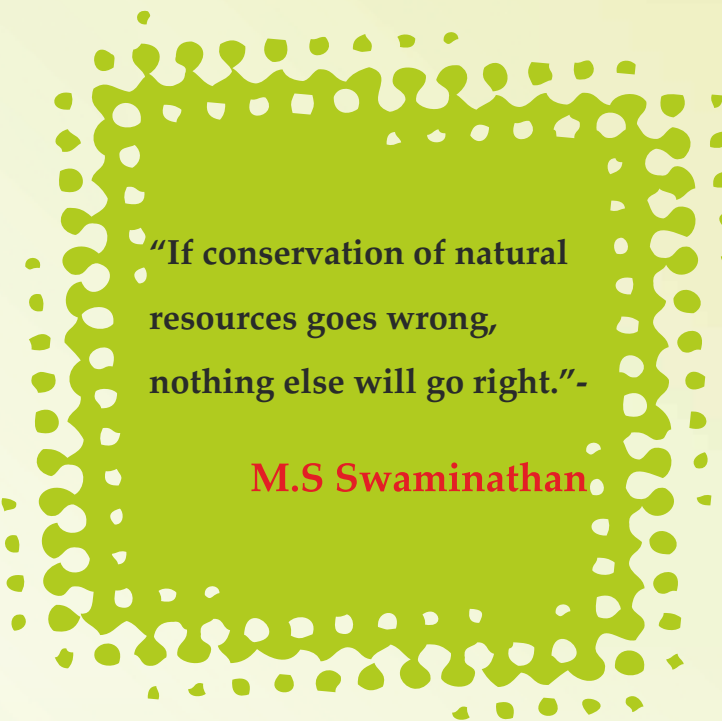





# ANNUAL REPORT 2017-18



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



**“If conservation of natural  
resources goes wrong,  
nothing else will go right.”-**

**M.S Swaminathan**

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# ANNUAL REPORT 2017-18



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



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## Abbreviations

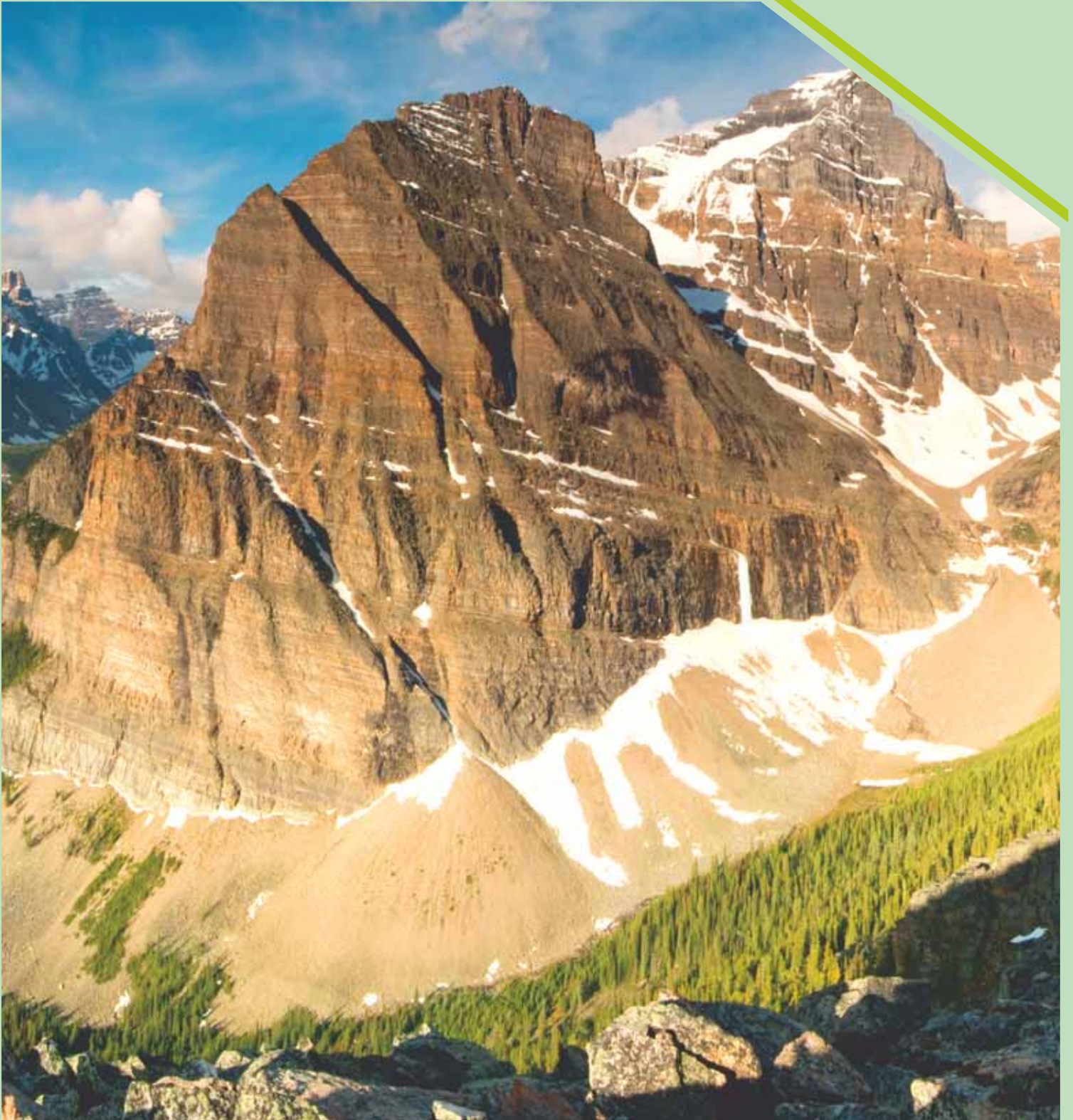
A.I.C.O.P.T.A.X. : All India Coordinated Project on Capacity Building in Taxonomy	G.O.I. : Government of India
A.W. : Animal Welfare	H.S.M.D. : Hazardous Substances Management Division
B.U.R. : Biennial Update Report	I.A. : Impact Assessment
B.C.S. : Bio-diversity Conservation Scheme	I.C. : International Co-operation
B.G. : Botanical Garden	I.C.I.M.O.D. : International Centre for Intergrated Mountain Development
B.G.I.R. : Botanicla Garden of the Indian Republic	I.F.C. : Information Facilitation Counter
B.S.I. : Botanicla Survey of India	I.F.D. : Integrated Finance Division
C.B.D. : Conventionon Biologicla Diversity	I.F.S. : Integrated Fiance Service
C.B.P. : Capacity Building Project	I.G.P.P. : Indira Gandhi Paryavaran Puraskar
C.C. : Climate Change	I.N.C.C.A. : Indian Network for Climate Change
C.C.U. : Civil Construction Unit	I.P.C.C. : International Panel on Climate Change
C.D.M. : Clean Development Mechanism	I.T. : Information Technology
C.E.S. : Centre for Ecological Science	I.U.C.N. : International Union for Conservation of Nature
C.M.W. : Conservation and Management of Wetlands	I.W.S.U. : Internal Work Study Unit
C.O.P. : Conference of the Parties	L.C. : Legal Cell
C.P.A. : Control of Pollution Air	M.B.P. : Man and Biosphere Programme
C.P.W. : Control of Pollution Water	M.G.C.E.&E. : Mahatma Gandhi Chair on Environment & Ecology
C.P.B. : Cartagena Protocol on Biosafety	N.A.T.C.O.M. : National Communication
C.P.C.B. : Central Pollution Control Board	N.B.A. : Natinal Biodiversity Authority
C.T. : Clean Technology	N.B.A.P. : National Biodiversity Actin Plan
C.R.Z. : Coastal Regulation Zone	N.C.Z.M.A. : National Coastal Zone Management Authority
C.S.D. : Commission on Sustainable Development	N.E.P.T.R.I. : Natianal Environmental Protection Training and Research Institute
C.V.O. : Chief Vigilance Officer	N.E.S.F.P. : National Environmental Science Fellows Programme
D.T.E.P.A. : Dehanu Teluka Environment Protection Authority	N.E.S.P.F. : National Environmental Science Fellows Proramme
D.M.E.D. : Development Monitoring & Evaluation Division	N.F.A. : National Fellowship Awards
E.C. : Economic Cell	N.F.A.P. : National Forestry Action Programme
E.E. : Environment Education	N.F.C. : National Forest Commission
E&F : Environment & Forest	N.T.C.A. : National Tiger Consevation Authority
E.I. : Environment Information	N.F.A. : National Fellowship Awards
E.E.A.T. : Environment Education Awareness and Training	P.G. : Public Gravences
E.I.V.R. : Entities of Incomparable Value Regulations	R.O. : Regional Office
E.N.V.I.S. : Environmental Informaiton System	N.G.R.B.A. : National Ganga River Basin Authority
E.P.T.R.I. : Environment Protection Training & Research Institute	N.I.A.W. : National Institute of Animal Welfare
E.S.A. : Ecologically Sensitive Areas	N.L.C.P. : National Lake Consevation Plan
F.E. : Forest Establishment	N.M.C.G. : National Mission on Clean Ganga
F.R.L.H.T. : Foundation for Revitalization of Local Health Traditions	N.M.N.H. : National Museum for Natural History
G.A. : General Administration	N.N.R.M.S. : National Natural Resources Management Systems
N.G.O. : Non Governmental Organisation	N.R.C.D. : National River Conservation Directorate
N.G.T. : National Green Tribunal	N.R.C.P. : National River Conservation Plan
G.B.P.I.H.E.D. : G.B. Pant Institute of Himalayan Environment & Development	N.B.A.P. : National biodiversity Action Plan
G.P.G. : Global Public Goods	N.C.Z.M.A. : National coastal Zone Managment Authority
G.C. : General Co-ordination	N.E.P.T.R.I. : National Environmental Protection Training and Research Institute
G.E.A.C. : Genetic Engineering Approval Committee	N.E.S.P.F. : National Environmental Science Fellows Proramme
G.E.F. : Global Environment Facility	N.F.A. : National Fellowship Awards
G.I.M. : Greening India Mission	N.B.A.P. : National biodiversity Action Plan
G.L.O.B.E. : Global Learning & Observation to Benefit the Environment	N.C.Z.M.A. : National coastal Zone Management Authority
G.O.S. : Group of Secretaries	N.E.P.T.R.I. : National Environmental Protection Training and Research





	Institute		
N.Z.P.	: National Zoological Park	S.I.C.O.M.	: Society for Integrated Coastal Management
P.E.	: Project Elephants	S.O.E.R.	: State of Environment Report
P.T.	: Project Tiger	S.T.P.	: Sewage Treatment Plants
O.C&M.P.	: Ozone Cell & Montreal Protocol	S.U.	: Survey & Utilization
O.L.	: Official Language	S.F.A.	: Standard Financial Annex
P&L	: Policy and Law	T&E	: Trade & Environment
R.E.	: Research in Environment	U.N.C.C.D.	: United Nations Convention to Combat Desertification
R.O.H.Q.	: Regional Office Head Quarter	U.N.D.P.	: United Nations Development Programme
R.F.D.	: Results Framework Document	W.H.C.	: World Heritage Conservation
R.T.I.	: Right to Information	W.C.C.B.	: Wildlife Crime Control Bureau
R.T.	: Research & Training	W.I.I.	: Wildlife Institute of India
S.A.C.O.N.	: Salim Ali Centre for Ornithology & Natural History	W.L.	: Wildlife
S.B.A.	: Swachh Bharat Abhiyan	W.G.E.E.P.	: Western Ghat Ecology Expert Panel
S.D.	: Sustainable Development	Z.S.I.	: Zoological Survey of India

# ROLE AND MANDATE OF THE MINISTRY





### Role and Mandate of the Ministry

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

- Conservation and survey of flora, fauna, forests and wildlife
- Prevention and control of pollution
- Afforestation and regeneration of degraded areas

- Protection of environment, and ensuring the welfare of animals.

