and more robust version of FSI Forest Fire Alerts System (Version 3.0) was launched in 2019 by adding several new features to the earlier Version 2.0. A major improvement over the previous version is the addition of large forest fire monitoring which identifies and tracks large fires in an automated manner.

Table-1.1 Forest Fire Alerts Dissemination

Sensor	2017 (Jan-June)	2018 (Jan-June)	2019 (Nov. 18- June 19)
MODIS	35,888	37,059	29,547
SNPP- VIIRS	245,783	258,480	210,286

Large Forest Fire Monitoring: Forest Survey of India launched the Large Forest Fire Monitoring Programme using near real time SNPP-VIIRS data as a part of the FAST version 3.0. With the launch of Large Forest Fire Monitoring System, FSI aims to track large fire events across the country and disseminate specific Large Fire alerts with the objective to identify, track and report serious forest fire incidents so as to help monitor such fires at senior level in the State Forest Department and also seek timely additional assistance that may be required to contain such fires.

FWI based Early Warning Alert System for Forest Fire: Forest Survey of India, with years of experience with the repository of fire

related data, developed in 2016, an indigenous “Early Warning Alert System for Forest Fire”. The objective of the study was not to predict forest fires but to identify areas which are more vulnerable to severe forest fires. The alerts to State Forest Departments are based on parameters like forest cover, forest type, climatic variables (Temperature and Rainfall) and recent fire incidences over the area.

This process has been further refined in 2019. The Fire Weather Index (FWI) of Canadian Forest Fire Danger Rating System (CFFDRS) has been customized for fire danger rating in India. On a pilot basis, Western Himalayan and Central Indian region were selected for FWI Based Early Warning Alert System wherein, the FWI values from GEOS-5 daily database from NASA’s GFWED database were downloaded and thresholds were customized for the pilot areas. The Fire Danger Rating was categorized into five classes, which are Extreme, Very High, High, Moderate and Low.

Study on identification of fire prone forest areas based on GIS analysis of archived: FSI has carried out a study based on spatial analysis of forest fire points detected by FSI in the last 13 years to identify fire prone forest area in the country. Extent of forest cover (excluding TOF) under different fire prone classes (Extremely fire prone, very high fire prone, highly fire prone, Moderately fire prone and Less fire prone) has also been determined for each State/UT.

Frequency of detected forest fires in an area over a period of time indicates proneness of the area to forest fires. Map showing forest



area in different classes of fire proneness can be an effective management tool for controlling forest fires. Such map can be used for optimally utilizing scarce resources available for controlling forest fires in fire season. Increased vigil in highly fire prone forest areas may effectively prevent forest fires. Considering usefulness of mapping fire prone forest areas, analysis of the detected forest fire points in GIS framework along with a grid coverage of 5 km X 5 km and latest forest cover has been done for the whole country.

National Spatial Data Infrastructure (NSDI):

It is a national programme monitored by NSDI division of Department of Science and Technology to build consensus on harmonizing the available country-wide spatial database 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. FSI has also been nominated and is working as the technical member for the working group of the National Data Registry (NDR). Forest

Data Content Standard Document based on Forest UML Diagram with unique codes for forest cover and forest type is to be included in National Data Registry. FSI is working on the guidelines of the NDR group and sharing important layers with NSDI.

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 information on different issues related to forest and wildlife areas. Geospatial data used in the DSS application includes state and district boundary, 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. All state PCCFs, MoEF&CC and its regional offices have been provided with the user ID and password to access and use the application website (www.fsigeoportal.gov.in/dss). This service has been extended upto the level of DFOs in many States and around 1000 users are using this portal for decision making.

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 1,27,205 polygons pertaining to 28 states have been checked by FSI through this portal till October 2019. e-Green Watch is included in all the training programmes 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.

Bihar Project: 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. Under this project, patches of Forest and Non Forest areas up to the 0.1 ha with adequate tree cover would be identified and mapped by the use of this high-resolution satellite data. This precise baseline information of resources would be vital for the long term planning, monitoring and for the preparation of natural resources management plans also. The final report was submitted by DG, FSI on 10th October, 2019 to PCCF, Bihar.

NITI Aayog Project: NITI Aayog, the apex planning body of the Govt. of India, entrusted Forest Survey of India (FSI) with the task of carrying out a special study for the Little Andaman and Great Nicobar Islands with the specific objective of mapping of land use land cover of the Islands on large scale (1:5000) using Very High Resolution Satellite Data for Development Planning with emphasis on Forest Conservation. An approach using a geospatial database of all existing land use types including forests, habitations, degraded lands and mangroves has been made. Further, ecologically sensitive areas from the point of view of conservation have also been assessed using the DSS Tools of the MoEF&CC to further strengthen the remote sensing based analysis. The results of the study will enable the policy planners and implementers in undertaking planning in a sustainable manner, considering the environmental fragility of the island and the developmental needs of the area. The compilation of the report for the two islands namely Great Nicobar and Little Andaman is in progress and will be submitted to NITI Aayog very soon.

Inventory of TOF in Rajasthan: The project on Inventory of Trees Out-side Forests (TOF) in Rajasthan has been taken by FSI on the request of Rajasthan Forest Department. The field work of the project is being carried out by the Rajasthan Forest Department. The field work has been completed. Checking of field forms and data entry work is in progress.

JICA Project: On the request of West Bengal Forest Department, FSI has taken up a



project for conducting a base line survey in collaboration with forest department for forest growing stock under the 'West Bengal Forest and Biodiversity Conservation Project' (WBFBCP) being implemented by Forest Department of West Bengal with assistance of Japan International Cooperation Agency (JICA) in 8 districts of West Bengal to establish benchmark. Objectives of this project are to improve forest ecosystem and conserve biodiversity by undertaking afforestation, regeneration and wildlife management activities through Joint Forest Management approach. The fieldwork of the project has been completed.

Forest Carbon Stock and Bamboo Resources Assessment in Nagaland (Phase-II): At the 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 for estimation of Bamboo resources in the Nagaland has been completed. The estimation of Carbon is in progress.

Above Ground Forest Biomass estimation using Synthetic Aperture Radar (SAR) Data: An attempt has been made by FSI under joint collaboration with Space Application Centre (SAC), ISRO, Ahmedabad for estimation of Above Ground Forest Biomass (AGB) for a few states of the country. Phased Array Type

L-Band Synthetic Aperture Radar (PALSAR) mosaic with forest inventory data at sample plots available with FSI has been used for AGB estimation.

Training

Regular Training Courses: FSI imparts training 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 Resources Management etc. Seven courses were conducted during the period March, 2019-September, 2019.

Important Conferences organized in Forest Survey of India: Forest Survey of India organized workshops and conferences during 2019 on Pre-Fire Season Workshop on Forest Fires for State Nodal Officers (16-17th January, 2019), Forest Fire Monitoring and Damage Assessment (25-26th February, 2019) and SAR data application for Above Ground Biomass Estimation (5-7th February, 2019).

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.

Regulation of Wood Based Industries in the country: The SU Division prepared the Guidelines for Wood Based Industries (Establishment and Regulation) Guidelines, 2016 in compliance of order of Hon'ble Supreme Court dated 05.10.2105 in W.P.(C) No.202/1995 in the matter of T.N. Godavarman Vs. Union of India and Ors. The Wood Based Industries (Establishment and Regulation) Guidelines, 2016 were subsequently modified as per the comments received from State/UT Forest Department and concerned stakeholders. The modified guidelines were published in the Gazette of India on 12th September, 2017. On the basis of these guidelines, the State Level Committees for Wood Based Industry will take decision on issue of new licenses/renewal of licenses for wood based industry. Wood Based Industries (Establishment and Regulation) Guidelines, 2016 have been amended vide Gazette Notification dated 22nd February, 2019 in order to regulate Wood based charcoal industries also.

State Forest Development Corporation: The Ministry has shares in 9 State Forest Development Corporations. The issue of dividend, annual General Meeting and other miscellaneous matters related to State Forest Development Corporation is being dealt with by the Ministry.

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

Plantation Development Corporation Limited (ANIFPDCL), Port Blair is the only CPSE under the administrative control of the Ministry. It was created in 1977 with the broad objectives of development and management of forestry plantations on the Islands. The Corporation is loss making and as per the approved Cabinet Note, Ministry is implementing the closure plan of the Corporation.

Nodal Division for Bamboo related matter in the Ministry: SU Division is the Nodal Division for bamboo related matters in the Ministry. The Ministry has also created a 'Bamboo Cell' in SU Division to deal with all matters related to Bamboo.

International Tropical Timber Organization (ITTO): India is a founder member of ITTO which aims for conserving tropical forest and assisting countries to develop economically in the field of forestry. ITTO has 74 members divided into two categories: Producer countries (36 members including India) and Consumer countries (38 members). The highest authority of the ITTO is the International Tropical Timber Council (ITTC), which governs the performance of all functions necessary to carry out the provisions of the International Tropical Timber Agreement (ITTA), 2006. An ITTO Task Force has also been created in SU Division under the Chairmanship of IGF(SU) to deal with all matters related to ITTO and to work on issues of sustainable Forest Development, Forest Certification and Timber Trade etc.

International Network of Bamboo and Rattan (INBAR): India is a member of INBAR since



1998. The South Asia office of the organization is in New Delhi. INBAR, an intergovernmental organization established in 1997, is dedicated to improving the social, economic, and environmental benefits of bamboo and rattan. The organisation 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. The organisations also connects a global network of partners from the government, private, and non-for-profit sectors in over 50 countries to define and implement a global agenda for sustainable development through bamboo and rattan.

CHAPTER

02



Conservation



2.1 Biodiversity Conservation

The Ministry undertakes activities under the 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, 2002 (BD Act), National Biodiversity Authority (NBA) and projects on biodiversity implemented through NBA.

CBD was adopted during the Earth Summit held in Rio de Janeiro in 1992. Its three objectives 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 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 a 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 11 May 2011, and ratified it on 9 October 2012. The Nagoya Protocol on ABS entered into force on 12 October 2014. The Nagoya Protocol is being implemented at national level inter alia through BD Act.

IPBES was established by the Governments of various countries in April 2012 as the biodiversity counterpart of Intergovernmental Panel on Climate Change, 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.

The BD Act is implemented through a three-tier institutional mechanism: NBA, State Biodiversity Boards (SBBs) and Biodiversity Management Committees (BMCs).

Activities undertaken:

CBD and related matters

- During the period, India participated in the following important international meetings relating to biodiversity.
 - Sub-Regional Science-Policy Dialogue for South and West Asia organised by the Secretariat of IPBES under the initiative of Capacity Building for Asia Pacific held on 27-28 February, 2019 in Nepal.
 - Seventh Session of the Plenary of IPBES held in France from 28 April – 2 May 2019.
 - Open-Ended Working Group on the Post-2020 Global Biodiversity Framework held in Kenya from 27-30 August 2019.
 - 23rd meeting of Subsidiary Body on Scientific, Technical and Technological Advice, 11th of meeting of the Ad Hoc Open-ended Working Group on Article

8(j) of CBD, Fifth Edition of the Global Biodiversity Outlook workshop and briefing by the Co-Chairs on the post-2020 global biodiversity framework held in Canada from 19-29 November, 2019.

- India also continued to contribute to the IPBES work programme including through nomination of Indian experts.
- As an obligation under Article 26 of the CBD, India submitted the National Report to CBD Secretariat on measures taken for the implementation of the Convention once in four years. So far six cycles of national reporting have been completed (1998, 2001, 2005, 2009, 2014 and 2018). While India's NR 6 was submitted on 29 December 2018 the narrative-form of the report released by the Hon'ble Vice President on the day of celebration of International Day of Biodiversity Celebration, 22 May 2019.
- The 1st meeting of Indo-German Joint Working Group on Biological Diversity was held on 12 February 2019 at New Delhi where the Terms of Reference of the Indo-German Biodiversity Working Group were finalized. The 5th Indo-German inter-governmental consultation was held on 1 November 2019.
- A meeting of Indo-France Joint Working Group was held on 18 November 2019. Discussions on biodiversity related focus.
- The projects on biodiversity currently being implemented through NBA are as follows.
 - India joined UNDP managed global project on Biodiversity Finance Initiative (BIOFIN) in 2015 which provides a methodological framework for measuring expenditure on biodiversity, calculating the investment required for implementation of NBAP and NBTs and developing nationally appropriate Biodiversity Finance Plan. The initiative is hosted by the NBA.
 - 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.
 - NBA-ASEAN Centre for Biodiversity Cooperation project entitled 'Capacity building towards implementing the Nagoya Protocol on ABS, the City Biodiversity Index and Strategic Plan on Biodiversity was approved by the ASEAN Secretariat with a cost of USD 993,333 for two years. A regional workshop on Accelerating Aichi Target 11 implementation was held on 22-23 April 2019 in Philippines. A regional Experiences Sharing meeting on Intellectual Property Rights, Biodiversity and Community ABS from the use of Biological Resources and Associated Traditional Knowledge was held on 18-20 June 2019 in Vietnam.
 - A UNDP ABS global project on



implementation of Nagoya Protocol has been approved for USD 350,000 which 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. 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.

- FAO TCP project on “Strengthening Agriculture and Allied Sector Contributions to India’s 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 at local levels in three states (Kerala, Mizoram, Punjab) for implementation of NBAP and relevant NBTs. Under project, an Experience Sharing workshop was organised on 6-7 March 2019 at New Delhi, with the project states, partners, NBA and MoEF&CC.
- ICLEI project on “INTERACT-Bio: Integrated sub-national action for Biodiversity-Supporting implementation of NBSAP” supported by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear

Safety BMUB, Government of Germany under their International Climate Initiative (IKI), aims to develop Cochin as the model city, and Mangalore and Panaji as the Satellite cities. The 2nd Project Steering Committee meeting was held on 19 March 2019 at MoEF&CC. A National Outreach for Awareness Generation on Urban Biodiversity was held on November 14-15, 2019 at WII.

- The International Day for Biodiversity (IDB) was celebrated on 22 May 2019 to raise awareness about the importance of the biodiversity. The theme of the celebration was “Our Biodiversity, Our Food, Our Health”. The event was graced by the Hon’ble Vice President of India, Shri M. Venkaiah Naidu as the Chief Guest. During the event, Hon’ble Vice President released documents on “Implementation of India’s National Biodiversity Action Plan: An Overview” 2019 and Biodiversity Finance Plan Working Document. A Call for India Biodiversity Awards 2020, fifth in the series, was also launched through the release of a brochure and poster. An IT monitoring tool for ABS was also launched.
- 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.
- MoEF&CC had issued an O.M. dated 10 September 2018 in exercise of the powers vested to the Central Government under Section 48 of the BD Act, issuing directions to NBA to consider all such cases where

prior approval of NBA was required but was not obtained, on the basis of merit and in accordance with the provisions of the Act for taking decisions within a period of 100 days from the date of issuance of this O.M. A subsequent O.M. was issued on 18 March 2019 for granting 60 days extension.

- In pursuance to the order passed by the Hon'ble NGT on 8 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 a meeting was organised with representatives of State Governments on 26 February 2019. A compliance report was submitted to Hon'ble NGT on 29 March 2019. In its order dated 12 April 2019, Hon'ble NGT directed the non-compliant States to furnish an explanation, in pursuance of which letters were sent from: (i) the Minister for Environment, Forest and Climate Change to the Minister of Panchayati Raj; (ii) Special Secretary, MoEF&CC to Chief Secretaries of all States, and (iii) Secretary, NBA to Principal Secretaries of Panchayati Raj and Rural Development Departments of all States. Regional meetings with all State Governments and SBBs were convened in Chennai on 21 June 2019, Delhi on 26 June 2019, and Kolkata on 19 July 2019 to review the progress made in setting up of BMCs. Subsequently, a compliance report was submitted by the Ministry to NGT on 2 August 2019. Thereafter, in pursuance to the order dated 9 August 2019, the first

meeting with the States was organised on 30 September 2019, and a meeting with SBBs was held on 17 October 2019 organised with SBBs.

Biological Diversity Act and National Biodiversity Authority: NBA is a body corporate established in accordance with the provisions of Section 8 of BD Act. It is an autonomous, statutory and regulatory organization which is intended to implement the provisions of BD Act. The Act is being implemented through a three-tiered institutional structures with NBA at national level, SBBs at state level and BMCs at local level.

The main objectives of NBA are:

- To regulate access to biological resources of the country to conserve and sustainable use of biological diversity.
- To respect and protect the knowledge of local communities related to biodiversity.
- To secure sharing of benefits with the local people as conservers of biological resources and holders of knowledge and information relating to the use of biological resources.
- Conservation and development of area of importance from the view point of biological diversity by declaring them as biological diversity heritage sites.
- Protection and rehabilitation of threatened species; involvement of institutions of state government in the broad scheme of implementation of the BD Act through constitution of committees.

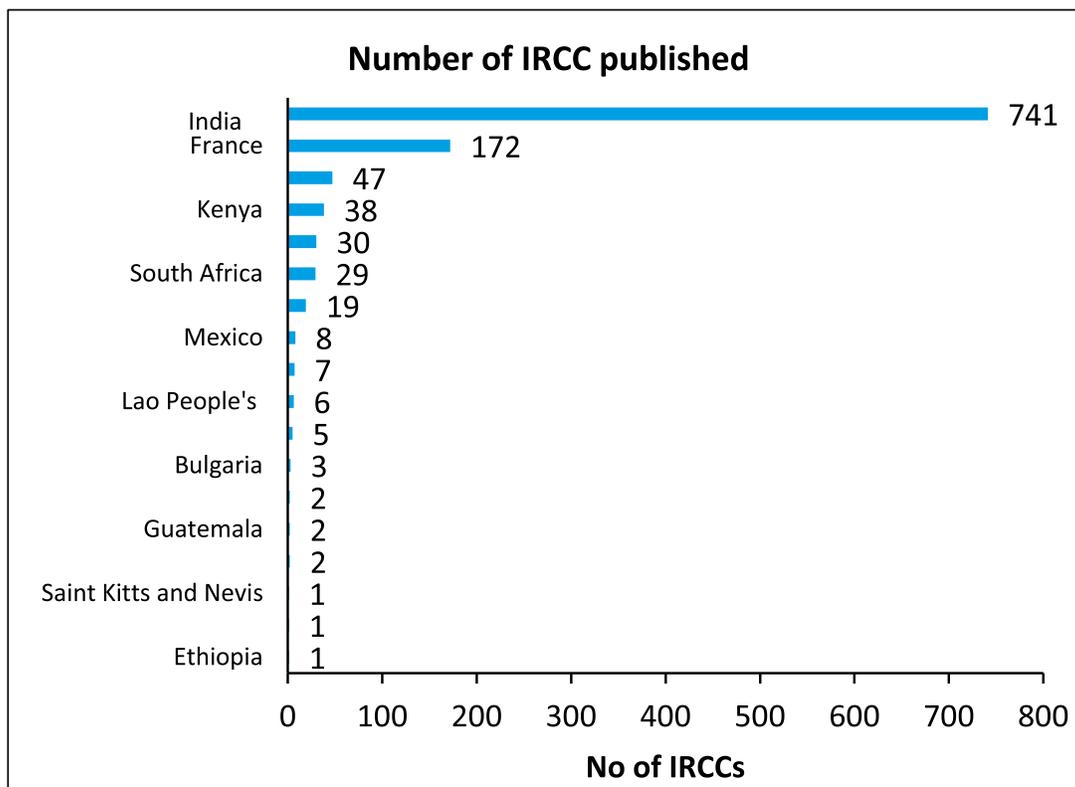


Activities undertaken by NBA:

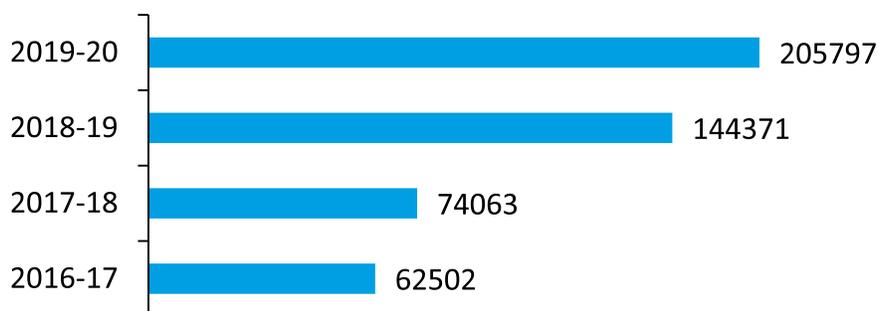
- During the year, 647 applications were received, of which draft agreements were sent to 386 applicants for execution. Out of these 386 agreements sent, 166 applicants have executed agreements with NBA.
- NBA has received a sum of Rs.1.23 crores as benefit sharing component during the year 2019-20.
- Five meetings of the Expert Committee on ABS were held, viz. on 8 January 2019, 14 March 2019, 24 July, 2018, on 8-9 August 2019, and on 8-9 November, 2019 where it evaluated 654 applications and submitted recommendation to Authority for decision.
- An Expert Committee was constituted to examine the BD Act and BD Rules, 2004. The Committee submitted two Interim reports to NBA which are being considered by the Authority.
- A consultation meeting was convened to understand the landscape of work on Digital Sequence Information being undertaken in India, on 30 July, 2019 in New Delhi.
- An exposure visit of a Nepalese delegation of the Ministry of Forest and Environment, Government of Nepal was facilitated by NBA to help develop an understanding of implementation of the BD Act and related matters during 4-8 November 2019.
- Till date, 14 Biodiversity Heritage Sites have been notified in 9 states details of which are: Assam (1), Karnataka (4), Maharashtra (1), Manipur (1), Uttar Pradesh (1), Telangana (1), Odisha (1), Meghalaya (1) and West Bengal (3).
- NBA has initiated monitoring of patent applications that are being published by the Indian Patent Office (IPO) every month so that the patent office as well as the applicant can be informed of the inventions that would potentially fall under the purview of Section 6 BD Act and would require obtaining prior approval of NBA. So far 2687 applications have been scrutinized between January- August and 405 communications have been sent to IPO informing that the said invention would require an approval of NBA.

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 741 IRCCs on the ABS Clearing House, out of the total 741 IRCCs published.



- 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.
- 2,05,794 BMCs have been constituted as of 19 December 2019.



- So far, 7567 PBRs have been prepared as on 30th October 2019.





- Two Biodiversity Heritage Site at Mandasaru Raikia block, Kandhamal district Odisha and Naro Hills located in Satna District in Madhya Pradesh has been notified during this period.



List of major publications:

- Biodiversity Finance Plan: Working Document
- Implementation of India's National Biodiversity Action Plan: An Overview, 2019.



Hon'ble Vice President released documents on "Implementation of India's National Biodiversity Action Plan: An Overview" 2019 and Biodiversity Finance Plan Working Document.

2.2 Conservation and Management of Mangroves & Coral Reefs

Ministry 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 2019-20, 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;
- 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:

- 14 MAPs have been approved under the scheme.

- 2 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).

State-wise status: The table 2.2 shows State/ Union Territory (UT)-wise status of the mangrove covers as estimated in the 2017 assessment and also the change with respect to the previous assessments.

Table- 2.1

State/Union Territories	Mangrove and Coral Reefs Sites
Andaman & Nicobar	North Andamans Nicobar
Andhra Pradesh	Coringa East Godavari Krishna
Goa	Goa
Gujarat	Gulf of Kutchh Gulf of Khambhat Dumas-Ubhrat
Karnataka	Coondapur Dakshin Kannada/ Honnar Karwar Manglore Forest Division
Kerala	Vembanad Kannur (Northern Kerala)
Maharashtra	Achra-Ratnagiri Devgarh-Vijay Durg Veldur Kundalika-Revdanda Mumbra-Diva Vikroli



State/Union Territories	Mangrove and Coral Reefs Sites
	Shreevardhan Vaitarna Vasai-Manori Malvan
Odisha	Bhaitarkanika Mahanadi Subernarekha Devi Dhamra Mangrove Genetic Resources 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

Table-2.2

Mangrove cover of India, as per FSI Report

(Area in km²)

State/UT	Assessment Year								
	2001	2003	2005	2009	2011	2013	2015	2017	Change w.r.t. ISFR 2015
Andhra Pradesh	333	329	354	353	352	352	367	404	37
Goa	5	16	16	17	22	22	26	26	0
Gujarat	911	916	991	1,046	1058	1103	1107	1140	33
Karnataka	2	3	3	3	3	3	3	10	7
Kerala	0	8	5	5	6	6	9	9	0
Maharashtra	118	158	186	186	186	186	222	304	82
Odisha	219	203	217	221	222	213	231	243	12
Tamil Nadu	23	35	36	39	39	39	47	49	2
West Bengal	2,081	2,120	2,136	2,152	2155	2097	2106	2114	8
A&N Islands	789	658	635	615	617	604	617	617	0
Daman & Diu	0	1	1	1	2	1.63	3	3	0
Puducherry	1	1	1	1	1	1	2	2	0
Total	4,482	4,448	4,581	4,639	4,663	4,628	4,740	4,921	+181

2.3 Biosphere Reserves

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 Indian National Man and Biosphere (MAB), Committee constituted by the MoEF&CC, is the apex body to oversee the programme, provide policy guidelines and review the programme. 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. Rs.16 Crore allocated at BE Stage in the F/Y 2019-20 and an amount of Rs. 10.05 crore have been released to States for implementation of Management Action Plans.

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 have been included in the World Network of Biosphere Reserves of UNESCO.

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 tomorrow's world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere.

Objectives:

- To reduce loss of biodiversity by conserving the diversity and integrity of plant 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 the 13 BRs 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 and buffer zone.
- Third party evaluation of the Scheme has been initiated.

Progress/ Achievements:

- Thirteen (13) new Management Action Plans (MAP) have been approved by the Ministry for carrying out various management activities in the 13 BRs.
- Proposal of the Panna Biosphere Reserve has been submitted to the UNESCO's headquarter for consideration under the World's Network of Biosphere Reserve.



Submission of proposal for Inclusion of Panna Biosphere Reserve in World Network of Biosphere Reserves.

Continuing committees/ commissions-their work:

Indian National MAB Committee has been reconstituted vide order dated 22.10.2018. Two annual meetings of the Committee held in the reference period from 01.01.2019 to 31.12.2019.

List of meetings/ conferences organized or attended:

- India participated in 9th meeting of South and Central Asia Man & Biospheres Network, held on 25-27 April, 2019 in Thimpu, Bhutan
- India participated in 31st session of the international coordinating Council of Man & Biosphere Programme held from 17-21, June 2019 in Paris, France.

2.4 Biosafety

Biosafety Division undertakes 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 (NKLSPRLR), and the Genetic Engineering Appraisal Committee (GEAC) as 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.

- NKLSPRLR 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 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 Ministry of Environment, Forest and Climate Change (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, MoEFCC 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.
- Phase-III PIF on GoI-UNEP project on “Mainstreaming of Biosafety and Institutional Capacity Building to strengthen effective implementation of Cartagena Protocol on Biosafety” has been recommended for funding under GEF-7 cycle.

Activities undertaken:

- The GEAC was reconstituted on 28.5.2018,

after completion of tenure of previous Committee. The 137th and 138th GEAC meetings were held on 20th March, 2019 and 11th November, 2019 respectively.

- Director, MoEF&CC and Member Secretary, GEAC participated in the 7th Annual South Asia Biosafety Conference held on 16 September 2019 in Dhaka Bangladesh.
- Director, MoEF&CC has also participated in Global Consultation Workshop on the Post-2020 Global Biodiversity Framework organized by CBD, held on 25 August 2019 in Nairobi, Kenya.

Progress/ Achievements:

- Developed and operationalized new GEAC Website with features for receiving applications in online mode (www.geacindia.gov.in)
- Fourth National Report on the implementation of the Cartagena Protocol on Biosafety was submitted.
- Nominated experts to participate in the online Ad Hoc Technical Expert Group on Socio-Economic Considerations (Article 26 of the Cartagena Protocol on Biosafety).
- Genetic Engineering Appraisal Committee considered around 36 proposals pertaining, inter-alia to confined field trials, commercial/ environmental release, import/ export of LMOs, clinical trials and vaccines.

List of publications:

- Electronic version Fourth National Report on the implementation of the Cartagena Protocol on Biosafety is available on <https://beta.bch.cbd.int/reports>.



7th Annual South Asia Biosafety Conference held on 16 September 2019 in Dhaka Bangladesh

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

The AICOPTAX was initiated in 1999 for enhancement of country's capabilities for Taxonomic Research including inventorizing, monitoring, conserving and utilizing biodiversity as well as for establishing leadership in the field of taxonomy at regional and global levels.

Goals:

- Taxonomic Research including survey, inventorisation and monitoring of India's bio-resources;
- Human resource development in taxonomy;
- Community participation in the assessment.
- Conservation and utilization of biodiversity

Objectives:

- Taxonomic Research including 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;
- Taxonomic Research including survey, collection, identification, and inventorisation of domesticated biodiversity;
- Storage and retrieval of taxonomic data;
- Creation of higher centres 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.
- India is a mega-diverse country and taxonomy is the key science to help ensure conservation of biological resources, their sustainable utilization and implementation of the CBD to which India is a party.
- The AICOPTAX is a flagship scheme of the Ministry for taxonomic research, biodiversity conservation & sustainable development. The Programme is envisaged to address the taxonomic impediment as recognized on a global basis by the Convention on Biological Diversity (CBD). As a signatory to the CBD, India stands committed to capacity building in

taxonomy and to undertake exploration and preparation of a survey and inventory of her living resources. Since the inception of the AICOPTAX, survey and inventory of plant, animal and microbial species in the country been significantly enriched and huge information on diversity and distribution of various components of biodiversity have been collected and disseminated.

- In view of inadequate number of taxonomist in the country, the AICOPTAX programme will enhance country's capabilities for inventorizing, monitoring, conserving, and utilizing biodiversity as well as for establishing leadership in the field of taxonomy at regional and global level by awarding projects to various research institutes

Progress/Achievements:

- This is a first time in the history of the AICOPTAX programme, the Ministry received 569 proposals under Plant, Animal and Microbial category. Four meeting of the Steering Committee have been organized and a total 500 research proposals have been considered out of 569.
- Under Animal, Plant and Microbial category, a total 82 research proposals were recommended by the Steering Committee of the AICOPTAX for funding.
- For initial scrutiny of the research proposals received under AICOPTAX, Seven (7) Subject Expert Group Committees have also been constituted.



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. The flagship scheme has been launched as per the India commitments to CoP and Convention of Biological Diversity.

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:

- Eight Lead and Nine small Botanic Gardens supported all over India, thereby ensuring conservation of Rare, Endangered and Threatened (RET) plant species through these Botanic Garden. Data base prepared for RET plant conserved under each Botanic Garden.
- Monitoring and evaluations of 34 Botanic Gardens undertaken by BSI.
- Progress Reviewed for all the Lead and small Botanics under the ABG Scheme by Expert group committee in a review meeting held on 8th May 2019 in Bhramaputra Conference Hall of MoEF&CC.

- MoU initiated for new Botanic Gardens for no land use transfer, and MoU signed with all the ongoing lead and small Botanic Gardens.
- Progress Reviewed for all the Lead Botanic Gardens and the ABG Scheme by MoEF&CC in a review meeting of 8th May 2019.
- MoU initiated for new Botanic Gardens under no land use transfer.
- Expert Group Committee of ABG Scheme recommended 5 lead Botanic gardens in states of UP, Punjab, Karnataka, Maharashtra, Kerala and 13 new small Botanic Garden projects all across the country for establishing Botanic Garden till 2020-21.
- 315 Rare, Endangered and Threatened (RET) plants conserved through ex situ conservation and methodology developed for their conservation.
- Approximately 2.5 Lakh researchers, students enriched their knowledge on plant conservation and environment education through these Botanic Gardens all over India.
- Indian Association of Botanic Gardens and compendium of Rare , endangered and Threatned plants conserved through various Botanic Gardens under final compliation.

2.7 Forest Conservation

Forest Conservation division of the Ministry deals with the proposals seeking approvals for use of forest land for non-forestry purpose under Forest (Conservation) Act, 1980. Forest (Conservation) Act, 1980 provides

regulatory mechanism that reflects the collective will of the nation to protect its rich biodiversity and natural heritage and that permits only unavoidable use of forest land for various developmental purposes such as for drinking water projects, irrigation projects, transmission lines, railway lines, roads, power projects, defence related projects, mining etc. It embodies the firm commitment of the Government of India to balance the conservation of forest with the sustainable development needs of the country contributing to better environment, health and economy. In order to minimize and mitigate the adverse impact on biodiversity and ecosystem service loss from the area, different compensatory levies are charged. These legislature provisions are highly effective and helped in striking balance between conservation of forest and sustainable development of the country.

Following are the objective of the FC Act, 1980:

- To regulate approval of forest lands for non-forestry purposes (in the national interest and in the interest of future generations).
- To regulate the indiscriminate approval of forest lands for non-forestry uses and to maintain a balance between the development needs of the country and the conservation of natural heritage.
- To issue guidelines under the Act from time to time, in order to simplify the procedures, to reduce delays and to make the Act more user friendly.

For such approval of forest lands for non-forestry purposes following measures are taken up to mitigate the ill effects of diversion of such vast forest area 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.

Progress/Achievements:

Guidelines issued during the year 2019 for streamlining and fast disposal of diversion proposals under the Forest (Conservation) Act, 1980 are as under:

- **Guidelines issued regarding Compensatory Afforestation:** Ministry, with a view to curtail delay in the identification of non-forest land/degraded forest and speedy disposal of FC proposals, has issued guidelines with regard to compensatory afforestation.
 - **Clarification on selection of land for Compensatory afforestation:** (i) Forest lands having crown density below 40 percent, shall only be treated as degraded forest land for the purpose of CA. (ii) State government shall prepare a CA scheme with 1000 plants per ha for all such lands. In case it is not possible to raise plantation at the rate of 1000 plants per ha on the selected non-forest land then the balance plants can be allowed to be raised on degraded forest land as per working plan prescriptions. (iii) Any non-forest land for the purpose of Compensatory afforestation (CA), selected by the state government, in



lieu of forest land to be diverted may be accepted by MoEF&CC irrespective of crown density. All such lands shall be mutated and notified in favour of state forest department and declared as PF/RF prior to stage II approval.

- **Special consideration of compensatory afforestation in forest rich States:** (i) The states/UTs having forest land of more than 75% of their respective total geographical area, shall not be insisted upon for providing non-forest land (for subsequently notifying into RF/PF) equal to the forest area diverted for non-forest purposes in the same state/UT. However, the same may be taken up in any other state/UT having deficient forest land/cover. (ii) Isolated patches having area less than 5 ha are difficult to manage as forests. Hence, no non-forest land, having area less than 5 ha area shall be accepted for CA purpose. However, land parcels, if contiguous to RF/PF, can be accepted for CA irrespective of their sizes, subject to their suitability for CA. In case of forest area under approval is less than 5 ha, efforts should be made to identify non-forest land contiguous to some RF/PF. User agency shall fence all such land parcels properly and mutate the same in the name of Forest Department before handing them over to the Forest Department. All such land parcels shall be compact (i.e. without any pockets of habitation or non-forest land) and free from any encumbrances. (iii) Land

parcels, if contiguous to National Parks/VVL Sanctuaries, can be accepted for CA irrespective of their sizes and suitability for CA, subject to condition that the same shall be mutated in the name of Forest Department, notified as RF/PF and thereafter merged with concerned National Park/Wildlife Sanctuary with suitable declaration, prior to stage-II approval by MoEF&CC.

- Provisions of Compensatory Afforestation providing that the UT/States with more than 75% of forest cover of their respective geographical areas shall not be required to provide non-forest land in lieu of diversion of forest land for projects within the UT/State itself.
- **Regarding changing status of forest land to revenue land in case of voluntary relocation of villages as per Order of the Hon'ble Supreme Court dated 28.01.2019:** Guideline has been issued for encouraging voluntary relocation of villages from core area of National Park/Wildlife Sanctuary/Tiger Reserve to forest fringe areas. In such cases, the legal status of the new area can be changed as to Non-forest land under FC Act, 1980. However, such proposals can be dealt case to case basis on merit and subject to conditions.
- **In respect of Wind Power Projects:** Lease rent of Rs. 30,000/- per MW for 30 years, in respect of Wind Power Projects, may not be levied by the State/UT Governments.
- **Guidelines specific to hydrocarbon sector for undertaking seismic surveys and**

exploratory drilling in forest areas: Special guidelines simplifying the provisions under FC Act, 1980 has been issued for undertaking seismic surveys and prospecting in Hydro-Carbon sector. For the purpose of Seismic

survey, the maximum permissible number of shot holes may be fixed as 80 per sq km of maximum size of 6.5 inch each so that reliable data can be collected. The permission for such temporary activity can be granted at state level.

Table-2.3

Statement Showing State Wise Total Forest Area approved for use of Non Forestry Purpose Under FC ACT, 1980

Category : All Categories		During the Period : 01.01.2019 to 06.11.2019	
		Approved	
S. No.	States / UTs	No. of Cases	Total Forest land approved (Ha.)
1	Andhra Pradesh	3	37.82
2	Bihar	28	453.43
3	Chhattisgarh	1	207.99
4	Goa	1	0.93
5	Gujarat	99	114.01
6	Haryana	251	519.53
7	Himachal Pradesh	52	434.36
8	Jharkhand	11	869.99
9	Karnataka	11	162.61
10	Kerala	2	0.26
11	Madhya Pradesh	220	795.36
12	Maharashtra	2	151.81
13	Mizoram	1	23.69
14	Orissa	14	4514.00
15	Punjab	123	411.07
16	Rajasthan	27	370.34
17	Tamil Nadu	6	18.45
18	Telangana	11	2055.05
19	Tripura	2	1.80
20	Uttar Pradesh	1	63.27
21	Uttarakhand	64	159.74
22	West Bengal	2	102.33
Total		932	11467.83

(For the remaining States/U.T no forest area was approved for Non forestry use during the above said period).