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

### Subjects under the Ministry of Environment, Forest and Climate Change.

The following items of work have been allocated to the Ministry of Environment, Forest and Climate Change:

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

- 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 Conservation, development, management and abatement of pollution of rivers excluding the river Ganga and its tributaries.
  - 8A. National River Conservation Directorate.
  - 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.
  - 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.
  - 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 Prevention of cruelty to animals.

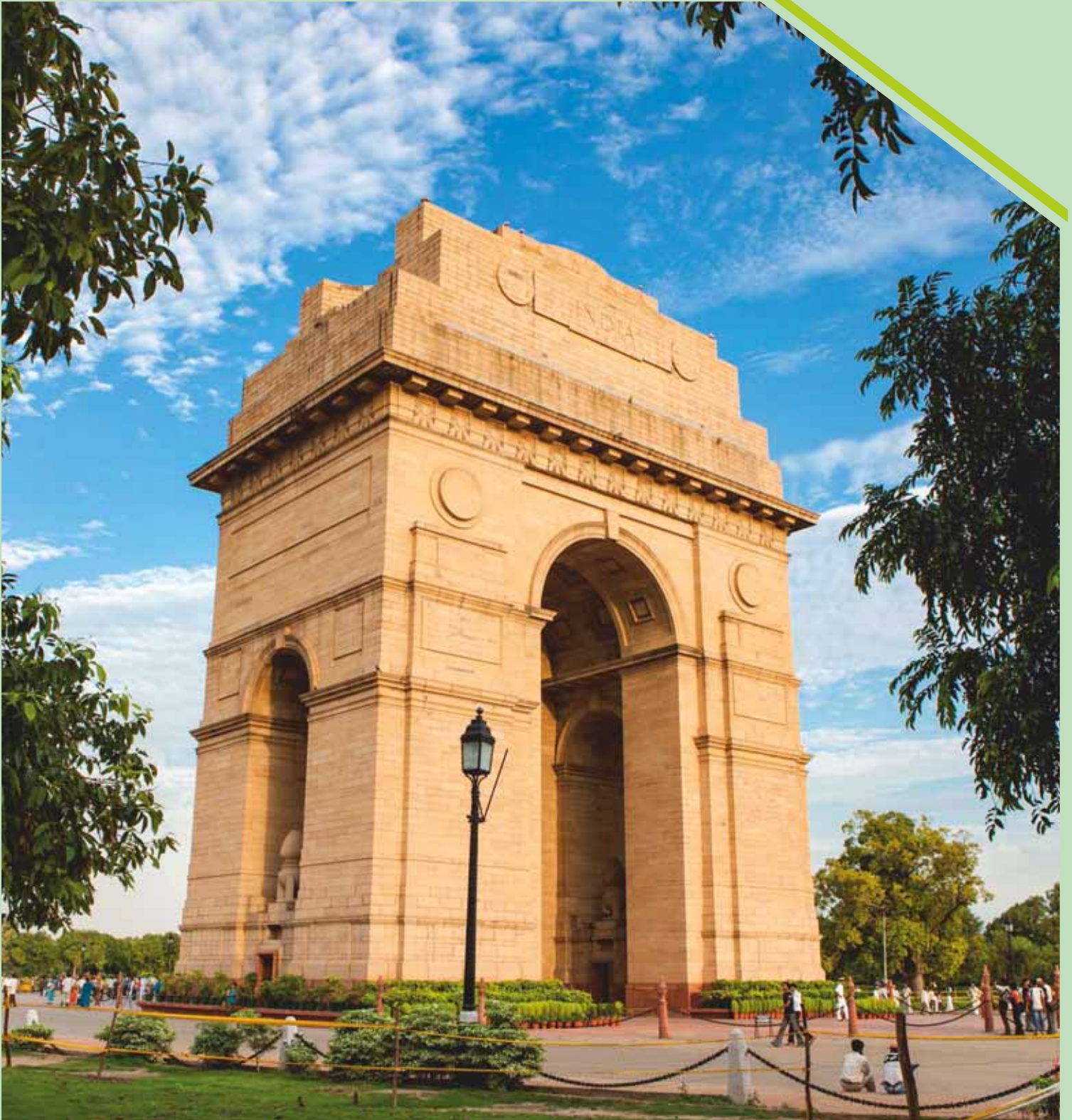


- 35 Matters relating to pounds and cattle trespass.
- 36 Gaushalas and Gausadans.
- 36A. Climate change and all other matters related thereto.
- 37 The Prevention of Cruelty to Animals Act, 1960 (59 of 1960).
- 38 The National Green Tribunal Act, 1995 (27 of 1995).
- 39 The Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974).
- 40 The Water (Prevention and Control of Pollution) Cess Act, 1977 (36 of 1977).
- 41 The Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).

- 42 The Indian Forest Act, 1927 (16 of 1927).
- 43 The Wild Life (Protection) Act, 1972 (53 of 1972)
- 44 The Forest (Conservation) Act, 1980 (69 of 1980).
- 45 The Environment (Protection) Act, 1986 (29 of 1986).
- 46 The Public Liability Insurance Act, 1991 (6 of 1991).

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

# Major Achievements of the Ministry During 2017-18







## Major Achievements

The Ministry of Environment, Forest and Climate Change all the schemes. The overall achievements made during 2017-18 are as follows.

**Botanical Survey of India:** Completed the taxonomic description of 75 species of family Bignoniaceae, 15 species subtribe Sporobolinae and 24 species of Genera Lepisorus and Adiantum.

**Zoological Survey of India:** Total 60 surveys have been completed. Various groups of animals comprising 24,127 were collected. Altogether 1773 species have been identified by the scientists from microscopic to the highly evolved organisms.

Eighty five species new to science have been described by the scientists. Altogether 41 species have been recorded for the first time from India.

## Forest Survey of India

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

**e-Green Watch:-** 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.

**Launch of the online application submission process of NBA:** The Hon'ble ME FCC formally launched the e-application process for National Biodiversity Authority (NBA) on 30th March 2017. This online process is user-friendly and has features such as editing, reviewing, printing, digital signature, online payment of fee etc. This is expected to considerably ease the process of filing of applications by applicants and also reduce the processing time of applications by NBA. The portal provides a step-by-step guide for e-filing of applications, along with tool tips/pop up messages to assist the applicants. The portal provides the facility for making online payment of application fee before submission of the application.

As per latest assessment ISFR 2015, total carbon stock in forests is estimated to be 7044 million tones. There is an increase of 103 million tons in the carbon stock of country as compared to the last assessment (i.e between year 2011-13).

**Forest Policy:** In a landmark initiative, the Indian Forest (Amendment) Act, 2017 has been enacted to omit the word bamboos from the definition of tree. With this amendment

bamboo grown in non forest areas has been exempted from the requirement of felling and transit permit for its economic use. The change in the classification of bamboo will usher in much needed and far-reaching reforms in the bamboo sector. On the one hand, the legal and regulatory hardship being faced by bamboo growers, farmers and private individuals, etc. will be removed and on the other hand, it will create a viable option for cultivation in culturable wasteland. The measure will go a long way in enhancing the agricultural income of farmers and tribals, especially in North East and Central India.

**Project Elephant:** For the first time in India an all India synchronized elephant census was conducted in 2017. One year prior to the actual enumeration of elephant population, Ministry initiated the process in collaboration with ANCF and conducted two regional workshops, subsequent trainings and dung decay experiments (six months before the elephant census was undertaken). The preliminary census report was released by the Hon'ble Minister, MoEF&CC on 12th August, 2017 on the World Elephant Day.

**National Tiger Conservation Authority (NTCA):** Commencement of All India Tiger Estimation 2018.

- Spatially Explicit Capture Recapture (SECR) models in a joint likelihood model shall be employed like the last estimation cycle to ensure statistical comparability.
- M-STrIPES: The M-STrIPES platform is being extended to all tiger reserves in Phase II, training for which has been completed for

all regions at the Bandipur, Kanha, Similipal and Corbett Tiger Reserves. A special training for computer technicians has been done at the Wildlife Institute of India, Dehradun. The said platform is being utilised for the All India Tiger Estimation 2018.

**Environmental Clearance to Developmental Projects:** Environmental Clearance (EC) has been accorded to 428 projects.

**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 prerequisite 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.

**Initiatives on Air Pollution Mitigation:** National Ambient Air Quality Standards envisaging 12 pollutants have been notified under EPA, 1986 and 115 emission/effluent standards for 104 different sectors of industries, besides 32 general standards for ambient air have also been notified.

**Mobile APP 'SAMEER' for AQI display and Public Complaints:** An APP 'SAMEER' is developed and available for Android and iOS devices, to display of AQI at city and station level, AQI Bulletin. A Public Forum is available



at the APP, which helps the public in submitting suggestions or complaints related to air pollution issues along with photos in support of complaint.

**Assessment of pollution:** Operation and maintenance of 691 manual Ambient Air Quality Monitoring Stations (AAQMS) covering 303 cities/towns in 29 States and 6 Union Territories.

CPCB has developed a network of real time data from CAAQM stations being operated by CPCB, SPCBs and PCCs. This data is provided to all stake holders and being published in public domain for taking corrective measures in time. In the beginning of the year 2015, CPCB network has data connected from 27 stations in 10 cities spread in 06 states, has been expanded to total 40 stations located in 22 cities of 11 states.

Operation of 3000 Water Quality Monitoring Stations (WQMS) at various aquatic resources. Time series data of water quality was analysed and identified the issue of sewage disposal in 302 river polluted stretches.

70 National Ambient Noise Monitoring Network (NANMN) stations have been installed spreading over 10 cities and data is being disseminated

With focus on environmental health issues, MoEF&CC has constituted a high level Apex Committee and a Working Group under the joint chairmanship of ICMR and the Ministry to identify thrust areas in environment health and to evaluate the related projects. In line with recommendation of Working Group, our Ministry in coordination with M/o Health and

ICMR has already initiated action towards study on National Environmental Health Profile, with emphasis on impact of air pollution on health.

**Conservation of water bodies:**

- Sewage Treatment Capacity of 9.19 mld has been created under NRCP. So far under NLCP/NPCA, a total of 46 projects for conservation of 63 lakes have been sanctioned in 14 States. Conservation works for 36 lakes have been completed.

National Afforestation and Eco- Development Board (NAEB): 28 SFDA Projects have been operationalised in the country. So far NAP has been contributing around 15% to 17% annually to afforestation efforts in the country and it is proposed to upscale the afforestation to the tune of 50,000 ha.

**Ecologically Sensitive Areas:** 29 Draft ESZ Notifications and 91 Final ESZ Notifications have been issued

**National Green Corps Programme:**

- Around 30,000 students from 3499 schools got registered ([www.pkeq.nic.in](http://www.pkeq.nic.in)) in the "Prakriti -Khoj"- online Environment Quiz' an environment initiative and 11,000 participated across the 26 States/UTs.
- Around 15000 students of Eco-clubs from Delhi participated in the Mini Marathon "Run for Clean Air" Swachh Hawa for Swachh and Swasth Bharat on 15.10.2017 at India Gate, New Delhi inaugurated by Hon'ble Minister for Environment, Forest and Climate Change Dr. Harsh Vardhan and Hon'ble Minister for State for Environment,



Forest and Climate Change Dr Mahesh Sharma. Teachers were provided the participation certificate and Green pledge was also administered among the students.