Table-2.4

Statement Showing Total Forest Area Approved (Category Wise) For Non Forestry use under FC ACT, 1980

Category : All States		During the Period : 01/01/2019 to 07/11/2019	
S. No.	Category	Approved	
		No. of Cases	Total Land Diverted (Ha.)
1	Approach Access	147	5.93
2	Borehole Prospecting	0	0.00
3	Canal	1	0.00
4	Defence	0	0.00
5	Dispensary/Hospital	1	40.51
6	Drinking Water	31	158.60
7	Encroachments	0	0.00
8	Forest Village Conversion	0	0.00
9	Hydel	9	167.96
10	Industry	5	29.03
11	Irrigation	24	4287.50
12	Mining	22	3846.09
13	Optical Fibre Cable	126	74.12
14	Others	244	314.77
15	Pipeline	19	6.85
16	Quarrying	1	2.00
17	Railway	11	386.06
18	Rehabilitation	0	0.00
19	Road	227	1487.82
20	School	2	4.38
21	Thermal	3	49.83
22	Transmission Line	46	578.67
23	Village Electricity	12	9.72
24	Wind Power	1	18.00
Total		932	11467.83

2.8 Compensatory Afforestation Fund Management and Planning Authority (CAMPA)

The “National Compensatory Afforestation Fund Management and Planning Authority

(National Authority)” has come into existence in place of Ad-hoc CAMPA with effect from 30.09.2018; the day the Compensatory Afforestation Fund (CAF) Act, 2016 and Compensatory Afforestation Rules (CAF) Rules,

2018 have come into force. Hon'ble Minister, Environment, Forest and Climate Change, Government of India is the chairperson of the Governing Body of the National Authority. The Governing Body is assisted by an Executive Committee, a Monitoring Group and an administrative support mechanism. One of the functions of the National Authority is to manage and utilise the "National Compensatory Afforestation Fund (National Fund)", which has been created at the National level under the public account of India, for the purpose of the CAF Act, 2016. The other fund created at each State/UT level is known as "State Compensatory Afforestation Fund (Name of the State)" under the public accounts of respective States/UTs. As per the Act, the compensatory levies, which are collected against approvals under the Forest (Conservation) Act, 1980 and/or under section 18, 26A or 35 of the Wildlife (Protection) Act,

1972) are to be deposited into the public accounts of the respective States and 10% of the amount, so deposited, is to be transferred to the National Fund annually. These funds are available to the National Authority and respective State Authorities through budgetary process.

Prior to the formation of the National Authority, the user agencies credited compensatory levies into the state specific bank accounts maintained by the Ad-hoc CAMPA. Till 20.06.2019, funds amounting to Rs 54,685 crores were transferred from these bank accounts to the National Fund. Hon'ble Minister for Environment, Forest and Climate Change disbursed funds to the tune of Rs. 47,436.18 crores from the National fund to 27 States, who have created their public accounts, in the meeting of State Forest Ministers held on 29.08.2019. The state-wise information is given in Table 2.5.





The compensatory levies deposited in bank accounts of various States/UTs (excluding UT Government of Jammu & Kashmir and UT Government of Ladakh) from 08.02.2019 to 20.12.2019 are given in Table-2.6. These funds will be transferred to the public accounts of respective States/UTs.

The Annual Plan of Operations (APOs) approved by the Steering Committee of a State Authority under section 18(1)(i) is finally approved by the Executive Committee of the National Authority under section 15(1)(i) of the CAF Act. The Executive Committee of the National Authority held four meetings in the calendar year and approved the annual plan of operations (APO) of 21 State Authorities submitted to it. The

Governing Body of the National Authority in its first meeting held on 15.11.2019 has approved 7 new and four ongoing schemes from the National Fund. All these schemes have been recommended by the Executive Committee of the National Authority.

Hon'ble Minister for Environment, Forest and Climate Change convened another meeting of State Forest Ministers on 30.11.2019 and emphasized upon the need to take up the activities relating to catchment area treatment and fodder development through their State CAMPA funds. In the meeting various other important forestry issues such as intensification of efforts to meet our INDC commitments, people's participation in forestry sector etc were also discussed.



Table-2.5

Disbursement of Fund from National Fund to Respective State Funds on 29.08.2019

S. No.	Name of State	Funds transferred (Rupees crores)	S. No.	Name of State	Funds transferred (Rupees crores)
1	Odisha	5,933.98	15	Haryana	1,282.65
2	Chhattisgarh	5,791.70	16	Punjab	1,040.84
3	Madhya Pradesh	5,196.69	17	Assam	560.81
4	Jharkhand	4,158.02	18	Bihar	522.95
5	Maharashtra	3,844.24	19	Sikkim	392.36
6	Telangana	3,110.38	20	Manipur	309.76
7	Uttarakhand	2,675.09	21	Goa	238.16
8	Uttar Pradesh	1,819.63	22	West Bengal	236.48
9	Rajasthan	1,748.26	23	Mizoram	212.98
10	Andhra Pradesh	1,734.81	24	Tripura	183.65
11	Himachal Pradesh	1,660.72	25	Meghalaya	163.31
12	Arunachal Pradesh	1,588.72	26	Tamil Nadu	113.42
13	Gujarat	1,484.60	27	Kerala	81.59
14	Karnataka	1,350.37		Total	47,436.18

Table-2.6

Statewise Account Credit from 08.02.2019 to 20.12.2019

S. No.	Name	Total Credit (Rupees crores)	S. No.	Name	Total Credit (Rupees crores)
1	Andaman	13.18	13	Haryana	153.47
2	Andhra Pradesh	121.05	14	Himachal Pradesh	88.02
3	Arunachal Pradesh	652.35	15	Jammu & Kashmir	0.00
4	Assam	112.69	16	Jharkhand	532.16
5	Bihar	41.99	17	Karnataka	53.78
6	Chandigarh	0.00	18	Kerala	4.28
7	Chhattisgarh	185.39	19	Lakshdweep	0.00
8	Dadar & Nagar Haveli	0.97	20	Madhya Pradesh	558.62
9	Daman & Diu	1.20	21	Meghalaya	5.87
10	Delhi	10.62	22	Maharashtra	209.63
11	Goa	0.00	23	Manipur	19.30
12	Gujarat	165.76	24	Mizoram	4.65



S. No.	Name	Total Credit (Rupees crores)
25	Nagaland	0.00
26	Odisha	296.44
27	Puducherry	0.00
28	Punjab	23.42
29	Rajasthan	46.91
30	Sikkim	11.33

S. No.	Name	Total Credit (Rupees crores)
31	Tamil Nadu	5.16
32	Tripura	42.69
33	Uttarakhand	187.53
34	Uttar Pradesh	55.53
35	West Bengal	72.31
36	Telangana	73.28
Total		3749.58

2.9 Forest Establishment

The Forest Establishment Division (FE) 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) and State Forest Colleges; general references relating to frontline staff of State Forest Departments including court cases, RTI requests and Parliament Matters concerning the above. The list of Organisations under FE are:

i. Indian Council of Forestry Research and Education (ICFRE), Dehradun an autonomous organization under the Ministry which oversees the functioning of the following Institutes/Centres;

- Forest Research Institute, Dehradun

- Tropical Forest Research Institute, Jabalpur
- Arid Forest Research Institute, Jodhpur
- Himalayan Forest Research Institute, Shimla
- Rain Forest Research Institute, Jorhat
- Institute of Forest Productivity, Ranchi
- Institute of Forest Biodiversity, Hyderabad
- Institute of Forest Genetics and Tree Breeding, Coimbatore
- Institute of Wood Science and Technology, Bengaluru
- Forest Research Centre for Skill Development, Chhindwara
- Forest Research Centre for Bamboo & Rattan, Aizawl
- Forest Research Centre for Eco-Rehabilitation, Prayagraj
- Forest Research Centre for Livelihood Extension, Agartala

- Forest Research Centre for Coastal Eco-System, Visakhapatnam
- ii. **Forest Survey of India (FSI), Dehradun** has following four Zonal Offices;
 - Central Zone, Nagpur
 - Eastern Zone, Kolkata
 - Northern Zone, Shimla
 - Southern Zone, Bangalore
- iii. **Wildlife Crime Control Bureau (WCCB)** has five Regional offices and three sub-regional offices located at:
 - Southern Region, Chennai.
 - Eastern Region, Kolkata.
 - Western Region, Mumbai.
 - Central Region, Jabalpur.
 - Northern Region, New Delhi.
 - Sub-regional office – Guwahati
 - Sub-regional office – Amritsar
 - Sub-regional office - Cochin
- iv. **Director of Forest Education (DFE), Dehradun** supervises the following Central Academies:
 - Central Academy for State Forest Service, Dehradun (Uttarakhand)
 - Central Academy for State Forest Service, Coimbatore (Tamil Nadu)
 - Central Academy for State Forest Service, Burnihat (Assam)
 - Central Academy of Forest Education, Kurseong (West Bengal)

- v. **National Zoological Park (NZP), New Delhi**
- vi. **Indira Gandhi National Forest Academy (IGNFA), Dehradun**

Functions:

- 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:

- RRs for 7 Group B Posts and one Group C post were published and a few more are under process.
- Group A (2 DD & 3 AD) posts in FSI were revived.
- Two posts of DD in FSI were filled by promotion and five posts of Inspector in WCCB were filled on deputation basis by convening the meeting of the DPC/Committee.
- for filling up eight posts of AD in FSI is under active consideration in the UPSC, one post of AD (Statistics) in FSI and one post of Public Prosecutor in WCCB is under process.
- Search-cum-Selection committee for Selection of Candidates for the posts of Group A Level 14 and above in ICFRE were constituted with the approval of DoPT.
- Updating of Data relating to various training courses/programmes being conducted by ICFRE, DFE, IGNFA and WCCB have been uploaded in the eSamikSha portal.
- As of 21.11.2019 FE Section has dealt with 61 RTI Requests one RTI Appeal 36 Public Grievances and four VIP/MP references.
- As of 31.12.2019 FE Section has dealt with

70 RTI Requests 1 RTI Appeal 38 Public Grievances and 4 VIP/MP references.

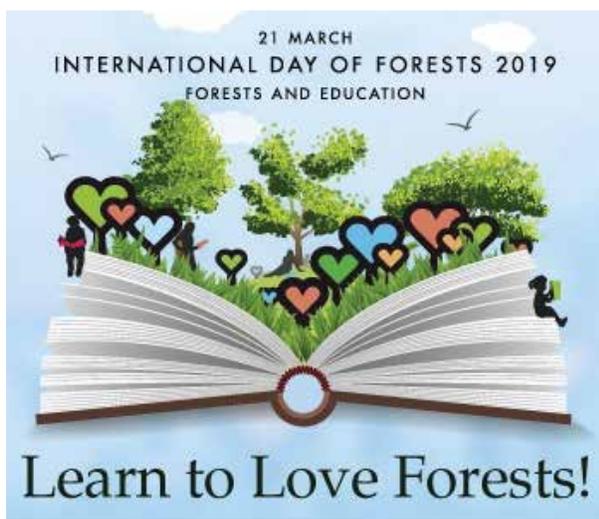
2.10 Forest Policy

Forest Policy Division of Ministry of Environment, Forest and Climate Change (MoEF&CC) 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. The 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 of 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 program.

The Division gives policy directions and issues advisories from time to time to State Governments on important forestry matters. Division has no subordinate offices/institutions attached with it.

Activities undertaken:

- i. Draft National Forest Policy, 2020 had been finalized. The same is under consideration for adoption.



International Day of Forests 2019

- ii. 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.
- iii. “National Portal on Pan India Transit System for timber, bamboo and other forest produce” has been developed and two national level consultations with all State Forest Departments have been held to finalize for piloting it in the states.
- iv. “International Day of Forests 2019” was celebrated at Forest Research Institute, Dehradun on theme of Forests & Education to sensitize the people, students and other stakeholders on importance of forests.
 - Every year, the day of 21 March is celebrated as “International Day of Forests” world over. 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.

- 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. The programme was attended by forestry institutions viz. FSI, FRI, WII, CASFOS, DFE, IGNFA, etc. Shri C. K. Mishra, Secretary, EF&CC attended the celebration as the Chief Guest and grace the occasion by ceremonial plantation of tree at botanical garden at ICFRE, Dehradun. Secretary, EF&CC also visited the exhibition stall and distributed prizes and awards to winners of the various competitions organised on the occasion by ICFRE. Shri Chandi Prasad Bhatt, a Padam Vibhushan awardee, addressed the gathering as the keynote speaker. Other Dignitaries were ADG (FC); DG, ICFRE; Director, WII; DG, FSI; Director, IGNFA, Director, FRI. IG (Forest Policy), AIG (FP), TO (FP) etc. The programme was also attended by school children, retired forest officers and other officials from forestry institutions.



- v. Forest PLUS 2.0 (Forest for Water and Prosperity), a technical collaboration programme under bilateral agreement between India and USAID, was launched at national level on 25.09.2019 for its implementation in Kerala, Telangana and Bihar. The National launch was followed by State launch and inception programme of the Forest PLUS 2.0 in Kerala, Telangana and Bihar on 31st October, 20th November and 5th December in Thiruvananthapuram, Hyderabad and Gaya respectively. The Forest PLUS 2.0 has been designed with the theme “forest for water and prosperity” and will focus on ecosystem approach for forest landscape management. The major aim of Forest PLUS 2.0 is (a) to strengthen ecosystem-based management of forest landscapes (b) to factor ecosystem services into the management of forest landscape and (c) to increase inclusive economic opportunities from improved landscape management. Under the Forest PLUS 2.0, following activities have been envisaged to be completed: (a) Automation of Working Plan (b) Development of Van App: An integrated automated System for Working Plan preparation, (c) Strategy paper on Ecosystem services Baseline and Valuation (d) Development of value chain to NTFPs and (e) Capacity building and training.
- vi. Consequent upon the release of “National REDD+ Strategy”, the document was submitted to UNFCCC and the India’s National REDD+ Strategy was uploaded at official page of UNFCCC. Ministry has requested ICFRE for developing the Safeguard Information System for implementation (SIS) of REDD+ Activities in the country.

vii. A detailed Concept Note on Jal-Van-Jal Abhiyan has been developed. The Jal-Van-Jan Abhiyan is an integrated mission for water security, conservation and eco-restoration of forests and enhancing the livelihood security of forest dependent communities.

viii. Forest Policy Division processed various Bills and offered comments for further action. These are:

- The Tamil Nadu Forest (Amendment) Bill, 2019
- The Jammu and Kashmir Reorganization (Adaptation of State Laws)Order 2019
- Amendment of Indian Forest Act 1927 for adaption by UT of Jammu and Kashmir
- Draft Regulations for Ladhak in respect of the Indian Forest Act, 1927 with amendments.

ix. Division processed following foreign deputation of Indian delegation in important International meetings on forests:-

- Indian delegation participated in the Expert Group Meeting on the Clearing House of the Global Forest Financing Facilitation Network (GFFFN) at UN HQ, New York, USA from 9-11 January, 2019.
- Indian Delegation attended the 14th Session of United Nations Forum on Forests from 6-10 May, 2018 in UNHQ, New York, USA.
- Indian delegation participated in 28th Session of Asia Pacific Forestry

Commission (APFC) from 17-21 June, 2019.

- Indian Delegation attended Expert Group Meeting of UNFF in Geneva, Switzerland from 12-15 November, 2019.

x. Ministry has communicated India's Voluntary National Contributions (VNC) to United Nations Forum on Forests (UNFF) towards the attainment of Global Forest Goals as outlined in the United Nations Strategic Plan for Forests 2017-30.

2.11 Forest Protection

The Forest Protection Division deals with forest protection related issues like illegal felling of trees, deforestation, encroachment of forest land, invasive weeds, forest fires etc. Forest Protection Division is the nodal division for disaster management related matters. This division administers Forest Fire Prevention & Management Scheme (FPM) which is a Centrally Sponsored Scheme.

Objectives:

- Nodal division for forest fires matters
- Implementation of National Action Plan on Forest Fire.
- Issues relating to forests protection including 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.

- Nodal division for Disaster management related matters.
- Engagement with fire-prone countries such as Canada, New Zealand and Australia to understand how to deal with forest-fires and study the use of other systems for fighting forest fires.

Activities undertaken:

A Central Monitoring Committee has been constituted vide Notification No. 8-4/2016-FPD dated 04.06.2019 under the Chairmanship of Secretary EF&CC to monitor the implementation of the National Action Plan on Forest Fire.

Progress/Achievements:

- Fire Alert System (FAST) Ver. 3.0 was launched on 16-17 January, 2019 by Forest Survey of India. It is faster, quicker and more robust forest fire detection and real time information dissemination system.
- As per the directions of the Hon'ble National Green Tribunal (NGT), New Delhi in the matter of Indian Institute of Sustainable Development v/s Union of India and others, this Ministry has amended the Wood Based Industries (Establishment and Regulation) Guidelines, 2016 for regulation of Wood based Industries.

Forest Fire Prevention and Management:

The scheme supports the efforts of State/UTs Governments in prevention and control of forest fire by providing financial assistance for various forest fire prevention and management measures.

Long Term Objectives:

- To minimize forest fire incidences and assist in restoring productivity of forests in affected areas.
- To institutionalize the partnership with forest fringe communities for forest protection.
- To contribute to the larger goal of maintaining environmental stability.
- To prepare fire danger rating system and devise forest fire forecasting system.
- 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.
- To develop knowledge on impacts and dynamics of forest fire.

Short Term Objectives:

- To carry out effective awareness campaign for prevention of forest fire.
- To effectively prevent and control forest fires by improving the traditional practices and employing available modern methods.
- To impart suitable training to the field staff and forest fringe communities on fire fighting with help of prescribed means and methods in the forest areas.
- To encourage community participation in prevention and control of forest fire.
- To develop and strengthen Forestry Infrastructure of the States and UTs that is required for effective prevention and management of Forest fire.

2.12 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, 1792.

Progress/ Achievements:

Asiatic Lion Conservation Project: The Ministry of Environment, Forest and Climate Change, Government of India launched the “Asiatic Lion Conservation Project” on 8th January, 2019 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.

The total budget of the project for 3 years that amounts to Rs. 9784.50 lakh will be funded from the CSS-DWH with the contributing ratio being 60:40 of Central and State share respectively.

The project activities are envisaged in a manner to cause habitat improvement, scientific interventions, disease control and veterinary care supplemented with adequate eco development works for the fringe population in order to ensure a stable and viable Lion population in the Country.

Preparations for 13th Conference of Parties to the Convention on Migratory Species:

India is hosting the 13th Conference of Parties to the Convention on Migratory Species at Gandhinagar, Gujarat from 15th-22nd February, 2020 with an aim to conserve migratory species through dialogue, listing and concerted efforts of the member countries (130 countries). 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 to 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. They don't just decorate the doorstep, but serve as 'bird and insect feed', as they are drawn with coarse rice powder every morning before sunrise. This unique gesture signifies our respect for all the species sublimely built into our culture.

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. The Great Indian Bustards look so elegant, carry themselves graciously, hence this name, derived from GEBY which means captivating or attractive. Government of India has taken several steps to conserve and protect the bird.

The theme/slogan for CMS-COP-13 is

“Migratory species connect the planet and together we welcome them home”. It is inspired from an age old saying in India “Athithi Devo Bhava”.

Asian Rhino range States meeting: The 2nd Asian Rhino range States Conservation meeting was held in the MoEF&CC, New Delhi from 26th -28th February, 2019. Representatives from Butan, Indonesia, Malasiya and Nepal attended the meeting besides India. After the deliberations, the Countries agreed for a New Delhi declaration for strengthening the conservation of Asian Rhinoceros in its range.



During the meeting, Hon’ble, Minister for EF&CC also launched the “National Conservation Strategy for the Indian One-Horned Rhinoceros”.

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.

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, all the meetings of the Standing Committee of NBWL were convened through Video Conferencing in the year 2019. Time for decision making in project proposals in NBWL/SC-NBWL has reduced from 365 days to 180 days and there is zero pendency in Wildlife Clearances. 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

Enhancement of Protected Area Network in the Country: The number of Protected Areas in the country has increased from a total of 771 in 2018 to 870 in 2019. The total area under PA is now 1,65,088.36 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 2018 to 127 in 2019.

Plastic Free Protected Areas: As part of celebration of Wildlife Week, 2019 the Wildlife Division of this Ministry issued directions to all States & Union Territories to take up awareness generation campaigns/ drives, sensitization programmes in a big way to prohibit single use plastics in the Forests in general and in all the Tiger Reserves, National Parks, Wildlife Sanctuaries, Zoological Parks etc. in particular.

Indo-German Development Cooperation Project on “Human Wildlife Conflict



Mitigation in India”: The Indo-German Cooperation project on “Human-Wildlife Conflict (HWC) Mitigation in India”, which is being implemented by MoEF&CC, State Forest Departments of Karnataka, Uttarakhand & West Bengal and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, aims at providing technical support at the National level and in selected States for effective implementation of Human Wildlife Conflict mitigation measures. To achieve these objectives, the Project is supporting the development of a National Strategy and Action Plan, and State-level Strategies and Action plans for the Project Partner States in a landscape manner approach, facilitating capacity development of key stakeholders, pilot application of holistic approach and instruments for HWC mitigation.

As part of the project, the National HWC Strategy and Action Plan, State level Strategy and Action Plans for selected States, Standard Operating Procedures (SOPs) for management of 10 key wildlife species and 3 issues on Human Wildlife Conflict Mitigation (crowd control, Media, medical emergencies), development of National database and monitoring system on HWC mitigation to provide a web-based interface for centralized database, visualization of HWC hotspots in India, Division level HWC Management Action Plans- in line with the recommendation under the National Wildlife Action Plan- in selected landscapes, development of competency-based curriculum and training materials for IFS and SFS officers as well as for the front-line officers and experts from other sectors etc. are under process of development.

Project organized a series of National and State level workshops during the year 2019-engaging scientists, forest officers, veterinary and media experts- for developing guidelines, implemented training courses on holistic approach on HWC mitigation for forest officers, developed competency framework and Training Needs Assessment format, facilitated in integration of a standardized 5-module on HWC into core training modules of the Wildlife courses at WII, and induction course for SFS at CASFOS Dehradun, conducted trainings for Rapid Response Teams and workshops of Panchayats of conflict hotspots in Partner States, pilot tested the HWC module for media students and professionals in the year 2019. The Project also provided key equipment for enhancing the capacities of the Rapid Response Teams at Project pilot sites, including radio collars, camera traps and other equipment for patrolling, monitoring and health & safety of the RRT personnel.

4th Meeting of the Steering Committee of Global Snow Leopard Ecosystem Programme (GSLEP): The 4th Steering Committee meeting of the Global Snow Leopard and Ecosystem Program (GSLEP) was organized by MoEF&CC, Government of India on 23rd-24th October 2019 at New Delhi. The meeting was attended by Hon’ble Ministers from Nepal, Russia, Kyrgyzstan and Mongolia along with senior officials from nine of the Snow leopard range countries i.e. Bhutan, China, Mongolia, Nepal, Tajikistan, Kyrgyzstan, Uzbekistan, Russia and Kazakhstan.

The meeting was chaired by Nepal and Co-Chaired by Kyrgyzstan to intensify collaborative

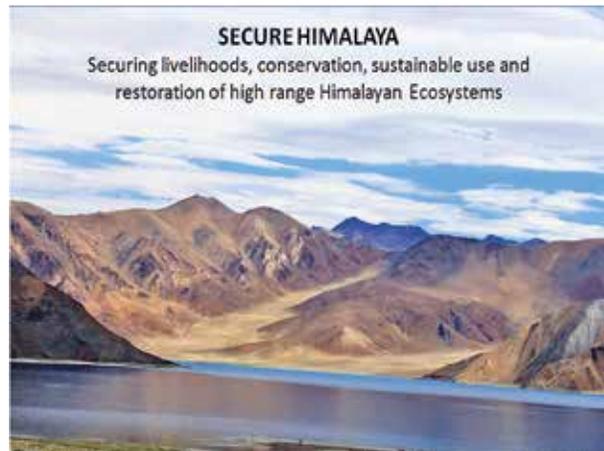
efforts towards conserving snow leopards and its ecosystem. The delegates discussed sustainable development efforts to be made in the snow leopard habitat and take into consideration green economic development, innovative conservation financing and population assessment of snow leopards. The Steering Committee also assessed efforts in combating poaching and illegal wildlife trade of snow leopards.

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

Project: SECURE Himalaya is a Govt. of India (MoEFCC)-UNDP-GEF project (2017- 2023) being implemented in Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Sikkim.

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 National protocol titled “Snow Leopard Population Assessment in India” was developed by MoEF&CC, WII and NCF in consultation with five Snow Leopard range State Governments for country wide enumeration and monitoring of snow leopard was launched by Hon’ble Minister, EF&CC on 23rd October, 2019 on the occasion of International Snow Leopard Day at New Delhi. 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.



Central Asian Flyway Range States Meeting:

India is home to several species of migratory birds and every year thousands of species arrive during winter mainly following Central Asian Flyway and is signatory to Convention on Migratory Species since 1983 and understands the importance of international cooperation in conservation of migratory species which travel across the political boundaries. India has been supportive in the formulation of CAF Action Plan. India has launched a National Action Plan (NAP) (2018-2023) which has been drawn actions envisaged in the Central Asian Flyway Action Plan. It provides a common strategic framework for regional collaboration and affirmative action for protecting, conserving, restoring, and sustainably managing populations of migratory bird species and their habitats in the Indian subcontinent falling under the Central Asian Flyway region.

To strengthen the conservation of Migratory species in the Central Asian Flyway Region, A meeting of Central Asian Flyway Range States was organised in Lonavala by MoEF&CC along with Bombay Natural History Society on 19th and 20th November 2019. The meeting was



inaugurated by Shri Babul Supriyo, Honb'le Minister of State for Environment, Forest and Climate Change. The meeting was attended by representatives from Saudi Arabia,

Bangladesh, Convention on Migratory Species (CMS), African Eurasian Waterbird Agreement (AEWA) and Birdlife International.



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.

Recovery programme for critically Endangered Species: With a view to provide focused protection to the critically endangered species

through 'Recovery programme' under the Centrally Sponsored Scheme of 'Development of Wildlife Habitat', Wildlife Division is providing financial assistance to the States for conservation and protection of 21 critically endangered species such as Batagur Baska, Red Panda, Arabian Sea Humpback Whale, Great Indian Bustard, Asiatic Lion, Vultures, Elephants etc.

2.13 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 this Act; and
- Such other powers as may be prescribed.

Activities undertaken:

- Collection, collation and dissemination of 92 intelligence inputs on wildlife crime and criminals to the Central / State agencies concerned for apprehension of criminals.
- Collection of wildlife crime data from 36 agencies of the States/UTs (Forest & Police Depts.) by creation of online data management system in WCCB website base.
- Wildlife Crime Enforcement under the provisions of Wild Life (Protection) Act, 1972:-
 - Detection/ search/ seizures/ apprehensions – 76 nos. of offence cases detected during the period.
 - Assisted in Investigation of 46 offences detected by the officers of the Bureau.
 - Filing of Many complaints in courts in cases detected by the Bureau.
- Capacity building in dealing with wildlife crimes and investigation of wildlife offences:-
 - Conducted 16 two days capacity building training courses on investigation of wildlife offences and intelligence tradecraft for 752 Police and Forest officials.
 - Conducted 70 Sensitization programmes



/ workshops / seminars for the Central and State agencies on issues related to wildlife crimes and identification of wildlife articles in which 3436 Officials participated.

- Conducted 26 PRI Sensitization programmes for the PRI members/ Villagers on issues related to wildlife crimes and protection of wildlife in which 1388 PRI members participated.
- 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.
- Created and displayed digital publicity materials on wildlife at 18 Airports of the country and displayed publicity materials at the National Zoological Park, Delhi.

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

I. Within country:

- Six Inter - agency coordination meetings were conducted 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.

- Conducted 108 Joint operations with other agencies for prevention of wildlife crime.
- Four Special Enforcement Operations coordinated by WCCB were launched with a focus on specific species wildlife crime as well as on online illegal wildlife trade.

II. International cooperation:-

- Liaison with Interpol, CITES Secretariat and concerned foreign authorities. Addl. Director, WCCB attended COP of CITES on 28-28 Aug., 2019.
- Participated in Interpol coordinated multi – national joint operations.
- Participated in the annual working group meeting of Interpol at Singapore on environmental crime on 18-22 November, 2019.
- Participated in the Asian Regional meeting on wildlife crime coordinated by the Interpol at Jakarta, Indonesia on 11-13 June, 2019.
- Participated in the regional investigative and analytical support meeting “Infra Terra” coordinated by the Interpol at Bangkok, Thailand on 12-14 June, 2019.
- Participated in the regional investigative and analytical support meeting coordinated by the Interpol at Kuala Lumpur, Malaysia on 28-31 July, 2019.
- Participated in the 5th Executive Committee Meeting of SAWEN at Male, Maldives on 26.03.19.

- Participated in the 4th meeting of the Nodal Points for wildlife crime between India and Myanmar on 17.12.19 at Nay Pi Taw, Myanmar.
- Sensitization and awareness campaigns on wildlife and wildlife crimes to public and other stakeholders: -
 - Public education and awareness campaigns - including schools/PRI leaders/fairs/ pet markets etc.
 - Sensitization programmes for other agencies and stakeholders.
- Assistance in investigation and prosecution of important wildlife offences being investigated by other agencies.
- 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.
- Issue Alerts and Advisories to the stakeholders on the issues pertaining to wildlife crime enforcement, policy and legislations.
- Published two Purple Notices on illegal trade & smuggling of Agarwood and Snake venom.
- Executed Internship programmes for the students to generate awareness. Thirty-nine Interns completed their internship programme during summer internship programme, 2019 and six Interns joined for winter Internship programme.

List of publications:

S.N	Publication	Brief purpose
1.	Illegal Bird Trade in India	For distribution to the various enforcement agencies like BSF, CISF, SSB, ITBP, Customs, Airport authority, Postal authority, State Forest and Police department during workshop and training programmes organized by WCCB at various places within country.
2.	Hindi version of the Wildlife (P) Act, 1972	For distribution to the various enforcement agencies of the country.

International Awards received:

- Clark R. Bavin Award for Wildlife Law Enforcement to Shri Rameshwar Singh Thakur IPS, Deputy Director, Intelligence and Coordination, WCCB, BHQ, New Delhi, The award was presented during CoP 18 at Geneva in August, 2019.
- Letter of Appreciation dt. 12.12.2019 from INTERPOL complementing the exceptional and exemplary contribution of WCCB among 109 countries which participated in Operation Thunderball conducted in June 2019, a global operation in combating wildlife crime.

Progress/Achievements:



Detection & seizures

Special Operations conducted by WCCB:

- Operation “Soft Gold” (1st October 2018 to 31st March 2019): Wildlife Crime Control Bureau has envisaged an enforcement operation code named as “Operation Soft Gold”. The Operation is envisaged to drag the attention of the enforcement agencies within the country to focus their attention

towards the illegal wildlife trade in Tibetan Antelope (Shahtoosh) species. During the operation WCCB trained enforcement agencies which include Custom, Forest department and Paramilitary officials deployed in the border and exit points and more than 350 shawls have been detected suspected to contain the Shahtoosh wool, which were bound to be exported from India.



- **Operation “Thunderball” (4th June 2019 to 30th June 2019):** During the operation, the cases have been detected & registered involving seizures of live Lion cub, white headed Langur, Pangolins, protected Birds, Snakes, Turtle/Tortoise, spiny tailed lizards, Rabbits, Crocodile Babies, Sea fans, Corals,

Snake Venom, Rhino Bones, Elephant Ivory, Bear Biles, skins of Tiger and Leopard, Deer Antler and Horn, Red Sanders listed under the Schedules of the Wildlife (Protection) Act, 1972. Seventeen numbers of Alerts/ Actionable inputs generated by the Bureau and 66 dossiers of wildlife criminals have been prepared during the period.



Tiger Skin and its skull, canine and bones seized on 09.06.2019 from Guwahati, Assam

- **Operation “lesknow-III” (1st September 2019 to 30th September 2019):** The Bureau found overwhelming response from the State Enforcement agencies in which 28 wildlife cases related to species specified for the operation were registered in 08 States during one month period of the operation. A total of 54 Wildlife criminals have been arrested in these cases.

2.14 Central Zoo Authority (CZA)

Following functions are assigned to the Central Zoo Authority (CZA) under the Wild Life (Protection) Act:

- To specify the minimum standards for housing, upkeep and veterinary care of the animals kept in zoos;
- To evaluate and assess the functioning of the zoos with respect to the prescribed standards or norms;
- To recognize or derecognize zoos;
- To identify endangered species of wild animals for purposes of captive breeding and assigning responsibility in this regard to a zoo;
- To coordinate the acquisition, exchange



and loaning of animals for breeding purpose;

- To ensure maintenance of studbooks of endangered species of wild animals bred in captivity;
- To identify priorities and themes with regard to display of captive animals in zoos;
- To coordinate training of zoo personnel in India and outside India;
- To coordinate research in captive breeding and educational programmes for the purposes of zoos;
- To provide technical and other assistance to zoos for their proper management and development on scientific lines.
- To perform such other functions as may be necessary to carry out the purposes of this Act with regard to zoos.

Activities Undertaken:

- The CZA has prescribed following standards for the housing and upkeep of animals housed in captivity:
 - Recognition of Zoo Rules
 - Guidelines for the Scientific Management of the Zoos
- During the period, the CZA has evaluated 5 large, medium, small and mini zoos and Rescue Centre.
- The CZA granted recognition to 11 zoos/ deer parks/rescue centre.
- The recognition of the one zoo has been cancelled.
- At present there are 145 recognized Zoos

in the country.

- The CZA 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 out of total 73 identified species and already launched the programme for 23 animal species.
- Target is to have at least 100 properly bred and genetically, physically and behaviorally healthy individuals of each targeted species in captivity in India for proper display and as an insurance for future exigencies & ultimately to release back in wild.
- The CZA has approved 95 exchange proposals of animals between Indian Zoos and 9 exchange proposals between Indian and Foreign Zoos.
- The Central Zoo Authority in collaboration with Wildlife Institute of India (WII), Dehradun has updated the studbooks of the 34 endangered species. All the Studbooks have been uploaded on the website of the Central Zoo Authority for the use by stakeholders freely.
- 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.
- During the period, CZA has approved

Master (Layout) Plans of the 31 Zoos and Master Plan of 3 zoos. Further, the CZA has also approved establishment of new 5 new zoos.

- The CZA had conducted 7 training programmes during the period for human resource development in the zoos.
- During the period CZA has provided the financial assistance for the following research project:-
 - “Morphometric Analysis of Pugmarks and Faeces of Captive Inmates – A Field Reference Manual”.
 - Awareness on Snake bite and anti – venom treatment in grater Chennai area.
 - “Environment Enrichment in Animal Enclosures” and “Questionnaire Survey regards Bio-diversity Awareness among Zoo Visitors”
 - No-invasive pregnancy diagnosis in captive wild felids at IVRI
- The CZA has convened its 33rd Meeting on 12th February, 2019, 34th Meeting on 8th March, 2019 and 35th Meeting on 29th August, 2019 wherein the minutes of the Technical Committee of CZA were endorsed and annual accounts for the year 2018-2019 and annual report for the year 2018-2019 were approved.
- The CZA had convened meeting of the Technical Committee on 1st February, 2019 (87th Meeting), 12th February, 2019 (88th Meeting), 7th March, 2019 (89th

Meeting), 6th June, 2019 (90th Meeting), 3rd September, 2019 (91st Meeting), 18th October, 2019 (92nd Meeting) and 28th October, 2019 (93rd Meeting) to discuss the proposal on improvement in zoos, conservation breeding programme, research and trainings, besides approval of master plan.

- The Expert Group on zoo designing convened its meeting on 29th January, 2019 (81st Meeting), 11th February, 2019 (82nd Meeting), 6th March, 2019 (83rd Meeting), 7th May, 2019 (84th Meeting), 28th May, 2019 (85th Meeting), 23rd July, 2019 (86th Meeting), 28th August, 2019 (87th Meeting), 24th September, 2019 (88th Meeting), 25th October, 2019 (89th Meeting) and 26th November, 2019 (90th Meeting), to approve the design of the enclosures to be constructed in zoos and to recommend the approval of master lay out plan of the zoos.
- The 23rd Meeting of Administrative Committee of the Central Zoo Authority was held on 26th June, 2019 at Indira Paryavaran Bhawan, Jor Bagh, New Delhi, under the chairmanship of DGF&SS, Ministry of Environment, Forest and Climate Change, Government of India wherein various administrative issues were deliberated and finalized.

2.15 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, Andaman & Nicobar, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Nagaland, Odisha, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal, (where an elephant rescue centre has been set up supported by Project Elephant). There are 30 notified and one proposed Elephant Reserve in the country (Khasi Hills Elephant Reserve in Meghalaya).

Objectives:-

- To conserve and protect viable population of wild elephants in their natural habitats in the country;
- To conserve and protect and, where necessary, to restore natural habitats and traditional corridors/migratory routes or movement paths used by the elephants – through eco-restoration, acquisition etc;
- To take concrete measures to protect the elephants from poaching and other threats by taking suitable measures like deployment of patrolling squads, intelligence gathering etc;
- To create a viable mechanism to ensure inter-state and regional and national level coordination in protecting and conserving the elephant and its ranges;
- To create infrastructure and other facilities for conservation support activities like veterinary care, management training, humane methods of capture, tranquilizing and translocation etc of wild elephants, as and when required;
- To improve and create infrastructure for the welfare of elephants in domestic use, including their veterinary care, training of mahouts and supervisory staff in proper treatment of elephants in captivity;
- To encourage and create facilities for research related to the management and ecology of elephant, and also with respect to its veterinary care;
- To take appropriate steps to mitigate man-elephant conflict through suitable measures, such as eco-development, public education and awareness programmes, scientific management, ex-gratia payments, deployment of anti-depredation teams etc.
- To take measures for detection and prevention of diseases in wild elephants.



Activities undertaken:

- The 3rd meeting of the Drafting Committee for preparation of Strategic Action Plan for East-Central Indian Region for Conservation of Elephant with special emphasis on Human-Elephant Conflict was held on 27th June, 2019 at MoEF&CC, New Delhi.
- The field visit and second meeting of Central Project Elephant Monitoring Committee (CPEMC) was held at Ambikapur, Chhattisgarh on 29th and 30th June, 2019, under the chairmanship of ADG (WL), Ministry of Environment, Forest & Climate Change (MoEF&CC) to evaluate the conflict situation in Surguja and Surajpur Divisions of Chhattisgarh.
- Third regional workshop on right of passages to elephants to mitigate the human- elephant Conflict was conducted from 1st to 2nd July 2019 at Raipur, Chhattisgarh.
- A meeting on discussing the Human Elephant Conflict issues in Kodagu, Hassan and Chickmagalur district of Karnataka was held on 19th July, 2019, under the chairmanship of Additional Director General of Forests (WL) in Krishna Hall, 4th Floor, Jal Wing, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi.
- **World Elephant Day, 2019:** The World Elephant Day is an International conservation event celebrated on 12th August every year, dedicated to spread the message of the conservation and protection of the world's elephants and its habitats. This year's World Elephant Day was celebrated by the Ministry of Environment, Forest & Climate Change, on 12th August 2019, Monday at Wildlife Institute of India (WII), Dehradun. Dr. Harak Sing Rawat, Hon'ble Minister, Forest & Wildlife, Uttarakhand, were the chief guest of the celebrations. A large number of local people, children officers & staff and members of scientific community have attended the World Elephant Day celebration 2019. MoEF&CC and all State Forest Departments have been celebrating this annual event for the cause of elephant conservation in the Country.
- A meeting to discuss issues relating to death of elephant due to electrocution and finding urgent solution to the issues was held with the Chief Wildlife Wardens of the major elephant range states and Ministry of Power on 5th August, 2019 at Indira Paryavaran Bhawan, New Delhi. Hon'ble MoS, EF&CC also attended the meeting.
- Second meeting to further discuss the development of Decision Support System (DSS) Software for Human Elephant Conflict



was held on 14th August, 2019 under the chairmanship of Director General of Forests & Special Secretary at Indira Paryavaran Bhawan, New Delhi.

- A meeting regarding the illegal trading of captive elephants in the country was held on 9th October, 2019 at Indira Paryavaran Bhawan, New Delhi.
- Ministry and the Elephant Cell of Wildlife Institute of India in association with Kerala Forest Department organized a workshop on “Use of Chemical Immobilization as a means to mitigate Human-Elephant Conflict” on 1st and 2nd November, 2019 at Kochi, Kerala.

Progress/Achievements

- An Elephant cell for supporting the activities of Project Elephant Division has been established at the Wildlife Institute of India.
- Standard Operating Procedure (SOP) for Dealing with Captive and Wild Elephant Deaths Due to Anthrax/Suspected Cases of Anthrax has been prepared.
- Strategic Action Plan for East-Central Indian Region for Conservation of Elephant with special emphasis on Human-Elephant Conflicts has been finalized.
- Standard Operating Procedure (SOP) for dealing with human elephant conflicts.
- Cabinet approval for Protocol on Transboundary Elephant Conservation between India and Bangladesh has been obtained.

MEAs, Agreements with countries, international organization, compliance:

The Cabinet approved the Protocol on Transboundary Elephant Conservation between India and Bangladesh.

2.16 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 Fifty Tiger Reserves since its formative years, the Project Tiger coverage has now 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 are mix of forest and non-forest lands and even part of protected areas (National Park or Wildlife Sanctuary) are managed as a multiple use areas. 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 Habitats 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 also 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 and actively fulfilling its mandate within the ambit of the Wildlife (Protection) Act, 1972 for strengthening tiger conservation in the country by retaining an oversight through Standard Operating Procedures/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 areas in the 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.

India conducts the all India Tiger Estimation (which is the world's largest wildlife estimation exercise) every four years to keep a pulse on its tiger population. As per the 4th cycle results conducted at country wide level, the tiger estimate is 2967 (2603-3346) vis-a-vis the estimate of 1411(1165-1657) as per the 1st country wide assessment carried out in 2006. India has achieved the target set by the St Petersburg declaration on tiger conservation (to double the number of wild tigers (T X 2)

across their global range by 2022) well ahead of the stipulated period in 2019 itself which is evident from the results of the Fourth All India Tiger Estimation, 2018-19 released by Hon'ble Prime Minister of India on the occasion of Global Tiger Day, 2019 i.e. on 29th July, 2019.

Under the Centrally Sponsored Scheme of Project Tiger, NTCA, MoEF&CC has provided funds to the tiger reserves of Tiger Range States to the tune of average 323.1728 crores annually for strengthening anti-poaching activities, strengthening Protection framework, STPF deployment, wildlife monitoring, creating inviolate areas in the core/critical tiger habitats of tiger reserves that are important for tiger breeding etc.

Using an internationally applied Management Effectiveness Evaluation (MEE) Framework, the National Tiger Conservation Authority (NTCA) with technical backstopping from Wildlife Institute of India (WII) have adapted and developed 32 headline indicators and a transparent reporting process to support tiger reserve management. Releasing the 4th cycle of MEE report on all 50 tiger reserves in the country, the Hon'ble Prime Minister of India complimented the National Tiger Conservation Authority, Wildlife Institute of India and the Managers and Frontline Staff for institutionalizing the MEE process in India. India now proudly stands amongst the select group of nations that have successfully demonstrated the significance of adopting an outcome-based approach for tiger conservation.



Fourth All India Tiger Estimation, 2018-19 released by Hon'ble Prime Minister of India on the occasion of Global Tiger Day, 2019 i.e. on 29th July, 2019.

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

The Wetlands Division of MoEF&CC looks after policies relating to the conservation and wise use of wetlands. The Ministry is currently implementing a centrally sponsored scheme namely, National Plan for Conservation of Aquatic Eco-systems (NPCA) for conservation and management of 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, bio fencing, fisheries development, weed control, biodiversity conservation, education and awareness creation, community participation, etc.

Activities Undertaken:

- For raising awareness amongst all the stakeholders and keeping them abreast of the new developments, five regional workshops on Conservation and Management of Wetlands were held

for Wetlands Managers & Stakeholders between 01.01.19 & 15.11.19

- World Wetlands Day (WWD) is celebrated each year on 2nd February in collaboration with the 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 February, 2019.
- The second meeting of National Wetlands Committee constituted under the Wetlands (Management and Conservation) Rules, 2017 was convened on 5-11-2019 under the Chairmanship of Secretary (EF&CC). The issues discussed in the meeting related to (1) Action Taken Report (ATRs) taken during the first meeting of NWC (ii) Status of 100 days Action Plan for the conservation of 130 wetlands (iv) Appraising the committee regarding designation of Ramsar Sites already declared and proposed Ramsar Sites (v) status on implementation of wetland rules, 2017
- A 100 days Action Plan was initiated for the Restoration & Rejuvenation of 100 Wetlands across the country. The four pronged strategy prepared and executed centred around preparation of brief documents for the identified wetlands, creating a citizen network of wetland mitras, institution of monitoring mechanism in the form of a wetland health card and finally preparation of management plan for the wetland.
- 100 major wetlands and Knowledge partners were identified. A meeting of the State Wetland Authorities chaired by the Secretary was called for on 26th August, 2019 where the formats for preparation of Brief Documents, 'Wetland Health Cards', Integrated Management Plans and concept paper on Wetland Mitras was shared with the nodal officers.
- Brief documents and Wetland Health Cards have been made for all the 100 identified wetlands. The work of enlisting Wetland Mitras is in progress and report in the format provided is being collated.
- 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

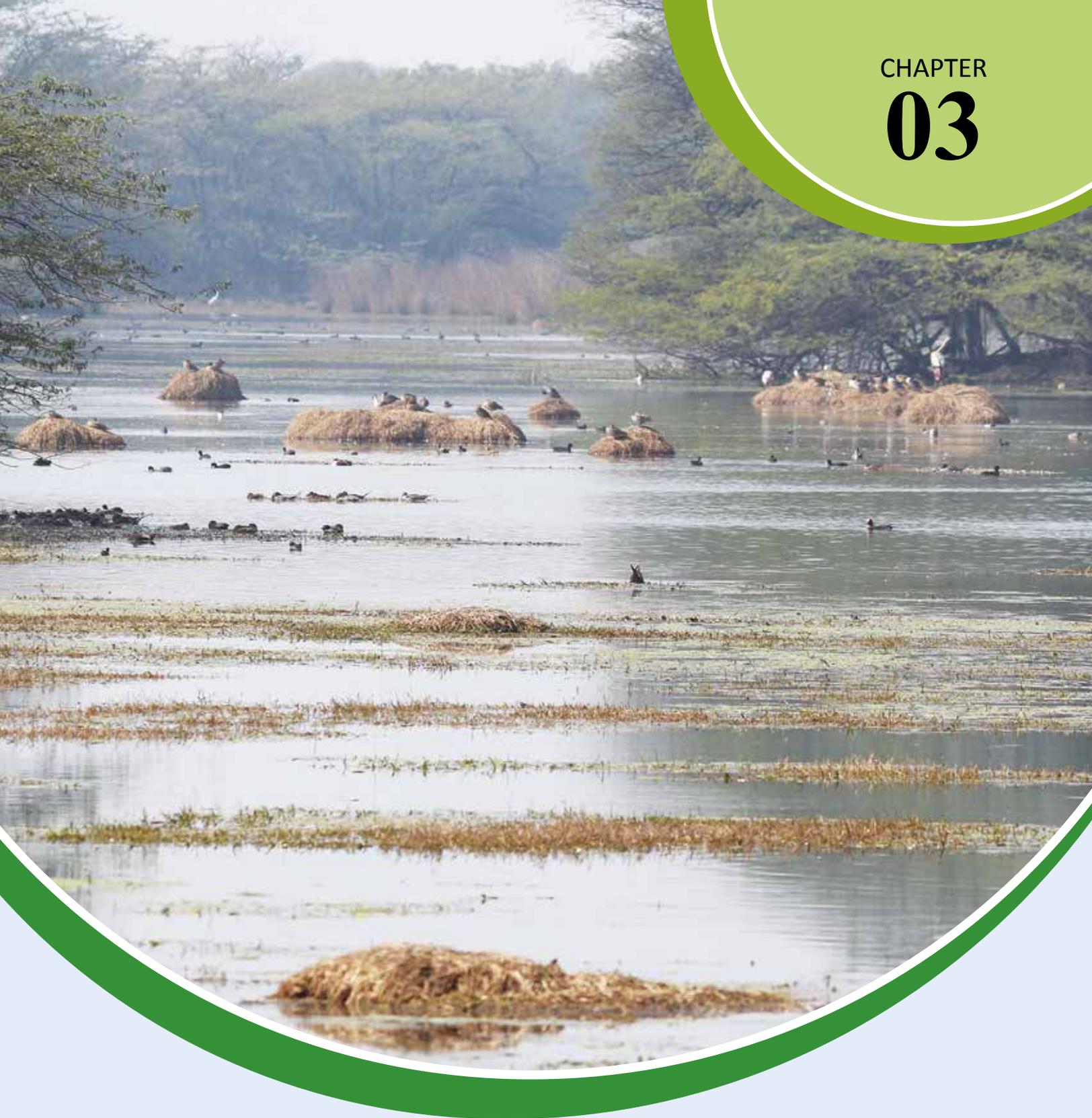


every three years to assess progress in implementing the Convention and wetland conservation, share knowledge and experience on technical issues and plan for the next triennium.

- Sundarban wetland in West Bengal has been designated on 30.01.2019 as the 27th Ramsar Site of India under the Ramsar Convention of Wetlands.
- A one day Brainstorming workshop for developing a National Policy Framework

for wetland conservation and wise-use was organized by the Ministry of Environment, Forest and Climate Change (MoEF&CC) on 28.01.2019 in Indira Paryavaran Bhawan 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.



Environmental Impact Assessment



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 37 categories of projects/ processes, listed therein. The criterion of investment was the basis for the projects requiring environmental clearance in different sectors. Ministry has issued the Coastal Regulation Zone (CRZ) Notification, 2011 in supersession of CRZ Notification, 1991 after a series of consultations with the various stakeholders including the fishermen community. The objective of the 2011 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 and CRZ Notification, 2011 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 EC 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.

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 322 projects (between April 2019 to December, 2019). The sector-wise list of environmental clearances issued to projects by the Ministry is given in the Fig.1.

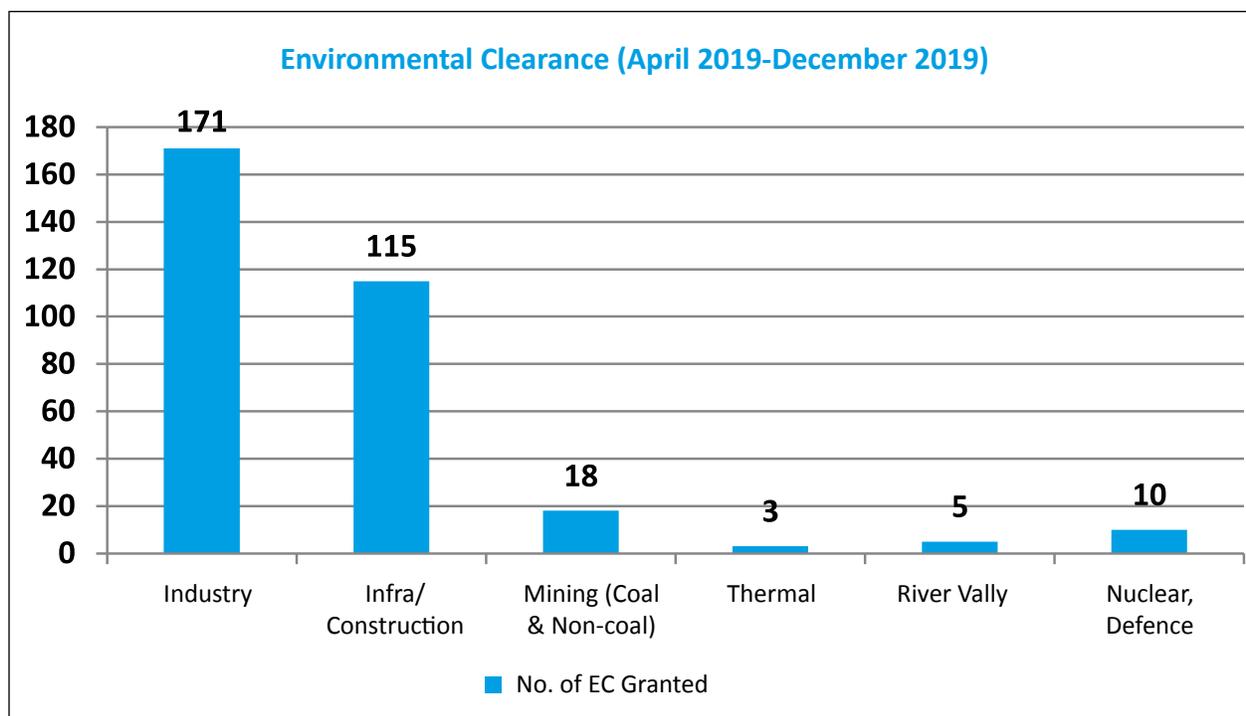


Fig.1-Environmental Clearance (April 2019 - December 2019) Total- 322

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. Six SEIAA/SEAC and Four EACs have been constituted in 2019-20.

Implementation of Single-Window Integrated Environmental Management System: In pursuant to the spirit of 'Digital India' initiation 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 Single window Hub) has been developed by the Ministry of Environment, Forest and Climate Change through NIC. The PARIVESH was launched on 10th August 2018.

The PARIVESH has automated entire process starting from submitting of application, preparation of agenda, preparation of Minutes as well as grant of clearances. It will facilitate sound and informed decision making, real time information about the status of application with alerts at each of the stages through SMSs and emails, standardization of processing and decision making across the States as well as real time monitoring and compliances. There will be single registration and single signing for



all types of clearances (Environment, Forest, Wildlife, CRZ). It will facilitate sustainable development of the country while keeping the environmental concerns unimpaired.

Post Project Monitoring of Environment Clearance Conditions: Clearances under EIA Notification, 2006 are granted by MoEF&CC 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 are also granted by MoEF&CC or the respective SEIAAs as the case may be 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 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 a 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 01.01.2018, there are 180 accredited EIA Consultant Organizations.

Progress/Achievements:

- Notification S.O. 1960(E), dated the 13th June, 2019 wherein item 5(g) and 6 (b) of the EIA Notification were amended.
- Notification S.O. 345(E) dated the 17th January, 2019 wherein special dispensation was provided for expediting production of Ethanol for its limited purpose of blending with petrol exclusively.
- Notification S.O. 4307(E) dated the 29th November, 2019 wherein provision for granting Environmental clearance expeditiously for the mining lease will have ended and freshly re-allocated to the successful bidder as per the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 was provided.

3.2 Coastal Regulation Zone (CRZ)

With the prime objective of ensuring 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 CRZ Notification was issued vide S.O. 114(E), dated 19.02.1991. This notification was superseded by the CRZ Notification, 2011 and issued vide S.O. 19(E), dated 06.01.2011. The said 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 from the coastal state governments, union territory administrations and other stakeholders, and a need was felt overtime to undertake a comprehensive revision of the notification. The Ministry of Environment, Forest and Climate Change had accordingly constituted a Committee in June 2014 under the Chairmanship of Dr. Shailesh Nayak (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 in 2015. The recommendations were further examined in consultation with Members of Parliament of Coastal States and Union Territories besides other concerned Ministries of Government of India and a draft notification viz. CRZ Notification, 2018 in supersession of CRZ Notification, 2011 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 Union Cabinet has approved the new Coastal Regulation Zone Notification on 31.12.2018 and finally issued vide G.S.R 37(E), dated 18.01.2019. This new



CRZ Notification is expected to go a long way in meeting the aspirations of coastal communities besides ensuring welfare of poor and vulnerable populations. The changes brought about in the new 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 new CRZ 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.

The new CRZ Notification, 2019 issued vide G.S.R 37(E), dated 18.01.2019, will however become effected after the Coastal Zone Management Plans (CZMPs) of the respective coastal states are aligned and updated based on the provisions of the new notification. To this effect the Ministry of Environment, Forest and Climate Change have issued a 'Guidelines for updation of Coastal Zone Management Plan prepared as per CRZ Notification, 2011 to align it with CRZ Notification, 2019' to all coastal states for immediate action.

Island Regulations: The islands located along the mainland (offshore and inshore within tidally influenced water bodies) are covered under the Coastal Zone Regulation (CRZ)

regulations, whereas Andaman and Nicobar and Lakshadweep group of islands are covered under the Island Protection Zone (IPZ) Notification, 2011, issued on 6th January 2011 under the Environment (Protection) Act, 1986. Akin to CRZ Notification, the Island Coastal Regulation Zone (ICRZ) Notification, 2019 was issued in supersession of IPZ Notification, 2011 vide S.O.1242 (E), dated 08.03.2019. This new notification will however become effective only after the ICRZ/IIMPs of the islands are revised and updated as per the provision of the new notification.

3.3 Society of Integrated Coastal Management (SICOM)

Society of Integrated Coastal Management (SICOM) has been established under the aegis of the Ministry of Environment, Forests and Climate Change, Government of India with a vision for vibrant, healthy and resilient coastal and marine environment for sustainable development and use of coastal and marine resources for sustainable outflow of benefits to the country and the coastal communities.

Objectives and functions:

- To support implementation of the Integrated Coastal Zone Management (ICZM) activities in India.
- To promote Research & Development (R&D) and stakeholder participation in management of the coastal and marine areas in India.

- Strategic planning, implementation and monitoring of the ICZMP Project and proposed ENCORE Project.
- To coordinate with all partner States/UTs to implement activities of ICZM Project.
- In implementation of activities identified under national component of the ICZM Project.
- Implementation of Beach Environment & Aesthetic Management Services [BEAMS] in all 13 coastal States/UTs to conserve and protect the marine and coastal environment by installing infrastructures such as solid waste management system, grey water treatment plant, bio toilets, changing room and showers, security and surveillance systems and daily beach cleaning activity to achieve the Blue Flag Certification for the identified beaches.

Integrated Coastal Zone Management Project:

Ministry of Environment, Forests & Climate Change initiated Integrated Coastal Zone Management (ICZM) Project in India to protect and conserve the coastal and marine ecosystems and its environment through a holistic coastal management and to implement the National Environment Policy 2006, recommendations of “Final Frontier 2009”, Public Accounts Committee (2009–2010) [PAC], and CRZ Notification, 2011 and IPZ Notification, 2011 regulatory framework with public participation. The World Bank extended financial assistance to the “Integrated Coastal

Zone Management Project” (ICZM Project) which was implemented in three coastal States namely Gujarat, Odisha and West Bengal from the year 2010.

ICZM Project has first time piloted ICZM approaches in India and has given satisfactory results. The Project has also established strong institutional mechanism including establishment of Society of Integrated Coastal Management (SICOM), New Delhi and National Centre for Sustainable Coastal Management (NCSCM)-Chennai.

Based on the success of ICZM Project, SICOM has initiated preparatory work for Enhancing Coastal & Ocean Resource Efficiency [ENCORE] Project for all coastal States/UTs of the Country. The Department of Economic Affairs, Ministry of Finance has given in-principle approval for the ENCORE Project. The activities under the ENCORE Project have been grouped under four main thematic components including: (a) Conservation and protection of coastal and marine resources and disaster management (b) Pollution abatement through developing infrastructure for protection of coastal and marine ecosystems (c) Livelihood enhancement/security of coastal communities and (d) Environment education, research and capacity building for implementation of the ICZM approach.

Progress/Achievements:

- The Preliminary Project Reports (PPR) have been submitted by the States of Gujarat,



- Goa, Karnataka, Kerala, Tamil Nadu, Puducherry, Andhra Pradesh, Odisha, West Bengal, Lakshadweep and Daman & Diu have been finalized.
- Environmental & Social Management Framework has been prepared and made available for public consultation. Final document has been submitted to the World Bank.
 - EFC memo has been prepared for ENCORE Project Phase-I and circulated to concerned Ministries for seeking views/comments.
 - Three Data Centres in Delhi, Chennai and Bengaluru have been established to store the high volume of important data generated through ICZM Project.
 - Under BEAMS Programme, SICOM has completed all infrastructure and services in two beaches i.e., Shivrajpur (Gujarat) and Ghogla (Diu).
 - Works/services contracts have been awarded and activities are under progress at eight beaches i.e., Padubidri and Kasarkod (Karnataka), Kozhikode (Kerala) Rushikonda (Andhra Pradesh), Golden Beach (Odisha), Eden Beach (Puducherry), Radhanagar Beach (Andaman & Nicobar Island) and Kovalam Beach (Tamil Nadu).
 - SICOM has initiated necessary preparatory work for identification of 20 beaches for eco friendly development under BEAMS programme.
 - Environmental education and awareness activities were organized on World Environment Day at identified beaches.
 - International Conference on Integrated Coastal Zone Management-Lessons Learnt and Relevance for India for proliferation to all Coastal States/UTs for organized at National Centre for Sustainable Coastal Management, Chennai from 9th July to 11th July 2019.
 - A week long intensive beach cleaning-cum-awareness drive named 'Swachh-Nirmal Tat Abhiyan' was organize from 11th to 17th November 2019 at 50 beaches in 10 coastal States, namely Gujarat, Daman & Diu, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Puducherry, Andhra Pradesh, and Odisha. Mechanized beach cleaning was also undertaken at 18 beach sites resulting in greater cleanliness.
 - To strengthen the capacity of the States/ UTs along with all the stakeholders, SICOM organized a two day technical workshop on 7th to 8th November 2019 in Dwarka on "Blue Flag Certification of the identified beaches of India".
- Under Integrated Coastal Zone Management Project initiated in 2010, the achievements have been as below:
- National level:**
- Delineation of hazard line for mainland of the entire coast has completed through

aerial photography and photogrammetric process (78000 sq km).

- Sediment cell mapping of entire coast has completed.
- ESA mapping of entire coast has been prepared.
- Shoreline change map of entire coast has been prepared.

State level:

Gujarat State - Project area: Gulf of Kachchh:

- 70 MLD STP commissioned at Jamnagar.
- 15670 ha mangroves plantation.
- 1900 ha shelterbelt plantation.
- 1200 sq mtrs coral transplantation.
- Capacity building of Gujarat Pollution control Board and GEER foundation by installing scientific instruments and upgradation of laboratory.
- Establishment of sea turtle hatchery.
- Livelihood activities involving formation of CBOs, SHGs, EDCs. 42627 families got benefited from the entry point activities carried out during the project.
- ICZM Plan for the project area has been prepared.

Odisha State- Project area: Dhamra to Paradip and Gopalpur to Chilika:

- Construction of 14 numbers of

multipurpose cyclone shelters in cyclone prone areas.

- Putting up of geo tubes (about 500 mt) embankment for erosion protection at Penthavillage.
- Eco tourism activities as sustainable livelihood options for fishermen community.
- Capacity building of Odisha State Pollution Control Board and Chilika Development Authority.
- Livelihood improvement activities through Self Help Groups (SHG) model covering 600 SHGs.
- Conservation and improvement of heritage structures.
- ICZM Plan for the project area has been prepared.

West Bengal State- Project area: Digha to Shankarpur and Sagar Island:

- 100% electrification work in Sagar Island completed. 30800 APL and 250 BPL service connections provided.
- 95 ha of mangroves plantation.
- Construction of 24 multipurpose cyclone shelters.
- 20 km storm water drainage at Digha.
- 6.7 MLD STP and sewerage networking at Digha.



- Beach beautification and rehabilitation of approx 1300 hawkers at Digha.
- Construction of watch tower and open air theatre at Digha beach.
- Livelihood activities through Self Help Groups and CBOs. Over 41000 individuals benefitted directly of which nearly 29000 are women.
- ICZM Plan for the project area in progress.



Abatement of Pollution



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

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.

A **Comprehensive Air Plan (CAP)** for Delhi NCR has been developed identifying the timelines and implementing agencies for actions delineated. The Central Government has notified a Graded Response Action Plan

(GRAP) for Delhi and NCR for different levels of pollution. 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.

For management of air pollution in Delhi and NCR, source-based approach has been adopted by the government to control air pollution which gets aggravated during winter months. Major sources contributing to air pollution are industrial emissions, vehicular emissions, road and soil dust, construction and demolition activities, biomass and garbage burning etc.

As per Continuous Ambient Air Quality Monitoring Stations (CAAQMS) data, there is general improvement in air quality of Delhi in 2019 from 2018 & 2017. The number of 'Good', 'Satisfactory', and 'Moderate' days has increased to 182 in 2019 as compared to 159 in 2018 and 152 in 2017 and 108 in 2016, and the number of 'Poor', 'Very Poor' and 'Severe' days has reduced to 183 in 2019 as compared to 206 in 2018 and 213 in 2017 and 246 in 2016. In Delhi, reduction in PM_{2.5} levels in 2019 is 5.2% over 2018, 12.1% over 2017 and 19.3% over 2016. In Delhi, reduction in PM₁₀ levels in 2019 is 10.3% over 2018, 18% over 2017 and 25.1% over 2016.

It can be seen that there is overall improvement in air quality of Delhi in 2019, successively, since 2016.

Ministry of Environment, Forest and Climate Change has launched National Clean Air

Programme (NCAP) in January 2019 to tackle the problem of air pollution in a comprehensive manner with targets to achieve 20 to 30 % reduction in PM_{10} and $PM_{2.5}$ concentrations by 2024 keeping 2017 as base year. The plan includes 102 non-attainment cities, across 23 States and Union Territories, on the basis of their ambient air quality data between 2011 and 2015. Non-attainment cities are those which have been consistently showing poorer air quality ($PM_{10} > 60 \mu\text{g}/\text{m}^3$) than the National Ambient Air Quality Standards. 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.

Various committees have been constituted at Centre viz. Steering Committee headed by Secretary, MoEF&CC, a Monitoring committee headed by Joint Secretary (CP, MoEF&CC) and Implementation Committee under Member

Secretary (CPCB). The States have been further directed to constitute these committees at State level.

To help the States/UTs implement the action plans, this Ministry is collaborating under NCAP with SPCBs and leading academic institutions in States for which MoUs have been signed. The Ministry has designated IIT Kanpur as the nodal academic institution to coordinate with all other IITs/other leading Universities and with States and to ensure collaboration between these institutions/technical partners & their respective SPCBs for effective implementation of NCAP.

Ministry has allocated Rs.10.00 crores for 28 cities with million plus population and $PM_{10} > 90 \mu\text{g}/\text{m}^3$ in the current year for following components: Public awareness and capacity building activities, Source apportionment study, Mechanical street sweepers, Water sprinklers, Mobile Enforcement Units, Tree plantation, greening activities & development of city forest in open areas, premises, parks & road side lands along with establishment of nurseries & plant raising, Construction & Demolition Waste Management Facility. For the remaining non-attainment cities, funding of Rs.10.00 lakh per city for cities with population less than 5 lakh and Rs. 20.00 lakh per city with a population of 5 to 10 lakh have been allocated. This amount will be used for public awareness, capacity building and installation of manual monitoring stations. Ministry has sanctioned the first installment of Rs.172.86 crore which has been released to respective State Pollution Control Boards (CPCBs) for these activities.



Table-4.1

List of 28 cities with million plus population and $PM_{10} > 90 \mu g/m^3$

S. No.	State	Cities
1	Andhra Pradesh	Vijayawada
2	Bihar	Patna
3	Chandigarh	Chandigarh
4	Chhattisgarh	Raipur, Bilai
5	Gujarat	Surat, Ahmedabad
6	Jharkhand	Dhanbad
7	Karnataka	Bangalore
8	Madhya Pradesh	Bhopal, Gwalior
9	Maharashtra	Mumbai, Navi Mumbai, Nagpur, Pune
10	Punjab	Ludhiana, Patiala
11	Rajasthan	Jaipur, Jodhpur, Kota
12	Telangana	Hyderabad
13	Uttar Pradesh	Kanpur, Lucknow, Agra, Varanasi, Allahabad
14	West Bengal	Kolkata
15	Odisha	Bhubaneswar and Cuttack

A number of initiatives have been taken for the abatement and control of air pollution which are as follows:-

Vehicular Emissions:

- BS-IV standards adopted from 1st April, 2017. Leapfrogging from BS-IV to BS-VI fuel standards since 1st April, 2018 in NCT of Delhi, in NCR since October 2019 and from by 1st April, 2020 in the rest of the country for both fuel as well as vehicles.
- 80% reduction in particulate matter emissions in BS IV heavy duty diesel vehicles with respect to BS III and further 50% reduction in PM due to BS VI standards with respect to BS IV.
- Operationalisation of Eastern Peripheral Expressway & Western Peripheral Expressway in 2018 to divert non-destined traffic from Delhi.
- Introduction of cleaner / alternate fuels like gaseous fuel (CNG, LPG etc.), ethanol blending in petrol.
- In Delhi, about 500 new CNG stations have been opened during the last 5 years.
- Use of RFID tags have been made mandatory for commercial vehicles entering Delhi. This has resulted in decrease in traffic congestion at Toll collection/Environmental Compensation Charge collection centres.
- Network of metro has expanded in Delhi NCR with total length of 377 km and 274 stations.
- To promote electric vehicles, Faster Adoption and Manufacturing of Electric Vehicles (FAME) -2 scheme has been rolled out with an outlay of Rs 10000 crore for 3 years. DHI has sanctioned 300 buses for Delhi and 100 buses for DMRC under this scheme so far.
- Permit requirement for electric vehicles has been exempted.
- Promotion of public transport and improvements in roads and building of more bridges to ease congestion on roads.

Industrial Emissions:

- Stringent emission norms for Coal based Thermal Power Plants (TPPs).
- Badarpur thermal power plant has been closed from 15th October, 2018.
- Pet coke and furnace oil have been banned as fuel in Delhi and NCR States. Import of pet coke to be done by industries using it as a feedstock/in process across the country.
- Out of about 4700 industrial units in Delhi – NCR, about 2600 units have shifted to PNG.
- Installation of on-line continuous (24x7) monitoring devices in all red category industries in Delhi and NCR. 503 industrial units in Delhi- NCR have installed it out of about 599 units.
- Revision of emission standards for industrial sectors from time to time. SO_x and NO_x standards for boilers have been introduced.
- About 2800 brick kilns have been shifted to zig-zag technology in Delhi and NCR. Only brick kilns with zig zag technology can operate in Delhi and NCR.

Crop Residue Management:

- In order to prevent stubble burning, a new Central Sector Scheme on 'Promotion of Agricultural Mechanization for In-Situ Management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi' for the period from 2018-19 to 2019-20 is being implemented by Ministry of Agriculture and Farmers' Welfare with

the total outgo from the Central funds of Rs.1151.80 crore (Rs.591.65 crore in 2018-19 and Rs.560.15 crore in 2019-20).

- Under this Scheme, the agricultural machines and equipments for in-situ crop residue management such as Super Straw Management System (SMS) for Combine Harvesters, Happy Seeders, Hydraulically Reversible MB Plough, Paddy Straw Chopper, Mulcher, Rotary Slasher, Zero Till Seed Drill and Rotavators are promoted with 50% subsidy to the individual farmers and 80% subsidy for establishment of Custom Hiring Centres of these machines.
- The State Governments during 2018-19 have supplied more than 56290 machines to the individual farmers and Custom Hiring Centres on subsidy for in-situ management of crop residue. During 2019-20, it has been targeted to supply more than 46578 machines.
- With the efforts of the Government, overall, about 15% and 41% reduction in burning events were observed in 2018 as compared to that in 2017 and 2016, respectively. During 2019-20 season, the total burning events recorded in the three States are 19.2% less than in 2018 till 18th November. UP has recorded 36.8% reduction, Haryana recorded 25.1% reduction, and Punjab recorded 16.8% reduction, respectively, in the current season than in 2018.

Solid Waste:

- Notifications of 6 waste management rules covering solid waste, plastic waste,



e-waste, bio-medical waste, C&D waste and hazardous wastes issued in 2016.

- Ban on burning of biomass/garbage.
- Three Waste-to-Energy (W-t-E) plants are currently operational in Delhi with a total capacity of 5100 Tonnes Per Day (TPD) generating 52 MW.
- A 200 TPD waste to compost plant is also operational in Delhi.
- Bioremediation and biomining of landfill sites have also been undertaken in Delhi.
- Number of mechanized road sweeping machines has been increased significantly and presently 60 machines are deployed for cleaning of roads in Delhi.

Construction and Demolition Activities:

- SoPs and notification regarding dust mitigation measures for construction and demolition activities have been issued.
- Three C&D waste processing plants with 2650 TPD capacity are operational in Delhi. About two lakh ton of end products have been used this year till August.

Monitoring:

- Notification of National Ambient Air Quality Standards in 2009 and launch of National Air Quality Index in 2015.
- Ambient air quality is monitored at 793 locations covering 344 cities in 28 States & 7 Union Territories (UTs) across the country under National Air Quality Monitoring Programme (NAMP). Under NAMP, PM_{2.5} is monitored at 274 locations covering 132

cities.

- Implementation of Air Quality Early Warning System for Delhi in October, 2018 in association with Ministry of Earth Sciences (MoES). The system provides timely alerts to implementing agencies for facilitating proactive actions.

Technical Interventions:

- Pilot projects were deployed in Delhi for evaluation of air pollution mitigation technologies:
- Ambient air purification through Wind Augmentation and Purification Units (WAYUs) for pollution abatement at traffic intersections and Pariyayatra filtration units on 30 buses was evaluated. Though minimal improvement in ambient air quality was observed, however, WAYU may be explored for providing improved air quality at localised levels.
- Application of dust suppressant -The effectiveness of the dust suppressant lasted up to 6 hours after which it had to be reapplied. About 30% reduction in dust concentrations was observed up to 6 hours. Advisory has been issued to State Boards to use dust suppressant.
- Research projects are being carried out by CPCB in collaboration with premier institutions like IIT, NEERI, etc. under Environment Protection Charge (EPC) funds.
- Lack of certification system of ambient air quality monitoring instruments in India was identified. A certification scheme has been

established in collaboration with National Physical Laboratory (NPL).

- Regular engagements with technical bodies and experts have been undertaken for knowledge sharing.

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 Pariyayantara 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.

Thematic Workshops: Organized thematic session on air pollution on 6th June, 2019 as part of the National events on the ‘World Environment Day’. This year’s scheme was ‘Air Pollution’.

Handling of public complaints regarding air polluting activities - Public complaints regarding prominent air pollution incidents in Delhi NCR can be reported through ‘Sameer App’, ‘E-mails’(aircomplaints.cpcb@gov.in) and ‘Social Media Network’ (Facebook and Twitter). Every complaint lodged is immediately forwarded to the concerned agency for redressal.

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, 2019, including deployment of 52 CPCB teams for field feedback on pollution activities in Delhi/NCR. Waste dumping/burning, traffic congestion, construction activity, open storage of construction material, unpaved road, open dumping of C&D waste and road dust re-suspension were identified as major concerns.

Noise Pollution/Pollution Abatement Scheme:

Activities undertaken:

- Enforcement of the provisions of the Noise Pollution (Regulation and Control) Rules, 2000;
- Implementation of green fire-crackers proposed by CSIR-NEERI in a Supreme Court matter.
- Assistance under ‘Abatement of Pollution’, Common Effluent Treatment scheme (CETP) and ‘Control of Pollution’ schemes.

Progress/Achievement:

- CPCB has been requested to initiate process for framing source standards for loudspeakers, public address systems in view of the amendments in Noise Pollution (Regulation and Control) Rules, 2000 (Noise Rules) suggested by Bihar Government.
- Ministry has devised following steps for implementation of use of green fire-crackers.
- All manufactures having license from Nagpur, Regional and DM licenses should seek the green composition details from CSIR NEERI (which is coordinating lab and also part of the development of green



crackers research and technologies) and sign NDA. These manufacturers will be provided hands on training for better understanding of new and improved formulations and familiarization with standard operating procedures for making green crackers and showcasing the working etc.

- The above manufactured composition shall be tested for emissions at CSIR NEERI and the emission certificate will be used by PESO to give approval for manufacturing.
- At manufacturers facilities PESO shall sample the raw material and sealed samples shall be sent to test facility with NABL labs standards created by CSIR NEERI at Sivakasi and Nagpur. Additional facility shall also be created in north India for manufacturers in North region. All samples collected shall be mandatorily tested for all manufacturers.
- MoEF&CC shall assist in setting up facilities wherein CSIR and Manufacturers will primarily run it sustainably.
- All emission tests and compositional analysis shall be encrypted through a QR code (through an app which has system of sharing all information to concerned agencies such as CPCB, NEERI, PESO as per needs) on all the products produced. This QR code will be highly useful for detecting spurious and copied products thus helping in enforcement.
- PESO shall be responsible for tests of any composition w.r.t stability and safety issues

as also Noise standards

- A committee comprising of members from MoEF&CC, CPCB, PESO, CSIR NEERI and invited member from manufacturers shall be in place which will review every year:
 - New and better products available for cleaner products.
 - Recommend improved testing and enforcement standards.
 - Advise on use and manufacturing processes and standards.
 - Report to the court steps taken towards better products and processes leading to reduced emissions from fire crackers.

Assistance under 'Abatement of Pollution' scheme

- The assistance of Rs.0.53cr. (approx.) has been extended to State Pollution Control Boards of Arunachal Pradesh and Manipur for salary support to the 07 (seven) technical staff under the scheme 'Assistance for Abatement of Pollution' for the year 2019-20.
- Rs.1.80 cr. has been extended to State Pollution Control Boards/Pollution Control Committees of Arunachal Pradesh, Assam, Manipur, Meghalaya, Tripura for laboratory equipment for setting up of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) during 2019-20.
- Rs.0.50 Crore has been extended to State Pollution Control Boards/ Pollution Control Committees of Assam,

Meghalaya, Mizoram, Nagaland, Sikkim and Tripura for procurement of basic lab equipment during 2019-20.

- Rs.3.11 crore has been released to Central Pollution Control Board for establishment of Manual Ambient Air Quality Monitoring Stations for monitoring of three parameters SO_2 , NO_2 & PM_{10} in the States of Mizoram and Jammu & Kashmir and for establishment of $PM_{2.5}$ monitoring in the States of Assam, Manipur, Meghalaya, Mizoram, Nagaland, Puducherry, Sikkim, Tripura.

Assistance under Common Effluent Treatment (CETP) scheme: Provided funding of Rs.2.35 crore for setting up of one 50 MLD CETP project by M/s Punjab Dyers Association (Tajpur&Rahon Module) at Tajpur Road, Ludhiana, Punjab.