**Swachh aur Swastha Bharat Cell:** As a part of carrying forward the ambitions of Swachhta to a whole new level, Ministry of Environment Forest and Climate Change took this challenge to usher cleanliness in Air, Water & Land improving air and water quality.

**Swachhta Hi Seva Campaign:** Ministry of Environment, Forest and Climate Change organized “Swachhta Hi Seva” Campaign from 15th September to 2nd October 2017. SSB Cell through Ministry’s Regional offices, Subordinate/Autonomous Bodies undertook cleanliness Drives across the nation creating awareness about cleanliness among masses.

**Celebration of Swachhta Pakhwada:** MoEF&CC, Government of India has been celebrating Swachhta Pakhwada during 1st – 15th June for past two years under the Swachh Bharat Mission and has called the effort “Clean India- Green India.” As a part of celebration of Swachhta Pakhwada during 1-15, July, 2017, Cleanliness Drives along with plantation of saplings were carried out in identified areas namely B.R Ambedkar Park, Nehru Park, Lodhi Garden and INA market area.

**“Prakriti Paryavaran Aur Hum” Initiative:** Hon’ble Minister for Environment, Forest & Climate Change has launched the major initiative “Prakriti Paryavaran Aur Hum” under Swachh Bharat Mission on 15 June, 2017 in National Zoological Park.

**Environment Information:** Green Skill Development Programme (GSDP) - for skilling the youth in the country. The first GSDP course was formulated for skilling Biodiversity Conservationists (Basic Course) and Para-taxonomists (Advance Course) of 3 months' duration each, on a pilot basis in ten select districts of the country (covering nine bio-geographic regions). Hon’ble Minister, EF&CC launched the GSDP and released the training course Modules on June 4, 2017, on the eve of World Environment Day. Under the pilot of GSDP, 94 Trainees successfully completed the basic course qualifying as skilled Biodiversity Conservationists and 154 students are enrolled for the Advance Course on Para-taxonomy which is expected to conclude in March, 2018.

**Climate Change:** Many important bilateral and multilateral meetings and negotiations, including 23rd Conference of the Parties (COP-23) to the UNFCCC, were held in which Hon’ble Minister, EF&CC and senior officials of the Ministry participated.

**International Negotiations on Climate Change:** During the year witnessed a number of bilateral and multilateral meetings on climate change where Hon’ble Minister, Environment, Forest and Climate Change and senior officials of the Ministry participated. These meetings were crucial in run up to the 23rd Conference of Parties to UNFCCC held from 6th – 17th November, 2017 in Bonn, Germany.

Delegates participated in the Informal Meeting of Heads of Delegation in Rabat on 07-08 September 2017, Like Minded Developing Countries (LMDC) meeting held on 14-16



August 2017 at Penang, Malaysia, 24th BASIC Ministerial Meeting on Climate Change held on 11th April 2017 in Beijing, China, 25th BASIC Ministerial Meeting held on 13th November 2017 in Bonn, Germany, Ministerial meeting on Climate Action held on 15 - 16 September 2017 in Montreal, Canada, and Pre-COP Ministerial Meeting of the UNFCCC held on 16-18 October, 2017 in Nadi, Fiji.

The 23rd Conference of Parties (COP 23) to UNFCCC was held from 6th – 17th November 2017 in Bonn, Germany. Dr. Harsh Vardhan, Hon'ble Minister, EF&CC led an inter-ministerial delegation that participated in the COP 23. This was the second COP since the adoption of the Paris Agreement at COP 21 in 2015 and since the Agreement entered into force on 4 November 2016.

The key outcome of COP 23 was decision 1/CP.23, 'Fiji Momentum for Implementation'. The decision calls for enhanced Pre-2020 Implementation and Ambition, reiterates the overall Paris Agreement Work Programme, and the design of the Facilitative Dialogue, termed by COP 23 Presidency of Fiji as the Talanoa Dialogue. Despite continuous resistance, Pre-2020 actions were brought back on the forefront with the persistent efforts of India. It now forms a major part of final outcome with concrete steps to accelerate and enhance pre-2020 action and ambition. It includes high level focus from both UNFCCC secretariat and COP Presidency as well as request to UN Secretary General for his intervention in speeding up the ratification of Doha Amendment to Kyoto Protocol. A number of procedural decisions

were taken regarding the evolution of rules/ guidelines/ modalities for the implementation of Paris Agreement including guidance for Nationally Determined Contributions, adaptation communication, modalities, procedures and guidelines for the transparency framework for action and support, global stocktake, compliance mechanism, technology framework, and cooperative (market and non-market) approaches under the Paris Agreement.

India participated in the Conference with a constructive and positive approach with the aim to protect India's long-term interests and its developmental priorities. India's position was firmly rooted in the core principles of equity and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC). India also underscored the importance of fulfilling the commitment of developed countries to achieve the goal of mobilizing USD 100 billion annually by 2020 and further scaling up thereafter. As a result, developed countries have been requested to prepare their next round of updated biennial submissions on strategies and approaches for scaling up climate finance for 2018-2020, with a view to updating information available on a pathway towards the goal of jointly mobilizing US\$100 billion per year by 2020. A high-level ministerial dialogue will also be organized in 2018 on access to climate finance. India was also able to incorporate equity and sustainable lifestyles in appropriate texts.

A number of Ministerial level bilateral meetings were also held during COP 23

including with Prime Minister of Fiji, Mr. Frank Bainimarama (COP 23 Presidency), United Arab Emirates, Australia, Norway, Finland, Turkey, Marshall Islands, European Union, Ecuador, UK, and Bangladesh.

**India Pavilion set up at COP 23:** The India Pavilion setup during COP 23 was a major attraction amongst the visitors with approx. 10000-12000 people visiting the pavilion.

**Ministerial Conference on Environment and Development in Asia and the Pacific:** United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in collaboration with UN Environment had organized the 7th Session of Ministerial Conference on Environment and Development in Asia and the Pacific and 2nd Forum of Ministers and Environment Authorities of Asia Pacific in Bangkok, Thailand from 5-8 September, 2017 with the objective to feed regional input to the outcomes of the 3rd Session of United Nations Environment Assembly held on 4-6 December, 2017 in Nairobi, Kenya. The Ministry was duly represented in the meetings.

**World Environment Day, 2018 (WED 2018):** India is the global host for celebrating the World Environment Day (WED), 2018. The theme for WED 2018 is Plastic Pollution. The World Environment Day is celebrated globally on 5th June every year to commemorate the opening of the Stockholm Conference on the Human Environment to serve as an important vehicle to stimulate worldwide awareness of the environment with a view to give human face to environmental issues, promote an understanding that communities are pivotal to

changing attitudes towards environmental issues.

**International Cooperation – Bilateral Matters:** The Ministry has entered into Agreements / Memorandum of Understanding (MoUs) with 22 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.

Dr. Harsh Vardhan, Hon'ble Minister of Environment, Forest and Climate Change as also Dr. Mahesh Sharma, Hon'ble Minister of State, Environment, Forest and Climate Change encouraged dialogue with the international community to invite investment, knowledge and cooperation to meet country's environment-related priorities and needs.

**India-Australia Memorandum of Understanding (MoU):** A Memorandum of Understanding (MoU) between India and Australia on cooperation in the field of Environment, Climate and Wildlife was signed by the Secretary, EF&CC and Australian High Commissioner, New Delhi and exchanged between the Hon'ble Prime Ministers of both the countries on 10.04.2017 in New Delhi.





**India-France bilateral meeting:** An Indo-French meeting for cooperation in the field of environment was held on April 25, 2017. The meeting agreed on mutual collaboration in the areas of Climate Change and Facilitative Dialogue, 2018 as well as the development of the Rulebook, Technology Transfer on RE and Waste to Energy, supporting a global strategy on phase out of chemicals under Montreal Protocol and Partnerships and Coalitions.

**India - European Union (EU) JWG meeting:** 9th Meeting of Indo-EU Joint Working Groups on Environment was held on 29th June, 2017. There were presentations followed by discussions on varied topics viz. Resource Efficiency, Circular Economy, Waste Management, Air Quality, Bio-diversity, Clean Energy, Climate Change, Water, Chemicals, Green Finance etc.

**Statistical Cell:** The State of Environment Report 2015 (National) has been finalized and is likely to be released soon. SoER for the state of Telangana has been finalized and released on 6th January, 2018 by Dr. Mahesh Sharma, Hon'ble Minister of State, MoEF&CC, Govt. of India and Shri. Jogu Ramanna, Minister, EFS&T, Govt. of Telangana. SoER for Mizoram, Sikkim and Nagaland are at final stage. Preparation of SoER Karnataka has already been started. Preparation of SoER for other states are likely to start soon.

**NGO Cell:** An IT Software for end-to-end processing of applications for sanction/release of grants/financial assistance to NGOs. It will provide the facility to NGOs to apply online to avail grants etc under various schemes of this Ministry. Also has been linked with NITI Aayog NGO-Darpan Portal for the Non-Governmental Organisation (NGOs) with the objective of bringing in transparency in their operations.

# Natural Resources- Survey and Exploration

**01**  
CHAPTER





## Natural Resources- Survey and Exploration

### Botanical Survey of India (BSI)

The Botanical Survey of India (BSI) is the apex research organization under the Ministry of Environment and Forests, Govt. of India for carrying out taxonomic and floristic studies on wild plant resources of the country. It was established on 13th February, 1890 with the basic objective to explore the plant resources of the country and to identify the plants species with economic virtues. 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 by Government of India as a part of scientific development of the country. During the successive plan periods, the functional base of BSI was further expanded to include various new areas such as inventorying of endemic, rare and threatened plant species; evolving conservation strategies; studies on fragile ecosystems and protected areas, like wildlife sanctuaries, national parks and biosphere reserves; multiplication and maintenance of endemic and threatened plant species, wild ornamentals, etc., in Botanic Gardens and Orchidaria; documentation of traditional knowledge associated with plants and development of National Database of herbarium specimens/live collections/botanical paintings/illustrations, plant distribution and nomenclature, plant uses, etc.

### 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.

### Activities undertaken:

- During 2017 – 18, BSI has so far undertaken 113 field tours under 119 projects for collection of plant specimens/materials for floristic, ethnobotanical and pharmacognostical studies on flowering and non-flowering plants covering 3 biodiversity hotspots, viz. the Himalaya (16 tours), the Indo-Burma (13 tours) and the Western Ghats-Sri Lanka (33 tours). This covered 8 bio-geographical regions of Western Himalaya, Eastern Himalaya, North-East India, Arid – Semi Arid, Gangetic Plains, Deccan Peninsula, Western Ghats, Coastal Region covering Kerala coast (for Sea weed Survey) and Andaman Islands. This is also covering 25 protected areas and 1 fragile ecosystem. Floristic Survey of sacred groves spreading over four districts of Andhra Pradesh and two out of five sacred groves of East Sikkim have been done and their flora is under documentation. In addition to these, 21 field tours for collections of live germplasm of threatened, endemic and economically important species for their ex-situ conservation has also been undertaken in the said areas.
- Documentation of ethnobotanical information from Koraput, Jajpur, Deogarh and Ganjam, districts of Odisha. Ethnobotanical field tours were undertaken to these areas and 320 ethnobotanical interested plant species have been collected.
- Apart from that, 35 Herbarium Consultation Tours for identification of critical specimens have also been conducted in different Herbaria, both within and outside BSI.
- Completed the taxonomic description of 75 species of family Bignoniaceae, 15 species subtribe Sporobolinae and 24 species of Genera Lepisorus and Adiantum
- 216 species of 8 projects of subtribe Eleusininae (Poaceae: Chloridoideae), Family Myrsinaceae, subgenus Carex of Genus Carex L. (Cyperaceae), family Fagaceae, lichenised non thelotremoid Indian Graphidaceae, Rubus L., genus Pteris L. (Pteridaceae) and family Memecylaceae have been completed by Senior Research Fellows of BSI under Flora of India.
- The project on Habitat analysis and population status of ca 300 RET species of Orchidaceae in Eastern Himalaya is going on.
- 6589 herbarium specimens have been barcoded and digitized alongwith their label data.
- Study of pollen and seed morphology using SEM on species of genera Andrographis, Eragrotis, Sporobolus, Tripogen, Ficus and South Indian Orchids is undergoing.
- Among non-flowering plants, floristic studies on pteridophytes, bryophytes, lichens, fungi (foliicolous as well as wood-rotting) and algae (pteridophytic as well as freshwater) is going on.