Development of Environmental Standards: The Ministry of Environment, Forest and Climate Change (MoEF&CC) formulates and notifies standards for emissions 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. emissions/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.

In sustained efforts towards control of air/ water pollution caused by various sectors of industries, the Ministry embarked upon developing new standards/revision of existing standards for various industrial categories. Achievements and Progress are as follows:

- A total of 36 such standards across various industries were identified for the purpose. Of these, standards for 28 categories of industries have been notified/ revised so far. These include:
 - Thermal Power Plants, Common Effluent Treatment Plants, Sugar Industry, Cement Plants, Textile Industry, Slaughter House, Sewage Treatment Plants, Fertilizer Industry, Airport Noise Standards, Diesel/Petrol/LPG/CNG Gensets, Dust Mitigation Measures for Construction and Demolition Activities,



Boilers using industries, Man-made Fibre Industry, Paint Industry, Kerosene, and Emissions Standards for SO₂ and NO_x for five industrial sectors – Lime Kiln, Ceramic, Glass, Foundry and Reheating Furnaces etc.

- Further, draft Notifications in respect of seven (07) industries viz., Coffee Processing Industry, Automobile Depots Service Stations, Tannery Industry, Brick Kiln Industry, Fermentation Industry, Iron & Steel Industry and PVC Pipes and Fittings have also been issued for seeking comments from stakeholders and these shall be finalised following due procedure.
- Action is further on to frame five (05) draft Notifications for Standards for Pharmaceutical Industry, Hot Mix Plants, Emissions from Diesel Locomotives, Pulp and Paper Industry and Amendment - Water Quality Standard for Coastal Water Marine Outfalls in respect of Primary Water Quality Criteria for Class SW-III Waters and Class SW-V Water as per Environment (Protection) Act, 1986 inviting public comments etc.

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 guidelines for establishment and recognition of the laboratories have been revised and procedures, streamlined 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).

During 2018-19, 15 private laboratories and one (01) govt. laboratory have been recognized under E(P) Act. 1986.

Environmental Health: Ministry has been implementing a programme on environmental health. An Apex Committee and Working Group have been re-constituted for screening/evaluation of project proposals on environmental health. One project was initiated and 4 ongoing projects were extended financial support.

4.2 Central Pollution Control Board

The Central Pollution Control Board was constituted as 'Central Board for the Prevention and Control of Water Pollution' on September 23, 1974 under the provision of the Water (Prevention & Control of Pollution) Act, 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 scientific data, providing scientific information, rendering technical inputs for framing national policies and programs, 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 programs 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 equipment, industrial plants or manufacturing processes to evaluate their performance and to take steps for the prevention, control and abatement of air and water pollution.
- 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 materials relevant to environment protection & mass awareness.

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).

National Ambient Air Quality Monitoring

Programme: Central Pollution Control Board is executing a nation-wide National Air Quality Monitoring Programme (NAMP). NAMP was started in 1984 with 7 stations in Agra and Anpara. The ambient air quality monitoring network has 793 operating stations covering 344 cities/towns in 28 States and 7 UTs.

CPCB, SPCBs and PCCs are monitoring ambient air quality of different cities and publishing real-time data in public domain for taking corrective measures in time. A National Air

Quality Index, which combines the effect of all air quality parameters and generates a single number, has been developed by CPCB. The National AQI communicates air quality in simple terms of one number and one color for general public. Air Quality Index (AQI), inaugurated by the Hon'ble Prime Minister of India, is being continuously published on a web portal of CPCB, updated on hourly basis.

The AQI software fetches the ambient air quality data from the CAAQM stations and publishes the values of AQI for each parameter at each station. There is no human interference in the process of fetching the data and publishing it. This application has become very popular and has created awareness in the field of environment. Media has also started reporting the air quality in the country on day-to-day basis, especially in Delhi & NCR. Now, this network has been expanded by integrating 205 stations located in 114 cities of 18 States & 02 UTs.

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).

Environmental Research: The research activities relating to prevention and control of pollution carried out by CPCB are "Micro-pollutants (Pesticides + Trace Heavy Metals) in Ganga River from Gaumukh (Origin) to Ganga Sagar (Confluence to sea), "Standardization and



validation of methodology for determination of pharmaceuticals and personal care products (PPCPs)” and “Spike Recovery study for Chemical Oxygen Demand (COD) in presence of high Chloride contents”.

Environmental Training: CPCB organized 23 training programs in the fields of environmental planning and management such as Water quality monitoring, Municipal solid waste management, Laboratory Quality Management, Effective Management of Hazardous Waste including E-Waste, Noise Monitoring and control Techniques, Advance Instrumental Analytical Technique, Taxonomical Identification of Macro Invertible in Biological Testing & Air Quality Monitoring (Ambient & Source) and Continuous Ambient Air Quality Monitoring (CAAQM), Bio-medical waste and hazardous waste management, Environmental impact assessment studies, Water and wastewater analysis and Air Quality monitoring.

Municipal Solid Waste Management: Status of the Solid Waste Management in all States/UTs based on the information provided by SPCBs/ PCCs is given below;

- Solid Waste Generation : 1,52,076 TPD
- Solid Waste Collection : 1,49,748TPD (98%)
- MSW Treated : 55,759 TPD
- Landfilled : 50,161 TPD
- Total Landfill Sites : 21 Nos
operational

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 three 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 stakeholders, who are involved in Implementation of SWM Rules, 2016. It is 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 is also 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.

In the matter of O.A. 519/2019, 514/2018 & others, the Hon’ble NGT has directed Municipal Authorities to carry out processing and bio-mining at 3 existing dumpsites of Delhi, Gurugram and Pirana (Gujarat). It is reported that works of dumpsite reclamation have been initiated.

Evaluation of Comprehensive Environmental Pollution Index (CEPI) in 100 Polluted Industrial Areas:

CPCB evaluated Comprehensive Environmental Pollution Index (CEPI) of 100 polluted industrial areas (PIAs) across the country as per revised CEPI-2016 based on environmental quality

monitoring conducted in 2018. CEPI is a rational number to characterise the quality of the environment at a given industrial area following the algorithm of source, pathway and receptor. Environmental Pollution Index (EPI) of air, water and land are evaluated based on presence of toxin, industrial activity, level of pollution, health statistics and adequacy of waste management facilities. Overall CEPI

scores are calculated from the EPI score and if score exceeds 70 in the scale of 0-100, then the industrial cluster is categorised as 'Critically Polluted Area (CPA)' and if score 60 and above and less than 70, the industrial cluster is categorised as 'Severely Polluted Area (SPA)'. The State-wise distribution of CPAs and SPAs out of 100 PIAs assessed are provided in the following table:

Table-4.2

S.N	Name of State	Clusters with CEPI >70 (38 Critically polluted areas)	Clusters with CEPI 60-70 (31 severely polluted areas)
1	Andhra Pradesh	--	Vijayawada
2	Assam	Byrnihat	--
3	Bihar	--	Hajipur
4	Chhattisgarh	Raipur , Siltara Industrial Area	--
5	Delhi	Najafgarh-Drain basin including Anand Parbat, Naraina, Okhla, Wazirpur	--
6	Gujarat	Ankleshwar, Vapi, Rajkot, Surat, Vatva, Vadodara	Bhavnagar
7	Haryana	Gurgaon, Panipat	Faridabad
8	Himachal Pradesh	--	Baddi, Kala Amb, Parwanoo
9	Jharkhand	--	Hazaribagh, Saraikela, Ramgarh
10	Karnataka	Peenya, KIADB Industrial Area- Jigini	Bidar
11	Kerala	--	--
12	Madhya Pradesh	--	Singrauli (MP area)
13	Maharashtra	Chandrapur, Tarapur	Aurangabad, Nashik, Dombivali, Navi Mumbai
14	Orissa	--	IB Valey, Paradeep



S.N	Name of State	Clusters with CEPI >70 (38 Critically polluted areas)	Clusters with CEPI 60-70 (31 severely polluted areas)
15	Punjab	Ludhiana, Jalandhar	Batala
16	Rajasthan	Bhiwadi, Jodhpur, Jaipur, Pali, Sanganeer Industrial Area	--
17	Tamil Nadu	Vellore –North Arcot, Manali, Tirupur, Mettur	Coimbatore, Cuddalore, Erode, Tuticorin
18	Telangana	Pattancheru-Bollaram	Kukatpally, Kattedan
19	Uttar Pradesh	Gajraula Area, Ghaziabad, Kanpur, Agra, Bulandshar-Khurza, Firozabad, Moradabad, Mathura, Varanasi-Mirjapur	Aligarh, Singrauli (UP area), Meerut, Noida
20	Uttarakhand	Udham Singh Nagar	--
21	West Bengal	--	Bandel, Durgapur, Howrah

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 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. 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 wastes 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 has 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.

Activities undertaken:

- The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 have been amended on 1st March, 2019 to prohibit the import of solid plastic waste into the country including SEZ and EOUs.
- Bio-Medical Waste Management Rules, 2016 have been amended vide notification 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.
- 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.
- Expert Committee led by MoEF&CC on increasing utilisation has prepared an action plan for enhanced utilization for fly ash in the sectors namely mines, roads, bricks, cements etc.
- Regional stakeholder consultation meetings on waste management have been conducted in Chandigarh.
- CSIR-NEERI has been engaged to assist Ministry in implementation of Stockholm convention and provide Technical inputs on various technical documents coming for deliberations under convention.
- IIT Hyderabad has been engaged to assist Ministry in implementation of Minamata convention and provide Technical inputs on various technical documents coming for deliberations under convention.
- IIT Chennai has been engaged to assist Ministry in implementation of SAICM objectives and provide Technical inputs on various technical documents coming for deliberations under SAICM.
- NLSIU, Bangalore has been engaged to assist Ministry in implementation of legal, policy and strategic inputs for all Chemical and Waste related MEAs.

- Project awarded to Chintan for organizing awareness program with various stakeholders for implementation of solid waste and plastic waste.
- Project awarded to Pt Deendayal Upadhyay Smriti Sansthan for organizing awareness program with various stakeholders for implementation of solid waste and plastic waste.
- Project awarded to NPC for organizing capacity building program with various stakeholders for implementation of various waste rules.
- Ministry of Environment Forest and Climate Change (MoEF&CC) is implementing the project on 'Environmentally Sound Management and Final Disposal of PCBs in India'. The proposed projects being undertaken for the treatment/disposal facilities are located at: (a) Bhilai Steel Plant of the Steel Authority of India Limited – Stationary units; and (b) Central Power Research Institute, Bangalore – mobile units. The mobile PCB de-chlorination facility is operational and it has started onsite treatment of PCB containing oil. During 2019, approx. 112 ton of PCB contaminated oil was treated and de-chlorinated.
- Report of Joint Committee on implementation of action plan to achieve 100% fly ash utilisation by the Thermal Power Plants (TPPs) has been prepared.
- Draft report has been prepared on national action plan for chemicals.
- Draft soil sampling protocol as well as screening and response level for contaminants with respect to contaminated site (Soil/Ground Water) has been prepared.
- Time bound Action Plan prepared to phase out Single Use Plastic by 2022.
 - The environmentally problematic plastic products with low utility value and high environmental impact were identified and grouped together. These items are proposed for phasing out by 2022.
 - A strategy has also been prepared on how to reduce the usage of other regime of plastic like Multi Layered Plastics, PVC, Polystyrene (Thermacol), PET or PETE bottles, Plastic packaging (other than MLP), Compostable plastic etc.
 - Prepared report on the use of PVC in all packaging, hording/banners, use-and-throw and short-life items as per NGT order.

Promulgation of new Acts/Rules:

- Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules, 2019
- Bio-medical Waste Management (1st Amendment) Rules 2019
- Bio-medical Waste Management (2nd Amendment) Rules 2019



- Draft amendment to fly ash notification issued on 25.02.2019 inviting comments/ suggestions from affected persons.

Important Conferences organized in India or International conferences:

- Two regional workshops on mercury inventory and Minamata Convention were conducted under the project in Kolkata and Ahmedabad in April and September 2019 respectively to hold a stakeholder consultation with industry/industry associations, regulators, policymakers, researchers, and CSOs.
- A National Workshop cum Stakeholder Consultation on implementation support for Construction & Demolition Waste Management Rules, 2016 (hereafter referred as C&D WMR, 2016) was organised at Ministry of Environment Forest & Climate Change on August 08, 2019 at Teesta Conference Hall, First Floor, Vayu Block, Indira Parayawaran Bhawan, New Delhi.
- Regional stakeholder consultation meetings on waste management have been conducted in Chandigarh.
- Contributed in “Preparation of Status Report and Sub-regional Road map for Implementing the Global Waste Management Goals toward Addressing SDGs in South Asia” jointly organized by CCET, SACEP, Government of Bangladesh, UNEP, and the Ministry of Environment, Japan on 15-17 July in Dhaka, Bangladesh.

MEAs Agreement with countries, international organizations:

- The 14th meeting of the Conference of the Parties (COP) to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (BC COP14), the 9th meeting of the COP to the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (RC COP9), the 9th meeting of the COP to the Stockholm Convention on Persistent Organic Pollutants (POPs) (SC COP8) was convened from April 29 – May 10, 2019 in Geneva, Switzerland. The Indian delegation, led by Joint Secretary, EF&CC, participated in the deliberations. Major decision taken during COP are as follows:
 - **Basel Convention:** Two important issues were discussed and decided, i.e. technical guidelines on e-waste and inclusion of plastic waste in the PIC procedure for export and import.
 - **Rotterdam Convention:** COP 9 adopted the decision for listing of two chemicals viz. Phorate and Hexabromocyclododecane (HBCD). India secured the membership of the Chemical Review Committee for another 4 years i.e. up to 2024.
 - **Stockholm Convention:** During COP 9, two chemicals viz. Dicofol; and Perfluorooctanoic acid (PFOA), its salts and PFOA- related compounds were

added in Annex A without and with specific exemptions, respectively.

- The Minamata Initial Assessment (MIA) was undertaken with UNDP as executing agency and funding from the Global Environment Facility (GEF). The assessment included undertaking a comprehensive national inventory of emissions, releases, storage, import and export of mercury in the country. The inventory covered 33 sectors including (i) mercury emitting industries such as thermal power plants, metal processing and extraction units, cement plants, (ii) mercury added products and manufacturing processes such as batteries, CFLS, dental amalgams, etc; and (iii) mercury released from waste sector such as waste incinerators, effluent treatment plants, cemeteries and crematoriums, etc. The draft reports have been submitted by UNDP-India.
 - A draft national mercury action plan has been developed based on the MIA study, which lays out sector specific action plan to meet the obligations of the Convention and phase out/phase down mercury from the identified sectors.
 - The National Environment Commission, Royal Government of Bhutan in collaboration with the Ministry of Environment, Forest and Climate Change, Government of India conducted a bilateral meeting on waste management from 27-28 August 2019 for consideration particularly (i) to

develop Indo-Bhutan Cooperation on Waste Management; (ii) Possible collaboration on technical and financial assistance to address the waste management issues and challenges; (iii) Share the waste management strategy and action plan as well as legal and institutional framework of waste management in Bhutan; (iv) Mapping of existing waste management projects and its results (municipality waste, hazardous waste, industrial waste, electronic waste, etc.); (v) Discuss the implementation mechanisms and identify challenges and opportunities of waste management at the national, district and local level;

Publications:

A Central Crisis Group Alert System i.e. Red Book has been brought out for coordination during disaster situations. Red book facilitates the quick information exchange during chemical emergencies. It also provides details of all relevant institutes pertaining to Chemical industrial disaster management. The Red Book is updated annually and the last updated was done in July, 2019. The Red Book is hosted on the website of MoEFCC.

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).

Progress/Achievements:

- 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.
- Regional stakeholder consultation meetings on waste management have been conducted in Bangalore, Ranchi and Chandigarh.

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.

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.

Progress/Achievements:

- Under the Scheme, during year 2019-20 (up to 15th November, 2019) the progress of ongoing projects was monitored and the Project Monitoring Committee meetings under the various 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.
- Two projects have been completed/closed during the year, the brief details are as follows:
 - “Waste Minimization through enhancing the recovery rate of pulse milling (red gram) and standardizing agronomic practice as well as milling unit

operation for both dry and wet milling by Kulbhaskar Ashram P.G. College and M/s Nari Kalyan Sewa Sansthan, Allahabad.

Under the project, the economic feasibility of increase in phosphorus dose of soil in red gram was studied and application of Phosphorous more than 80 kg/ha in soil shows better efficiency of Red gram during milling. Further the Linseed oil treatment of grain showed better result than water soaking treatment and Sodium Bicarbonate treatment. The possibility of reduction of emission of micro particles during milling of Red Gram by introducing micro particle arresters is studied and arrested particles and waste material were used as animal feed. The application of cyclonic filter, fabric filter and calcium carbonate in Dal mill and their effects in reducing air pollution were also examined and reduction in Respirable Suspended Particulate Matter level was found. The possibility of fortification of animal feed with Iodine (I), Iron (Fe), Vitamin-A, Vitamin-B (complex), Vitamin-C and Calcium (Ca) was evaluated and successfully done.

- Project entitled “Biosorption by Fungi – A simple Microbiological Technique to remove heavy metals from e-wastes” by Bangalore University.

Under the project, the fungi resistant to high concentration of heavy metals (lead and chromium) were selected after several rounds of screening from 263 samples collected and biosorbent was designed. Among the 120 fungal isolates, *Aspergillus niger* and *Aspergillus terreus* shows resistance to 1500mM of lead,



while *Aspergillus niger*, *Apergillusterrus* and *Trichoderma* sp., exhibited resistance to 10mM of chromium. The designed biosorbent was effective to remove 52% of lead from an industrial effluent (collected in Bangalore Industries) and the 100% of toxic Cr (VI) form

to non-toxic Cr (III). The major advantages of biosorption over conventional treatment methods include low cost, high efficiency, regeneration of biosorbent, and minimization of chemical or biological sludge and possibility of metal recovery.

CHAPTER

05



Regeneration and Eco-development



5.1 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.3894.81 crore to treat an area of 22.10 lakh hectares since inception of the NAP scheme till 31.10.2019. NAP Scheme stands merged with Green India Mission as per Order dated

30th January, 2018. However, during the year 2019-20, Rs.20.80 crore has been released to carry out committed liabilities of plantation activities taken up during previous years under the NAP scheme. Advance work of 17789 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 Govts. the funds are released to State Forest Development Agencies.

Table-5.1

**Year-wise progress of National Afforestation Programme
(As on 31.10.2019)**

Year-wise progress of National Afforestation Programme(From the year 2015-16 to 2019-20)		
Year	Project Area* approved (ha.)	Release** (Rs. in crores)
2015-16	35986	94.16
2016-17	2359	59.35
2017-18	39847	80.00
2018-19	15086	95.38
2019-20	17789	20.80

* Area approved for advance soil work/preparatory plantations during the year for all ongoing FDA projects.

** Total (financial assistance provided during the year for planting, advance soil work, maintenance, etc.) for all ongoing FDA projects

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.



Table-5.2

The progress of ETF Battalions during the year 2019-20.

Battalion	Location	No. of plants planted (in lakh)	Area Covered (in ha.)
1	2	3	4
127 Inf. Bn(TA) Eco	District Tehri Garhwal (Uttarakhand)	4.00	400
128 Inf. Bn(TA) Eco	Shri Mohangarh, District Jaisalmer (Rajasthan)	6.00	600
129 Inf. Bn(TA) Eco	Bahu Purmandal Project, Samba (J&K)	1.10	185
130 Inf. Bn(TA) Eco	Pithoragarh (Uttarakhand)	5.00	500
134 Inf. Bn(TA) Eco	Sonitpur District (Assam)	5.75 (incl. seed ball)	89.12
135 Inf. Bn(TA) Eco	Chirang Res. Forest, Kokrajhar, (Assam)	3.01	300
Total		24.86	2074.12

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.

5.2 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.

Mission objectives:

- To increase forest/tree cover on 5 m ha of forest/non-forest lands and improved quality of forest cover on another 5 m ha (a total of 10 m ha).
- To improve ecosystem services including biodiversity, hydrological services and carbon sequestration as a result of treatment of 10 m ha.
- To increase forest-based livelihood income of about 3 million households living in and around the forests.
- Enhanced annual CO₂ sequestration by 50 to 60 million tonnes in the year 2020.

Activities undertaken:

- The National Executive Council of GIM has approved annual plans of operation of the 11 States and Perspective Plans Jammu & Kashmir and West Bengal with financial implication of Rs. 599.54 crore.

- Fund amounting to Rs.96.592 crore has been released so far as the 1st and 2nd installment to seven States namely Chhattisgarh, Odisha, Karnataka, Sikkim, Madhya Pradesh, Manipur, Mizoram, Punjab and Kerala in the year 2019-20.
- Green India Mission (GIM) has taken up World Bank Funded Ecosystems Services Improvement Project (ESIP) on 13th July, 2018 which is being implemented in two States namely Chhattisgarh and Madhya Pradesh.
- The National Project Steering Committee of ESIP has approved annual plan of operation of Indian Council of Forestry Research and Education (ICFRE) with financial implication of Rs.18.36 crore. Rs.10.00 crore has been released to ICFRE for Implementation of ESIP activities.





Table-5.3

Progress/Achievements: The State-wise details are given below:

(Phy: area in hectares, Fin: rupees in crore)

S. No.	States	Physical Target			Amount Released
		Advance Work	Creation Work	Maintenance Work	
1	Chhattisgarh	-	-	19128	5.036
2	Manipur	-	-	8798	4.167
3	Karnataka	-	600	760	2.210
4	Odisha	-	6965	2094	14.189
5	Madhya Pradesh	11445	11800	-	30.653
6	Sikkim	-	1509.2	-	3.124
7	Kerala	-	2281.64	347.64	16.318
8	Mizoram			17084	17.709
9	Punjab			3004	3.186
	Total	11445	23155.84	51215.64	96.592

CHAPTER

06



Research



6.1 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.

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 3 Rs, 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, 3 Rs, 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:

- 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/approval of new R&D proposals;
- Releasing next instalment of Grants for ongoing R&D projects.

Progress/Achievements:

1	New Proposal/applications received for funding	39
2	Total No of project applications appraised (new + ongoing)	72
3	Total No of new projects funded in the year	16
4	Number of meeting of the Technical & Financial Appraisal Committee (TFAC) held during the year	10
5	Number of meeting of the Steering Committee held during the year	04

6.2 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, 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, Mahableshwar-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 07.11.2019, out of total 662 Protected Areas (PAs), 408 proposals with 556 PAs have been received in ESZ Division. ESZ Division has published 236 Final Notifications covering 357 PAs and 145 Draft Notification covering 167 PAs. Remainings are at different stages of approval and publication of notification.
 - The status of draft and final ESZ Notifications issued by the Ministry as on 01.01.2019-07.11.2019 is as follows:

Table 6.1

Final ESZ Notifications Published in 2019-2020

(1st January 2019 to 7th November 2019)

S. No.	State	Name of final Notification	Date of Publication
1.	Andaman	Mount Harriet National Park, Andaman & Nicobar Islands	04.02.2019
2.	& Nicobar Islands	Cuthbert Bay Sanctuary, Andaman & Nicobar Islands	27.02.2019
3.	Arunachal Pradesh	Mouling National Park, Arunachal Pradesh (renotified on 25.05.2018)	31.05.2019
4.	Assam	Hollongapar Gibbon Sanctuary, Assam	25.09.2019
5.	Chhattisgarh	Achanakmar Sanctuary, Chhattisgarh	10.10.2019
6.		Kanger Valley National Park, Chhattisgarh	10.10.2019
7.	Gujarat	Rattan Mahal Sanctuary, Gujarat	30.01.2019
8.		Jambugodha Sanctuary, Gujarat	11.03.2019
9.		Kutch Desert Sanctuary, Gujarat	30.08.2019
10.	Haryana	Asolabhattie WLS, Haryana	31.05.2019
11.	Jammu and Kashmir	Jasrota WLS, J&K	29.10.2019

S. No.	State	Name of final Notification	Date of Publication
12.	Jharkhand	Hazaribagh WLS, Jharkhand(re-notified on 16.02.2018)	01.08.2019
13		Palamau Tiger Reserve WLS, Jharkhand (Re notified on 22.02.2018)	09.08.2019
14		Udhwa Lake Bird Sanctuary, Jharkhand	01.08.2019
15		Kederma Sanctuary, Jharkhand	09.08.2019
16		Palkot Sanctuary, Jharkhand	09.08.2019
17		Gauatam Buddha Sanctuary, Jharkhand	05.08.2019
18		Parasnath And Topchanachi Sanctuary, Jharkhand	05.08.2019
19		Lawalong Sanctuary, Jharkhand	09.08.2019
20.		Karnataka	SharavathiValley WLS, Karnataka (re-notified on 19.09.2018)
21	Chinchioli Sanctuary, Karnataka (re-notified on 04.10.2018)		09.08.2019
22	Daroji Bear WLS, Karnataka (re-notified on 19.09.2018)		27.09.2019
23.	Maharashtra	Anerdam WLS, Maharashtra	03.01.2019
24.		Yawal WLS, Maharashtra	08.03.2019
25.		Tadoba Tiger NP and Andhari WLS, Maharashtra (13.07.2018)	11.09.2019
26.		Tungareshwar Sanctuary, Maharashtra	11.09.2019
27.	Mizoram	Tawi Sanctuary, Mizoram	12.06.2019
28.		Pualreng Sanctuary, mizoram	12.06.2019
29.		Thorangtlang Sanctuary, Mizoram	25.06.2019
30.		Lengteng Sanctuary, Mizoram	02.07.2019
31.		Murlen National Park, Mizoram	02.07.2019
32.		Dampa Tiger Reserve, Mizoram	15.07.2019
33.	Odisha	Sunabeda WLS, Odisha	08.03.2019
34.		Badrama and Khalasuni Sanctuary, Odisha	30.08.2019
35.	Rajasthan	Nahargarh WLS, Rajasthan	08.03.2019
36.		KeoladeoWLS, Rajasthan (Renotied 28.11.2018)	26.07.2019
37.	Tamil Nadu	Chitrangudi Bird Sanctuary, Tamil Nadu	07.06.2019
38.		Karaivetti Bird Sanctuary, Tamil Nadu	31.05.2019
39.		Udayamarthandapuram Bird Sanctuary, Tamil Nadu	07.06.2019
40.		Koonthankulam Bird Sanctuary, Tamil Nadu	07.06.2019
41.		Melaselvanur-KelaselvanoorBird Sanctuary, Tamil Nadu	10.10.2019
42.		Megamalai Sanctuary, Tamilnadu	10.10.2019
43.		Gangaikondan Spotted Deer Sanctuary,Tamil Nadu	01.08.2019
44.		Nellai Sanctuary, Tamil Nadu	05.08.2019
45.		Vaduvloor Bird Sanctuary, Tamil Nadu	16.09.2019



S. No.	State	Name of final Notification	Date of Publication
46.	Uttarakhand	Gangotri NP, Uttarakhand	07.06.2019
47.	Uttar Pradesh	Bakhira WLS, Uttar Pradesh	01.01.2019
48.		Chandraprabha Sanctuary, U.P.	08.01.2019
49.		Jai Prakash Narayan (Surahatal) BS, UP	11.03.2019
50.		Lakh Bahosi Bird Sanctuary, Uttar Pradesh(Renotified on 05.12.2018)	30.08.2019
51.		Sandi Bird Sanctuary, Uttar Pradesh (Renotified on 05.11.2018)	01.08.2019
52.		Nawabganj Bird Sanctuary, Uttar Pradesh (Renotified on 11.09.2018) (saheed Chandra Shekhar Azad name changed)	30.08.2019
53.		Samaspur WLS, Uttar Pradesh (Renotified on 21.12.2018)	27.09.2019
54.		Vijay Sagar Bird Sanctuary, UP	10.10.2019
55.		Soor Sarovar Bird Sanctuary, U.P.	10.10.2019
56.	West Bengal	Chintamani Kar Bird Sanctuary, West Bengal	15.01.2019
57.		Senchal Sanctuary, West Bengal	15.01.2019
58.		Chapramari Sanctuary, West Bengal	07.06.2019
59.		Ramnabagan Sanctuary, West Bengal	30.08.2019
60.		Bibhutibhushan WLS, West Bengal	10.10.2019

Table 6.2

Table 2: Draft ESZ Notifications Published in 2019-2020
(1st January 2019 to 7th November 2019)

S. No.	State	Name of final Notification	Date of Publication
1.	Andhra Pradesh	Sri Venkateshwara NP & Sanctuary, A.P	24.01.2019
2.	Arunachal Pradesh	Eagle Nest WLS, Arunachal Pradesh	Afresh Draft Published on 23.08.2019
3.	Assam	Nameri NP, Assam	Afresh Draft Published on 04.02.2019
4.		DehingPatkai Sanctuary, Assam	30.05.2019
5.	Jammu and Kashmir	Rajparian Sanctuary, J&K	25.09.2019

S. No.	State	Name of final Notification	Date of Publication
6.	Karnataka	Kudremukh NP Karnataka	Afresh Draft Published on 25.10.2019
7.		Someshwara WLS, Karnataka	Afresh Draft Published on 25.10.2019
8.	Madhya Pradesh	National Chambal Sanctuary, Madhya Pradesh	11.06.2019
9.	Pradesh	Kharmor (Sardarpur) Sanctuary, Madhya Pradesh	10.10.2019
10.	Maharashtra	Great Indian Bustard Sanctuary	14.01.2019
11.		Radhanagari WLS, Maharashtra	10.07.2019
12.		Bhimashankar Sanctuary, maharashtra	25.07.2019
13.	Odisha	Simlipal Tiger Reserve and Hadagarh Sanctuary, Odisha	29.01.2019
14.		Lakhary Sanctuary, Odisha	25.07.2019
15.		Karlapat Sanctuary, Odisha	09.08.2019
16.	Rajasthan	JaisamandWLS, Rajasthan	Afresh Draft Published on 03.06.2019
17.		Mount Abu WLS, Rajasthan	Afresh Draft Published on 03.06.2019
18.	Tamil Nadu	Vaduvloor Bird Sanctuary, Tamil Nadu	08.03.2019
19.		Oussudu Sanctuary, Tamil Nadu	08.03.2019
20.		Satyamangalam Tiger Reserve, Tamil Nadu	31.05.2019
21.		Cuvery North Sanctuary, Tamil Nadu	11.06.2019
22.		Point Calimere Sanctuary (including Block A) , Tamil Nadu	03.07.2019
23.		Vellode Bird Sanctuary, Tamil Nadu	23.09.2019
24.	Uttarakhand	Askot Sanctuary, Uttarakhand	30.01.2019
25.	Uttar Pradesh	Mahavir Swami Sanctuary, UP	03.06.2019
26.	West Bengal	Buxa Tiger Reserve, West Bengal	11.06.2019
27.		Ballavpur Sanctuary, West Bengal	27.09.2019

- 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 (3) 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 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 Government is deliberated during the meeting of the Expert Committee.
- During 2019-20, five meetings of ESZ Expert Committee were convened. In addition, one meeting to discuss the draft Notification of the Ecologically Sensitive Areas (ESA) of the Western Ghats was convened.

6.3 National Natural Resources Management System (NNRMS)

The Scheme “National Natural Resources Management System (NNRMS)” of the Ministry is a Central Sector Scheme, merged with the R&D scheme under RE Division.

The prime objective of NNRMS scheme is

utilization of Remote Sensing Technology for Inventorization, Assessment and Monitoring of country’s natural resources.

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:

- 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 undertaken:

- The 1st meeting of TFAC was held on 21st January, 2019 and Final Technical Report submitted for respective project was evaluated.
- The 2nd meeting of TFAC was held on 30th April, 2019 and Final Technical Report submitted for respective project was evaluated.
- 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 on 30-31 March, 2019.
- 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.
- The ongoing research projects are being processed for funding.
- About 70 research proposals submitted during the financial year 2012 and onwards were placed before TFAC.
- The 3rd meeting of TFAC was held on 15th November, 2019 and Final Technical Report submitted for respective project was evaluated. About 42 revised proposals received from different University/Institute were evaluated.

Progress/Achievements:

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, 2nd and 3rd meeting of TFAC.

- **Following projects were finally closed with physical/financial settlement.**
 - Development of knowledge based decision tool to simulate mechanism of vegetation change due to climatic change in Western Himalayan Ecoregion (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.
 - Monitoring of Snow and Glaciers of Himalayan Region – Phase-II, Space Application Centre (SAC), Ahmedabad.
 - Desertification Status Mapping of India, Space Applications Centre (SAC), 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.
 - 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.

- Land use dynamics and its impact on microelements, structure, composition and diversity of Achanakumar – Amarkantak Biosphere Reserve using satellite remote sensing and GIS techniques. IG National Tribal University, Amarkantak, M.P.
- 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.
- **FTR of the following projects was accepted by TFAC.**
 - 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.
 - 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.

- 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, 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.

List of publications:

- **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.

Based on Annual progress report submitted by the concerned Principal Investigator under this scheme, following publication under different project was published:

(1) 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.

6.4 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 Ministry of Environment, Forest and Climate Change, Government of India, 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 centers 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 undertakes 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.

Objectives:

- 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:

I Center for Land and Water Resource Management (CLWRM)

- Towards developing the water sustainability mapping in western Himalaya, household survey for water use in 36 villages (12 in 500 -1000 m, and 24 in 1000 - 2000 m) of the 2-blocks of Pithoragarh district was carried out, and 80 springs in these villages (66 perennial and 14 non-perennial) were geo-tagged.
- The spring inventory map and gauging site location map of the Kali watershed were prepared to depict distribution of springs in the basin. Reconnaissance surveys for the installation of automatic rain gauges at Jauljibi, Pancheshwar and Jhulaghat sites were completed. A macro analysis of tourism trends and observations on seasonal drying of water sources were analyzed in terms of threats and impact on tourism prospects.
- Integrated studies of Himalayan cryosphere in Uttarakhand and Arunachal Pradesh are ongoing to understand the retreat rate in Chipa and Khangri glaciers by using DGPS and handheld GPS.

II Center for Socio-Economic Development (CSED)

- Developmental activities were conducted in the three selected villages of Almora districts (Bhetuli, Takula Block >1800 m; Jyoli, Hawalbagh Block

1200-1800 m; Malera, Hawalbagh Block 900-1200 m asl). During the year 114 families were benefited through field demonstrations of polyhouse, polytank, vermi-compost pit and chick birds for poultry farming. Under the plantation activities a total of 2730 fruits, medicinal plants, bamboo and other important plants were distributed and planted in the target villages benefiting 127 families. A total of 21 training programmes were conducted for the farmers of target villages under different subjects round the year.

- Towards sustainable approach for livelihood improvement pine needles are being used to make various products such as bio-briquetting and hand made paper. Both the products from chir pine needle has provided an additional source of income to local people and helped to save surrounding pine forests from forest fire.

III Center for Biodiversity Conservation and Management (CBCM)

- Towards monitoring vegetation in western Himalaya, data on various forest ecological parameters studies were recorded across four forest types in long-term ecological monitoring (LTEM) sites established in Gaula catchment (Distt. Nainital). Meteorological data of these four LTEM sites revealed that the mean atmospheric temperature during 2019 was found ranging from 11.07 (Mixed-Broadleaf forest, Patwadangar) - 14.86 oC (Sal forest, Ranibagh) and

mean annual relative humidity ranged from 72.8% (Oak forest, Kailakhan) - 96.2% (Oak-Conifer forest, Nainital).

- The center has successfully established (i) genetic repository of 133 apple cultivars at Horticulture Garden Chaubatia; (ii) high altitude medicinal plants nursery at Sri Narayan Ashram;



Demonstration of medicinal plants cultivation and exposure to diverse stakeholders group at Sri Narayan Ashram (Pithoragarh)

(iii) promoted cultivation of medicinal plants at Chaudas area; (iv) provided three weeks' green skill development (GSDP) training in various aspects of biodiversity, such as preparation of peoples' biodiversity register (PBR) and formation of biodiversity management committees (BMC).

IV Center for Environmental Assessment and Climate Change (CEA&CC)

- Study on the impact of forest fire in the Kumaun region has been initiated and data on different environmental parameters such as ambient air quality in terms of particulate matter below 10 micron (PM_{10}), particulate matter below 2.5 micron ($PM_{2.5}$) and black carbon (BC) in the background site at GBPNIHESD campus, Katarmal is being monitored.
- Under the National Mission on Sustaining Himalayan Ecosystem TF-3 Project, the Institute has (i) developed database of tree and shrub species

of IHR; (ii) assessed forest vulnerability index (FVI) for inherent vulnerability of community forests; (iii) developed tree ring chronologies for selected tree species i.e., *Cedrus deodara*, *Pinus roxburghii*, *Betula utilis*, *Abies spectabilis* and *Pinus wallichiana*; (iv) analysed future temperature and precipitation trends using climate model MIROC5 in Pithoragarh region; (v) recorded carbon sequestration rate of Pine and oak dominated forest of the Central Himalaya; and (vi) organized 14 days GSDP course on 'Forest Resources and Plant Biodiversity'



Regional Centers:

I Himachal Regional Centre

- Soil samples of dumping and control sites of the selected towns were collected and analyzed; suitable species for the reclamation of dumping sites were identified and propagated in the nursery; training-cum-capacity building workshops organized, and automatic bio-composter and paper recycling machine were installed in Kullu.
- Various decorative products such as paper roll frame, paper bowl, flower, trophy, lantern, glasswares, etc., prepared using the waste material and displayed in RTC for the training and awareness of stakeholders.

II Garhwal Regional Centre

- Towards documenting pilgrimage potential for tourism development in the sacred landscape of Garhwal Himalaya, impact assessment on environment, social and cultural aspects of tourism in upper Kedar valley landscape has been conducted. Awareness campaigns were organized involving diverse stakeholders such as local people, travel, tour operators, guides and porters, hotel and shop owners, NGOs, tourism and other line departments of state and central governments, educational, research and development institutions, and media in the field of naturalist guides, natural resource management, and conservation education, promotion of value addition in wild edibles, local food

products and home stay accommodation so as to improve local economy.

III Sikkim Regional Centre

- Thirty two sampling grids have been sampled covering moist-deciduous forests, oak-mixed forests, sub-tropical evergreen forests, Abies dominated forests, Rhododendron mixed forests, sal dominated, and sal mixed forests of Sikkim Himalayan region at an elevation ranging between 800 to 3800m asl. The specimens of all species were identified by consulting herbaria. The sampled transects contained 23,256 individuals of about 198 woody species, where 124 species identified using regional flora and e-flora. Distribution map using ecological niche modeling were developed and approximately 450 records of different woody taxa were compiled for different spatial grids.

IV North-East Regional Centre (NERC)

- Baseline data on the livelihood of different households of Ziro valley were collected and data revealed that ecotourism was found as a source of livelihood has showed rapid growth of tourist since 1999 in Arunachal Pradesh. Socio-economic status and livelihood information from 4 villages of Mebo circle namely, Silluk, Ngopok, Kiyit and Borguli showed that 61.6% houses are good, 36.9% are livable and 1.4% is dilapidated.

V Mountain Division Regional Centre

- Detailed eco-physiological analysis of

Valerina jatamansi in different drought conditions for understanding adaptation mechanism were carried out and data on the physiological, phytochemical and biochemical parameters generated. Some adaptation mechanisms like synthesis of stress responsive proteins, increased activity of antioxidant enzymes, increased carotenoid content and proline accumulation of the species were identified.

- Trade-off between conservation and livelihood outcomes in protected area management in Corbett Tiger Reserve (CTR) revealed that the park brings substantial income to local community residing nearby places. Around 21% population across the surveyed villages was found engaged in economic activities that linked directly to CTR.
- Water quality assessment in the 13 locations of the Parbati basin in different parameters like temperature, pH, EC and TDS showed water from all the sources was under the permissible limits prescribed by BIS 2012 and WHO 2011.
- Assessment and valuation of alpine and sub-alpine ecosystems of Himachal Pradesh in relation to climate change has been carried out in 10 sites in Fozal valley between 2500– 3210 m amsl. Vegetation composition in different habitat conditions at varying altitudinal zones was recorded.

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 Centers towards building skill of diverse group of stakeholders. These skill building programme included, preparation of people's biodiversity register; monitoring of environmental parameters; 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 16 new projects were funded and currently a total of 42 projects are under operation at various stages of implementation covering 11 Himalayan states through IERP.
- The ENVIS center on Himalayan Ecology, collects, collates and compiles information on various aspects of Himalayan Ecology.
- 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 Organizations) on payment basis.



The Institute is strengthening and maintaining Central Library and providing number of services such as Article Alert, Current Awareness, Selective Dissemination of Information, Reprography, Referencing, Indexing, Bibliography, Web Services (Online Journals) etc., for the development of the human resources.

6.5 National Mission on Himalayan Studies (NMHS)

Recognizing the importance of Himalaya, National Mission on Himalayan Studies (NMHS), a Central Sector (CS) 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 and UTs. 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 and Sustainable Development Goals (SDGs). The Mission had been revamped in 2017–18 and focusing 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. The mission activities have been expanded to all 11 IHR states and two UTs in the year 2019-20.

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.

Activities Undertaken:

- In 2019–20, NMHS-PMU has convened one meeting of Steering Committee (SC), three meetings of Scientific and Technical Advisory Group (STAG), two meetings of Working Groups (WG) for smooth implementation of the scheme.
- Additionally, all 157 ongoing projects and 175 Himalayan fellowships were monitored and reviewed through one Monitoring & Evaluation Workshop and two Himalayan Researchers Consortiums.

- Active collaborations were made with IHR States through 6 Nature Learning Centres (NLCs) and 11 State Government Projects (SGPs).
- R&D Institutions were strengthened in IHR through 175 Himalaya Research fellowships to 31 IHR Institutions/ universities.

Progress/Achievements:

• Water Resource Management

- Total 241 intervention sites have been developed on spring rejuvenation, watershed development, installation of surface-weather stations, etc.;
- Geo-tagging of 2557 Springs identified in 04 IHR States (Uttarakhand, Himachal Pradesh, Nagaland and Sikkim) has been completed; Template for inventory of Springs accepted by National Water Mission for updating the database on State-wise inventory;
- Total 11 technological innovation models were developed, including Riverbank Filtration model- Uttarakhand- (02 No.); “Low-Cost Solar Water Heater”- Himachal Pradesh (100 No.);
- A large campaign for spring rejuvenation (Jal Abhyaranya) for rural water security has been initiated by MoEF&CC (all 12 states wherein 12 districts including 09 Aspirational Districts have been taken up).

• Livelihood Options & Employment Generation

- Small micro-enterprises (45) have been initiated for sustainably

utilizing the Himalayan bio-resources (Total beneficiaries 60 village eco - entrepreneurs and >4200 farmers; 126 SHGs); “Processing the Wild edible to Nutritional Products”; and ‘Chir-Pine Needles Processing’ –Uttarakhand, etc.

- Cultivation of High Value Medicinal Plants (MPs) is promoted in Uttarakhand: 196 farmers (15 Villages) of High altitude area have cultivated the MPs [namely Picrorhiza kurroa (Kutaki), Ocimum tenuiflorum (Tulsi), Veleriana jatamansi (Samyo), Rosemarinus officinalis (Rosemarry), Hedychium spicatum (KapurKachari), etc.] in 12.84 ha land (Net income Rs 34000-67000/ farmer).
- Market linkages have been developed (products sold through www.switchon.co.in) with community empowerment with village-based models on 42 products with 21 SOPs on various nutritional, cosmetic and fibre-based products.

• Handling Hazardous Waste

- “SWAYMBHU-WRM-2021” – a full-scale model has been developed for turning plastic waste into high-value Graphene) in Uttarakhand.

• Biodiversity Conservation & Management

- Total 2799 Species were collected and identified (1450 plant specimen; 1200 zoological samples; 49 lichens); further, 04 plant taxa were reported first time from India, namely Bistorta longispicat, Sabia campanulata subsp. Ritchieae,



Corallodiscus cooperi and *Codonopsis bhutanica*. A new Huntsman spider *Pseudopoda cheppe* sp. is also discovered first time from India.

- Database on Himalayan Flora and Fauna (all IHR States) was compiled: >47,000 Species Collection; 30,000 species documentation; >100 GIS maps; passport data catalogue for 745 accessions of 39 indigenous crops of Uttarakhand;
- High altitude Medicinal Plant nursery has been established (2.0 Ha) at 3200 m asl with capacity more than 10.0 lakh seedling of medicinal plants; Developed four-tier (Top, middle, lower and underground) conservation models for improvement of shifting cultivation in the farmers' field (05 states of North eastern states).

6.6 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:

- ICFRE participated in the UNCCD event and presented the research efforts of ICFRE in Restoration of Degraded Lands and Combating Desertification through exhibition and a side event. Recognizing the

research being undertaken at ICFRE, Prime Minister of India announced setting up of Centre of Excellence at ICFRE to promote south-south cooperation for addressing land degradation while addressing High-Level Segment of COP of UNCCD, on 9th September, 2019.

- 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 17,000 students and staff belonging to 178 KVs & 36 JNVs situated in different parts of the country have been sensitized through various programmes spreading over 113 days.



Students and Staff of JNV-Leh participating in Prakriti



- ICFRE has signed MoUs with various organizations including G.B. Pant Institute of Himalayan Environment and Development, Almora; Indian Institute of Forest Management, Bhopal and Green Initiatives Certification and Inspection Agency, Noida etc. to expand its outreach with a collaborative approach.
- During the period 2019-20 the three consultancies worth of Rs. 376.66 lakhs have been awarded to ICFRE one each by South Eastern Coalfields Limited (SECL); State Forest Departments of Government of Odisha and Government of Chhattisgarh. Among the on-going consultancy studies, reports on 8 R&R Plans of BCT Karnataka have been submitted to Govt. of Karnataka; one EPIR report of Kusmunda OCP to

SECL; two Environmental Audit Reports of Koyagudem OCP and Khairagura OCP to SCCL; six monthly reports on Monitoring of CAT Plan of VishnigadPipalkoti HEP to THDCIL; and Annual report on Monitoring of NTPC Plantations in Seven states for the year 2018-19 to NTPC Ltd. have also been submitted and accepted.

Major Research Findings of ICFRE:

Forest Research Institute (FRI), Dehradun:

- Research has been initiated on high density plantation management for food production and assessment of wood properties of coppiced material and establishment of community fodder banks in forest fringe villages in Uttarakhand and Himachal Pradesh.



Gamhar and Kadam based agro-forestry

- Post fire impact on soil properties and micro-organisms in Chir pine (*Pinus roxburghii*) and Oak (*Quercus leucotrichophora*) forests of Uttarakhand have been studied. A reduction in bacterial and fungal population has been recorded in the burnt forest sites compared to the un-burnt sites.

However, increase in soil organic carbon in burnt forest sites has been observed compared to the un-burnt forest sites. A decrease in soil nitrogen and potassium content has also been observed in the burnt forest sites.



Assessment of fire impact on Chirpine (Pinus roxburghii) Forests at Padoli, Ranikhet Range, Almora Forest Div. (Aldt. 1700m).

- A study on “Assessment of hydrological services imparted by forests of Kempty watershed (Mussoorie)” is being carried out. Under this study Hydrological services imparted by forests of Kempty watershed (Mussoorie) are being assessed along with the meteorological parameters. The study reveals that key controlling factors of carbon dioxide efflux rate are soil moisture and soil temperature. The soil temperature and soil moisture were used to develop regression models to measure their Measurement of soil CO₂ efflux rate at study site.
- Superior germplasm of Kalmegh (Andrographis paniculata) and Brahmi (Bacopa monnieri) having more active ingredients (andrographolide and bacoside) has been identified for commercial cultivation at farmer’s field. Post harvest technologies of Kalmegh and Brahmi have been standardized for quality her bal produce.
- *Astraeus hygrometricus* (Family: Diplocystaceae), commonly known as ‘Earth Star’ ‘Rugra’, ‘Matitara’ or ‘Phutphut’, is an ectomycorrhizal edible mushroom found growing in association with Chir pine (*Pinus roxburghii*) and Sal (*Shorea robusta*) trees in the forests of Uttarakhand, Uttar Pradesh, Jharkhand, West Bengal, Odisha, Madhya Pradesh and Southwest India. Simple, economical and local people adoptable practices for preservation of the fruit bodies upto six months period were developed.
- Progeny trials of Neem (*Azadirachta indica*) have been established in Uttar Pradesh,



Measurement of soil CO₂ efflux rate at study site



Gujarat, Madhya Pradesh and Rajasthan. Under neem improvement, natural populations and man-made plantations of the species were intensively surveyed in various neem growing states to select plus trees for establishing breeding population as well as supplying improved seeds for instantaneous plantation programme.

- A Patent entitled “A process for the isolation of Ursolic Acid from Eucalyptus hybrid (Leaves) has been awarded to Director, Forest Research Institute, Dehradun (Patent Certificate with respect to the grant of patent No. 313151 dated 25/02/2019).
- A detailed project entitled “Detailed project Report (DPR) Preparation for Rejuvenation

of major Indian Rivers through Forestry Interventions”, sanctioned by MoEF&CC. FRI Dehradun is working on preparation of DPR for rejuvenation of Yamuna River through forestry interventions. State-level stakeholder meetings were organized for wider consultation with varied groups of stakeholders in all states.

- A study on “Mortality of Pinuswallichiana in Nandadevi Biosphere Reserve” is being carried out to find out the gaps in knowledge regarding identification, biology and disease epidemiology of the forest pathogens and insect pests need to be addressed so that effective management options can be developed.



Dead tree



Browning of the needles

- A study on “Bio-prospecting of Pinusroxburghii needles wax and other extractives” has been carried out in which economic and facile processes were developed for extraction of fibers in 35- 40% yield from P. roxburghii needles. The fibres may be utilized for various applications like ropes, mats, composites etc.



Fibre from Pinusroxburghii

- The research on wood welding is being conducted for the first time in India in FRI, Dehradun. To begin with, common Indian timbers like shisham, mangos are

undertaken in the study. An indigenously designed and fabricated, customized machine is being used in this study.



Indigenously fabricated rotational wood welding machine holders



Rotational wood welding machine holders



Wood pieces welded in longitudinal direction the length machine

Institute of Forest Genetics & Tree Breeding (IFGTB), Coimbatore:

- A rapid spread of wilt disease in Casuarina clones (CH5) was reported by Casuarina growers from Tindivanam, Cuddalore and Villupuram regions of Tamilnadu (India) was identified as bacterial wilt caused by soil borne pathogen *Ralstoniasolanacearum*. To control this disease, the bacterial strain *Micromonospora maritime*, isolated from the root nodules of *Casuarina equisetifolia* was identified by 16s rRNA sequence. Field application of this strain revealed that the infected clones developed new foliage and new sprouts. The entire infected plantation was recovered up to 95% and showed improvement of growth too after 30 days of application. Based on extensive field surveys in all the 7 agro-climatic zones of Tamil Nadu in different aged ToF (Trees outside Forests) plantations in private

lands, documentation of spectrum of insects infesting saplings/trees, percentage of trees affected, intensity and frequency of different species of insects infesting tree species identified.

- A Pest Calendar was prepared for use by farmers based on the spectrum and level of incidence of pest species. An easy reference Hand Book for farmers and foresters on the Insect pests of Trees outside Forests prepared. Feasible management measures standardised.
- Australian Tree Seed Centre has taken up internationally coordinated provenance trial program to expand the current genetic base of the *A. mangium* in Cambodia, Thailand, Vietnam, Malaysia, Indonesia, China and India. Institute of Forest Genetics and Tree Breeding has established International Provenance Trial of *Acacia mangium* in Ram Nager, Dandeli, and Karnataka.



- Four on-farm genetic gain trials were established in East and West Godavari Districts of Andhra Pradesh in collaboration with International Papers APPM Limited to identify the best clone to be promoted under the Company's farm forestry programme for different soil types. In addition, the realized gain in terms of additional pulp wood production through the best clone can be quantified in comparison with the next best option (currently used clone / local seed source). Early assessment of growth and survival was carried at the age of six months. The survival has been above 90% for all clonal and seedling accessions in all locations. This indicates the adaptability of the accessions in the test locations. Clones IFGTB-CH-2 and IFGTB-CH-5 have consistently performed better than other accessions in all four locations.
- Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore is involved in genetic improvement of *Ailanthus excels* Roxb. In an attempt to study the adaptive genetic diversity of teak populations across India, efforts were made at IFGTB to completely sequence the genome of teak to understand the distribution of gene pattern and micro satellites distributed in the genome. The study revealed repeat elements of about 11.18% in the genome and that about 600 genes are involved in timber formation.
- IFGTB has developed micro propagation protocols for large scale plantlet production of teak genotypes from apical buds and nodal segments. Selected stock of teak

has been mass propagated through micro propagation and supplied to farmers. Other than farmers, IFGTB has supplied tissue culture teak plants to Forest Development Corporation of Maharashtra and Kerala Forest Department. Demonstration trials have been established with ten clones. These trials will help to evaluate stable performers across sites and also site specific clones for future planting programmes of the State Seed production orchards for twelve medicinally important tree species have been established with the funding support from National Medicinal Plants Board, GoI.



Planting of seedlings

Institute of Wood Science & Technology (IWST), Bengaluru:

- A patent "Simple and rapid infrared (IR) spectrum based detection method for discrimination of pure sandalwood and other essential oils" has been filed in June 2019. The antioxidant properties of Volatile oil and oleoresin of *Zanthoxylum rhetsa* was screened by DPPH method. Oleoresin of fruit and seed coat showed better scavenging property when compared to the standard.

- Field survey was conducted in forest areas of Hunsur, Koppa, Sagar divisions and Rajiv Gandhi National Park of Karnataka through line transect and total count methods and population density, regeneration status and different girth classes of rosewood trees recorded.
- Agarseeds collected from 64 locations in Assam, Arunachal Pradesh, Tripura and Nagaland. Provenance cum progeny trail with 14 families established at forest college experimental station (UAHS, Shimoga) Iravathai, Sagar.
- Developed transparent wood composite (TWP) using poplar veneers by infiltrating biodegradable polymer (polyvinyl alcohol). The potential application of such optically anisotropic and flexible wood-polymer composite as light shaping diffuser is demonstrated.
- A process patent entitled “A Transparent Lignocellulosic Composite” has been filed.
- The successful amplification and sequencing of the 16S rRNA gene confirmed the presence of phytoplasma in symptomatic samples of sandalwood. The 16S rRNA sequences obtained from three sandalwood and an Indian gooseberry samples

*Cestrum diurnum*

showed 99.9 % sequence similarity with each other and 99.36 % with reference phytoplasma strain OAY (AJ550984) of ‘CandidatusPhytoplasmaasteris’.

- SSR molecular marker associated with acoustic velocity (an indirect measure of modulus of elasticity) for Meliadubiawere identified. The markers can potentially be used in early selection of superior genotypes for wood trait.
- A fast eco-friendly and cost effective process for developing luminescent transparent wood composite with optical transmittance upto 82% and haze to 90% from silver oak wood veneers was developed. The transparent wood can be used as a light shaping diffuser and in opto-electronic devices.

Arid Forest Research Institute (AFRI), Jodhpur:

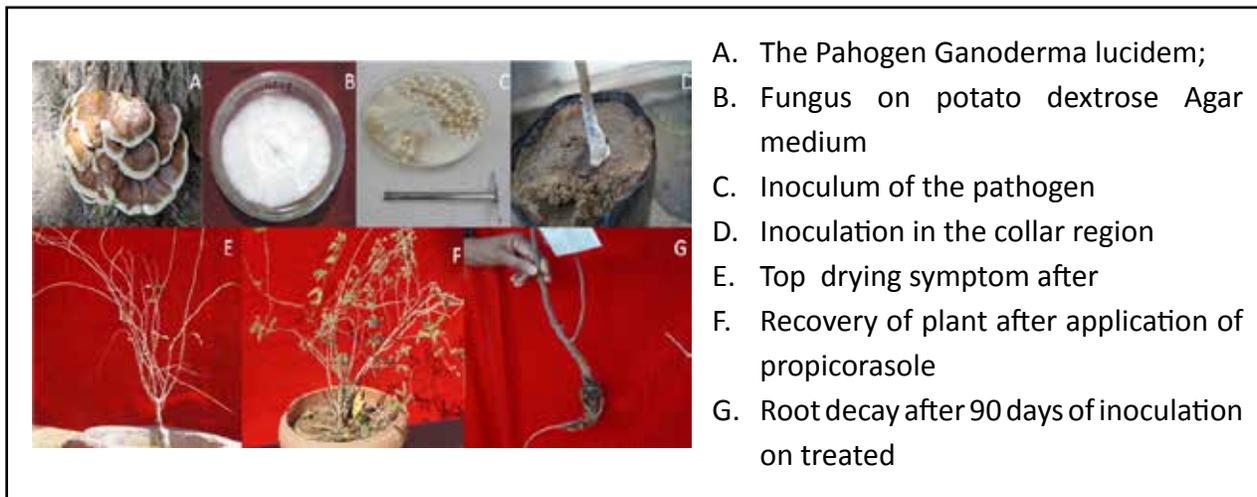
- While quantifying harvested wood biomass and developing allometric equations based on tree growth parameters we find significant relationship between diameter at breast height (dbh) and total height of *E. Camaldulensis* trees.
- Overall maximum collar growth was observed in combination of Azotobacter+Azospirillum+Trichoderma.

*Hiptage benghalensis*



- Integrated management of Ganoderma root rot pathogen was done using botanical extract, bioagent and chemical fungicide and it was observed that Propiconazole, leaf extract of Prosopis juliflora and Trichoderma harzianum are able to manage the pathogen in vitro as well as in vivo,

propiconazole being the best followed by bioagents and botanical extract in terms of survival percent, shoot height and collar diameter. Thus, the application of chemical can be minimized by using botanical pesticides or bioagent as its substitute.



- A. The Pathogen *Ganoderma lucidum*;
- B. Fungus on potato dextrose Agar medium
- C. Inoculum of the pathogen
- D. Inoculation in the collar region
- E. Top drying symptom after
- F. Recovery of plant after application of propiconazole
- G. Root decay after 90 days of inoculation on treated

- Strain of Rhizobium has been isolated from nodules of khejri which has properties of not only fixing atmospheric nitrogen but also can act a biological control agent due to its chitinase production activity.
- Selection of efficient AM fungi, PSBs and Azospirillum for productivity enhancement of *Dendrocalamus strictus* & *Bambusa bambos*.
- Neem tree is of multi-faceted importance. It has tremendous economic importance. However, it is frost-prone species and experience die-back at seedling stage and of young shoots in mature trees, leading to poor seed set. The project aims at developing a genetic transformation protocol for neem using *Agrobacterium* is underway at AFRI, Jodhpur.
- Reckless over-exploitation for oleo- gum-

resin has resulted in enlistment of the Ayurvedic divy aushidhi plant of the arid regions – Guggul in the IUCN Red Data Book as a critically endangered species. The callus cultures were successfully established from guggul immature fruits. Biomass accumulation rate of guggul cells and cell- aggregates was recorded. Ethyl acetate extraction of guggul sterones was carried out and HPLC standard curves were established.

- Maticembryogenesis is established in *Leptadenia reticulata* through callus induction from immature seeds and flowers.

Himalayan Forest Research Institute (HFRI), Shimla:

- Conservation of *Pinus gerardiana* through mycorrhizal biotechnology.

- Standardization of Grafting Techniques in Cedrusdeodara (Roxb.) G.Don: Different methods of grafting (i.e. Wedge, cleft, side and side-veneer) attempted at different intervals in Cedrusdeodara during the



Grafted plants at FRS, Shillaru

period of study did not produce successful grafts as the grafted plants died after six to eight months of their grafting. Hence, grafting as method of propagation has not been found successful in deodar.



Grafted plants covered with Plastic bags

- Community dependency on oak forests for fodder and comparative analysis of different oak species of Himachal Himalaya for nutritive value and leaf biomass production.
- Standardization of Agro-Techniques and Evaluation of Growth Parameters of

Juniperuspolycarpus C. Koch under Nursery and Field Conditions.

- Awareness training for conservation of Pinusgerardiana (Chilgoza) through scientific intervention in Moorang forest range of district Kinnaur, Himachal Pradesh.



Field demonstration on Harvesting of Chilgoza cone



Tropical Forest Research Institute (TFRI), Jabalpur:

- Progeny trial of *Tectonagrandis* representing seedlings from 28 CPTs of 04 states viz. M.P., Chhattisgarh, Maharashtra and Odisha and Seedling Seed Orchard of *Tectonagrandis* representing seedlings from 33 families of 03 states viz. Madhya Pradesh, Chhattisgarh and Maharashtra.
- Mass multiplication of different species of



In vitro shoot multiplication and rooting in Bambusa Tulda

- The finding derived from a research project titled 'Assessing the impact of pruning of *Diospyros melanoxylon* bushes on its yield, quality and natural regeneration of tree species in Maharashtra' funded by Maharashtra State Forest Department will have implications in providing guidelines for sustainable harvest of tendu bushes in the State of Maharashtra.
- Development of Value Chain Industrial Agroforestry with Orient Paper Mill, Amlai (MP): Initiated work to develop Value Chain on Industrial Agroforestry with Orient Paper Mill, Amlai (MP) to promote Subabul and Bamboo based Agroforestry System

Bamboos, carried out through the process of macro and micropropagation.

- Information on tendu (*Diospyros melanoxylon*) harvest practices: The traditional pruning practices of *Diospyros melanoxylon* bushes were evaluated for yield and quality of leaves, and their natural regeneration to suggest best harvest practice in Maharashtra.



for Economic Upliftment and Livelihood Security of Farmers' in Madhya Pradesh under NABARD, Bhopal and MPSFD, Bhopal project.

Institute of Forest Productivity (IFFP), Ranchi:

- Selection of Candidate Plus Trees (CPTs) of important tree species has been done in eastern India. Forty-six CPTs of *Pterocarpus marsupium* have been selected from Jharkhand and West Bengal. In Seed production areas (SPAs) of miscellaneous species, 166 seed trees have been evaluated in West Bengal, out of which 36 seed trees have been marked as Seed Source Tree.



Field activities carried out during Seed Stand Evaluation

- The most probable distribution map of *Lantana camara* distribution for Jharkhand has been generated and valid at edatrandom points for different category of land-use pattern.
- Carbon Stock of miscellaneous trees species in Dalma Sanctuary and Betla National Park in Jharkhand has been estimated.
- Seeds of *R. Serpentine* plants, foliar sprayed with different concentration of natural biostimulant viz aqueous *Moringaoleifera* leaf extract were collected and subjected to germination test in petridish. Possible control measures for *Soapnutsemiloooper*, *Tinoliuseburneigutta* (Noctuidae: Hemiptera).

Institute of Forest Biodiversity (IFB), Hyderabad:

- Air layering experiments were conducted with coppice shoots of *Pterocarpussantalinus* L.f.. The vegetative multiplication garden at Institute of Forest Biodiversity was hedged at one-foot height during the month of December. The effects of following factors were studied over a period of two years.
- Rooting and callusing response was found to be much better during rainy season compared to summer season. Similarly, the rooting and callusing response in ring incision was found much better than stripe incision.

Activities of ICFRE Institutes

Forest Research Institute (FRI), Dehradun:

- Forest Research Institute put astallin Kumbh Mela 2019 at Prayagraj in which technologies developed by different ICFRE Institutes were demonstrated through digital posters, models, exhibits, short films, brochures, publications, digital presentations and forest products.
- FRI participated in the exhibition “Destination Uttarakhand - 2019” from 18th to 20th July, 2019. FRI participated in Exhibition and Technology Fair organized during COP-14 of the United Nations to combat desertification.



Hon'ble Minister of EF&CC visiting the stall in COP-14



Ms. Diya Mirza, UN Environment Goodwill Ambassador visited ICFRE stall in exhibition and technology Fair, CoP 14, Noida

- FRI 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.



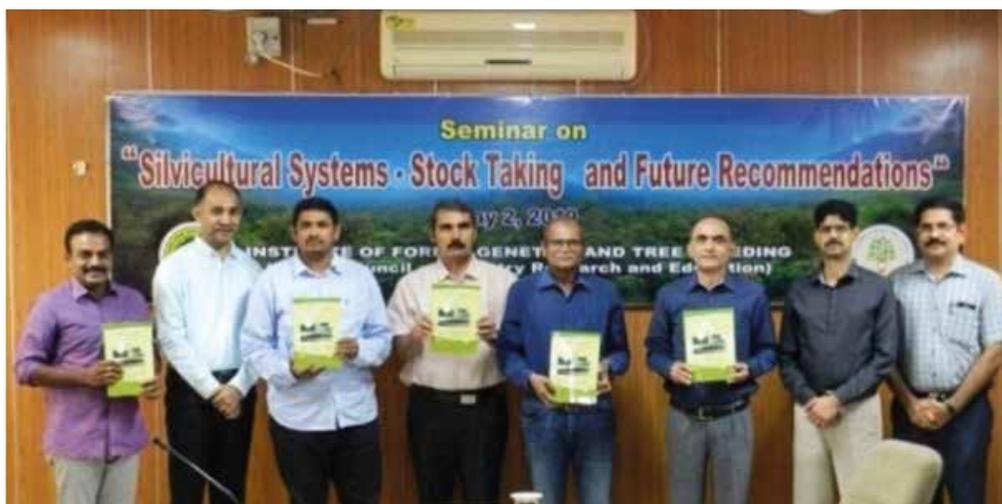
Shri C.K. Mishra, Secretary, EF&CC visiting ICFRE stall in Exhibition during International Day of Forests-2019

- The Institute organized meetings of Commissioners, Dy. Commissioners, teachers of Kendriya Vidyalaya and Navodaya Vidyalaya Sanghthan to finalize the activity calendar for visits of students and teachers to FRI, Dehradun. According to MOU signed and calendar visits and meetings of teachers have been conducted.
- Five divisional seminars have been organized by the Institute to share the knowledge, ideas and to find out the future research directions in consultation with various stakeholders.
- Three trainings under Green Skill Development Programme (GSDP) of MoEF&CC, New Delhi have been organized

for various stakeholders by the Institute from January 2019 to onwards. Besides this 13 training programmes have been organized for IFS Officers (20), Commandants of Coast Guard (12), Farmers, Students (34), Forest officers, & Army officers of Nepal (25), Farmers, NGOs, SHGs, Students (36), Farmers, Frontline Staff, Students (54), Supervisor & Field Staff BCCL, Dhanbad (330), Cosmetologist beauticians, Scientist, Doctors, Arm therapist, Entrepreneurs (43), Officers & Engineers of MES, IMA Dehradun (22), Forest Guard (M.P) (03), Farmers Students, NGOs (40), Forest officers (20) and Officers of Company(05).

Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore:

- IFGTB organized Tree Growers Mela on 13 February 2019 at A.S. Mahal, Tiruvannamalai under the theme “Smart Cultivation for Increasing Farm income and Green Cover”, in collaboration with Tiruvannamalai forest division, Tamil Nadu Forest Department.
- IFGTB, Coimbatore organized seminar on “Silvicultural Systems - Stock Taking and Future Recommendations” on 2 May 2019. 29 Senior Officers, J&K Forest Department of TNFD, CASFOS, and Scientists of IFGTB attended the seminar.



Institute of Wood Science and Technology (IWST), Bengaluru:

- IWST, Bengaluru organized workshop on “Status of Eucalyptus Plantation – Myths and Reality” on 28 May 2019. 32 Stakeholders like State Forest Departments and Pulp and Paper Industries participated in the programme.
- IWST, Bengaluru organized training cum

demonstration on “Forestry and Wood Science” under VVK on 27 March 2019. 39 Farmers, NGOs and entrepreneurs attended the programme.

- IWST, Bengaluru organized training on Forest Utilization from 26 to 28 March 2019. 29 RFO trainees from Tamil Nadu Forest Academy attended the programme.
- IWST, Bengaluru organized training on



“Value-Addition - Bamboo Technologies, sponsored by Bamboo Technical Support Group (BTSG)-ICFRE from 11 to 15 March, 2019. Artisans from Karnataka, Andhra Pradesh and Telengana attended the programme.

Rain Forest Research Institute (RFRI), Jorhat:

- RFRI, Jorhat organized workshop on Identification of Drivers of Deforestation in Meghalaya under the agencies of MBMA on 29 January 2019. 32 participants from Academia, NGO, State Government Departments including Forest and Environment Department, Government of Meghalaya, etc attended the programme.
- RFRI, Jorhat organized stakeholder’s consultation workshop organized by RFRI at Sikkim on “Preparation of State REDD+ Action Plan for Sikkim” on 26 June 2019. 43 indigenous people, forest dependent communities and Forest Department attended the workshop.
- RFRI, Jorhat organized inception meeting cum workshop on “Preparation of Detailed Project Report (DPR) for rejuvenation of river Brahmaputra through forestry interventions” on 18 June 2019. 36 People of Brahmaputra basin attended the workshop.
- FRC-LE, Agartala organized workshop on “Bamboo based Community Enterprise Development” in collaboration with Bamboo Society of India-Tripura Chapter and Tripura Tourism Department at FRC-LE on 6 May 2019.
- FRC-LE, Agartala collaboration with Tripura

Bamboo Mission organized workshop on Bamboo planting stock certification and nursery accreditation program” on 13 May 2019.

Arid Forest Research Institute (AFRI), Jodhpur:

- AFRI, Jodhpur organized interactive workshop on “Preparation of DPR for Rejuvenation of Luni River & Chambal River (Rajasthan part) through forestry Intervention” on 27 May 2019. 93 Forest officers, NGOs, Scientists, Farmers, Academician attended the workshop.
- AFRI, Jodhpur organized seminar on tree improvement of an important timber species of Rajasthan *Tecomella undulata* on 28 June 2019. 37 scientists, technical staff, research Scholar of AFRI attended the programme.
- AFRI, Jodhpur organized a seminar on NTFP species of Rajasthan and their value addition on 29 August 2019. 40 Forest Department personnel attended the programme.
- AFRI, Jodhpur organized interactive workshop on “Preparation of DPR for Rejuvenation of Luni River through Forestry Interventions” on 17 and 26 September 2019. Total of 101 Forest officers, Scientists, Professors, Academician, NGOs and Technicians etc. participated in the programme.

Himalayan Forest Research Institute (HFRI), Shimla:

- HFRI, Shimla in collaboration with Agriculture Department and Forest Department, Leh organized Farmer’s/

Kisan Mela at Leh, on 6 September 2019. More than 135 people including farmers, foresters etc. participated in the programme. During the Kisan Mela, 270 plants of Juniper polycarpus were distributed to local farmers and field staff of Leh Forest Division for plantation in Cold desert area.

- HFRI, Shimla organized stakeholders consultation workshop on “Preparation of State REDD+ Action Plan for Himachal Pradesh from 18 and 19 June 2019.
- HFRI, Shimla organized workshop and brain storming for Preparation of Detailed Project Report for Rejuvenation of Indus river Basin through forestry interventions from 28-29 June 2019.
- HFRI, Shimla in collaboration with GB Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD), Himachal Regional Centre, Mohal-Kullu, Himachal Pradesh organized one-day workshop on Cold Desert Biosphere Reserve for the Preparation of UNESCOMAB Net Document on 26 July 2019 at HFRI, Shimla.

Tropical Forest Research Institute (TFRI), Jabalpur:

- TFRI and FRC-SD organized 25 training programmes including five GSDP trainings during January - October 2019, wherein training had been provided to 800 persons including unemployed youth, students, teachers, farmers, frontline staff of forest departments and other stakeholders.

Institute of Forest Productivity (IFP), Ranchi:

- IFP, Ranchi organized inception workshop on “DPR preparation for Rejuvenation of Mahanadi and Godavari rivers through Forestry Interventions” in collaboration with the Department of Forest and Environment, Govt. of Odisha on 10 June 2019.

Institute of Forest Biodiversity (IFB), Hyderabad:

- Institute of Forest Biodiversity (IFB), Hyderabad and Centre for Fly Ash Research & Management (C-FARM), New Delhi organized national seminar on “Use of Fly ash in Forestry Applications and Rejuvenation of Waste/ Degraded Lands” held at Telangana State Forest Academy (TSFA), Dulapally, Hyderabad on 19 January 2019.
- IFB, Hyderabad conducted seminar on topic “Biodiversity & their related issues” & on topic “Rural management & Importance of farmers” on 22 May 2019.

Indian Plywood Industries Research and Training Institute (IPIRTI), Bengaluru:

Progress/Achievements:

- **Research:** During the period 79 projects have been under taken including institute, sponsored and consultancy projects out of which 34 projects have been completed.
- **Training and Education:** During the period, 30thbatch Training Course for One Year Post-Graduate Diploma in Wood and Panel Products Technology for graduates in Science and Engineering was



conducted wherein all the 29 candidates completed the course successfully and 100% placement was arranged through campus recruitment process. Training course for 31st batch Course for One Year Post-Graduate Diploma in Wood and Panel Industries Technology for graduates in Science and Engineering is commencing from November, 2019. 8 Short Term Training Courses were conducted.

- Testing of Samples will be conducted as per relevant Bureau of Indian Standards (BIS) and International standards. Total number of samples tested from 01.01.2019 is 406.
- Several extension and outreach activities for industry, community and other endeavours is taken up by IPIRTI including organisation of an International Conference cum Exhibition on bamboo composites from 9th– 12th February 2019 at IPIRTI, Bengaluru.
- IPIRTI 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.
- **Publications:** 9 Research Reports have been published from January 2019.

Indian Institute of Forest Management (IIFM), Bhopal:

Progress/Achievements:

The Institute offers four academic programmes, Post Graduate Programme in Forestry

Management (equivalent to Master’s Degree), Post Graduate Diploma in sustainability Management (PGDSM), M.Phil. (Natural Resource Management) and Certificate course on Chartered Foresters. The Institute is also recognized as a Nodal Centre for Research by Forest Research Institute, Deemed University (FRI), Dehradun for Doctoral programme.

- **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).
 - Centre for Ecological Services Management (CESM).
 - Centre for Livelihood Management (CLM).
 - Centre for Sustainable Forest Management and Forest Certification (CSFM&FC).
 - Centre for Climate Change Studies (CCCS).
 - Centre for Policy Studies (CPS).
 - Centre for Application of Management Techniques in Government (CAMTG).
 - Centre of Excellence for IIFM – Industry Interface for Sustainable Development.
 - Geo-Informatics Centre for forestry, climate change and livelihood support.
 - Centre of Excellence in Corporate Social Responsibility (C-CSR).
 - Centre for Forest Hydrology.

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

- **Training:** During the year under report the institute conducted 11 Management Development Programmes and a total of 237 persons were trained and 04 workshops/seminars were conducted in which 113 delegates participated.
- **Consultancy:** During the period under report the Institute is currently having 05 consultancy projects in the area of ecological studies, environmental-economic, socio-economic studies, evaluation of schemes and programmes and cross-functional areas of forest certification and sustainable forest resource management and non-timber forest products.
- **Publications:** The faculty members of IIFM have published 07 papers in books, 06 lectures in conferences, seminars and special occasions, 05 presentations in international conferences and 02 books and reports.
- **Awards & Recognition Received by IIFM:** IIFM achieved 41st Rank Overall under the National Institutional Ranking Framework (NIRF), Ministry of Human Resources Development, Government of India Ranking . National Board of Accreditation (NBA) has accredited Post Graduate Diploma in Forestry Management (PGDFM) for three years.
- New course 'Post Graduate Diploma in Sustainability Management' has started

from the academic year 2019-20.

- 22nd July 2019, has been marked as "Jal Diwas" under "Jal Shakti Abhiyaan" and programmes were organized related to water conservation efforts.
- In association with TiE Madhya Pradesh and VASPL, IIFM Bhopal organised a session with Mr Mahavir Sharma, Vice Chairman, TiE Global Board of Trustees, on "The Art of Story-Telling", on 31st July 2019.
- An elocution competition 'Turn Coat' was held on 1st August by the Literary Club, IIFM,
- Each species is a masterpiece, a creation assembled with extreme care and genius. " The WWF workshop held on 3rd August and enlightened the students of IIFM about them. The session was addressed by Mr. Nikhil Raut, a herpetologist with few volunteers of WW.

Directorate of Forest Education (DFE), Dehradun:

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 follows:



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

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

- Two (02) batches of State Forest Service Officers have joined induction training during 01.01.2019 to 31.12.2019.
- Three (03) batches of State Forest Service Officers are undergoing induction training at the various Forestry Training Academics.
- Two (02) batches of State Forest Service Officers have passed out at various Forestry Training Academics.
- Nine (09) batches of Range Forest Officers have joined induction training during 01.01.2019 to 31.12.2019.
- Four (04) batches of Range Forest Officers are undergoing training at the various Forestry Training Academics/Institutes.
- Ten (10) batches of Range Forest Officers have passed out at the various Forestry Training Academics.
- Refresher Course/Theme based Workshops for In-service State Forest Service Officers and Senior Forest Range Officers.

List of publication:

- **DFE Dehradun**: - "Field Forester Journal":

The Field Forester is an educational Journal launched by the DFE, Dehradun seeking to inculcate reading and writing habits amongst officer trainees as well as serving foresters of state forest departments through a new popular educational Journal named "Field Forester". Success/failure stories as a bridge between young and senior forests are being documented.

- **CASFoS, Dehradun:** - "Safarnama": The batch wise list of State Forest Service Officer Trainees trained by this Academy w.e.f. 1981-83 batch to 2017-19 batch.