- Disseminated information relating to plant diversity of the country by observing important days like Earth Day (22nd April), Biodiversity Day (22nd May) and World Environment Day (5th June).
- During the period, 9 books have been published by BSI

### Progress/Achievements:

### Botanical Exploration & Inventorisation of Phytodiversity:

**Field tours and Herbarium consultation tours:** 113 field tours were undertaken for floristic/ ethnobotanical/ pharmacognostical studies on flowering and non-flowering plants, as well as live germplasm collection for introduction in the gardens, by different regional centres and units of BSI covering the following regions. These include 23 tours in 20 protected areas.

- **Western Himalaya:** Uttrakhand (Upper Girthi valley, Badhani Forest, Sunderdhunga valley and its surroundings, Mothranwala and Mussoorie); Jammu & Kashmir (different localities of Ladakh in cold desert area); Himachal Pradesh (Shimla, Kullu, Manali, Narkanda and Rohtang)
- **Eastern Himalaya:** Arunachal Pradesh (Ajnaaw District, West Siang District, East Kameng District, West Kameng District, Pakke Wildlife Sanctuary); Sikkim (Lungthang, Kupup, Memenchu lake and Tamzey area of East Sikkim; Lachen, Thangu and Yangri areas of North Sikkim; Lachen, Chopta Valley, Zema, Samthang, Kalep, Thangu and Chhaten of West Sikkim); West Bengal (Jalpaiguri)
- **North–East India:** Assam (Ranga, Kakoi & Dullung Reserve Forests, North Lakhimpur), Mizoram (Murlen National Park, Blue Mountain National Park, Ngenpui Wildlife Sanctuary, Khawaglung Wildlife Sanctuary, Tawi Wildlife Sanctuary), Meghalya (South Garo Hills – Siju Wildlife Sanctuary, Baghmara Pitcher Plant Wildlife Sanctuary and Balpakram National Park, Pynursla & Mawphlang block in East Khasi Hills district, Ri-Bhoi district, Sohrarim, Mawphlang, Laitkynsew, Mawryngkneng, Jowai and Jarain)
- **Arid – Semi Arid:** Haryana (Sultanpur National Park); Gujarat (Shoolpaneshwar Wildlife Sanctuary, Narmada, Dang District); Rajasthan (Jamwa Ramgarh Wildlife Sanctuary, Sirohi, Udaipur, Rajsamand and Chhittorgarh districts for lichens)
- **Gangetic Plains:** Uttar Pradesh (Upper Ganga Ramsar Site), Chhattisgarh (Korea and Korba area); Jharkhand (Koderma Wildlife Sanctuary, Palkot Wildlife Sanctuary, Udhwa Lake Bird Sanctuary, Ranchi, Ramgarh and Bokaro district for Algae), Bihar (Gautam Buddha Wildlife Sanctuary), West Bengal (Buxa Wildlife Sanctuary, Jaldapara Wildlife Sanctuary); Orissa (Nabarangpur, Balangir and Dhenkanal, Chilika lagoon and Rushikulya coast in Khurda and Ganjam district)
- **Deccan Peninsula:** Andhra Pradesh (Kadapa and Rajampeta divisions of Seshachalam Biosphere Reserve and Thimmamma marrimanu of Kadiri area,

Ananthapur district, Nagarjunasagar-Srisailem Wildlife Sanctuary)

- **Western Ghats:** Maharashtra (Lonavala, Khandala, Matheran and adjacent areas, Mahabaleshwar, Panchgani, Sawantwadi, Ambholighat, Radhanagari, Koyna Wildlife Sanctuary & adjacent areas, Kas Plateau, Great Indian Bustard Wildlife Sanctuary, Thane district); Tamil Nadu (Srivilliputhur Wildlife Sanctuary, Kalakad Mundanthurai Tiger Reserve, Tirunelveli); Karnataka (Sharavathi valley Wildlife Sanctuary))
- **Coastal Region:** Kerala (Seaweeds of Kerala)
- **Andaman & Nicobar Islands:** North Andaman Isls. (Narcondum, East Islands, Peacock, Paget Islands, North Reef Islands.); South Andaman Isls. (Rani Jhasi Marine National Park); Little Andaman Islands (John Lawrence, Henry Lawrence, Outrum, Rutaland Island)

Apart from that, 19 herbarium consultation tours and 14 ex-situ conservation tours were also conducted.

During these field tours, ca 30,298 specimens were collected and 27,892 specimens were identified into 14,752 taxa (species, subspecies and varieties). This resulted into the discovery of 44 new species and 50 (1 genus and 49 species) new records for India. 9 plant species have been rediscovered after 100 years. These details are given in 'Plant Discoveries 2016'

#### **Documentation of Phytodiversity:**

##### **National Flora (Flora of India):**

- Completed the taxonomic description of 75

species of family Bignoniaceae, 15 species subtribe Sporobolinae and 24 species of Genera Lepisorus and Adiantum

- 216 species of following 8 projects have been completed by the Senior Research Fellows of BSI under Flora of India.

Revision of the subtribe Eleusininae (Poaceae: Chloridoideae) in India; Revision of the Family Myrsinaceae in India; Taxonomic revision of subgenus Carex of Genus Carex L. (Cyperaceae) in India; Taxonomic revision of the family Fagaceae in India; Taxonomic Studies on lichenised non thelotremoid Indian Graphidaceae; Taxonomic Studies of genus Rubus L. in India; Taxonomic revision of fern genus Pteris L. (Pteridaceae) in India; Taxonomic revision of the family Memecylaceae in India.

**Regional/State Flora/District:** Completed the taxonomic description of 736 species for Flora of Uttarakhand, Flora of Gujarat, Grass Flora of Arunachal Pradesh, Flora of Anjaw District & West Siang District, Arunachal Pradesh, Polypodiaceae of NE India, Bryoflora (Hepaticae & Anthocerotae) of Mizoram, Flora of South Garo Hills, Meghalaya, Wild Mushrooms of North Sikkim, Pteridophytic Flora of North Sikkim, Flora of Chhattisgarh, Floral Diversity of Upper Ganga Ramsar Site, UP, Flora of Uttarakhand, Vol. III, Endemic & Threatened Pteridophytic Flora of NW Himalayas, Flora of Gujarat, Vol. III, Ferns of Maharashtra, Foliicolous Fungi of Maharashtra, Orchids of Maharashtra, Seaweed of Kerala Coast, Flora of N. Andaman Isls., Foliicolous lichens of Andaman, Flora of Bihar, Flora of Jharkhand, Liverworts &



Hornworts of Sikkim, Wood Rotting Fungi of Koderma Wildlife Sanctuary and Algae of Jharkhand.

Flora of Protected Areas: Completed taxonomic description of 894 species from Buxa Wildlife Sanctuary, West Bengal; Gautama Buddha Wildlife Sanctuary, Bihar; Great Indian Bustard Wildlife Sanctuary, Maharashtra; Jaldapara Wildlife Sanctuary, West Bengal; Jamwa Ramgarh Wildlife Sanctuary, Rajasthan; Koderma Wildlife Sanctuary, Jharkhand; Malabar Wildlife Sanctuary, Kerala; Nagarjunasagar Srisailem Wildlife Sanctuary, Andhra Pradesh; Pakhui Wildlife Sanctuary, Arunachal Pradesh; Palkot Wildlife Sanctuary, Jharkhand; Rani Jhansi Marine National Park, South Andamans; Seshachalam Biosphere Reserve, Andhra Pradesh; Shoolpaneshwar Wildlife Sanctuary, Narmada, Gujarat; Srivilliputhur Wildlife Sanctuary, Tamil Nadu. The manuscripts of Flora of Nagarjunasagar Srisailem Wildlife Sanctuary, Andhra Pradesh has been finalized.

### Ex-Situ Conservation:

- 105 live plants under 36 species collected from WB, Meghalaya and Arunachal Pradesh have been introduced in the nursery of Acharya Jagadish Chandra Bose IBG, Howrah.
- 19 rare and endangered species have been introduced in other associated botanic gardens of different Regional Centres.

### Micro-Propagation of Threatened Species:

Multiplication of *Cymbidium tigrinum*, *C. eburneum*, *Illex khasiana* (at ERC, Shillong) and *Eremostachys superba*, *Pittosporum eriocarpum* and *Indopiptadenia oudhensis* (at

NRC, Dehradun) have been taken up through tissue culture.

### Documentation of Indigenous Knowledge of Plant Resources

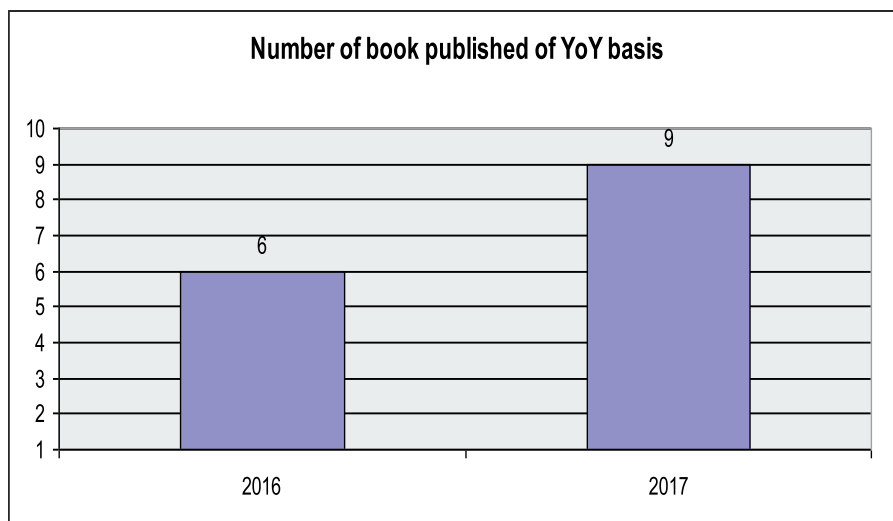
- Ethnobotanical field tours were undertaken to Koraput, Jajpur, Deogarh and Ganjam districts of Odisha. Total 264 ethnobotanical interested plant species in duplicate voucher specimens were collected with the help of medicine man from different tribal populated village at Dhenkanal. Among these 264 plants, 194 plants are used for medicine, 26 plants for food, 14 plants for small timber, 6 for agriculture implements, 8 for bio-fencing, 2 plants for insect repel, 3 as tooth brush, 3 for oil, 2 for liquor, 10 as fodder and 4 as rope/fibre.
- 368 ethnobotanical information from Lodha tribal group of WB have also been recorded.

### Studies of Nutritional Values of Wild Edible Plants of Meghalaya:

Nutritive values, mineral estimation and antioxidant profile of 11 plant species have been carried out using parameters like proximate composition, mineral content and antioxidant activities.