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:

- 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) Programmes were conducted for in-service IFS Officers.
- One Professional Skill Up-gradation Course (PSUC) (Induction Training Programme for officers inducted into IFS from SFS).
- Four 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.
- Two- Day Training Workshop 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 at an estimated cost of (Rs. 11.01 crore) in addition, approval for construction of all-weather Swimming Pool has been received and work will start shortly (Estimated cost Rs. 15.50 crore).

List of publications:

Hindi magazine 'Aranya' was published and released on 25.03.2019 by the Director, IGNFA.

Training of IFS Officers:

The Ministry of Environment, Forests & Climate Change Government of India have been



organizing 37 In-service training courses of one week for IFS Officers in various disciplines in various institutions in the country. Officers are also sponsored for long-term training courses. In addition to sponsoring short-term refresher courses, the MoEF&CC have been sponsoring 23 In-service 1-3-day training workshops and seminars on emerging topics of regional, national and international importance.

Training of Personnel of Other Services:

The component provides awareness programs through short-term trainings, workshops, and study tours for the personnel of various Departments such as Police, Revenue, Customs, etc. The Ministry of Environment, Forests & Climate Change Government of India have been organizing 4 training courses for IFS Officers in various disciplines in various institutions in the country for the personnel of Other Services.

Foreign Training of Forestry Personnel (FTFP):

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. The Ministry of Environment, Forests & Climate Change Government of India have been organizing 5 training courses in various disciplines 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. The Ministry of Environment, Forests & Climate Change Government of India have been organizing 31 training courses for IFS Officers in various disciplines in various institutions in the country for these stakeholders.

6.7 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 MoEFCC 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. The research agenda is guided by the Training, Research Advisory Committee (TRAC) comprised of 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 during 2019-20

Projects funded by WII's Grants-in-Aid	10
NTCA funded projects	12
Externally aided projects	63
Department of Science & Technology	10
CAMPA/ Species Recovery Programme	4
Short Term Projects	32
Total	131

• Higher Education and Academic Activities

➤ 16th M.Sc. Course in Wildlife Science:

The Institute has been conducting a two-year Master's programme in Wildlife Science since 1987. The purpose of this course is to build a cadre of trained wildlife scientists who would strengthen field-based research. The XVI batch of the 2-year M.Sc. in Wildlife Sciences (2017-19) began on the 26 June 2017 at WII. 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. During the reporting period, all 20 students of 16th M.Sc. (Wildlife Science) Course conducted their dissertation from February to May 2019. The students openly defended their dissertation findings. The students submitted the final thesis after incorporating the reviewers' comments on 29 June 2019. The course concluded on 30 June 2019.

➤ 17th M.Sc. Course in Wildlife Science:

The 17th M.Sc. Course commenced in July 2019 with 20 students after a competitive selection process based on National Level Entrance Test and Interview. A total of 525 candidates competed for 20 seats. In this semester the students have gone through basic theory papers and practical on Ecology, Evolution, Plant Systematics, Mammalogy, Ornithology, Herpetology, Forestry, Ichthyology, Invertebrates, Population Ecology and Statistics. The students have also been taken to the Orientation tour to Lansdowne Forest Division and the Techniques tour to Rajaji Tiger Reserve. The first semester examinations were conducted during 9-15 December 2019 and the second semester is planned to start from 6 January 2020.

➤ First Master's Degree Course in Heritage



Conservation and Management commenced at UNESCO Category 2 Centre, Wildlife Institute of India, Dehradun, 1st July 2019: The UNESCO Category 2 Centre (C2C) for World Natural Heritage Management and Training for Asia and the Pacific Region at Wildlife Institute of India, Dehradun was established in the year 2015 to realize the objectives of the UNESCO World Heritage Convention, 1972 by building capacity of World Heritage professionals through training, research and information dissemination. Responding to the critical need for advancing heritage education, the Centre has introduced a 2-year residential Master's Course in Heritage Conservation and Management beginning July 2019. Currently affiliated to Saurashtra University, Gujarat, the course is interdisciplinary in nature and advances sustainability studies through the prism of heritage. This includes theoretical and methodological integration of ecological sciences, social sciences and humanities, and heritage studies. A total of ten students joined the course on 1st July 2019.

- **Training Programmes**

- **XL Post Graduate Diploma in Advanced Wildlife Management Concluded, Dehradun, 1st September 2018 to 30th June 2019:** The 40th PG Diploma Course in Advanced Wildlife Management began from 1st September 2018 and concluded on 30th June 2019. Thirteen

officer trainees of the rank of DCF/ACF from ten states joined the course. All the officer trainees have successfully completed the course.

- **XLI Post Graduate Diploma in Advanced Wildlife Management Commenced, Dehradun, 1 September 2019 to 30 June 2020:** The 10-month PG Diploma Course in Advanced Wildlife Management commenced on 1 September 2019 at this Institute with twenty officer trainees of the rank of Deputy Conservator of Forests/Assistant Conservator of Forests and equivalent levels. Among them, six officers represented Indian States (three from Chhattisgarh, two each from Maharashtra and Tamil Nadu, one each from Kerala, Himachal Pradesh, Uttarakhand, Maharashtra, Madhya Pradesh, Rajasthan, Assam and Arunachal Pradesh). Besides, five foreign nationals from Myanmar (2) and Bangladesh (3) have also joined the course. During the reporting period, the officer trainees were taken to Koluchaur, Chowkhamb, Lansdowne Forest Division, Pauri Garhwal and its adjoining areas for their the Orientation Tour during 23-28 September 2019. The objective of this tour was to introduce the concept of conservation values, unique features, orientation to flora and fauna, identification of bird species and guilds in the different forest ecosystem.
- **XXXIV Certificate Course in Wildlife Management Concluded, Dehradun, 1st November, 2018 to 31st January,**

2019: The Certificate Course began on November 1, 2018. A total of 18 officer trainees joined the course, of which nine officer trainees were from six different states of the country and nine were from foreign countries (five from Malaysia and four from Myanmar). Apart from the classroom teaching, the officer trainees were taken to various protected areas of Madhya Pradesh, Rajasthan and Tamil Nadu in India; and Colombo in Sri Lanka for the Management Tour. The Valedictory Function was organized on 31 January, 2019. All the officer trainees have successfully completed the course.

➤ **XXXV Certificate Course in Wildlife Management Commenced, Dehradun, 1st November 2019 to 31st January 2020:**

The Wildlife Institute of India has been organizing the 3-month Certificate Course in Wildlife Management since 1985 for the Forest Officers from the State Forest Departments as well as Wildlife Officers from the neighbouring countries. The XXXV Certificate Course was started on the 1 November 2019, in which 19 Officer Trainees including two from Uttarakhand, one each from Madhya Pradesh and Mizoram, three from Bangladesh, six each from Malaysia and Myanmar are undergoing training. The course included intensive field-oriented training along with classroom teaching.

- **Workshops, Seminars, Meetings and Other Activities:** A large number of activities were conducted during the reporting period.

The information of some important events is given below:

- 3rd Ten-day Orientation Workshop on Wildlife & Health Management, Dehradun, 16-25 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, 4-8 February, 2019.
- Professional Development Programme (PDP) for Enhancing EIA Effectiveness, Dehradun, 25 February 2019 – 8 March 2019.
- Wildlife Restraint and Immobilization Workshop with Special Reference to Elephants and Carnivores, Dehradun, 15-20 April 2019.
- Training Workshop on Wildlife Techniques for Frontline staff and Veterinarians of Gangotri-Govind SECURE Himalayan Landscape, Dehradun, 29 April to 1 May 2019.
- One-week Special Course on Wildlife Protection, Law and Forensic Science for Officer Trainees of Indian Revenue Service (Customs & Central Excise) Group-A, 70th Batch, Dehradun, 6-11 May 2019.
- Two-day Training Workshop on Management Effectiveness Evaluation of Protected Areas, Dehradun, 6-7 June 2019.
- Ten-Day Orientation Workshop on



“Wildlife and Health Management”,
Dehradun, 5-14 August 2019.

- Annual Research Seminars.
- XV Internal Annual Research Seminar, Dehradun, 19-20 August 2019; 4th Himalayan Research Seminar, Dehradun, 21 August 2019; 2nd Biodiversity and Ganga Conservation Seminar, Dehradun, 22 August 2019; Seminar on Endangered Species Recovery Programme, Dehradun, 23 August 2019; and XXXIII Annual Research Seminar, Dehradun, 26-27 August 2019.
- National Training Workshop for Spearhead Team of Ganga States on “Ganga Biodiversity Conservation and Monitoring of Aquatic Species of Ganga River”, Dehradun, 3-9 September 2019.
- Sensitization Workshop on “Rescue and Rehabilitation of Aquatic Macro-Fauna” for Local Community and Forest Officials of Sahibganj, Jharkhand, 14 September 2019.
- Training Course on ‘Biodiversity Conservation’ for Scientists & Technologists working in Government Sector, Dehradun, 4-9 November 2019.
- Certificate Course on Nature

Interpretation for Zoo Guide Training under Green Skill Development Programme (GSDP), Ahmedabad, 30 November-9 December 2019.

- Compulsory Training Programme for IFS Officers on “Illegal Trade in Wildlife and Role of Wildlife Forensics in Dealing with Wildlife Crime”, Port Blair, 2-6 December 2019.

Progress/Achievements:

- Release of the Tiger Status Report of WII-NTCA by the Hon’ble Prime Minister of India showing a sustainable conservation success and recording a major increase in tiger status, New Delhi, 29 July 2019.
- Establishment of Molecular Ecology and Conservation Genomics Laboratory. It was inaugurated by the Hon’ble Union Minister for Environment, Forest and Climate Change, Govt. of India, Shri Prakash Javadekar on 7 September 2019.
- Establishment of Elephant Cell at WII by Project Elephant, MoEF&CC, 12 August 2019 and its inauguration by Shri Harak Singh Rawat, State Minister of Environment & Forest, Govt. of Uttarakhand.
- Successful establishment of a Conservation Breeding Centre for the Great Indian Bustard and hatching of 09 chicks.



Education and Awareness



7.1 Environmental Education, Awareness and Training

Under the Division, Environmental Education, Awareness and Training (EEAT) scheme is central sector scheme launched during financial year 1983-84 which aims to promote environmental awareness and mobilize student's participation for environment conservation. There are five programmes operational under the EEAT scheme, as follows:

- 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)

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 presently around 1,50,000 Ecoclubs 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 (waste segregation into biodegradable and non-biodegradable) 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.
- Cleanliness drives.
- **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 three days to create awareness amongst school/college students on environment and nature. The activities undertaken includes ‘Apna Paryavaran Janiye’ (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; 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



'Train the trainer' workshop on GLOBE programme for Ecoclub coordinators held under the chairmanship of Sh. Arvind Nautiyal, Joint Secretary, MoEF&CC

- **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 have been initiated through schools/colleges under National Green Corps "Eco-club" programme of Ministry.

Progress/Achievements:

- **Number of Ecoclubs doubled in States –** With the increased ceiling of 500 Ecoclubs

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 programme which focuses on Hands- on-approach based environmental learning and has tremendous potential in enhancing the quality of Environment Education.



Ecoclub students participating in the Swachh Nirmal Tat Abhiyaan

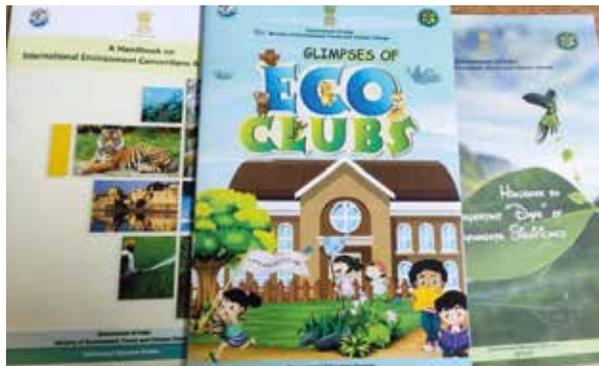
in each district, seven States have been able to increase the number of Ecoclubs namely Andhra Pradesh, Assam, Gujarat, Karnataka, Madhya Pradesh, Odisha and Telangana. Other States/UTs are also in the process of doubling the Ecoclubs.

- **Nature camps organized:** 113 nature camps have been supported and organized for the Ecoclub students.
- **Capacity building trainings conducted:** Financial assistance has been provided under the scheme to support 38 trainings



conducted for students and teachers in the States/UTs.

- **GLOBE:** Six Trainings on four protocols namely Pedosphere, Hydrosphere, Biosphere and Atmosphere has been conducted in six States (Madhya Pradesh, Gujarat, Odisha, Kerala, Rajasthan and



Knowledge products for Ecoclubs

- **'Single Use Plastic Free' Ecoclub Schools:** Under the 100 day action plan, Environment Education Awareness and Training scheme of Environment Education Division intended to make at least 1000 schools single use plastic free Ecoclubs. Accordingly nodal agencies (State Government bodies) implementing the programme in States/UTs were communicated following activities to be disseminated among the schools:

- No 'single-use' plastic items to be used in schools such as plastic cups, plastic plates, straws etc.
- Cleanliness drives to be undertaken by the schools.
- Awareness campaign by schools on harmful effects of single-use plastic.

Telangana) successfully wherein 150 Ecoclub teachers actively participated in each training programme. Further one 'Train the Trainer' workshop, under the chairmanship of Joint Secretary, MoEF&CC was also organized in Delhi in through International Master Trainers of the GLOBE programme.



Ecoclub Students preparing Eco-friendly Ganesh idols

Ecoclubs were given list of 'single use' plastic items to be banned in schools and thereby making their environment single use plastic free. A total of 1367 schools across 13 States/UTs have made their campuses 'Single use plastic free'.

Jal Shakti Abhiyaan: Ecoclubs actively participated in the 'Jal Shakti Abhiyan' of Ministry of Jal Shakti initiated from 1st July 2019 onwards on the theme "Sanchay Jal, Behtar Kal". The major intervention areas under the Jal Shakti Abhiyan were Water conservation and rain water harvesting, Renovation of traditional and other water bodies/tanks, Reuse, borewell recharge structure, Watershed management and Intensive afforestation. Ecoclub volunteers from the districts/blocks were involved for making this campaign successful.



Ecoclub Students cleaning a 'Bowli' in Sikar district, Rajasthan

- **Harit Diwali:** Ecoclubs celebrated environmental-friendly Diwali by cleaning of houses, renovating and decorating homes with diyas, lighting up candles, lamps; donating clothes/books to needy; making colourful rangoli etc.
- **'Swachh Nirmal Tat Abhiyaan' - Beach cleanliness drives:** Ecoclubs actively involved in the week long (11-17 November, 2019) intensive beach cleaning drive launched by the Ministry across all identified 50 beach sites in the 10 coastal States. During the drive period, a mind boggling 238 tonnes (approx.) solid waste was collected from the 50 beach sites. The drives witnessed huge stakeholder participation particularly the students of schools/colleges, volunteers, State Government officials and all sections of society. About 70,200 volunteers actively participated in the drive across all 50 beaches. Mass awareness campaigns, quiz competitions, painting competitions, counselling sessions, pledge ceremonies, slogan writing, rallies etc. were also highlight of this program duly sensitizing the importance of conserving the pristine coastal ecosystems.

Important Conferences organized in India or International Conferences:

- In order to oversee and review the activities being carried out under EEAT scheme across the country, a 'Review meeting of the Environment Education, Awareness and Training Scheme' was held on 19th July 2019 under the chairmanship of Additional Secretary in the MoEF&CC.
- Annual Meet of the Nodal agencies implementing the EEAT scheme is scheduled on 19.12.2019 under the chairmanship of Secretary (EF&CC) in Gujarat. All the States/UTs shall showcase their knowledge products, success stories and experiences under the Ecoclub programme.
- Global Learning and Observations to Benefit the Environment (GLOBE) Asia Pacific Regional Meeting of the Country Coordinators held in Seoul, Republic of Korea from 21-23 May, 2019. India



prepared a detailed plan of action to conduct the GLOBE programme effectively in States on pilot basis. Programme is now

being undertaken in six States namely Gujarat, Kerala, Madhya Pradesh, Odisha, Rajasthan and Telangana.



GLOBE Asia Pacific Regional Meeting of the Country Coordinators held in Seoul, Republic of Korea

List of major publications:

Four publications are being brought out namely:

- **Glimpses of Ecoclubs:** This booklet present the glimpses of the achievements and activities/success stories under the Ecoclub programme.
- **Brief on International Environment conventions:** The booklet documents the background and brief information on various conventions which Ministry has signed for protection of environment. This booklet shall be used as resource material for the students of Ecoclubs across India. Students will have insight on India's perspective on biodiversity, waste management, pollution, desertification, climate change, wetlands etc.
- **Important Environment Days:** This booklet shall make the students of Ecoclubs across the country aware about the environment related days and their importance. Students celebrate these events by organising

debates, quiz, slogan competitions, drawing/poster competitions etc, on the related theme.

- **Citizen Charter for Green Habit:** The booklet aims to bring about mass environmental awareness on Green Habits among society. The green deeds are simple, practical steps that every individual may perform in day-to-day life that can make a visible difference to the environment.

7.2 Swachh aur Swastha Bharat Cell

Swachh Aur Swasth 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 (SAP) 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.

SAP 2019-20 has been divided into three-time frames April- July, August- November

and December – March. Each time frame consist of a focused activity along with other activities, the same may be seen at table 7.1. During April – July the activities were focused on awareness about solid waste management under the title ‘Dust to Dustbin campaign’, during August-November time frame; Ministry under its SAP is focusing on ODF awareness in rural areas whereas from December- January the focused area of activity will be awareness on E-waste management. During this period following awareness tools will be used to raise mass awareness on environmental and health benefits of ODF in villages across the country:-

- Rallies
- Mini –marathon

- Door-to- Door Campaigns
- Knowledge Workshops
- Environment Film Festival
- Cleanliness drives
- Plantation drives
- Swachhta Melas
- Subject specific campaign (eg. Swachh Bharat K Liye Swachh Hawa)
- Nukkad Nataksetc

The budget of the Swachhta Action Plan has been kept at Rs 20 lakh for each State/UT and is being released in two instalments to State Nodal Agencies as per laid norms of the Ministry.

Each time frame consists of a focused activity along with other activities:

Table 7.1

Swachhta Action Plan (SAP) 2019-20

Month	Activity	Focussed Activity
April - July	Swachhta Pakhwada Dust to Dustbin Campaign (Dry Waste and Wet Waste Segregation awareness for households), Plantation Drive	Dust to Dustbin campaign
August- November	ODF awareness, Swachhta Hi Seva (Cleanliness drives at Riverfront, Beach, lakes, pond etc) Anti-litter Campaign	ODF awareness in rural areas
December- March	Awareness on E-Waste Awareness on Plastic Pollution Swach aur Swasth Bharat k Liye Swachh Hawa Annual Reports, Newsletter etc	Awareness on E-Waste



Students and Volunteers Taking Swachhta Pledge in Mizoram



Swachhta Pakhwada Rally in Sikkim



7.3 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:

- Creation of Environment awareness at all levels.
- Information dissemination about all Environment and Forest programmes and Biodiversity conservation.
- Making People aware of their responsibilities towards environment.

Activities undertaken:

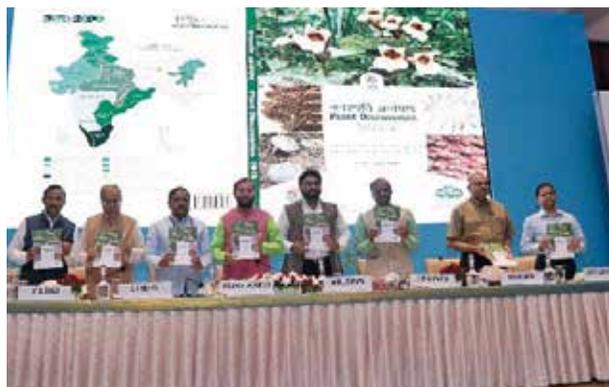
- **World Environment Day:** World Environment Day (WED) is celebrated globally on 5th June every year. Ministry of Environment, Forest and Climate Change (MoEF&CC) celebrated World Environment Day on 5th and 6th June, 2019. This year the theme was "Air Pollution". The details of the programme organized on the occasion

of World Environment Day are as under:

- On 5th June, 2019 saplings were planted and a campaign #SelfieWithSapling was launched with reward for best selfies.
- On 6th June, 2019 a function was organized at New Delhi. The details of the programme were as under:
 - ✓ A theme song "HawaAane De" on the theme of air pollution was released.
 - ✓ Two books namely, (i) Plant Discoveries-2018 (ii) Orchids of India by Botanical Survey of India, Kolkata, and two books namely, (i) Animal Discoveries-2018 (ii) Faunal Diversity of Mangrove Ecosystem in India by Zoological Survey of India, Kolkata were released.
 - ✓ Special issue System for Tigers – Intensive Protection and Ecological Status by National Tiger Conservation Authority was also released.
 - ✓ Two Films produced by Zoological Survey of India namely, The Great Nicobar and East Kolkata Wetlands were released.
 - ✓ A Short Film Competition and Festival on Pollution was launched in collaboration with CMS Vatavaran, New Delhi.
 - ✓ Three thematic sessions were held on the themes: (i) Air Pollution (ii) Waste Management (iii) Forests: the Green Lungs of cities.

- ✓ Tripartite MoUs with identified academic institutions in the States, respective State Pollution Control

Boards (SPCBs) and MoEF&CC were signed as part of National Clean Air Programme (NCAP) to control and abate air pollution.



- Audio-Visual Creatives on topics like avoid disposables, air pollution, no to single use plastic, save water, etc. have been prepared by Media Cell and uploaded on MoEF&CC's website at link:<http://moef.gov.in/green-goods-deeds-videosaudio>. These are also being aired on Prasar Bharati and Doordarshan.
- Visits of students/professionals of different educational institutions to Indira

Paryavaran Bhawan was also organized to explain its green features.

- Ministry received 70 entries under the #SelfieWithSapling campaign launched on 5th June, 2019. Best 3 entries were awarded.
- MoEF&CC-2019 Short Film Competition and Festival on Environment held from 27-11-2019 to 30-11-2019 at Dr. Ambedkar, International Centre, 15 Janpath, New Delhi.





Table 7.2

Details of the category-wise winners of MoEF&CC-2019 Short Film Competition and Festival on Environment are as under:

Category	Prize	Id Number	Title	Running Time	Original Language	Director	location
School Students	First Prize	SFC2019 073	Clean and Green	00:02:24	English	Toon Club & Ecole Mondiale World School	Mumbai
	Second Prize	SFC2019 312	pleaseeee	00:01:35	English	CHINH MEDIA CLUB STUDENTS	New Delhi
	Third Prize	SFC2019 133	Let us breathe	00:02:58	Hindi	Harshita Bhatt	New Delhi
	Special Mention	SFC2019 066	Our World	00:01:00	English	Kushagra Gaur	Pune
Amateur and College students	Second Prize	SFC2019 202	ONE LIFE	00:01:05	English	NISHANT KUMAR NISHU	Patna
	Second Prize	SFC2019 326	sketch book	00:01:15	Hindi	Rishi Nikam	Dewas, MP
	Third Prize	SFC2019 262	Aaina	00:02:59	Hindi	Dhananjay Khanna	New Delhi
Professionals	First Prize	SFC2019 303	NOW, YOUR HOME?	00:02:00	English	Prasad Pandurang Mahekar	Kolhapur, Maharashtra
	Second Prize	SFC2019 020	The Silent Voice	00:02:30	Hindi	Anshul Sinha	Hyderabad
	Third Prize	SFC2019 168	A WHIFF OF CLEAN AIR	00:02:32	English	AJAY SHARMA	Noida, UP



7.4 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 open 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 respect to promote environmental awareness.

NMNH, New Delhi has its four Regional Museums of Natural History (RMNH) in different parts of the country viz. Mysuru, Bhopal, Bhubaneswar and RGRMNH, Sawai Madhopur. Another RMNH at Gangtok is under construction to cover North-East region. After fire incident in April, 2016, the NMNH is functioning from CGO complex, Lodhi Road, New Delhi. Construction of permanent building of NMNH is under progress at Paragati Maidan, Bhairon Mandir Marg, New Delhi.

Objectives:

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 consonant with the scope and resources of the museum; to extend professional help to other agencies/organizations regarding natural history collections /museums; to develop national and international cooperation/collaboration with other organizations/professional bodies/museums related to natural history/EE.

Activities undertaken

- The NMNH and its Regional centres have been undertaken Environmental educational programmes/ activities throughout the year to all sections of the society such as International Day for Disabled, World Environment Day, Orientation Workshop for Teachers, Ozone Day, Youth Nature Camp and Wildlife Week etc.
- NMNH and its regional centres set up more than 22 thematic exhibitions such as Air Pollution, Water Conservation, Heritage sites of India, Protect our Species, Plastic Pollution, Nilgiri Biosphere Reserve, Birds of India, Kingdom of Tiger, Rainbow world of Insects etc. for general public to enhance their knowledge on environmental awareness and sensitisation.
- In addition, the NMNH worked earnestly for Communication, Education and Public Awareness (CEPA) about Biodiversity, Green Diwali-Healthy Diwali, Say No To Single Use Plastic and Jal Shakti Abhiyan.



It also developed thrust areas on Museum Accessibility (Social inclusion) and Traditional Knowledge on Biodiversity.

- NMNH actively participated in the UNCCD

COP14 for setting up exhibition with Indian exhibitors and Cultural event held at India Expo Mart, Greater Noida during 2-13 September, 2019.



Shri Prakash Javadekar, Hon'ble Minister of Environment, Forest and Climate Change with school students.

Progress/Achievements:

- A total number of 3,21,397 people visited the Regional Centers (Mysore, Bhopal, Bhubaneswar and Sawai Madhapur during the reference period.
- NMNH, and its regional museums located at Mysuru, Bhopal, Bhubaneswar, Sawai Madhopur disseminated the knowledge/information of conserving water and sensitized approximately 3,55,350 students involving 1171 schools / institutions

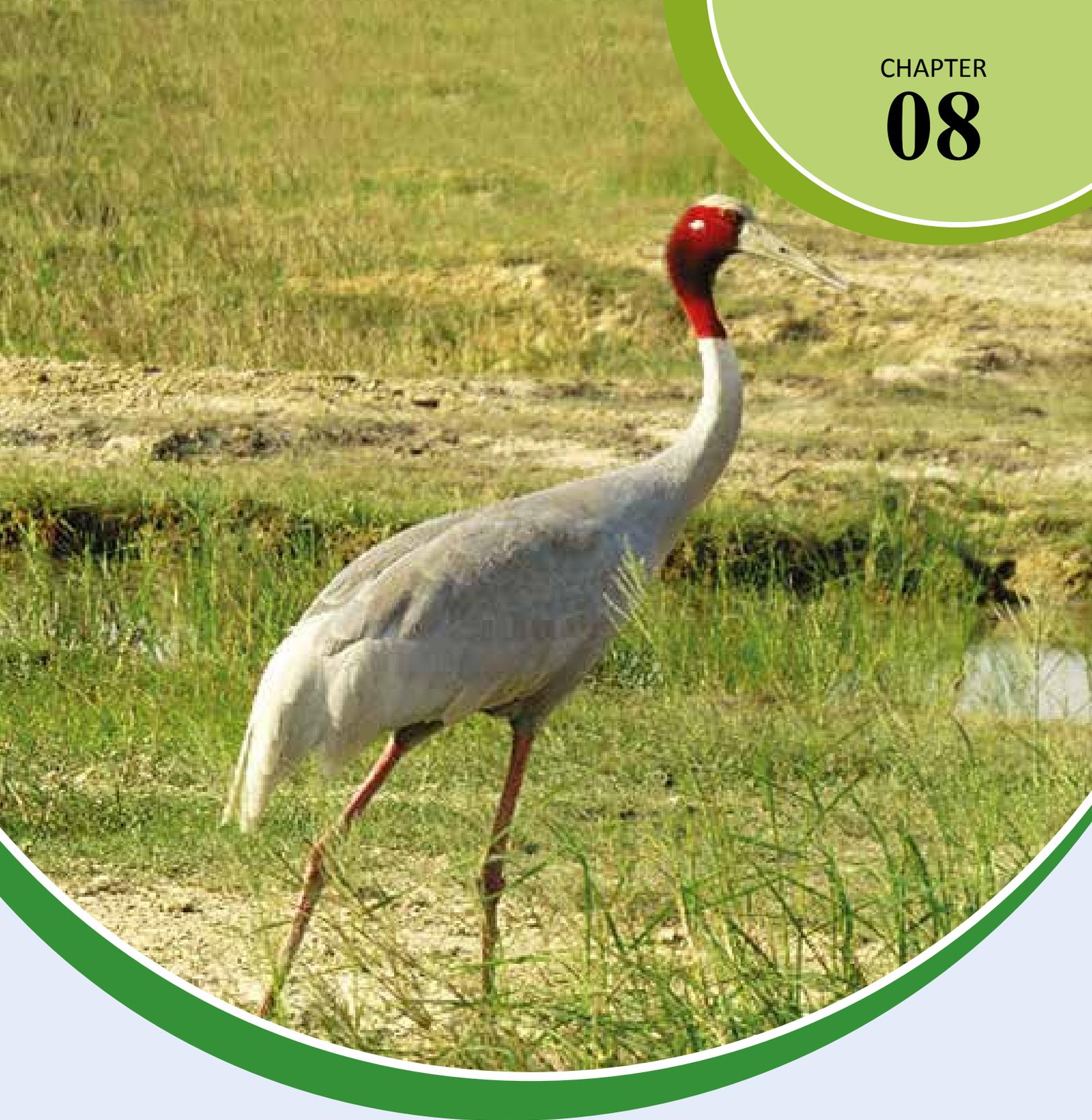
under the 'JAL SHAKTI ABHIYAAN' of the government. Nearly, 10,580 native plant saplings were also planted during this period. The programme indirectly also reached on to approx. 17,76,750 other students/citizens throughout India.

List of major publications:

- Brochures on Water Conservation, was published by NMNH, RMNH Mysuru and RGRMNH, Sawai Madhapur.

CHAPTER

08



Centre of Excellence



SACON was set up by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Govt. of India under its “Centre of Excellence” Scheme during November, 1988 and commenced its functioning from June 1990 in Coimbatore, Tamil Nadu.

Objectives:

For conservation of avian biodiversity their habitats and ecosystems.

Activities Undertaken:

The MoEF&CC awarded the following 10 Research projects to SACON for conservation of avian biodiversity:

(1) Developing Conservation and Management Plans for Select Important Bird and Biodiversity Areas (IBAs) of the Country, (2) Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization, (3) Assessing the distribution, population and habitat use of three endangered species to develop conservation plan for species and their habitats, (4) Assessment of status, distribution and threats to the population of threatened Sarus Crane *Antigone antigone* in Gujarat, (5) Assessment of status, distribution and threats to the population of threatened Sarus Crane *Antigone antigone* in Uttar Pradesh, (6) Developing a conservation action plan for Forest Owlet (*Heteroglauxblewitti*), a Critically Endangered species endemic to central India, (7) In-situ and Ex-situ conservation of Endemic Andaman Edible-nest Swiftlet in the Andaman and Nicobar Islands, (8) A study on bird hazards in select Indian civil airfields, (9) Establishment of National Avian Forensic Laboratory at SACON for National Certification for Illegal Trafficking of Birds and (10) National centre

for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds in India. These are on-going.

Progress /Achievements:

SACON conducted 28 research projects of which 24 are ongoing, including 10 projects sponsored by the MoEF&CC, and 04 completed projects. Some important studies undertaken by SACON during the period are:

- Under the thematic area ‘Conservation of Eco-sensitive Areas, Habitats and Landscapes’, SACON is developing Conservation and Management Plans for Select Important Bird and Biodiversity Areas (IBAs) of the Country.
- Under the programme ‘Conservation Plans for Rare/ Endangered/Threatened avifauna’, SACON continued studies across the country for:
 - (1) Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization, (2) Assessing the distribution, population and habitat use of three endangered species; Manipur Bush-quail *Perdiculamanipurensis*, Swamp Grass-babbler *Laticillacinerascens* and Black-bellied Tern *Sterna acuticauda*, (3) Assessment of status, distribution and threats to the population of threatened Sarus Crane *Antigone antigone* in Gujarat and Uttar Pradesh, (4) Developing a conservation action plan for Forest Owlet *Heteroglauxblewitti*, a Critically Endangered species endemic to central India.



- Bird-aircraft collisions have been a serious threat to the aviation sector in recent years. SACON continued comprehensive studies to assess bird communities 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 evaluate bird hazards to aircrafts and provide strategies to mitigate these.
- As part of the long-term programme on the conservation of the endemic Edible-nest Swiftlet in the Andaman and Nicobar Islands, SACON continues to contribute towards in-situ and ex-situ conservation of the species.
- On 24th August 2019, Shri Prakash Javadekar, Hon'ble Union Minister for Environment, Forest and Climate Change, Govt. of India, inaugurated a new laboratory on campus 'National Centre for Avian Ecotoxicology'.
- Samples from various agencies were received and analysed at the State-of-the-Art laboratories (National Avian Forensic and National Centre for Avian Ecotoxicology) for bird species identification from body parts to facilitate law enforcement agencies in controlling illegal bird trafficking and to identify chemical contaminants responsible for mortality of birds.
- A three-year study on "Characterization of Community Reserves and Assessment of their Conservation Values in Meghalaya" is undertaken to support the sustenance and enhancement of the ecological, natural, cultural and socio-economic values of the Himalayan Region.







Environmental Information



9.1 Economic Division

Economic Division of the Ministry is headed by the Economic Adviser. It is responsible for the following areas of work:

- Implementation of the Environmental Information System (ENVIS) Scheme, which serves as a single-stop web-enabled repository of comprehensive environmental information with collection, collation, storage, retrieval and dissemination through a nationwide network of ENVIS Hubs (hosted by the Environment/ Forest Department of State Governments/ UT Administrations) and ENVIS Resource Partners (RPs) (hosted by environment related governmental and non-governmental organizations/ institutes of professional excellence).
- The Nodal Division in the Ministry for all the matters referred by the Department of Economic Affairs including Notes for Cabinet/ Cabinet Committees/ Committee of Secretaries and 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.
- 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.
- Coordination of inputs/ material for the Economic Survey to the Department of Economic Affairs.
- Nodal Division to deal with references received from M/o Commerce & Industry relating to Trade & Environment including Cabinet/ Cabinet Committee/ Committee of Secretaries matters.
- Coordination of Ministry's position on trade-related matters referred by other Ministries, including Regional/ Bilateral/ Multilateral Trade Agreements on environmental, ecology, wildlife and forestry issues; Trade Policy Review of India by WTO; bilateral investment agreements/ investment protection agreements/ international negotiations etc.
- Coordination of matters 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.
- Engagement with the DBT Mission, Cabinet Secretariat to spearhead the work of on-boarded schemes of the Ministry on DBT Bharat portal (www.dbtbharat.gov.in) and coordinating with the Divisions concerned for reporting of monthly progress, requirement of database of beneficiaries, etc. It is responsible for ensuring the

following actions for the DBT Applicable schemes of the Ministry:

- 100% Electronic transfer of benefits
- 100% Aadhaar based transfers
- Capturing and maintenance of MIS for all DBT schemes of the Ministry
- Curbing pilferage and duplication
- Officers of the Division attend regular interactive sessions and review meetings with the DBT Mission on Aadhaar Act and reporting of progress on DBT on-boarded schemes.
- Organizing 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.
- Examination of the representations received from various stakeholders on GST Rates in consultation with Divisions concerned and taking up the same with GST Council.

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, Economic Survey, OECD Reviews and other documents referred to the Ministry by the Ministry of Finance.
- 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.

- Coordinated and prepared Ministry's response on various environmental issues concerning India's 7th Trade Policy Review (TPR) under WTO, 4th Session of India-Serbia Joint Economic Committee (JEC), 4th meeting of India Colombia Joint Committee on Business Development etc., referred to the Ministry by the Ministry of Commerce and Industry.
- 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 Policy on Ease of Doing Business' and 'Winding up of NCTI'.
- Test level integration of all DBT on-boarded Schemes completed.
- Integration of one DBT app on-boarded Scheme with DBT Bharat Portal completed.
- Facilitated Project Divisions in preparation of Draft Notification under Section 7 of the Aadhaar Act, 2016.

Objectives:

Environmental Information System (ENVIS), a Central Sector Scheme is being implemented through a network of 60 ENVIS Hubs and Resource Partners (RPs) of which 26 Hubs dealing with "State of the Environment and Related Issues" are hosted by the respective State Government/UT Administration and



34 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.

Progress /Achievements:

- **Green Skill Development Programme (GSDP):** launched in June 2017 on pilot basis to skill youth in environment, forest and wildlife sectors and enabling them to be gainfully employed or self-employed. The programme was expanded to an all India level with 43 Courses offered in 2018-19. During the reference period (January, 2019-December 10, 2019), 67 training programmes were conducted at 46 locations throughout the country covering diverse fields and 1326 youth joined the 'Green Skilled Workforce'. More batches are undergoing training under various ongoing courses at different locations across the country.
- **National Environment Survey (NES)-a Grid-based Resource Information and Decision Support System (GRIDSS) for sustainable**

management of natural resources: the ENVIS Hubs/Resource Partners would carry out environmental survey of the country through a grid-based approach, covering various parameters like flora, fauna, pollution, waste inventory mapping, etc., to fill data gaps in respect of various environmental parameters and to ascertain the status of environment at district level. The secondary data collection is under way and district level survey would commence in the select districts by the Hubs/RPs after the secondary data collection has been completed and the data gaps identified.

- **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, 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, etc. During the reference period (January, 2019-December 10, 2019), ENVIS Network printed, published and uploaded more than 740 Knowledge products including newsletters, books, theme based special publications, e-books, e-bulletins, booklets, environment calendars, brochures, pamphlets, DVDs, CDs, Mobile Apps, etc. In addition, 167 knowledge products are likely to be published and uploaded by the ENVIS

Hubs/RPs by December 31, 2019.

- On the occasion of World Environment Day, various programmes such as Green Pledge, Nature Walk, Plantation Drive, Slogan Writing, Nukkad Natak (Street Plays), Environment Quiz, Debate Competition, Film Shows on Environment Conservation, etc., were organized by ENVIS Hubs and RPs, across the country. The ENVIS Hubs/RPs also conducted various outreach activities as part of celebration of important events/days viz. World Ozone Day, World Wetland Day, World Forest Day, International Day for Biological Diversity, etc.
- 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.
- A National Review Meet (NRM) of ENVIS was conducted in April 2019 and was inaugurated by Secretary, EF&CC. All ENVIS Hubs/RPs displayed their knowledge products as well as activities under GSDP in the NRM.



Secretary, EF&CC visiting exhibition stalls by ENVIS Hubs/Resource Partners during National Review Meet (NRM) of ENVIS conducted in April 2019

- During the reference period, ENVIS Hub at Department of Environment, Maharashtra was revived. Two ENVIS Resource Partners were set up at the following institutions with the relevant themes:
 - Centre for Sustainable Future, Amrita Vishwa Vidyapeetham (AVV), Coimbatore, Tamil Nadu [Theme: Science based management of biological invasion/invasive alien species in India]
 - Lucknow University, Lucknow, Uttar Pradesh [Theme: Biodiversity & Traditional Knowledge]
- 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 2.66 crore hits till December 10, 2019 and is expected to reach 3 crore by December 31, 2019.



Secretary, EF&CC visiting exhibition stalls by ENVIS Hubs/Resource Partners during National Review Meet (NRM) of ENVIS conducted in April 2019



Preparation of rooting media by the GSDP trainees under the GSDP Course on Plant Tissue Culture Techniques and its Applications conducted by ENVIS Resource Partner at EPTRI, Hyderabad

9.2 Statistics Division

Statistics Division in the Ministry of Environment, Forest and Climate Change liaisons with all divisions of the Ministry and, where necessary, its subordinate offices and autonomous institution to strengthen the process of collection, validation processing and interpretation of statistical data. The Division 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.

Statistics Division of the Ministry undertakes the following tasks:

- To liaise with all divisions of MoEF&CC and, where necessary, its subordinate offices and autonomous institution to strengthen the process of collection, validation processing and interpretation of statistical data.
- Coordinating preparation of State of Environment Report.

- It supports Ministry of Statistics and Programme Implementation (MoSPI) for publication of 'EnviStats'- a publication on Environment Statistics. Statistics Division provides inputs on behalf of the Ministry for the publication.
- Coordinate and represent the Ministry in UNSD/UNEP's consultations on Global Environment Outlook, System of Environmental Economic Accounting (SEEA), Ecosystem Accounting, Framework for Development of Environment Statistics (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.
- Annual Report of the Ministry for the year 2018-19 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 (MoSPI). The revamped publication EnviStats 2018 incorporating various data on Environment and Climate Statistics has been compiled and published by MoSPI. The Ministry supported MoSPI in compilation of the various environment related data for the publication.
- The Division also provides information for periodic publications produced as per the recommendations of the National Statistical Commission and Statistical Abstracts and other publications of Central Statistics Office (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.

9.3 SDG Co-ordination Unit

Implementation of Sustainable Development Goals (SDGs) in the Ministry

MoEF&CC is implementing Sustainable Development Goals (SDGs) relevant to the Ministry. SDG Coordination Unit under Statistics Division coordinates the implementation of SDGs and related frameworks in the ministry. The following are the role of SDG Coordination unit.

- Overall coordination of SDG implementation in the Ministry.



- Coordination of metadata, baseline data and data flow with Divisions.
- Coordination with NITI Aayog, MoSPI and Custodian Agencies of SDG Global Indicators.
- Presenting Ministry's consolidated proposals in High Level Committee of MoSPI for SDG indicator refinement.
- Capacity Development in respect of SDG implementation in the ministry
- Technical support for metadata and refinement of indicators.
- Publication of Ministry's SDG reports.
- Parliament questions on SDGs

Activities undertaken

- Coordinated with the Divisions of the ministry in planning the implementation of the SDG targets.
- A refinement proposal on indicators relevant to the Ministry was 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.
- Baseline data for MoEF&CC indicators were 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.

- Time series data with regard to MoEF&CC indicators was submitted for the 1st SDG progress report to MoSPI.
- Coordinated with NITI Aayog on various SDG related matters.
- Attempts have been made to analyse the data gaps that exists for effective monitoring of SDGs at both Global and National level.

9.4 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 fields 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 representations received from PMO, Cabinet Secretariat, and Individuals etc.
- Handling RTI applications.

The instructions of NITI Aayog to provide linkage of the NGO portal of the Ministry with NITI Aayog Darpan Portal to bring transparency in the affairs of NGOs was carried out with the support of National Informatics Centre (NIC) in the Ministry.

CHAPTER

10



Legislation and Institutional Support



10.1 Policy and Law

The Policy and Law Division is allocated funds under the Budget Head “National Green Tribunal” and the budget under this is further allocated to –

- National Green Tribunal,
- Grants-in-Aid to Loss of Ecology Authority, Chennai
- Grants-in-Aid to Dahanu Taluka Environment Protection Authority, Ahmedabad.

The Policy and Law Division handles the administrative issues of NGT while the ESZ and CP Divisions are administrative in charge of Dahanu Taluka Environment Protection Authority and Loss of Ecology Authority respectively.

10.2 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.

The Tribunal 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 01.01.2019 to 30.11.2019, the institution of cases before the NGT is 3053, disposal of cases is 3076 and pendency of

cases before the NGT is 2969.

The Ministry took following measures for smooth functioning of NGT:

- The National Green Tribunal (Recruitment, Salaries and other Terms and Conditions of Service of Officers and other Employees) Rules, 2011 were amended vide Notification issued on 22.02.2019 revising the qualifying year for promotion from Stenographer Grade-I to the post of Private Secretary from six years to five years.
- An advertisement for the six (06) vacant posts of Judicial Members was published in the National Dailies on 01.03.2019. The applications received were processed and the recommendations of the Interim Search-cum-Selection Committee were forwarded to Appointments Committee of the Cabinet for consideration, in October 2019.
- For the last round of selection of Expert Members, the Appointments Committee of the Cabinet approved two names for appointment. Shri Saibal Dasgupta, Additional Director General of Forests (Retired) joined NGT on 01.11.2019. The other appointee Sh. Siddhanta Das, Director General of Forest and Special Secretary is likely to join the NGT on 1st January 2020.
- A fresh advertisement for the six (06) vacant posts of Expert Members, NGT has been advertised in the National Dailies on 09.11.2019, inviting applications from the eligible candidates.

Legal Monitoring Cell (LMC): A Legal Monitoring Cell set up in the Policy and Law Division monitors the progress of court cases and also to acts 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 31.10.2019 is Two thousand five hundred and fifty-four (2554) and no reply was pending beyond three months, for filing, against any of the Divisions handling Court cases.

Ecomark 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 under the Chairmanship of 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 composition of the Steering Committee was substituted by Resolution dated 19.12.2016.

The Ecomark Scheme is being provided stimulus to align it with emerging market demands and increased environmental awareness among the consumers and producers/ manufacturers. Initially, Self-Certification had been envisaged for enabling faster Eco-labelling process. The products are required to adhere to compulsory

quality standards specified by the Bureau of Indian Standards (BIS), as a pre-requisite to Eco-labelling.

A Technical Committee under the Chairmanship of the Chairman, Central Pollution Control Board (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 CPCB to assess and certify the products.

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;

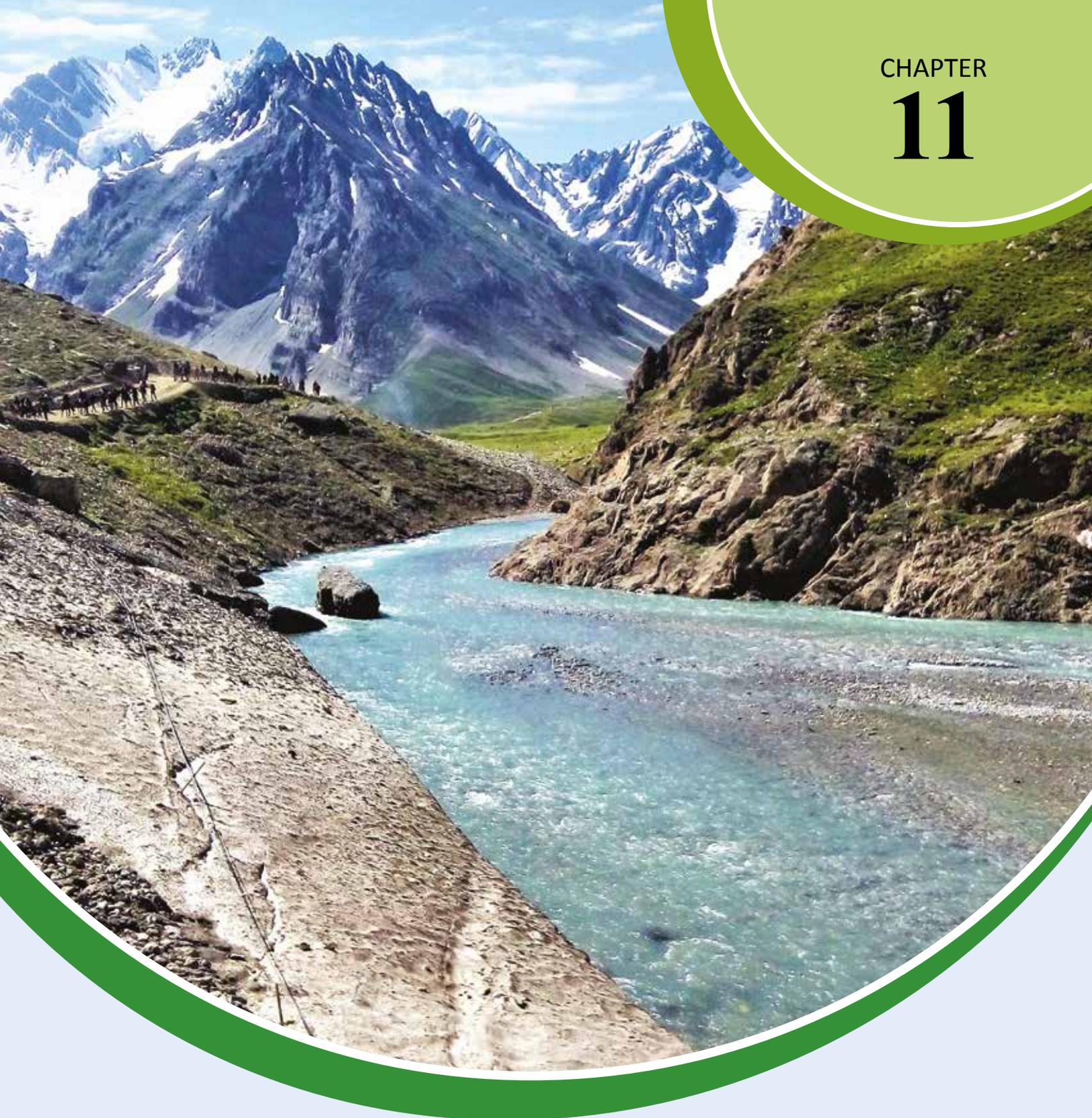


Propellants and aerosols; Food items (edible oils- including Vanaspati, tea and coffee); Electrical and electronic goods; Packing/

packaging materials; Lubricating/speciality oils; Drugs; Food preservatives and additives; Pesticides; and Leather.

CHAPTER

11



Climate Change



11.1 Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) is the primary international body for all climate change negotiations. India is a Party to UNFCCC, its Kyoto Protocol and the Paris Agreement. The Ministry of Environment, Forest and Climate Change (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 Biennial Update Reports (BURs) as part of the reporting mechanism under UNFCCC.

During the year 2019-20, many important bilateral and multilateral meetings and negotiations on climate change, were held in the run up to the 25th Conference of the Parties to UNFCCC (COP-25) which was held during 2nd to 15th December, 2019 in Madrid, Spain under the Presidency of the Government of Chile. Hon'ble Minister, EF&CC led an inter-ministerial delegation and provided guidance and leadership to the delegation as well as BASIC (Brazil, South Africa, India and China) and Like Minded Developing Countries (LMDC) Groups in the COP-25.

During the year, Indian delegation, led by Hon'ble Prime Minister, Shri Narendra Modi, participated in the United Nations (UN) Climate Action Summit hosted by the UN Secretary General on 23rd September, 2019 in New York, where India, in partnership with Sweden,

launched the Leadership group in Industry transition track. During the Summit, India announced its plan to increase the share of non-fossil fuel by increasing renewable energy capacity to 450 GW. India also announced the launch of Coalition for Disaster Resilient Infrastructure and its plan to spend USD 50 billion for conservation and development of water resources through Jal Jeevan Mission. India gifted Solar Panels to UN building worth USD 1 million.

National communication and Biennial Update Report submitted to the UNFCCC: India made presentation on its second Biennial Update Report (BUR) submitted to UNFCCC in December 2018 under the Facilitative Sharing of Views (FSV) process at COP-25. The key highlight of India's second BUR is the achievement of 21% reduction in emission intensity of its Gross Domestic Product over the period of 2005-2014. Questions and queries from the country participants were adequately responded to.

National Action Plan on Climate Change (NAPCC): The National Action Plan on 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. These Missions 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 Jal Shakti, Department

of Science and Technology, Ministry of Environment, Forests & Climate Change, and Ministry of Agriculture and Farmers Welfare respectively.

The Prime Minister's Council on Climate Change (PMCCC), Chaired by the Prime Minister, and the Executive Committee on Climate Change (ECCC), Chaired by the Principal Secretary to Prime Minister, monitor the progress of activities relating to the eight National missions along with other initiatives on Climate Change.

The Missions are being revised in light of emerging scientific knowledge and in line with India's Nationally Determined Contribution (NDC) towards combating climate change.

State Action Plan on Climate Change (SAPCC):

State Action Plans on Climate Change (SAPCC) have been prepared in line with the NAPCC to achieve coherence between the strategies and actions at national and sub-national level. SAPCC aim to mainstream climate change concerns in the State planning process. So far, 33 States/ Union Territories (UTs) have prepared SAPCC. States and UTs are also encouraged to revise their SAPCC in line with India's Nationally Determined Contribution under Paris Agreement and emerging new scientific knowledge. The States/UTs are being supported with Rs.20 lakh for the revision of SAPCC.

National Adaptation Fund on Climate Change (NAFCC):

The National Adaptation Fund on Climate Change (NAFCC) is a Central Sector Scheme which was set up in the year 2015-16. The overall aim of NAFCC is to support concrete adaptation activities to deal with

the adverse effects of climate change. The activities under the scheme are implemented in a project mode. The projects related to adaptation in sectors such as agriculture, water, forest, animal husbandry etc. are eligible for funding under NAFCC. National Bank for Agriculture and Rural Development (NABARD) is the National Implementing Entity (NIE). The states and Union Territories are required to prepare project proposal in consultation with NABARD. The project proposals are required to be approved by State Level Steering Committee on Climate Change to be eligible for implementation under NAFCC.

So far, 30 projects at a total cost of Rs.847.82 Crores have been approved under NAFCC in States of Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal.

Climate Change Action Programme (CCAP):

Climate Change Action program (CCAP) is a central sector scheme with an objective of building and strengthening scientific & analytical capacity for climate change assessment, establishing appropriate institutional framework and implementing climate related actions in the context of sustainable development at Central and State levels. The components of CCAP include coordination of NAPCC, capacity building and demonstration pilots to



support implementation of SAPCC, National Carbonaceous Aerosols Programme, Long Term Ecological Observations, and Climate Change studies for North Eastern Region.

India's post-2020 climate goals: In response to the decisions of the Conference to the Parties, India submitted its Nationally Determined Contribution for the post-2020 period to 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, the Ministry 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 to identify specific policies and actions aimed at achieving the NDC goals and 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, the Ministry has commissioned studies to research institutions/organizations working in climate change domain for developing roadmaps for achieving NDC goals.

International Negotiations: The year 2019-

20 witnessed a number of bilateral and multilateral meetings on climate change. Delegates participated in the Petersberg Climate Dialogue held during 13th – 14th May, 2019 in Berlin, Germany; UNFCCC Subsidiary Bodies Inter-sessional meetings from 17th to 27th June, 2019 in Bonn, Germany; 28th BASIC (Brazil, South Africa, India and China) Ministerial Meeting on Climate Change held from 14th – 16th August, 2019 in Brazil; Heads of the Delegation Meeting on COP 25 held during 27th – 29th August, 2019 in Santiago, Chile; Pre-COP 25 Ministerial Meeting of the UNFCCC held between 8th and 10th October, 2019 in Costa Rica; 29th BASIC Ministerial Meeting on Climate Change held on 25th – 26th October, 2019 in Beijing, China; and meeting of the Like Minded Developing Countries (LMDC) held during 27th – 28th November, 2019 in Madrid, Spain.

These meetings were crucial in the run up to the 25th Conference of Parties to UNFCCC held from 2nd to 15th December, 2019 in Madrid, Spain, which was attended by high level delegation led by Hon'ble Minister, Environment, Forest and Climate Change.

The Ministry also hosted the meeting of the Lead Authors for the Working Group III for the sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) in September 2019. India also participated in the 141st Assembly of the Inter Parliamentary Union (IPU) held on 13th – 17th October, 2019 in Belgrade, Serbia where India proposed a 'Resolution on addressing climate change' which was adopted unanimously by the Assembly.

COP-25 was held under the Presidency of the Government of Chile in Madrid, Spain on 2nd – 15th December 2019. The conference focused on a range of issues, particularly Article 6 of Paris Agreement, Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, climate finance and pre-2020 implementation and ambition. India was successful in protecting its key positions in the last draft decision text.

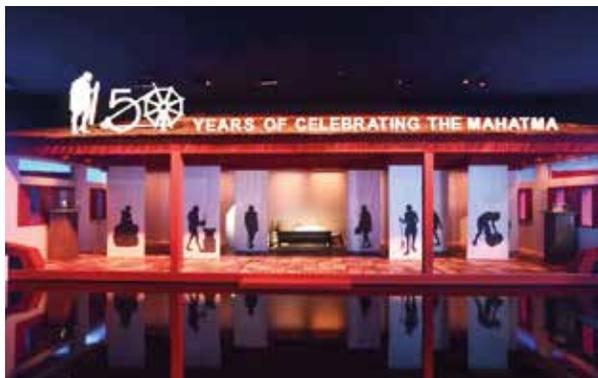
India showed leadership and reiterated its commitment to implement the Paris Agreement in its letter and spirit and to act collectively to address climate change. India engaged constructively in the negotiations while protecting its key interests including consideration of the principles of equity and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC); need for enhanced means of implementation, including climate finance, technology transfer at affordable costs and capacity building support, from developed to developing countries in accordance with their obligations under the UNFCCC and Paris Agreement.

India also hosted an 'India Pavilion' at COP-25 which was a major attraction amongst the visitors that included delegates from different parts of the world, UN agencies etc. The theme of the pavilion was '150 years of celebrating the Mahatma' and it was designed to depict Mahatma Gandhi's life and messages around sustainable living. To mark the 150th anniversary of Mahatma Gandhi, the Pavilion also featured the 'Charkha' or the spinning wheel which is the physical embodiment of the Gandhian principles of perseverance, self-



sufficiency and sustainability. The pavilion also depicted ambitious climate actions of the Government of India, and our cultural underpinnings based on the principles of sustainable consumption and production. The pavilion had a special focus on 'sustainable lifestyles' as a solution to climate change. The India pavilion also became a platform to bring together various stakeholders such as Central

Ministries, State Governments/ Departments, Think Tanks, Civil Society organizations, etc. to deliberate and discuss various climate change related topics such as the International Solar Alliance, Adaptation, Sustainable cities etc. More than twenty such side event sessions were organized at India pavilion including presentations and panel discussions on various thematic areas in climate change.



India Pavilion at COP-25 held in Madrid, Spain



Shri Prakash Javadekar, Hon'ble Minister, EF&CC spinning 'Charkha' at India Pavilion at COP-25 held in Madrid, Spain



Shri Prakash Javadekar, Hon'ble Minister, EF&CC delivering country statement at High Level Segment at COP-25 held in Spain, Madrid.

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, 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 National CDM Authority (NCDMA) of the Government of India, with Secretary, Environment, Forest and Climate Change as the Chairman, comprises Secretaries of key Ministries of the Government of India including Ministries 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) focusing on Sustainable Development. Some of India's key achievements in CDM are:

- As on 17th December, 2019, 1670 out of total 7815 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 250 million (12.57%) of the total 1988 million CERs issued.
- The National CDM Authority (NCDMA) in the Ministry has accorded Host Country Approval to 3060 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).
- In the year 2019, the NCDMA has accorded 32 host country approvals to CDM projects.
- Most of the CDM projects are developed by private sectors which has facilitated huge private sector investments in the country.

Green Climate Fund: Green Climate Fund (GCF) is the operating entity of the financial mechanism of the UNFCCC. It aims to deliver a 50:50 balance between mitigation and adaptation allocations in its portfolio.

So far, three (03) projects have been approved to India with total a total cost of USD 177.8 Million GCF funding. The total value of these three (03) projects is 546.6 Million USD to address both adaptation measures and mitigation action.



11.2 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, 2014 and 2019, to implement ODS phase-out activities in the country.

Implementation of Hydrochlorofluorocarbons (HCFC) Phase-out Management Plan (HPMP)

Stage II: To oversee the implementation of HPMP Stage II three meetings of the Project Steering Committee (PSC) were convened with UNDP, which is the lead implementing agency for HPMP Stage II.

Approximately 160 enterprises, including large number of Micro, Small and Medium Enterprises (MSMEs) in the foam manufacturing sector, have entered into Memorandum of Agreement (MoA) with Ozone Cell for transitioning from HCFC-141b to non-ODS and low GWP technologies. Memorandum of Agreements had been entered with 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.

In a significant first, amongst the Article 5 parties (developing countries) under the Montreal Protocol, India has been able to achieve the complete phase out of HCFC 141 b in the foam manufacturing sector, as part of implementation of HPMP Stage II. HCFC 141 b is one of the most potent chemical involved in stratospheric ozone depletion after the CFCs.

A separate notification S. O. No. 4724 (E) dated 31st December, 2019, amending the Ozone Depleting Substances (Regulation and Control) Rules, 2000, was published in the Gazette of

India inter alia prohibiting the issuance of import license for HCFC-141b from 1st January, 2020.

Kigali Amendment to the Montreal Protocol-Energy Efficiency: India piloted Decision XXIX/10 in the 29th Meeting of Parties (MOP) the report of the Technology and Economic Assessment Panel (TEAP) of the Montreal Protocol in response to the Decision, 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: Twenty Thousand Service Technicians have been up-skilled and certified under phase I as part of Memorandum of Understanding (MoU) between the Ministries of Environment, Forest and Climate Change and Skill Development and Entrepreneurship, to upskill and certify 100,000 RAC service technician. 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. A third party review/assessment for the trainings and certifications conducted under Phase-I of the project has been done by Indian Institute of Corporate Affairs (IICA).

Competency Enhancement of System Houses and Micro, Small and Medium enterprises in foam manufacturing sector: Competency Enhancement of System Houses and foam

manufacturing enterprises especially MSMEs participating in HPMP is being provided by Central Institute of Plastics Engineering & Technology (CIPET) and Ozone Cell. 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.

A Technical Assistance facility is being established at Laboratory for Advanced Research in Polymeric Materials (LARPM) CIPET, Bhubaneswar for providing training and testing facilities to System Houses and foam manufacturing enterprises covered under HPMP stage II. Stakeholder Workshops have been organized on “Alternative Technologies to HCFC-141b in Foam Manufacturing Sector”. The main objective of the workshop was to make aware the foam manufacturing enterprises about the HCFC free alternative technologies and the process of technology conversion. This also included hands-on training session for enterprises.

Awareness generation and consultation Activities/meetings: Ozone Cell has made available awareness generation material to the public on its website. Instructional training videos for Refrigeration and Air-conditioning (RAC) service technicians in 6 different languages. Separately, as part of awareness generation and information dissemination activates the ozone cell has set up YouTube channel, Facebook and Twitter pages. Separate QR codes have been generated for the



instructional videos for wider dissemination through print medium.

The newsletter for service technicians in Refrigeration and Air-conditioning-news TRAC- is being published and widely circulated. A separate special issue of news TRAC has been brought out on social security, access to finance and occupational safety for RAC service technicians. Pamphlets and information material was brought out and disseminated.

In a large exercise to provide contemporary update relevant material related to Refrigeration and air-conditioning servicing the publications brought out by Ozone Cell were sent to Government run Industrial Training Institutes (ITIs) across the country which have RAC trade vocational training.

25th World Ozone Day, 2019: The 25th World Ozone Day was organized on 16th September, 2019 at New Delhi with the theme: “32 years and healing”. A large number of stakeholders including participants from multilateral and bilateral agencies, representatives of various government departments, industry and industry associations and school children participated in the event. The Chief Guest for the World Ozone Day 2019 was Shri Babul Supriyo, Hon’ble Minister of State, Environment, Forest and Climate Change, Government of India.

The Hon’ble Minister of State (MoS) for Environment, Forest and Climate Change launched the following publications on the occasion:

- Proceedings of Stakeholder consultation on Strengthening of Refrigeration and Air-

conditioning certification system for RAC servicing technician.

- Special issue of newsletter “newsTRAC” – for technicians in Refrigeration and Air-conditioning (RAC) Sector on Social Security, Access to Finance and Occupational Safety of Servicing Technicians
- A Quick Guide on Good Servicing Practices for flammable refrigerants.
- “Montreal Protocol: India’s Success Story”



Shri Babul Supriyo, Hon’ble Minister of State, Environment, Forest and Climate Change, Government of India on the occasion of 25th World Ozone Day on 16th September, 2019

To celebrate the World Ozone Day, poster design, painting, slogan writing competitions were organized among school children. The Prizes for the winning entries in each category of the competitions were awarded by the Shri Babul Supriyo, Hon’ble Minister of State, Environment, Forest and Climate Change, Government of India.



Award Winning Students on the occasion of 25th World Ozone Day on 16th September, 2019 along with Shri Babul Supriyo, Hon'ble Minister of State, Environment, Forest and Climate Change, Government of India

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. 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 ICAP has been appreciated internationally as an important policy initiative which has the potential to provide socio-economic and environmental benefits related to reduced refrigerant use, climate change mitigation and Sustainable Development Goals. Many countries are now involved in development of cooling action plans keeping in view the significant environmental benefits and the fulfilment of Sustainable Development Goals. The United Nations Secretary General in

his message on World Ozone day 2019 has highlighted the need for all countries to develop national cooling action plans. This step taken by India has led to a global recognition of this important policy initiative which can help in climate action and achievement of sustainable development goals.

The Ministry has taken steps to operationalize the recommendations given in ICAP along with concerned line Ministries and Government Organizations, Industry and think tanks and Academia.

The 31st Meeting of the Parties (MOP) to the Montreal Protocol was held from 4th to 8th November, 2019 in Rome, Italy. The following are the major achievements:

- India piloted decision XXXI/7 along with other proponents for continued provision of information on any new developments



with respect to best practices, availability, accessibility and cost of energy efficient technologies in RACHP sector.

- India and like-minded parties secured the Kigali Amendment as a decision which will necessitate expenditure by the Multilateral Fund during the period 2021–2023 in the terms of reference of the Replenishment Task Force (RTF). The RTF shall work out the replenishment levels of the Multilateral Fund for the consideration of the Parties for 2021 to 2023.
- India along with likeminded parties piloted decision XXXI/8 on Terms of reference of the Technology and Economic Assessment Panel (TEAP) and its technical options committees and temporary subsidiary bodies specifically on the procedures relevant to nominations. Keeping in view urgent need for geographical, regional and subject expertise balance in TEAP.
- Ms. Geeta Menon, Joint Secretary, Ministry of Environment, Forest, and Climate Change represented India in Ministerial Round table on “Contribution of the Montreal Protocol to food loss reduction through sustainable cold chain development” organized during the high level segment of the 31st Meeting of Parties to the Montreal Protocol held in Rome on 7th November, 2019.

The 84th Ex-Com of the Multilateral Fund (MLF) for Implementation of the Montreal Protocol was held from 16th to 20th December 2019 in Montreal, Canada. The following are the major achievements:

- India actively participated in the

deliberations on Country Program (CP) data reporting forms to be used post the adoption of Kigali Amendment to the Montreal Protocol and adoption of decision 84/89 which is an important step for operationalization of funding for energy efficiency while phasing down HFCs.

- In a significant first step, under the Montreal Protocol, India along with like-minded parties was able to pilot Decision 84/87 to explore ways for consideration by the Executive Committee for funding cost effective management of stock piles and destruction of controlled substances under the Kigali Amendment.

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.

11.3 United Nations Convention to Combat Desertification

Desertification Cell in the Ministry of

Environment, Forest and Climate Change (MoEF&CC) is the nodal division coordinating activities allied to combating desertification and restoring degraded land. The Division is-

- The national executing agency for the Sustainable land and Ecosystem Management (SLEM) programmatic approach;
- The focal point addressing the issues pertaining to the implementation of the United Nations Convention to Combat Desertification, which was ratified by India on 17th December 1996.

As the dynamics of land degradation, Climate Change and Bio-diversity conservation are intimately connected; the Desertification Cell works closely in co-ordination with the Climate Change and Bio-diversity divisions of this Ministry. The above two divisions are the focal point of the other two Rio conventions viz. United Nations Framework Convention on Climate Change (UNFCCC) and Convention on Biological Diversity (CBD) respectively. The three divisions work together linking environment and development to sustainable land management with an integrated approach.

MoEF&CC, with relevant line Ministries, work in sync with the vision of Hon'ble Prime Minister of "Doubling Farmer's Income" by taking initiatives:

- For improving the living conditions for people in drylands;
- Maintaining and restoring land and soil productivity; and
- Mitigating the effects of drought.

Objective:

The Desertification Cell undertakes activities to strengthen inter-ministerial coordination for undertaking activities allied:

- To combat desertification/land degradation;
- To mitigate the effects of drought / desertification;
- To improve productivity of land,
- For conservation and sustainable management of land and water resources;
- Achieving Land Degradation Neutrality (LDN) in India, by 2030:
 - By adhering to the concept of avoid, reduce and reverse land degradation;
 - By Attaining SDG target 15.3, Combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world,
 - Ensuring that LDN targets are mainstreamed in national strategies and National Action Plans (NAPs);
 - Promoting Sustainable land management interventions on affected zones.

Functions:

- To work in Co-ordination with the Climate Change, Bio-diversity, Hazardous Substances Management and Control of Pollution divisions of this Ministry for ensuring sustainable land management;
- Strengthen India's position on different issues related to UNCCD by participating



in COP, scientific conferences and other important events arranged by the Convention.

- Coordination with UNCCD for reporting status of desertification and land degradation (DLD) every four years;
- Training, Capacity Building and consultative workshops:
 - On sustainable practices on land management;
 - On the technical measures to conserve water bodies and promote water resource development;
 - On measures to achieve Land Degradation Neutrality.
- Inventorisation and monitoring of the status of desertification/land degradation

in the country wide mapping, survey, calculation and assessment of the drivers of degradation using Earth observation satellites in co-ordination with Space Application Centre;

- Restoration of twenty-six million hectares of land by 2030 (21 million hectares of Bonn Challenge target) in co-ordination with National Afforestation and Eco-development Board, Green India Mission, Forest Conservation divisions of the Forestry wing of this Ministry and other line Ministries.
- Documentation, Dissemination and promotion of case studies related to Sustainable Land Ecosystem Management Projects.
- Use of secondary literature from Special



Report on Climate Change and Land by IPCC and Assessment Report on Land Degradation and Restoration by IPBES for land degradation and restoration.

- Formulation of policy frameworks addressing land degradation, drought, gender, sand and dust storms, desertification in co-ordination with Ministries viz. Ministry of Agriculture and Farmers' Welfare, Ministry of Rural Development, Ministry of Jal Shakti, Ministry of Mines, Department of Space, Ministry of Tribal Affairs, Ministry of Panchayati Raj and Ministry of Housing and Urban Affairs.

Sub-ordinate/Attached Offices:

Centre for Excellence in India has been proposed to be established at Indian Council for Forest Research and Education (ICFRE), Dehradun. The Centre will promote and implement initiatives related to land restoration and sustainable land management with the focus to increase land productivity, improve farmers' income and ensure food-water and livelihood security to the vulnerable communities. The Centre will also undertake research and activities related to land degradation vulnerability assessment, modelling, assessment of socio-economic parameters related to land, preparedness-prevention-prediction of drought and other related issues with aid of most recent and innovative science and technology.

The proposed centre will act as a centre for South-South Co-operation on an international level by compiling and disseminating information related to best practices on

advanced scientific knowledge and technology for combating desertification, restoring degraded land, mitigating drought, soil and water conservation, livelihood improvement, gender empowerment, poverty eradication etc.

Activities undertaken:

- In the Silver Jubilee year of the UNCCD, India Celebrated the World Day to Combat Desertification (WDCD) on 17th June 2019, in Vigyan Bhawan, New Delhi, where the Hon'ble Minister of Environment, Forest and Climate Change, Shri Prakash Javadekar formally announced that India will host the fourteenth session of Conference of Parties of United Nations Convention to Combat Desertification (COP14-UNCCD), from 29th August 2019 to 13th September 2019. The commemoration of WDCD 2019 envisaged the release of COP 14 Logo with the Slogan "Restore Land Sustain Future".
- MoEF&CC and UNCCD had jointly organized a National Workshop on 'Land Degradation Neutrality (LDN) Target Setting Programme' on 17th June 2019 where discussions were held on validation of the National LDN baselines, identification of land degradation hotspots, formulation of voluntary national LDN targets and prioritization of the transformative projects and programme.
- MoEF&CC, Govt. of India hosted fourteenth session of Conference of Parties (COP-14) of UNCCD, from 29th August to 13th September, 2019, at India Expo Centre and Mart, in Greater Noida. India is one of the four countries worldwide, that has



hosted COP of all three Rio Conventions [UNFCCC in 2002 (New Delhi); CBD in 2012 (Hyderabad); UNCCD in 2019 (New Delhi)]. Over 6000 delegates from 156 countries including Ministers, Heads of United

Nations and Intergovernmental bodies, Country Parties, Youth, Local governments, Business leaders and representatives of CSOs/NGOs etc participated in COP-14.



Important Conferences organized in India or International Conferences:

- Shri Jigmet Takpa, Joint Secretary (MoEFCC) and the National Focal Point (UNCCD-India) represented the country in the 17th Session of Committee to Review the Implementation of the Convention (CRIC) held in Georgetown, Guyana from 27-30 January, 2019. The National Focal Point announced that India will be hosting the Conference of Parties (COP-14) to UNCCD in September 2019. India made significant contributions in two interactive sessions on achieving Land Degradation Neutrality by 2030 and Gender Framework Action Plan.
- On 2nd September, 2019, the COP14 of UNCCD was inaugurated by the Hon'ble Minister, MoEF&CC, Shri Prakash Javadekar with hoisting of the National Flag of India along with the flag of the Convention. India being the global host for COP 14, took over the COP Presidency from China for the next two years till 2021.



- This Conference turned out to be a global platform for intergovernmental and national organizations/agencies demonstrating their efforts in Land, Water, Environment monitoring, restoration and rejuvenation through exhibition and sessions in India Pavilion.
- The Rio Conventions Pavilion, an effervescent space for interactive all-day events and meetings, also took place at COP-14, hosting “thematic days” that focused on the different areas of work of the Convention and the synergies among the Rio Conventions on climate change, biodiversity and desertification. The events included a Youth Forum, a Gender Caucus, a Science Day, Sand and Dust Storms Day, a Business Day, a Local and Regional Governments Day, the GEF Day, the Land for Life Day and a Drought Day.
- While inauguration of the High Level Segment on 9th September 2019, Hon’ble Prime Minister of India made the following announcements:
 - To set up a centre for excellence in India at the Indian Council for Forest Research and Education (ICFRE) Dehradun, an initiative for enhanced South-South Cooperation that aims to share India’s experiences on cost-effective and sustainable land management strategies;
 - India committed to achieve LDN by 2030 and restore 26 million hectares of degraded land;
 - Adopted the Delhi Declaration(Investing in Land and Unlocking Opportunities) in which the member countries have expressed commitment for a range of issues, including gender and health, ecosystem restoration, taking action on climate change, private sector engagement and recovery of 26 million hectares of degraded land in India.
- Indian delegation, headed by Shri C. K. Mishra, Secretary, MoEF&CC and Deputy Head Shri Anil Kumar Jain, Special Secretary, MoEF&CC participated in the UNCCD COP



14. The UNCCD's two subsidiary bodies, the Committee on Science and Technology (CST) and the CRIC, convened in parallel to the COP. COP adopted about 36 decisions delineating on how to implement thematic policy frameworks addressing land degradation, drought, gender, sand and dust storms, desertification, involvement of Industry, migration and also land tenure as a new thematic area under the Convention.

In this unprecedented global campaign to save productive land, country parties have agreed to make the Sustainable Development Goal target of achieving land degradation neutrality by 2030 a national target for action. The UNCCD COP 14 ended on 13 September 2019, after ten days of meetings, 11 high-level, 30 committee and over 170 stakeholder meetings, 44 exhibitions and 126 side events.

COP 14 UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION



International Cooperation



12.1 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 Ministry 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 multilateral activities:

- I. **United Nations Environment Programme (UNEP):** India is a member of UNEP and provides annual financial contribution of USD 100,000 to UNEP Environment Fund. The Ministry is a member of the UNEP's International Resource Panel (IRP) Steering Committee.
- II. **One Planet Network,** spearheaded by

UNEP, is the network of the 10 Year Framework of Programmes on Sustainable Consumption and Production, responsible for a systems-based approach that addresses the range and complexity of interactions in the production and consumption of food worldwide through Sustainable Food System (SFS) Programme. This Ministry joined as nodal Ministry for One Planet Network.

- III. **International Resource Panel** is an important organ of UNEP, launched in 2007, with a view to build and share the knowledge needed to improve our use of natural resources worldwide and to steer away from overconsumption, waste and ecological harm to a more prosperous and sustainable future. The International Resource Panel is administered by the Steering Committee, an intergovernmental body, which gives the Panel strategic direction, ensures policy relevance, helps set the annual work plan, oversees budgets and advises on the scientific make-up of the Panel. The latest 25th meeting of International Resource Panel and Steering Committee was held in Bled, Slovenia during November, 2019 and the Ministry participated in the same.
- IV. **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.

- V. **Partnership for Action on Green Economy (PAGE):** PAGE, an United Nations entity, established in 2012 as a follow up of an outcome of the Rio+20 Declaration, 'The Future We Want', which called upon the United Nations System and the international community to provide assistance to interested countries in developing, adopting and implementing green economy policies and strategies relating to Sustainable Development Goals, especially Goal No. 8 and 12. India took membership of PAGE in 2018.

PAGE is a joint initiative of five UN Agencies: the United Nations Environment Programme (UNEP), 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).

In order to prepare, implement, monitor and evaluate activities aimed at achieving national priorities in India under PAGE, this Ministry is constituting a National Steering Committee (NSC) with representation from relevant Ministries.

Under PAGE engagement, three regional and one national consultative workshop have been conducted jointly by UNEP and TERI to deliberate on trends, initiatives and challenges in key economic and environmental sectors, including manufacturing, agriculture, mining, urbanization, water, energy trade and tourism in the domain of inclusive green economy. The first workshop for Southern and Western states of India was conducted at Goa in July 2019.