**Publications:** During the period, following 08 books and periodicals were published by BSI.

- a) Plant Discoveries 2016 (Bilingual)
- b) Vanaspati vani 2017
- c) Angiosperm Diversity of Mahatma Gandhi Marine Nat. Park, Andaman
- d) Rhododendron of NE India
- e) Flora of Kerala, Volume II
- f) Flora of Dzuko Valley, Nagaland
- g) Health Tradition among Dimasa Tribe of Barak Valley, Assam
- h) Flora of Uttar Pradesh, Vol. I



In addition, scientists of BSI published 194 research papers and communicated 68 research papers in various peer reviewed journals, both Indian and foreign.

### Miscellaneous:

**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 6589 specimens completed by December 2017.

**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 22589 visitors, including scientists, students, teachers and VIPs, visited different botanic gardens, herbaria and museum of BSI. 186 queries on plant distribution and nomenclature were attended; 1886 specimens of angiosperms,

pteridophytes, bryophytes and fungi, received from students / scientists outside BSI have been identified and about 265 plant materials, samples and seedlings have been supplied to scientists and students outside BSI.

**Revenue Earnings:** During the period BSI earned Rs. 88,65,524/- which includes Rs. 72,856/- towards identification charges of specimens and samples, Rs. 2,48,623/- towards sale of BSI publications, Rs. 1,05,280/- towards guest house charges, Rs. 85,26,580/- towards Entry fee, Photography Charges and boating charges at AJCB Indian Botanic Garden, Howrah and Rs. 17,465/- towards entry fee at National Orchidarium, Yercaud.

**Review of the work on 'Red listing of Orchids of Eastern Himalaya as per IUCN criteria' (Entire Sikkim, Darjeeling district of West Bengal and Arunachal Pradesh excl. Changlang and Tirap):** 286 specimens of Sikkim Himalayan Regional Centre, Gangtok were finalized in respect of their identity and geo-coordinates.





## Zoological Survey of India

The Zoological Survey of India (ZSI) a premier institute under the Ministry of Environment, Forest and Climate Change has successfully completed 100 years of services to the Nation. 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 acts as a custodian of the National Zoological Collections. ZSI Headquarters is located in Kolkata and has 16 Regional Centers located at different parts of the country involved in the surveys and exploration of the different states, ecosystems and conservation areas. 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 Centers.
- Research Fellowship, Associateship 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.
- Chromosomal Mapping and DNA finger printing

### Activities undertaken:

- Faunal surveys
- Faunal Identifications
- New Discoveries and New Records
- DNA Barcoding of important Taxa
- International Participation
- Publications
- Book releases by dignitaries
- Training and Extensions
- Identification of Confiscated Wildlife Material

- Identifications and Advisory services
- Visits of dignitaries
- Study visits by Foreign Researchers
- Green Skill Development Programme
- ENVIS Centre on Faunal Diversity
- Strengthening Administrative functioning

**Progress/Achievements:**

**Faunal surveys:** One arctic expedition participation was made by Dr. Jasmine. P, Scientist D. Surveys were conducted for faunal exploration to four Biosphere Reserve, two

Desert Ecosystems, two Eco-Sensitive Zone, ten Estuarine ecosystem, nine Freshwater ecosystem, six Grassland Ecosystem, Marine ecosystem: Zoological Survey of India, for the first time conducted a deep sea survey along the east coast of India onboard FORV SagarSampada from 4th to 26th June, 2017, along with CMLRE in the East coast of India-Bay of Bengal. Protected Areas (Wildlife Sanctuary), 40 Protected Areas (Wildlife Sanctuary), four States and four Union Territories and one Status survey of of Giant Squirrel in Satkosia Tiger Reserve.



*Insect collection at Bangaram Island, Lakshadweep*



*Rajgir Wildlife Sanctuary, Bihar*

**Faunal Identifications:** Total 60 surveys have been completed by December 2017. Various groups of animals comprising 24,127 were

collected. Altogether 1773 species have been identified by the scientists of ZSI Headquarters and regional centers ranging from microscopic to the highly evolved organisms.



*Indian Gazelle, Gazellabennettii (Sykes, 1831)*



*River Lapwing – Vanelhusduvaucelii (Lesson, 1826)*

**New Discoveries and New Records:** Eighty five (85) species new to science have been described during the year 2017 by the scientists of ZSI. These are:-three new genera were described each from Crustacea, Orthoptera and Hymenoptera. In addition to that 2 species of Amphibia, 2 species of Arachnida, 2 species of Ascidia, 9 species of Crustacea, 4 species of Fishes, 7 species of Platyhelminthes, 3 species of Nematodes, 5 species of Polyclads, 2 species of Coleoptera, 5 species of Collembola, 2 species of Diptera, 3 species of Ephemeroptera, 16 species of Hymenoptera, 6 species of Lepidoptera, 5 species of Odonate, 5 species of Orthoptera, 1

species of Thysanoptera and 3 species of Trichoptera.

**New records to India:** Altogether 41 species have been recorded for the first time from India as: 5 species of Ascidians, 3 species of Octocoral, 1 species of Opisthobranch, 1 species of Polyclad, 2 species of scleractinian corals, 4 species of sea anemones, 2 species of sponges, 1 species of Coleoptera, 1 species of Dermaptera, 3 species of Hymenoptera, 9 species of Lepidoptera, 1 species of Orthoptera, 1 species of Thysanoptera, 6 species of Trichoptera and 1 species of Arachnida.





*Indian Tree Frog-Polypedates maculatus*(J.E.Gray)Chital : *Axis axis* (Erxleben)

**DNA Barcoding of important Taxa:** More than Eight hundred (800) DNA sequences were generated and submitted to BOLD database belonging to organism as diverse as Sponges Thrips, Spiders, Moths, Butterflies,

Coleoptera Crabs, Reptiles, Fishes, to Museum vertebrate samples. Four new species with DNA barcodes and seven new records from India with DNA barcodes have been published.



*Green bee-eater, Merops orientalis* Latham, 1801



*Melanoidestherculata* (Mueller)





**Identification and Advisory services:** The ZSI continued its task of rendering Identification and Advisory services free of cost to research and teaching institutions in India, Central and state Government/Agencies, NGO's, Industries and also to individuals on zoological specimens and related matters.

**Publications during 2017-18:** Two volumes of Records of Zoological Survey of India, Seven Occasional papers, one Memoirs of ZSI, three Conservation Area Series (Protected Area Network), one Guide to Marine Aquarium Fishes of MARC, Digha, one Biography and Bibliography, one Animal Discoveries book on 2016, one book on Current Status of Freshwater Faunal Diversity in India and another on Fauna of Sundarbans Biosphere Reserve. Apart from these 10 publications are in press. NAAS rating was obtained for Records of the ZSI journal.

**Book releases by dignitaries:** Seven books were released during the period two books

were released by Hon'ble Minister, Dr. Harsh Vardhan :Animal Discoveries 2016 and Indian Seashells MoEFCC, three books by Hon'ble Secretary, Shri Ajay Narayan Jha IAS, MoEFCC: Fauna of Sundarbans Biosphere Reserve, Thrips of Economical importance in India : An identification guide, Memoirs of the Zoological Survey of India, A monograph on the Snappers (Pisces : Lutjanidae) of India while one book and ZSI Calendar were released by Ms Manju Pandey, Joint Secretary, MoEFCC: Fauna of India (Homoptera : Aphidoidea -- Part – 7(2) and one book on Status of Faunal Diversity of freshwater diversity of India

**Participation in Training programme by ZSI Scientists:** Altogether 32 newly recruited Scientists of Zoological Survey of India; Kolkata attended a five day training program from 10th August to 14th August 2017 on 'Advances in Wildlife Research and Conservation' which was organized by the Wildlife Institute of India, Dehradun.



*National Conference on Current Status of Faunal Diversity of Mangrove Ecosystem in India*

**Identification of Confiscated Wildlife**

**Material:** Queries related to confiscated wildlife materials were attended which were received for identification from different departments like Kerala Forests & Wildlife Department, Thamarasserry Forest Range, Divisional Forest officer, Baikunthpur Wildlife Division, Siliguri, West Bengal, DFO, Social Forestry Division, Ahmadabad, Forest Range Officer, BikashBhawan, Salt Lake, Kolkata, Divisional Forest Officer, Jaldapara Wildlife Division, Cooch Behar, West Bengal, Regional Deputy Director, Wildlife Crime control Bureau (WCCB), Chennai. Deputy Field Director, Buxa Tiger Reserve Alipurduar West Bengal, Divisional Forest officer, Gorumara Wildlife Division, Jalpaiguri, West Bengal, Burdwan Government Railway Police Station, West Bengal, Range Officer, Senchal West Range, Darjeeling Wildlife Division, Divisional Forest Officer and Department of Environment & Forests, South Andaman.

**Identifications and Advisory services:**

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

**Green Skill Development Programme**

**(GSDP):** The GSDP foundation course on Biodiversity Conservation was jointly organized by ZSI and BSI, with a uniform syllabus throughout India. Foundation course of three months duration, from 29th May to 29th August, 2017 was conducted at ZSI, Hqs and six Regional Centres. Total number of students trained were 72. The students were evaluated and awarded ' Biodiversity Conservationists' -

certificates based on the written and practical exams and viva, conducted by ZSI and BSI.

The GSDP advanced course for Parataxonomists, with course duration of three months was launched during the 1st week of December. A total of 68 students are taking this course. Detailed methods of collection, preservation and identification of all faunal groups will be taught in detail. The trainees will also be trained on GIS modules and grid based survey methods. Students will also have hands on training in Taxidermy techniques, PBR documentation methods, and also citizen science initiatives.

**ENVIS Centre on faunal diversity:** Information on fauna was updated as: Species Update: 510, Bibliography: 454, Photo gallery: 138, Latest News: 30, Checklist. Many events were organized and participated in many events: Science Express on May 2017 and International Day of Biological Diversity at Goa: Poster preparation, Exhibition of ENVIS publication and Exhibition of Photographs on June, 2017, World Ozone Day 2017, Photography Contest on Biodiversity and Sustainable Tourism and Faunal diversity. Apart from this, four volumes of ENVIS Newsletters (Invasive Alien Species 1& 2, Ecosystem Service, Protected and Conservation areas) of 2016-2017 were published.

**Details of Responsibilities:** The main responsibilities of ZSI and its 16 regional centre are survey, collection, documentation (including the traditional knowledge associated with animals) and ex situ conservation of wild animal diversity of the country.

**High priority areas include:**

- Survey and Identification of fauna.



- Publication of National and State faunas.
- Taxonomic studies, revisionary/monographic studies on selected animal groups.
- Identification of Red list species and species rich areas needing conservation and focus on data deficient species to collect more information on populations.
- Development of National database of Indian animals including Museum specimens, live specimens, paintings, illustrations etc. and maintenance of already existing collections with modern facilities and as per international standards of collection management.
- Developing and maintaining Museums and using such facilities for conservation education for people especially students.
- Ex situ conservation of critically threatened taxa.
- Capacity building in taxonomy, nomenclature, specimen collection, preservation and maintenance through training programmes.
- Digitization of present collections, preparation of fine scale distribution maps based on primary occurrence data and making it available in a searchable format.

### Coastal Regulation Zone

The Ministry has issued the Coastal Regulation Zone Notification, 2011 in supersession of Coastal Regulation Zone Notification, 1991, after a series of consultations with the various stakeholders including the fishermen community. The objective of the notification is to ensure livelihood security to fishing and other local communities living in coastal areas, and to conserve/protect coastal stretches while also promoting development based on scientific principles. The notification covers

categorization of CRZ areas, permissible and prohibited activities, regulation of permissible activities in CRZ areas, procedure for clearance, preparation of Coastal Zone Management Plans, mapping and areas requiring special consideration etc.

In order to bring more transparency and accountability in the procedures to be followed for grant of CRZ clearances the Ministry of Environment, Forest and Climate Change has rolled out a 'Web Portal for CRZ Clearances' during the year 2017-2018. This portal is a web-based application system for obtaining CRZ clearances. In addition to the objective criteria mentioned above, the system will also enable the project proponents in tracking the status of their proposals. The system is based on the web architecture, similar to the existing system in place, for according Environmental and Forest Clearances.

Based on the representations received from various State Governments /Departments/Stakeholders and on merit of the case, the Ministry has also made amendments in the CRZ Notification, 2011 such as providing enabling provision in the notification for setting up of sewage treatment plant in CRZ-I in Mumbai, bringing out clarity in so far as rare mineral mining in CRZ areas etc.

### Society of Integrated Coastal Management (SICOM)

**National Coastal Management Programme (NCMP):** To conserve, protect and manage the coastal and marine environment, Ministry of Environment, Forests and Climate Change, [MoEF&CC] Government of India is implementing the ICZM Project with the World Bank assistance. For the implementation of the above project MoEF &CC has established a Society of Integrated Coastal Management [SICOM] as nodal Body under the Society

Registration Act, in Delhi. Under the above World Bank assisted ICZM Project, the above issues have been given a huge thrust for implementation both at the regional and national levels.

The above ICZM Project was approved in March, 2010 with a cost estimate of Rs.1155.63 crore upto March 2015. Now the same has been revised to Rs.1655.10 crore with time extension upto 31st December 2018.

The ICZM Project is being implemented as Pilot investments in the coastal States of Gujarat, Orissa and West Bengal. National activities are implemented through SICOM along with monitoring of activities carried out by three selected States. The project has four implementing agencies – MoEF&CC at the national level with lead responsibilities, and the Departments of Forests and Environment (DoFE) of the three participating states.

#### **Objectives of the Project:**

- “To develop the capacity and institutions to implement the Coastal Regulation Zone Notification, 1991 and achieve the objectives of integrated and sustainable coastal management as per the National Environmental Policy, 2006.
- To address the issues relating to climate change which have a major implication on the coastal areas and coastal communities especially with respect to sea level rise and increased frequency of cyclones and storm surges. Under the programme, an exercise of hazard mapping will be carried out to protect the coastal people and infrastructure located in the coastal regions.
- To develop an institution to carry out

studies and research in the area of coastal and marine management.

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

#### **Activities undertaken so far under the project:**

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

- SICOM-Delhi and NCSCM –Chennai:- Two professional bodies have been set up.
- Aerial Photography of the entire coast of India has been completed ( 78000 sq km). The World Bank has indicated that this work is first of its kind , largest ever in the World Bank projects.
- Photogrammetric work of western coast has been completed ( 41000 sqkm) and eastern coast in under progress.
- Hazard Line mapping of West Coast has been completed.
- Sediment cell mapping of entire coast has been completed.
- ESA mapping of entire coast has been completed.
- Shoreline Change map of entire coast has been completed.





70 MLD STP Commissioned at Jamnagar-Gujarat



**Shelter Belt Plantation  
Bhambhdai, Mandvi, 2014-15**

Mangrove plantations and Shelter Belt Plantations-Kutch-Gujarat

**B. In Odisha State:**

- Construction of 14 numbers of Multipurpose Cyclone shelters at cyclone prone areas.
- Installation of Geo Tubes embankment for erosion protection at Pentha village.
- 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.



Alternative Livelihood Activities



*Embarkment of Geo Tubes at Pentha Village*

**In West Bengal State:**

- 100% electrification work in Sagar Island- 30800 APL and 250 BPL service connections provided.
- 95 Ha. of Mangroves plantation including 275 ha of Gap plantation.
- Construction of 25 Multipurpose Cyclone shelters is under progress.
- 20 km Storm water drainage in Digha.
- 6.7 MLD STP and sewerage networking at Digha.
- Beach Beautification and rehabilitation of appx 1300 hawkers at Digha.
- Construction of Watch Tower and open Air theatre at Digha Beach.
- Livelihood activities through Self Help Groups and CBOs. The World Bank has indicated that livelihood component has so far directly benefitted over 41000 individuals of which nearly 29000 are women.



*Beach Beautification and Cleaning activity at Digha*





*Mangrove Plantations*

**Phase-II of the Project: (Appx USD 300 Mn):**

Based on the success of the Phase-I of the ICZM project and in –principle approval from DEA, Ministry of Finance; the project is being extended to all 13 Coastal States/UTs. Preparatory activities for the Phase-II are in progress. The project activities in identified coastal stretches of the respective States/UTs shall be grouped under the following broad themes:-

I. Conservation of coastal & marine ecological resources.

- II. Coastal Pollution management and related infrastructure upgrade.
- III. Livelihood security and sustainable development of coastal communities.
- IV. Capacity Building & implementation of ICZM Plans.

**Island Management Plan Preparation:**

MoEF& CC through NCSCM has prepared the Integrated Island Management Plans for the ten islands of Lakshadweep and approved by Hon'ble Supreme Court. The same shall be considered as DPRs for implementation of the Phase-II of the ICZM Project.



## Implementing organizations along with details of responsibilities

**At National level:** Society of Integrated Coastal Management (SICOM) is established as National Project Management Unit at Delhi under the edges of MoEF&CC and implementing National components of ICZM Project. SICOM is also coordinating with State Project Management Unit to smooth implementation of ICZM Project at ground level.

Further, to strengthen the capacity in field of coastal and marine area management a National Centre for Sustainable Coastal Management (NCSCM) is established under Anna University premises at Chennai.

**State Level:** To implement the ICZM Project in selected three states, a State Project Management Units in each state has been created which are monitored by concerned State Government.

- I. **Gujarat Ecology Commission (GEC)** is the nodal office to implement the ICZM project at state level. GEC is the apex body of the Department of Forests and Environment, Government of Gujarat and working as Gujarat State Project Management Unit (GSPMU) for ICZM Project. GSPMU is monitoring the project activities and coordinating with all Project Executive Agencies (PEAs)
- II. **Integrated Coastal Zone Management Society of Odisha (ICZMSO)** is the nodal office to implement the ICZMSO is the

registered society and nodal office of the Department of Environment and Forest, Government of Odisha. ICZM Society of Odisha working Odisha State Project Management Unit (OSPMU) for ICZM Project. OSPMU is monitoring the project activities and coordinating with all Project Executive Agencies (PEAs)

- III. **Institute of Environmental Studies & Wetland Management (IESWM)** is one of the pioneering institutes in the country known for its contribution in the conservation and management of the ecosystem. IESWM has been mandated by the Govt. of West Bengal to act as the West Bengal State Project Management Unit (WSPMU) for implementing the Integrated Coastal Zone Management Project in the state of West Bengal. WSPMU is monitoring the project activities and coordinating with all Project Executive Agencies (PEAs).

## Survey & Utilization Division

Survey & Utilization Division deals with the matters related to State Forest Development Corporations, International Organizations like International Tropical Timber Organization, International Network for Bamboo & Rattan (INBAR), Trade Policy, Forest Survey of India, Sandalwood & Red Sanders related matters, Formulation of guidelines of international/ domestic trade in forest produce and regulation of export & import of forest produce as per the





Export and Import (EXIM) policy, Minor Forest Produce, all matters relating to Andaman and Nicobar Islands Forest Plantation Development Corporation Limited, Forestry trade tariff and related issues for Bilateral/ Multilateral Trade Negotiations, National Forestry Information System, Sustainable Forest Management Cell and C&I for SFM at National Level, Forest Certification of Natural Forests, Plantation and NTFP, Wood Based Industries, Permission for Industrial Estates including North Eastern States and NE Cell.

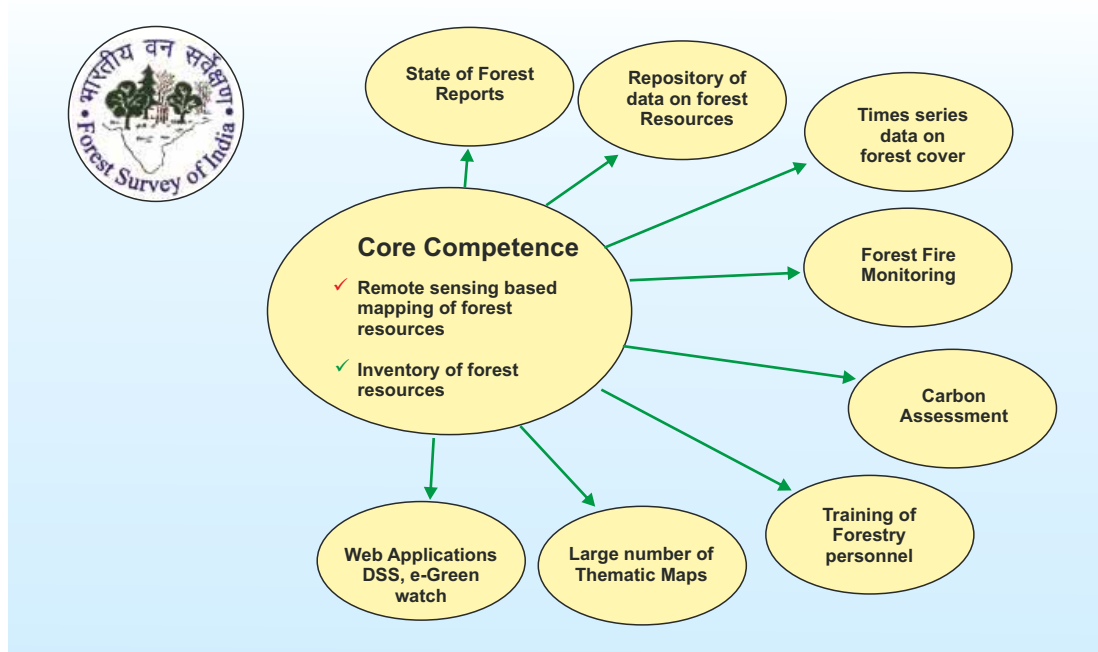
### Highlights of some works of SU Division:

Forest Survey of India: Forest Survey of India (FSI), a national level organization under Ministry of Environment, Forest & Climate Change, Government of India is engaged in the assessment of the country's Forest resources on a regular interval. Establishment on June 1, 1981, the Forest Survey of India succeeded the "Preinvestment 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 the creation of a National Forest Survey Organization for collection of reliable data through countrywide comprehensive forest resources survey at

regular intervals. Consequently, PISFR was reorganized into FSI in June 1981. After a critical review of activities, the mandate of FSI was refined in 1986 in order to make it more relevant to the rapidly changing needs and aspirations of the country. The main objectives of FSI are as follows:

### Objectives of FSI

- To assess the forest cover of the country through Remote Sensing technology, analyse the changes and prepare State of Forest Report biennially.
- To conduct inventory in forests and non-forest areas at national level and develop database on wood volume and also estimate tree cover.
- 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 SFD's and other organizations on project basis.



*Major activities of FSI*

The activities at the headquarters includes forest cover assessment, producing maps, designing methodology for national inventory, data processing, producing State of Forest Reports and other reports, conducting training coordination and monitoring the activities of Zonal offices. On the other hand, activities of Zonal offices concentrate mainly on field inventory. Recently forest cover mapping work has also been given to Zonal offices.