- VI. **Shanghai Cooperation Organization (SCO):** The Shanghai Cooperation Organization (SCO) is a multilateral organization, established on 15 June 2001 in Shanghai, China, initially by 6 countries viz: China, Kazakhstan, Kyrgyzstan, Russia, Tajikistan and Uzbekistan to deliver principle of strengthening mutual trust and neighbourliness among the member states; promote their effective cooperation in politics, trade, the economy, research,



technology and culture, as well as in education, energy, transport, tourism, environmental protection, and other areas; make joint efforts to maintain and ensure peace, security and stability in the region; and move towards the establishment of a democratic, fair and rational new international political and economic order. India officially joined SCO as full-fledged member at the historic summit in Astana on 9 June 2017. Shanghai Cooperation

Organization has the status of Observer at the United Nations General Assembly.

First Meeting of the Heads of Environment Ministries of the SCO Member States responsible for environmental protection was convened in Moscow, Russia on September 27, 2019 with special focus on “Programme of development of ecological well-being of cities.” Indian Delegation led by Minister for Environment, Forest and Climate Change attended the meeting.



(First Meeting of the Heads of Environment Ministries of the SCO Member States in Moscow, Russia)

VII. South Asia Cooperative Environment Programme (SACEP): The South Asia Cooperative Environment Programme (SACEP) was set up in 1982 with headquarters in Colombo, Sri Lanka. India is a founder member of SACEP. Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka are the members of the SACEP. SACEP aims to promote Regional

Cooperation in South Asia in the field of environment, both natural and human, in the context of sustainable development and on issues of economic and social development which also impinge on the environment and vice versa.

The Governing Council (GC) is the principal deliberative and review body

responsible for determining policies, strategies and programmes of SACEP. The Governing Council of the SACEP consists of Environment Ministers of all 8 Member countries of SACEP. The latest and 15th Meeting of Governing Council of SACEP

was held in Dhaka, Bangladesh on 6th November, 2019. Indian Delegation led by Minister for Environment, Forest and Climate Change attended the meeting. India pays regular annual contribution to SACEP @ US \$ 31,850 per annum.



(Shri Prakash Javadekar, Minister for Environment, Forest and Climate Change delivering country statement in 15th Meeting of Governing Council of SACEP held in Dhaka, Bangladesh)

During Governing Council Meeting, Environment Ministers and the high-level officials from 8 member countries and also SACEP international partners including UN agencies came together and addressed the overwhelming environmental challenges of today and adopted SACEP and South Asian Seas Programme (SASP) work programmes for the year 2020-2021, SACEP Strategy for the year 2020-2030, South Asia Roadmap

towards Sustainable Waste Management and Resource Circulation. The meeting also adopted a declaration on Sustainable Public Procurement, Marine and Coastal Biodiversity Strategy for South Asia, and the Regional Marine Litter Action Plan for the Region.

VIII. International Union for Conservation of Nature and Natural Resources (IUCN):
International Union for Conservation of



Nature and Natural Resources (IUCN), established in 1948, plays leading role in conservation of the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. India became a member of IUCN in 1969. This Ministry is nodal for IUCN and supports IUCN in achieving goals of conservation of nature, natural resources and biodiversity. This Ministry pays an annual membership fee to IUCN @ CHF 246,801.00 per annum.

IX. **SWITCH-Asia:** SWITCH-Asia, launched in 2007, is an EU funded programme to share knowledge, disseminate and promote replication of successful project practices, facilitate networking between Asian and European stakeholders & produce publications on sustainable consumption and production (SCP) practices. European Union funds projects under SWITCH Asia Programme to promote sustainable consumption and production in Asia under Goal 12 of Sustainable Development Goals (SDGs). SWITCH Asia had so far taken up 106 projects on SCP 19 countries across Asia which includes 17 projects taken up in India.

SWITCH Asia-II Programme was launched in 2018. UNEP Regional Office, Bangkok directly coordinates SWITCH Asia-II Programme.

Bilateral Matters

International Cooperation – 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. The Ministry has entered into 26 Agreements / Memorandum of Understanding (MoUs) with various countries like Australia, Norway, Sweden, France, Finland, Canada, Bangladesh, Egypt, Morocco, Brazil, Russia and others 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 the international community. A number of Joint Working Groups (with Germany, European Union, etc.) have also been constituted which flows from Agreements / MoUs / Joint Statements entered into by other Ministries.

Shri Prakash Javadekar, Hon'ble Minister of Environment, Forest and Climate Change and Shri Babul Supriyo, Hon'ble Minister of State for 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, among others, and discussed environmental issues:

- Vietnamese delegation led by Mr. Phan Xuan Dung, Member of Central Party Committee of Viet Nam on 04th July, 2019.
- US Senator Chris Van Hollen on 04th October, 2019
- Dr. Thani Bin Ahmed Al Zeyoudi, Hon'ble Minister of Climate Change and Environment, UAE on 30th August, 2019.

- UK Delegation led by Lord Tariq Ahmed, UN Minister of State for the Commonwealth, the UN and South Asia on 3rd October, 2019.
- Mrs. Brune Poirson, Hon'ble Minister of Ecological and Inclusive Transition, France on 1st November, 2019
- Meeting with Australian Standing Committee Delegation on Environment and Energy on 04th November, 2019.
- Meeting with delegation from Mubadala Investment Company of UAE on 05.11.2019
- Sustainable development of mountainous regions;
- Environmentally sustainable and resilient urban development;
- Air, land and water pollution;
- Clean and renewable energy;
- Climate change risk management.

India-Switzerland Memorandum of Understanding (MoU): A Memorandum of Understanding (MoU) was signed between India and Switzerland on Technical Cooperation in the field of Climate Change and Environment. The MoU was signed on 13.09.2019 during the visit of the Hon'ble President of India to Switzerland.

The Memorandum of Understanding will enable establishment and promotion of closer and long-term cooperation between the two countries in the field of environment protection and management of natural resources on the basis of equity, reciprocity and mutual benefits, taking into account the applicable laws and legal provisions in each country.

The MoU identifies the following areas of cooperation:

- Capacity building on Climate Change and Sustainable Water Management;
- Sustainable Forest Management;

Visit of Indian Delegation to Bhutan: Secretary, Ministry of Environment, Forest and Climate Change, Government of India had visited Bhutan during 30th April to 2nd May, 2019, on the invitation of the Royal Government of Bhutan to discuss the projects of mutual interest under the domain of environment. As a follow up of the above, Royal Government of Bhutan, in collaboration with UNEP, organized in Thimpu, Bhutan, following workshops with a view to advance the mutual cooperation in the field of environment:

- Workshop on Waste Management from 27-28 August, 2019 and
- Workshop for formulation of Kangchenjunga-Manas corridor project from 29-30 August, 2019.

BRICS Environment Ministers Meeting: The 4th meeting of the BRICS Joint Working Group and 5th BRICS Environment Ministers' Meeting were held in Brazil from 12 to 15 August, 2019. The theme for the BRICS Environment Meeting was contribution of urban environmental management to improving the quality of life in cities.



Indian delegation led by Shri Prakash Javadekar, Hon'ble Minister of Environment, Forest and Climate Change participated in the BRICS Environment Ministers' Meeting. The following areas of cooperation were discussed during the meeting:

- I. Urban environmental management to improving the quality of life in cities and advancing cooperation on key issues:
 - Marine litter and land based waste impacts on marine ecosystems
 - Waste management and reverse logistic;
 - Urban green areas;

- Urban air quality;
 - Sanitation and water quality;
 - Contaminated areas and soil remediation.
- II. Discussion on Post- 2020 Biodiversity framework
 - III. Urban Environmental Management, Circular Economy, in the context of Sustainable Consumption and Production and Oceans Economy and Conservation
 - IV. Resource Efficiency and Financing
 - V. The following initiatives from Previous BRICS meetings were also discussed:

- Discussion on the BRICS Environmentally Sound Technology (BEST) Cooperation Platform
- Discussion on the Clean Rivers of BRICS Umbrella Program
- Discussion on Partnership for Urban Environment Sustainability Initiative (PUESI)

India – France Joint Working Group (JWG)

Meeting: The second meeting of the India-France Joint Working Group on Environment (JWGe) was held at the Ministry of Environment, Forest and Climate Change (MoEFCC), Indira

Paryavaran Bhawan, New Delhi from 18-19 November, 2019.

The following issues, among others were discussed during the meeting:

- Climate Change;
- Global Biodiversity;
- Forest (Protected areas / natural heritage);
- Air quality; and
- Blue Economy.

The meeting was followed by a field visit to Assam in connection with AFD Assam Forest and Biodiversity Conservation Project from 20-22 November, 2019.



Third Indo-German Environment Forum (IGEnvF), February 13, 2019, New Delhi: Under the chairmanship of Honourable Minister of Environment, Forest and Climate Change, Government of India, Dr. Harsh Vardhan and his German counterpart Federal Environment Minister Svenja Schulze, the Third Indo-German Environment Forum was held in New Delhi on February 13, 2019 with the title “Cleaner Air,

Greener Economy: Capacities and Technologies for Implementing NDCs and SDGs”. The one-day event had panel discussions/parallel sessions focused on challenges, solutions and necessary framework conditions of air pollution control, waste management and circular economy as well as implementation of NDCs and SDGs based on Paris Agreement and Agenda 2030 of UN, respectively.



Third Indo-German Environment Forum (IGEnvF), February 13, 2019, New Delhi

In presence of both the ministers, two Joint Declarations of Intent (JDI) were exchanged between Mr. SPS Parihar, Chairman CPCB and Ms. Maria Krautzberger, President Umweltbundesamt (UBA-the German Environment Agency) on, (i) combatting air pollution, and (ii) preparation of Reference / COINDS Documents for textile sector. During the networking dinner hosted by the Ministry, Shri C. K. Mishra, Secretary, MoEF&CC, also briefed H.E. Svenja Schulze on the potential priority areas for cooperation.

Meeting of Indo-German Joint Working Group (JWG), February 5-7, 2019, New Delhi: Third meeting of the JWGs on 'water' and 'waste management and circular economy (CE)' were organized on February 5-6, 2019 respectively. These working groups act as technical platform to identify, discuss environmental issues and take forward cooperation with Germany, which ultimately feeds inputs into the Indo-German

Environment Forum. Potential topics discussed under the JWG on Water were: industrial waste water, water governance, environmental aspects of navigation and shipping in rivers, water quality monitoring, and combating air pollution and potential topics discussed under JWG on Waste Management and Circular Economy were: Detailed assessment on Waste to Energy (incineration), Waste to Energy (bio-methanation), Dumpsites (contaminated and non-contaminated) and Marine litter. Also, the delegation along with the team from CPCB and GIZ had a field visit to ELV dismantling center in Greater Noida on February 07, 2019.

National Conference on Sustainable and Environment-friendly Industrial Production (SEIP) Project on February 15, 2019 at New Delhi: 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 main topics included successful models of Resource Efficiency & Pollution Reduction in Industries, Performance Improvement of ETP/CETPs, Voluntary Actions for Environmental Improvement in Industrial Areas and Planning and Retrofitting of Industrial Areas. Around 70 participants including representatives from 18 State Pollution Control Boards and 8 State Industrial Departments were present. Shri A. K. Jain, Additional Secretary, MoEF&CC inaugurated the conference and stressed that agencies shall take learnings to the regional levels and in the SEIP-Phase-II, shall aim at strengthening strategic and operational governance structures of selected agencies at the state level to effectively combat water pollution from industrial wastewater.

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 (OFFP)

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 grants.

The GEF mandate is decided as per the guidance provided by the Conference of the Parties of the multilateral environmental conventions namely Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), United Nations Convention to Combat Desertification (UNCCD), Stockholm Convention on PoPs and Minamata Convention on Mercury.

Currently, we are in GEF-7 Cycle (2018-2022) with projects being designed and implemented in all focal areas viz., Climate Change, Land Degradation, Biodiversity, International Waters and Chemical & Wastes.

The GEF South Asia Constituency Meeting was held in New Delhi from 11-12 December 2019. The meeting was organized by the World Bank and the GEF Secretariat wherein participants from South Asian countries participated (India, Bangladesh, Bhutan, Maldives and Sri Lanka). The meeting was inaugurated by Shri C.K. Mishra, Secretary, Ministry of Environment, Forest & Climate Change.





12.2 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, other line ministries in the Government of India such as Ministry of Finance, Ministry of Home Affairs, NITI Aayog, etc. It provides technical inputs on projects submitted by State Governments for financial assistance from donor agencies.

At present 13 externally aided forestry projects are under implementation in the

country. The projects are funded by JICA, French Development Agency, Kfw and GIZ. The broad objectives of these forestry projects are increasing forest cover, conservation of biodiversity, rehabilitation of degraded forest areas, soil and moisture conservation measures, Capacity building of forest officials and other stakeholders, creation of livelihood opportunities for forest fringe villagers and other measures for sustainable management of forests.

Ongoing projects are as follows:

S. No.	Name of the Project	Theme	Project Duration	Funding Agency
1.	Assam Project on Forest and Biodiversity Conservation- Phase II	Forest and Biodiversity Conservation	2019-20 to 2024-25	French Development Agency (AFD)
2.	West Bengal Forestry and Biodiversity Conservation Project	Biodiversity Conservation Community Development	2012-13 to 2019-20	JICA
3.	Rajasthan Forestry and Biodiversity Project (Phase-II)	Biodiversity Conservation Poverty Alleviation and Livelihood Improvement Water conservation Structures	2011-12 to 2020-21	JICA
4.	Tamil Nadu Biodiversity Conservation and Greening Project	Biodiversity Conservation	2011-12 to 2019-20	JICA
5.	Sikkim Biodiversity Conservation and Forest Management Project	Forest and biodiversity conservation Eco – tourism Joint Forests Management	2010-11 to 2019-20	JICA

S. No.	Name of the Project	Theme	Project Duration	Funding Agency
6.	Odisha Forestry Sector Development Project Phase-II	Biodiversity Conservation and science based management of protected area. Infrastructure development, REDD plus preparedness Forest Management under JFM mode	2017-18 to 2026-27	JICA
7.	Uttarakhand Forest Resource Management Project	Livelihood improvement – Community Development & IGAs Restoration/ Development Forests Resource	2014-15 to 2023-24	JICA
8.	Japanese Technical Cooperation Project for Natural Disaster Management in Forest Areas of Uttarakhand	100% Grant Mode	2016-17 to 2020-21	JICA
9.	Himachal Pradesh Forest Eco-Systems Climate Proofing project	Under planting of Chir Pines areas Rehabilitation of bamboo plantation Soil and water conservation measures/ drainage line treatments	2016-17 to 2020-21	KfW
10.	Himachal Pradesh Forest Ecosystem Services (HPFES) – Technical Cooperation Project funded by GIZ.	Preparation of micro-plans in selected pilot sites with ecosystem services approach etc.	2015-16 to 2019-20	GIZ



S. No.	Name of the Project	Theme	Project Duration	Funding Agency
11.	Himachal Pradesh Forest Ecosystem Management & Livelihood	Soil and Moisture Conservation Biodiversity Management Wildlife barbital improvement program Environmental Rehabilitation	2018-19 to 2027-28	JICA
12.	Nagaland Forest Management Project	Forestry interventions and Biodiversity Conservation through Community Participation. Livelihood Improvement and Community Development.	2017-18 to 2026-27	JICA
13.	Sustainable Forest and Catchment Management in Tripura	Sustainable Forest Management Soil & Moisture Conservation Livelihood Development	2018-19 to 2027-28	JICA

CHAPTER

13



Administration and Civil Construction



13.1 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;
- Internship Scheme of Ministry of Environment, Forest and Climate Change; and
- Review of services under FR 56(j).

P-II Section

- Cadre management of CSSS/CSS/CSCS, Central Staffing Scheme, IES and ISS officers
- Establishment/service matters of Secretariat Group 'A', 'B' & 'C' posts (except officers working at the strength of IFS 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.
- Recruitment & Framing of Recruitment Rules of non-technical ex-cadre posts of the Ministry (E&F) Wing
- Training Programme of AIS and all Secretariat officers
- Matters relating to Minister's staff

- Outsourcing (deployment and policy matters)
- Election Work
- Work Allocation among all officers/staff other than scientific/technical officers

P-III Section

- Recruitment of Group 'A' Scientists in the Ministry, including regional and attached/subordinate offices;
- Review/assessment of Group 'A' Scientists in the Ministry including regional and attached/subordinate offices for promotion under Flexible Complementing Scheme ;
- 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:

- Sanction Orders of 73 delegations of foreign tours of Minister and officers were issued till 22.11.2019;
- Implementation of summer internship 2019-20 in 22 disciplines;
- Promotion of five scientists to higher grade.
- Identification of suitable posts with benchmark disabilities in pursuance of the provision made in Rights of persons with Disabilities Act, 2016 finalised;

- Online recording of APARs across all Cadres of CSS/CSSS/CSCS has been introduced w.e.f. 2018-19.
- Timely processing of retirement benefits of 4 officials;
- Proposal of cadre restructuring of Technical Cadre (Forestry) under process.
- Shri John Thomas, Research Officer (E) Grade II repatriated to parent department.

Promotion:

- 38 cases of promotion of scientists in various grades were reviewed and out of which 25 were promoted to the higher grade in accordance with the guidelines of the Flexible Complementing Scheme.
- 55 cases of promotion of Scientists in various grades are being considered in accordance with the guidelines of the Flexible Complementing Scheme.

13.2 Indian Forest Service (IFS) Cadre Management

Mandate:

- Ministry of Environment Forest & Climate Change 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, 2019 is 3191'(three thousand one hundred



ninty 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:

- 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 of Indian Forest Service (IFS) Examination 2018 have been completed. However, vacancies for induction of State Forest Service officers into Indian Forest Service have been determined in respect of 21 cadres during the year 2019.
- Cadre review completed in respect of Karnataka and notified in 2019. Cadre review proposal in respect of Rajasthan, Himachal Pradesh and Chhattisgarh is under consideration in DoP&T.
- Smart Performance Appraisal Report Recording Online Window (SPARROW) implementation for online filing of PAR in respect of IFS Officers has been completed and closed for the assessment year 2018-2019 on 31.12.2019.

- Up-to-date Civil List of IFS officers as on 01.01.2019 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 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 upgradation.
- The re-structuring of the Content Management Based IFS Website (<http://www.ifs.nic.in>) has been completed and will be launched shortly.
- 53 State Forest Service Officers were included in the Indian Forest Service under IFS (Appointment by Promotion) Regulations, during January- December, 2019.
- 25 IFS officers joined at various levels under the Central Staffing Scheme of the Ministry and 16 IFS officers joined under the Central Staffing Scheme of the Department of Personnel & Training. 05 IFS officers at the level of Additional Secretary, one at the level of Secretary and 08 IFS officers have been empaneled at the level of Joint Secretary at the Centre.
- Around 16 Court Cases pending in various Courts across the Country were disposed off.
- A total of 137 RTI application and 95 CPGRAM applications were disposed off during year 2019.

13.3 Vigilance Division

- The Vigilance Division interacts with Central Bureau of Investigation (CBI) in various matters and facilitates CBI for obtaining the information/documents from various Divisions of the Ministry.
- Handling of 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 01.01.2019 to 31.12.2019, 144 complaints were received and examined and 135 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.
- Identification of Sensitive Posts and to ensure periodical rotation of staff holding such sensitive posts. Administration Division is regularly asked to carry out rotation of staff holding sensitive posts.
- 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 and Processing 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. 2 (Two) 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.
 - Receipt and Scrutiny of Annual Immovable Property Returns (AIPRs) of All Officers and officials (including IFS officers) of MoEF&CC.
 - According clearance from vigilance angle in respect of officers and officials of the Ministry. 989 vigilance clearance were accorded during the period.
 - Permission/Intimation of Movable/

Immovable property under Conduct Rules, 1964 and All India Service (Conduct) Rules, 1968.

- Preventive Measures to check corruption.
- Organizing Vigilance Awareness Week as per CVC directions.

13.4 Parliament Section

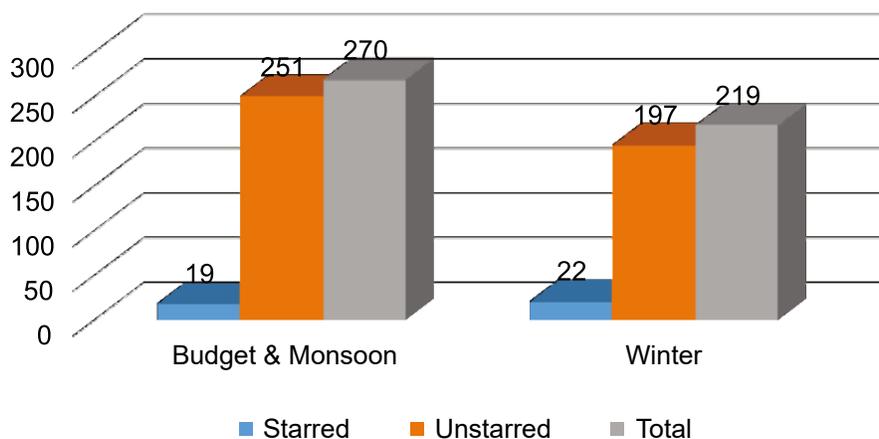
The Parliament Division in the Ministry is responsible for co-ordination of all parliament matters related to the Ministry of Environment, Forest and Climate Change (MoEF&CC). During the year 2019-20, a total number of 836 Parliament Questions pertaining to various aspects of environment were answered by the Ministry (489 questions in the Lok Sabha, out of which 41 were starred and 448 were un-starred. A total of 347 questions were asked in the Rajya Sabha, out of which 33 were starred and 314 were un-starred). The questions covered a wide range of issues with which the Ministry is concerned, prominent among them being questions related to Pollution, Wildlife Management, Climate Change, Forest Conservation, Environmental Conservation, Environment Impact Assessment, Freshwater and Marine Conservation, Waste Management, Water Management, Biosafety, Environmental Education, Medicinal Plants and Disaster Management etc.

Graphical representation of the Parliament Questions replied by the Ministry during 2019-20 both in Lok Sabha and Rajya Sabha in various Sessions are given in Fig- (A) and Fig- (B) respectively.

Lok Sabha

Type	Budget & Monsoon	Winter	Grand Total
Starred	19	22	41
Unstarred	251	197	448
Total	270	219	489

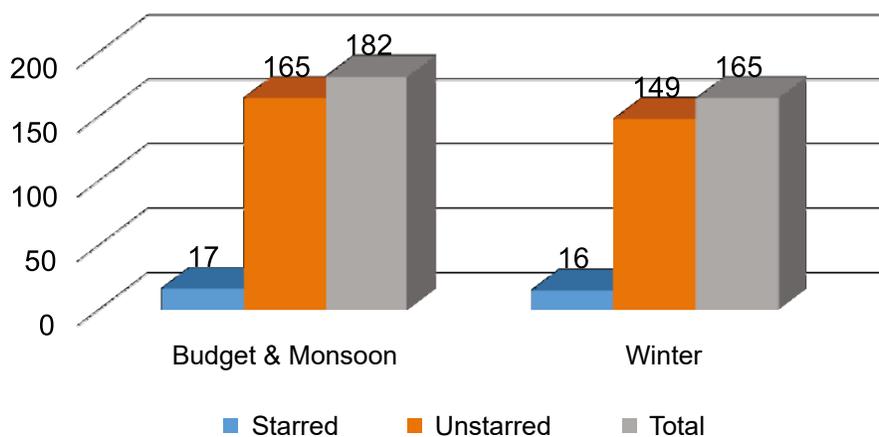
Fig. (A) Number of questions replied by the MoEF&CC in all sessions of Lok Sabha during 2019-2020



Rajya Sabha

Type	Budget & Monsoon	Winter	Grand Total
Starred	17	16	33
Unstarred	165	149	314
Total	182	165	347

Fig. (B) Number of questions replied by the MoEF&CC in all sessions of Rajya Sabha during 2019-2020





During the year 2019-20, Parliament Section coordinated two meetings of Department related Parliamentary Standing Committee of Science and Technology, Environment, Forest and Climate Change and one meeting of Consultative Committee of the Ministry.

The subject matter for the two meetings of the Department related Parliamentary Standing Committee of Science and Technology, Environment, Forest and Climate Change was as under:-

- 'Functioning of the Ministry of Environment, Forest and Climate Change'
- 'Environment and Health'

The subject matter for the meeting of the Consultative Committees was as under:-

- Single Use Plastic,

In addition to the above, 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.

13.5 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:

- The website of the Ministry was re-designed, re-developed and made Go Live.
- Procured and installed the Video Wall in the Ganga Auditorium.
- Continued the implementation of e-Office in the Ministry under Digital India Programme (collected details of officers and staff, Registered 1086 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.
- Continued the Management of Wi-Fi System at Indira Paryavaran Bhawan including addition/deletion of users, configuration in mobile phones, installation of certificates in iPhones.
- Continued the Management of Biometric Attendance System including sending reports on requirement basis.
- Monitored the regular updation of material in Social Media sites (<http://twitter.com/moefcc> & <http://facebook.com/moefcc>).
- Created new account in Instagram and (<https://www.instagram.com/moefccgoi/>)
- 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.

- Continued the Management of Budget Expenditure Management System for IFD, PAO, B&A, PC and other Divisions.
- Continued the Management of Online Stationary Request Management System for submitting the request for stationary.
- Continued the Management of Smart Performance Appraisal Report Recording Online Window (SPARROW) for online submission of APAR of IAS, IES, ISS, IPS, CSS & CSSS Officers. Online submission of APAR implemented for JSA, SSA, ASO, SO, Steno-D, PA and PS during the year 2019-20.
- Continued the 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 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 West Bengal. The OCMMS is integrated with DIPP / State Government



Single Window System for Twelve (12) States viz. Andhra Pradesh, Chhattisgarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Kerala, Odisha, Tamil Nadu, Telengana, Punjab and Uttarakhand. The mobile version of OCMMS is implemented in Eight (8) States viz. Andhra Pradesh, Bihar, Delhi, Haryana, Jharkhand, Kerala, Punjab and Tamil Nadu and the same are made 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 (MOEFCC), 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.

Objectives of PARIVESH:

- 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.

13.6 Right to Information (RTI) Cell

- As per RTI-MIS Portal, the MoEF&CC has received 4233 RTI applications and 304 RTI appeals under the RTI Act, 2005 during the year 2019-20 (01.01.2019 to 31.12.2019).
- 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.

13.7 General Administration (GA) Section

The General Administration (GA) Division of the Ministry 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. It has the unique distinction of getting LEED India Platinum & GRIHA-5 Star Green Building ratings.

13.8 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.
- Smt. Geeta Menon, Joint Secretary (PG) is the Nodal Public Grievance Officer of the Ministry.
- During the period 1st January, 2019 to 31st December, 2019, the PG Cell had received 6440 public grievances.
- During the period, 6560 grievances have been disposed online and 316 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 periodic reminders to the Divisions/Sections concerned for early disposal of pending grievances, and to strive towards Zero pendency of grievances.

13.9 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 organised 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-** 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. Books received for Award/Prize are being studied/evaluated. An Evaluation Committee has been constituted under the chairmanship of Additional Secretary, Ministry of Env. Forest and Climate Change for taking decision on grant of Award.
- **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 01.09.2019 to 15.09.2019. During this period various Hindi competitions aimed to increase

progressive use of Official Language Hindi were organised. Employees of the Ministry, NAEB and CCU participated in these competitions.

13.10 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) headed by the Chief Engineer is a separate division under the administrative control of the MoEF&CC. The main roles of CCU are:

- Planning of works including preparation of estimates in house and vetting of estimates prepared by other PWOs.
- To construct major works in house or get these constructed through other PWOs.
- Technical Advisor in the construction works of the Ministry.

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: 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:

- Extension of Executive Hostel for IGNFA, Dehradun.
Sanction amount - Rs. 11 Cr.
- Construction of all Weather Swimming Pool for IGNFA at Dehradun.
Sanction amount – Rs. 15.00 Cr.
- Construction of Regional Museum of Natural History at Gangtok.
Sanction amount - Rs. 57.59 Cr.
- Construction of National Museum and State of the Art Auditorium in the premises of EBRC, ZSI.
Sanction Amount – Rs. 11.08 Cr.
- 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.



- Construction of Faunal repository of ZSI at Port Blair.
Sanction amount - Rs. 3.57 Cr.
- Construction of 10 No. Residential Quarters for BSI at Dehradun.
Sanction amount - Rs. 3.66 Cr.
- Construction of 7 No. staff quarters at Regional Museum of Natural History at

Sawai Madhopur (Raj.).

Sanction amount - Rs. 2.74 Cr.

Progress/ Achievements:

Completed Works:

- Executive Hostel, IGNFA, Dehradun
- Girls Hostel, FRI, Dehradun
- Shanghai Deer Enclosure, NZP, New Delhi
- Office building of CPCB at Bhopal



Development Monitoring & Evaluation, Budget and Accounts



14.1 Development Monitoring & Evaluation

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).

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

Activities & Progress/Achievements:

- In accordance with the guidelines issued by the Ministry of Finance and NITI Aayog, DMED formulated the road map for monitoring and evaluating the Public funded schemes of the Ministry. Currently, the Division is engaged in the 3rd Party Evaluation of Central Sector Schemes, implemented during FY 2017-18 to 2019-20 in order to determine the effectiveness of Schemes in addressing the issues and also to decide their continuation beyond Fourteenth Finance Commission cycle.
- To steer and monitor the overall exercise of evaluation and monitoring, an Evaluation Monitoring Committee (EMC) was constituted vide Notification dated 7th February, 2019, under the chairpersonship of the Principal Adviser with representatives of Integrated Finance Division, Budget Division, Audit Wing and the Joint Secretaries/Inspector Generals of Forests/Advisers of Programme Divisions. Economic Adviser is the Member Secretary of the Committee. The EMC was reconstituted vide Notification dated 5th November, 2019, to be chaired by the Additional Secretary, MoEF&CC.
- The following groupings of Central Sector Schemes has been made based on the nature of the Schemes and taken up for evaluation:

S.No.	Umbrella Category and Sub-Scheme there under;
I	Environment Protection (EP)
1	Pollution Abatement
2	Hazardous Substances Management
3	Control of Pollution

S.No.	Umbrella Category and Sub-Scheme there under;
II	Environment Conservation (EC)
4	Eco-Task Force
5	Climate Change Action Plan
6	National Adaptation Fund
7	National Coastal Mission (including EAP)
III	Decision Support Systems (DSS)
8	Environmental Information Systems (ENVIS)
9	R&D for Conservation and Development
10	National Mission on Himalayan Studies
IV	Environmental Awareness and Capacity Building (EACB)
11	Forestry Training and Capacity Building
12	Environmental Education, Awareness and Training including Media

The process to allot the studies to the 3rd Party agencies had been completed and 4 Agencies were issued work orders on 6th December, 2019 for carrying out the third party evaluation of the schemes.

- The Centrally Sponsored Schemes (CSS) of Ministry of Environment, Forest & Climate Change are being evaluated by the NITI Aayog through a 3rd Party Agency appointed - M/s KPMG Advisory Services Private Ltd. The Economic Adviser, MoEF&CC has been nominated as Nodal Officer for this exercise. The DME Division coordinates with Programme Divisions of the schemes to facilitate the exercise.

14.2 Budget and Accounts

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 2019-20: The Ministry has been allocated an outlay of Rs 2954.72 crore in the Budget Estimates (BE) for the Financial Year 2019-20.

The financial outlays and expenditure during 2019-20 is given in the following table:

Table-14.1

Umbrella Scheme-wise Allocation (2019-20)

(Rs in crore)

S. No	Name of the Scheme	BE 2019-20	AE 2019-20 (upto 31.12.2019)
1	Environmental Knowledge and Capacity Building (CS)	85.80	84.39
2	Environment Protection, Management and Sustainable Development (CS)	215.00	78.97
3	National Coastal Management Programme (CS)	95.00	87.87
4	Decision Support System for Environmental Awareness, Policy, Planning and Outcome Evaluation (CS)	153.00	92.55
5	Control of Pollution	460.00	326.85
6	National Mission for a Green India (CSS)	240.00	226.43
7	Integrated Development of Wildlife Habitats(CSS)	560.00	410.50
8	Conservation of Natural Resources and Ecosystems (CSS)	86.00	46.19
Total		1894.80	1353.75

Table-14.2

Umbrella Non Scheme-wise Allocation (2019-20)

(Rs in crore)

S. No	Name of the Scheme	BE 2019-20	AE 2019-20 (upto 31.12.2019)
1	Secretariat	143.00	104.19
2	Attached/ Subordinate offices	445.02	300.08
3	Assistance to Autonomous Bodies	324.90	239.05
4	Statutory & Regulatory Bodies	147.00	103.75
Total		1059.92	747.07
Grand Total (Scheme + Non Scheme)		2954.72	2100.82

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.



Annexure-I

List of pending C&AG Paras (up to 31st December, 2019)

S. No.	Report No. & Year	Para No.	Brief Subject
1	21 of 2012- 13	1-7	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

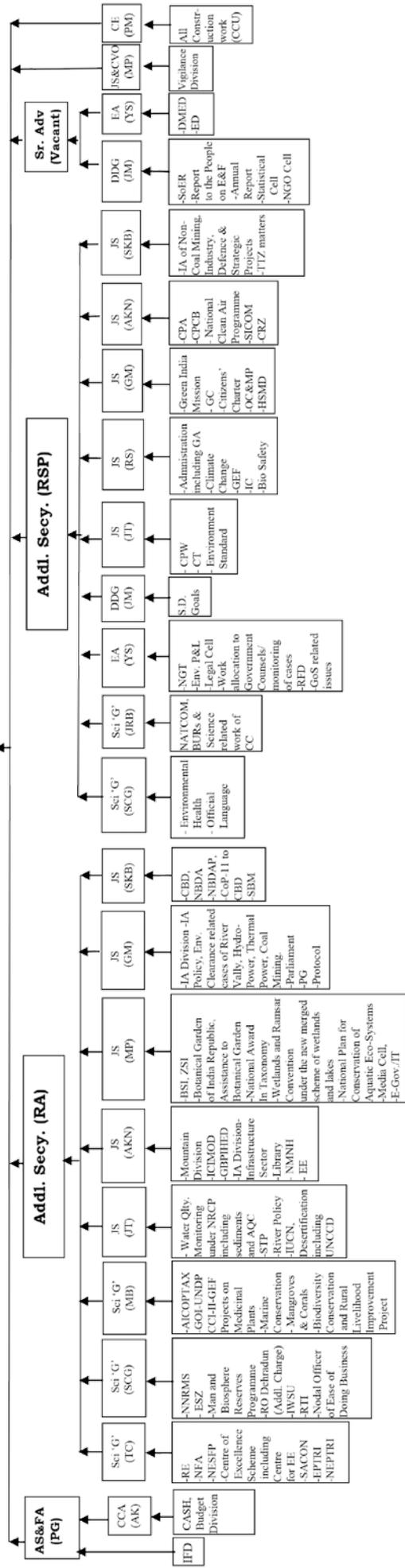
ORGANISATIONAL STRUCTURE OF MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (DIVISIONS UNDER ENVIRONMENT WINGS)

MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE

Minister of State for Environment, Forest and Climate Change

SECRETARY

As on 2 January 2020



ORGANISATIONAL STRUCTURE OF MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (DIVISIONS UNDER FORESTRY & WILDLIFE WINGS)

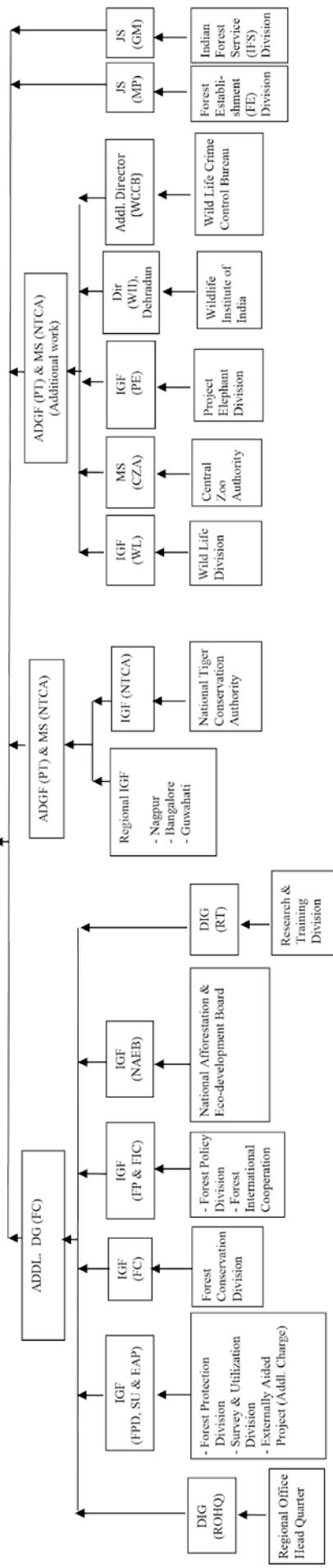
MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE

Minister of State for Environment, Forest and Climate Change

SECRETARY

DGF & SS
(Vacant)

As on 2 January 2020



Annexure-IV

List of Wetlands of International Importance in India under Ramsar Convention

Sl. No.	State/UT	Sl. No	Name of Ramsar Site	Area in ha	Date of Declaration
1.	Andhra Pradesh	1.	Kolleru	90100	19/08/2002
2.	Assam	2.	Deepar Beel	4000	19/08/2002
3.	Gujarat	3.	Nalsarovar Bird Sanctuary	12000	24/09/2012
4.	Himachal Pradesh	4.	Pongdam	15662	19/08/2002
		5.	Renuka	20	08/11/2005
		6.	Chandratal	49	08/11/2005
5.	Jammu & Kashmir	7.	Wullar	18900	23/03/1990
		8.	Tso Morari	12000	19/08/2002
		9.	Hokersar	1375	08/11/2005
		10.	Mansar & Surinsar	350	08/11/2005
6.	Kerala	11.	Ashtamudi	6140	19/08/2002
		12.	Sasthamkotta	373	19/08/2002
		13.	Vembanadkol	151250	19/08/2002
7.	Madhya Pradesh	14.	Bhoj	3201	19/08/2002
8.	Manipur	15.	Loktak	26600	23/03/1990
9.	Orissa	16.	Chilika	116500	01/10/1981
		17.	Bhtarkanika	65000	19/08/2002
10.	Punjab	18.	Harike	4100	23/03/1990
		19.	Kanjli	183	22/01/2002
		20.	Ropar	1365	22/01/2002
11.	Rajasthan	21.	Sambhar	24000	23/03/1990
		22.	Keoladeo NP	2873	01/10/1983
12.	Tamil Nadu	23.	Point Calimere	38500	19/08/2002
13.	Tripura	24.	Rudra Sagar	240	08/11/2005
14.	Uttar Pradesh	25.	Uppar Ganga	26590	08/11/2005
15.	West Bengal	26.	East Kolkatta wetland	12500	19/08/2002
		27.	Sundarban wetland	423000	30/01/2019
		Total	27 sites	1056871 ha	



INDIRA PARYAVARAN BHAWAN



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