**Forests 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 14 cycles

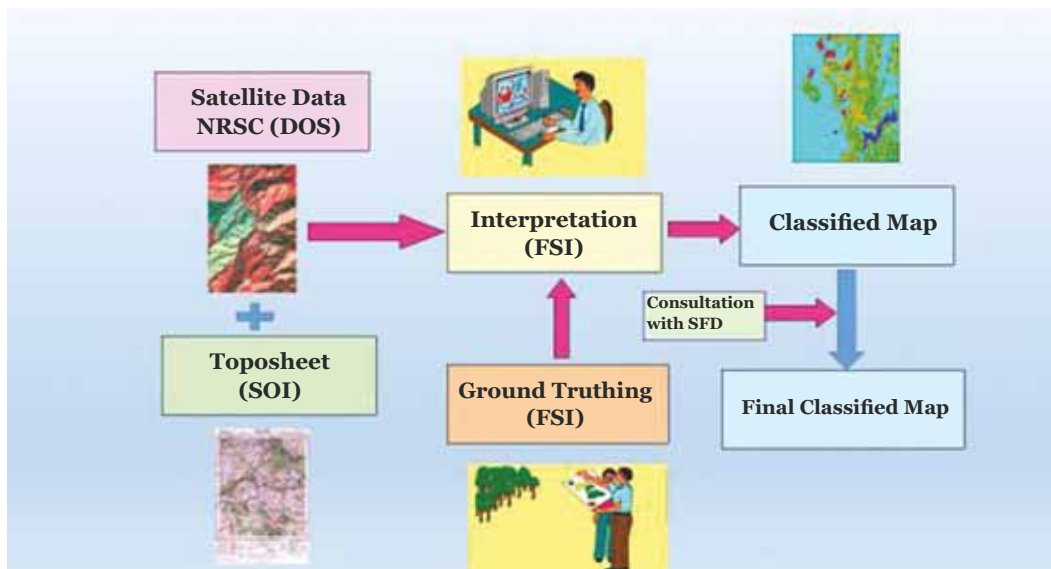
of forest cover assessment have been completed since 1987 till year 2015. The latest report published by FSI is ISFR 2015. The work for 15th cycle has been completed and the findings will be published in the 'India State of Forests Report-2017'.

In addition, tree cover is also estimated based on inventory of Trees Outside Forest (TOF). Tree cover is defined as small tree patches and isolated trees outside the recorded forest area which are less than one hectare in extent. These trees are generally found in village woodlots, homestead, urban areas, compact block, along road, canal, railway line etc and as scattered trees. The assessment of such trees and tree patches cannot be ascertained



accurately using remote sensing satellite data used for forest cover assessment, as the minimum mapping unit for forest cover assessment is one hectare. Thus small tree patches less than one hectare and isolated

trees found outside the recorded forest areas are excluded from the forest cover. Their contribution is captured in the form of tree cover. Tree cover along with forest cover gives a complete picture of



Forest Cover Mapping

**Forests & TOF Inventory:** Inventory of forests and Trees Outside Forests (TOF) is the second major activity of FSI. For national Forest inventory, the country has been divided into 14 physiographic zones and 60 districts randomly selected from these zones on probability proportional to size for detailed inventory in two years cycle. About 7000 sample plots are laid in forests areas distributed over the country in each cycle for field inventory. The outcome of this inventory is estimation of growing stock according to species and diameter class wise and carbon stock estimation at national levels. In addition to

inventory of forests, tree outside forests (TOF) resources are also inventoried concurrently to provide a national estimate of growing stock of TOF on two year cycle. About 10000 sample plots are laid out in TOF areas. In the recent past TOF resources have gained importance because of their increasing role in meeting the needs of wood based industries and society. The main outcome of TOF inventory is estimate of growing stock in TOF, Tree cover and production of wood from TOF.

In the latest report, chapters on 'Tree Cover', 'Growing stock' and 'important Characteristics of India's forest and different forests types

groups' are based on the field inventory of forests. These chapters give information about tree cover, species and diameter wise growing stock, carbon stock estimates and information on various important characteristics in India's forest on parameters such as soil depth classes, humus, soil organic carbon, soil erosion, forest vegetation, crop composition, important tree species in forest type groups, forest fires, injuries to crops, biotic influence etc.

The data collection work for inventory of forests and TOF for ISFR 2017 has already been completed. The data has been checked and processed. The result will be published in ISFR 2017.

**Estimation of carbon stock in India:** Forests Survey of India has been one of the major contributors on forest biomass estimation and carbon stock change. In India's initial national communication (INC) submitted to United Nations Framework Convention on Climate Change (UNFCCC) in 2004, FSI estimated forest carbon of woody growing stock. In 2010, FSI has completed estimation of forest carbon stock and change between two time periods viz. 1994 and 2004 as part of second national communication (SNC) to UNFCCC. Since inventory of forests / TOF is a regular process of FSI which forms the basis for estimation of carbon stock, FSI is estimating carbon stock, FSI is estimating carbon stock, FSI is estimating carbon in India's forests, both at national data, forest cover mapping and forest type mapping information.

FSI has been estimating the carbon stock in the India's forests as per the methodology of 'Good

Practices Guidance' (GPG) developed by the intergovernmental panel on climate change (IPCC). For estimation of emission factors for different strata, data of national forest inventory (NFI) has been used. Biomass equations/factors developed through a special study conducted by FSI. GIS techniques were used for synthesizing the data and to estimate carbon stock under different carbon pools.

As per the latest assessment ISFR 2015, total carbon stock in forests is estimated to be 7044 million tonnes. There is an increase of 103 million tons in the carbon stock of the country as compared to the last assessment (i.e. between years 2011-2013). These estimates will be updated in ISFR 2017.

**Training of Forestry Personnel:** Forests Survey of India (FSI) has been imparting training to forestry personnel of State Forest Departments since 1981 through short term courses (one/two weeks) on modern geomatic tools such as remote sensing, GIS, GPS, DGPS, carbon stock inventory and inventory techniques. Till November, 2017, about 4500 forestry personnel have been trained in these fields in the various training programmes conducted at FSI. In addition, around 500 forestry personnel were also trained at various outreach training courses of FSI.

### Other major activities of FSI

**New National Forests Inventory design:** FSI has implemented a new sampling design for National Forest Inventory from 2016. FSI has switched over to a grid based design having





nationwide grids of 5X5 km. Each year selected grids will be selected for forests and TOF inventory. The cycle for forests inventory is kept as 5 years and cycle for TOF has kept as 10 years. The new design is fully based on RS and GIS.

The new design will enable to reduce the revisit times of forest inventory 20 years to 5 years and to generate state level estimates with better accuracy. Data on many new parameters such as NTFP, invasive species, availability of water near sample plot etc. is being collected under the new design. Under the new design forest inventory data from 5435 grids has been collected. In addition TOF (Rural and Urban) data on 10092 grids has been collected. The data entry work of 1485 grids of forest inventory and 3817 grids of TOF (R&U) has been completed.

**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.

The preliminary updation in forest types for the majority of states have been completed. The field verification for the project is in progress and the project is expected to be completed by 2018.

**Near Real Time Forest Fire Monitoring:** Forest

fires are a recurrent phenomenon in India during fire season which is from January to June. The exercise on the real time monitoring of forest fires was initiated in 2004 by FSI. The fire alerts received from high temporal MODIS (Moderate resolution imaging Spectro radiometer Sensor) with spatial resolution of 1 km x 1 km and VIIRS (Visible Infrared Imaging Radiometer Suite) with spatial resolution of 375 m x 375 m, are processed for pure forest fire signals using FSI forest cover layer / RFA Boundary, other ancillary information i.e. Forest Administrative Boundary information (upto compartment level in 3 states, upto Beat level in 16 states and upto range level in 3 States). The fire signals are also sent to the State Forests fire nodal officer as KML which is Google Earth compatible file. FSI has reported a total of 35,888 & 2,45,783 forest fire points across the country using MODIS & VIIRS sensor respectively during 2017.

**Pre Warning Alerts for Forest Fire and burnt area assessment:**

The objective of the pre-warning alerts for forest fire is to identify areas, which are more vulnerable to severe forest fires. The parameters used for forest fire monitoring are forest type and forest cover map for virtually estimating the fuel load, Temperature, Relative Humidity, Rainfall for calculating Drought Index and forest fire archival data. The 5 km X 5 km grids are used for identifying the vulnerable areas and these areas are disseminated to the state nodal officers as E-mail alerts which are valid for the ensuing week.

In addition, FSI also carryout burnt area assessment. FSI is currently using AWIFS image for the identification of burnt area and their severity assessment. Most of the objectives, including methodology of the project has been streamlined. However, the system is being made more robust by addition of different parameters.

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

**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:

- I Compensatory Afforestation Land (CA Land)
- II Diverted Land (DL)
- III Other Plantation Work (OPW)
- IV Plantation Work (PW)
- V Assets

Until now 90518 total no. of polygons related to 28 states that have been uploaded and have been checked by FSI through this portal.

**Very High Resolution Data:** VHR Project: Very High Resolution (VHR) satellite imagery is defined as satellite data having sub meter spatial resolution. This data can be obtained in panchromatic mode, more often in combination of panchromatic and multispectral mode.

The Project was started with the Very High Resolution Triple Sat imageries (resolution 0.8m Panchromatic and 3.2 m multispectral) for the forest areas of two pilot states: Karnataka and Maharashtra. Due to its high spatial resolution and the revisit capabilities, the area imaged by a single frame allows more detail of ground being captured per unit of area. The ortho-rectified high-resolution data enables precise positional accuracy.



FSI has developed a web portal which enabled users to view the Very High Resolution images on a Google Earth-like web map application. On the portal TripleSat data for the forest areas of the pilot states: Karnataka and Maharashtra is available for viewing. The Inter Map Digital Terrain Model (10m) enables users to have an accurate and detailed three-dimensional view of the VHR data. The other datasets available for visualization on VHR application are Sentinel-2A (10m), Landsat-8 (30m), LISS-III (23.5m), LISS-IV (5.8m), Forest Cover Map (Source: FSI), Forest Type Map (Source: FSI), Recorded Forest Areas boundaries of Maharashtra & Karnataka (Source: State Forest Department) and States & Districts boundaries of India (Source: Survey of India).

The VHR project aims to undertake research with the available very high resolution (TripleSat) data for one pilot study area each for both Karnataka and Maharashtra States on the following work areas/topics:

- a) Forest density classification using VHR data. The density classes of forest will be more detailed and will have more classes as compared to Forest Cover Mapping done by FSI with LISS-III data.
- b) Estimation of biomass, carbon by combining inventory and Forest Cover density classes as per VHR data classification.

Project for Forest Cover Mapping and Inventory of Forest/Tree Resources in Nagaland: In order to help Nagaland state, which has forest cover of 12,868(77.61% of the

state's geographical area) for preparation of Working Plans of its nine forest divisions spread over 11 districts, a new project has been completed. The project objective was achieved as indicated by Nagaland Forest Department using remote sensing data and inventorying of forest and tree resources including vegetation survey and estimation of soil carbon as per the methodology laid down by FSI. The different types of satellite data (LISS-III and LISS-IV 2011-12 multispectral data, ASTER DEM, SOI Topo sheets 1:25,000/1:50,000) were used for the execution of this project. The District wise information's about the forest cover map showing the categories of forests by Density classes, forest type map, slope map, aspect map, drainage map, land use area map, DEM (District and state wise) and FC draped (District and state wise) completed and submitted to Nagaland forest department.

**Designing NFI for Sri Lanka with collaboration with FAO:** Forest survey of India has signed a LoA with FAO Sri Lanka for designing and developing a National Forest Inventory (NFI) system for Sri Lanka. Under this project, FSI is preparing a sampling design for carrying out inventory in Sri Lanka, designing of field forms, field manual, conducting field training, developing data entry and data processing module and conducting data processing training for staff of Sri Lanka Forest Department. The project started in April, 2016 and expected to be completed in the first half of the year 2017. The sampling design for the NFI of Sri Lanka has been prepared. In addition,

field forms and field manual has also been prepared.

**FAO-TCP Project:** A Technical Cooperation Programme (TCP) for Strengthening National Forest Inventory and Monitoring Protocols and Capacities in India has been initiated by FSI under the ministry of MoEF & CC with the technical assistance of FAO. The FAO-TCP project would develop and set up a new integrated National Forest Monitoring System (NFMS), build national capacities on forest monitoring, and pilot test implementation in selected states. The MoEF & CC of Government of India is the nodal ministry for the project which will be implemented by FSI. The overall programme will be guided by a National Programme Steering Committee (PSC) under the chairmanship of Director General and SS, MoEF & CC. FSI has already conducted an inception workshop for formally launching the programme in August, 2016.

**Guidelines for Wood Based Industries:** 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 has further 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.

Standard Operating Procedure for movement of surplus timber to other parts of the country: As per the order of Hon'ble Supreme Court dated 12.04.2016, SU Division prepared the Standard Operating Procedure for allotment of railway wagons for movement of surplus timber from North Eastern Region to the other parts of the country. The proposal received from North Eastern States for allotment of wagon for movement of surplus timber to other parts of countries are examined in SU Division on the basis of Standard Operating Procedure and comments received from Regional Office, Shillong.

#### **International Tropical Timber Organization (ITTO):**

- ITTO has 73 members divided into two category: Producer Countries (35 members) and Consumer Countries (38 members). India is a founder member (producer Country Category) of ITTO which aims for conserving tropical forest and assisting countries to develop economically in the field of forestry.
- 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 ITTA, 2006.
- The Council is supported by four committees open to all member countries,





which provide advice and assistance to the council on policy and project issues.

- Three of the committees deal with key areas of policy and project work. They are (i) Committee on Economic Information and Market Intelligence; (ii) Committee on Reforestation and Forest Management; and (iii) Committee on Forest Industry.
- These committees are supported by the Expert Panel for the Technical Appraisal of projects and Pre-Projects, which reviews project proposals for technical merit and relevance to ITTO objectives.
- The fourth committee, on Finance and Administration, advises the Council on matters related to the budget and other funding and administrative issues concerning the management of the Organization.
- As a member of ITTO, India pays annual contribution to ITTO every year. In the current year 2017-18, the Government of India sanctioned the annual contribution of US \$ 94,567/- to ITTO for the calendar year 2017.
- In the current year, Indian Delegation led by Shri Siddhanta Das, Director General of

Forests and Special Secretary and Shri A.K. Mohanty, Deputy Inspector General of Forests contact point of ITTO in India, attended the 53rd Session of International Tropical Timber Council held in Lima, Peru from 28th November, 2017 to 2nd December, 2017.

#### **International Network of Bamboo and Rattan**

**(INBAR):** The International Network for Bamboo and Rattan (INBAR) is an intergovernmental organization established in 1997. INBAR is dedicated to improving the social, economic, and environmental benefits of bamboo and rattan. INBAR plays a unique role in finding and demonstrating innovative ways of using bamboo and rattan to protect the environment and biodiversity, alleviate poverty, and facilitates fairer pro-poor trade. INBAR 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. As a member of INBAR, India pays annual contribution to INBAR every year. During the year 2017-18, Government of India has sanctioned annual contribution of US \$ 28,000 for the calendar year 2017 to INBAR.

# Conservation

# 02

CHAPTER





## Biodiversity Conservation

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

The Nagoya Protocol on Access and benefit Sharing (ABS) adopted under the aegis of CBD in 2010, is aimed at fair and equitable sharing of benefits arising from the utilization of genetic resources. India signed the Protocol on 11th May 2011, and ratified it on 9th October, 2012. The Nagoya Protocol on ABS entered into force on 12th October 2014. The Nagoya Protocol is being implemented at the national level inter alia through the Biological Diversity Act.

The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) was established by the Governments 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 ([www.ipbes.net](http://www.ipbes.net)).

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

### Activities undertaken

Convention on Biological Diversity (CBD) and related matters:

- During the period, India participated in the following important international meetings relating to biodiversity:
- The Fifth session of the plenary for Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES-5) held in Bonn, Germany from 6-10 March 2017.
- GEF Expanded Constituency Workshop held from 4-7 April 2017 at Da Nang, Vietnam.
- Third BIOFIN Regional Workshop for Eurasia-Pacific held from 25-27 April 2017 at Almaty, Kazakhstan.
- International symposium on “National Implementation of ABS System under the Nagoya Protocol: Sharing Lessons &

- Discussing Future Challenges” held on 6th July 2017 at Seoul.
- High-level United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development held at United Nations Headquarters in New York from 5 to 9 June 2017.
  - Regional dialogue meeting and capacity building workshop held from 20-22nd July 2017 in Tokyo, Japan.
  - ABS dialogue “Informing about Domestic Measures for Access to Genetic Resources” held from 27-31 August 2017 at International Academy for Nature Conservation on the Baltic Sea Isle of Vilm, Germany.
  - Informal Advisory Committee to the Access and Benefit Sharing Clearing House held in Montreal, Canada from 14-16 November 2017.
  - For participating in these meetings of the CBD and IPBES, country positions were prepared through a consultative process, which were put forth at these meetings.
  - Preparation is underway for participation of Indian delegation in the twenty-first meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and the tenth meeting of the Ad Hoc Working Group on Article 8(j) and Related Provisions will be held from 11 to 16 December 2017, in Montreal, Canada.
  - For further augmenting the list of normally traded commodities to be exempted from the purview of the BD Act, a notification has been issued by this Ministry on 7th April 2016 under Section 40 of the Biological Diversity Act, 2002, for augmentation of the list of 385 species listed in the Principal Notification to 421, by adding 36 species.
- The Division is presently implementing eight projects on biodiversity through NBA, three of which were initiated during this year. The details of the projects are given below.
- I. UNEP-GEF-MoEFCC ABS Project on “Strengthening the Implementation of the Biological Diversity Act and Rules with Focus on its Access and Benefit Sharing Provisions” is being implemented in ten provincial states of India in partnership with SBBs in Andhra Pradesh, Karnataka, Gujarat, Goa, Himachal Pradesh, Odisha, Sikkim, Telangana, Tripura and West Bengal, to increase the institutional, individual and systemic capacities of stakeholders to effectively implement the BD Act 2002.
    - The Project Steering Committee of the project met on 21st December, 2016 in the Ministry to review the progress made under the project.
  - II. Centre for Biodiversity Policy and Law (CEBPOL) has been set up by the Ministry and housed in NBA with technical collaboration from Norway with the aim to develop professional expertise on biodiversity related policies and laws and





develop capacity building on various issues identified by both India and Norway pertaining to biodiversity.

- The fourth meeting Programme Steering Committee of the CEBPOL project was held on 30th January 2017 at MoEFCC.

III. India joined UNDP managed global initiative on Biodiversity Finance Initiative (BIOFIN) in 2015. BIOFIN provides a methodological framework for measuring expenditure on biodiversity, calculating the investment required for implementation of National Biodiversity Action Plan and National Biodiversity Targets (NBTs) and developing nationally appropriate Biodiversity Finance Plan. The initiative is hosted by the NBA, and Wildlife Institute of India (WII) and National Institute of Public Finance and Policy (NIPFP) are technical partners.

The Eighth meeting of the Project Steering Committee of UNDP's Natural Resources Management project, of which BIOFIN is one component, was held on 30 October 2017 at MoEFCC.

- IV. UNDP ABS global project on implementation of Nagoya Protocol has been approved for USD 350,000. Under the project, it is proposed to map research institutions that access and utilize genetic resources in India, develop a guidance document on ABS, and develop capacity of research institutions through training.
- V. FAO TCP project on "Strengthening Agriculture and Allied Sector Contributions to India's National Biodiversity Action Plan

(NBAP) 2008 and National Biodiversity Targets (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.

VI. Integrated sub-national action for Biodiversity-Supporting implementation of National Biodiversity Strategy and Action Plan (NBSAP)" is supported by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Government of Germany under their International Climate Initiative (IKI). The project with a four year duration is being implemented in three countries - Brazil, India and Tanzania, in partnership with ICLEI's offices in these regions. The project cities in India are Cochin as the model city, and Mangalore and Panaji as the Satellite cities.

- The day when the Convention text was adopted in 1992, 21st May is celebrated as the International Day for Biodiversity (IDB) to raise awareness about the importance of the biodiversity. The theme for the year 2017 was "Biodiversity and Sustainable Tourism". The national level celebrations of IDB were organised in Goa on 22nd May 2017. The Chief Minister of Goa was the Chief Guest on the occasion. The

event was celebrated with enthusiasm by several organizations all over the country. An exhibition was also organised in the premises of MoEFCC, New Delhi through National Museum of Natural History, which was inaugurated by the Minister for Environment, Forest & Climate Change.

- Action has been initiated to prepare India's Sixth National Report to the CBD, which is required to be submitted to the CBD Secretariat by December 31, 2018. The Ministry of Environment, Forest and Climate Change has organized five regional consultation workshops in collaboration with NBA, on 17-18 August 2017, 22-23 August 2017, 7-8, 14-15 and 21-22 September 2017 in Guwahati, Lucknow, Ahmedabad, Chandigarh and Hyderabad, respectively, with concerned stakeholders for creating awareness on National Biodiversity Action Plan (NBAP) and National Biodiversity Targets (NBTs), as well as for seeking inputs for preparation of India's sixth National Report to the CBD. Nearly 400 participants from all 29 States including officers from concerned Departments including Agriculture, Rural Development, Tourism, Forest, Commerce and Industry etc.; key organisations working in the area of biodiversity conservation including Wildlife Institute of India, Zoological Survey of India, Botanical Survey of India, GB Pant Institute; and

representatives from Industry, Non-Government Organisations and academia participated in these workshops. A brochure on "Mainstreaming biodiversity: National Biodiversity Action Plan, National Biodiversity Targets and India's Sixth National Report to Convention on Biological Diversity" prepared for these workshops was released. The brochure has been translated in Hindi and regional languages for these workshops.

- In line with the initiatives under Digital India, a dedicated web portal ([www.nationalreport6.com](http://www.nationalreport6.com)) has been developed for seeking inputs for India's Sixth National Report to the CBD.
- Action was undertaken to prepare India's Interim National Report to the Nagoya Protocol on ABS, which was required to be submitted online to the CBD Secretariat by 1st November 2017. After consultations with concerned organizations and experts including through two meetings, and after approval by the competent authority, India's Interim National Report was submitted online on CBD Secretariat's ABS Clearing House on 1st November 2017. The report is available at the link <https://absch.cbd.int/countries/IN>.
- 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 86 IRCCs on the ABS Clearing House, out of the total 114 IRCCs published (<https://www.cbd.int/doc/press/2015/pr-2015-10-07-abs-en.pdf>).

- The Ministry initiated a process to develop a National biodiversity portal through NBA, for which a consultation meeting was organized on 26th May 2017. NBA is in the process of developing a proposal for national biodiversity grid/portal.

### **Biological Diversity Act and National Biodiversity Authority:**

- During the period, one meeting of the Authority viz., 42nd meeting was held on 21st August, 2017 in Chennai, in which decisions have been taken on ABS applications, important regulatory, policy and legal issues. The 43rd meeting of Authority will be held in Chennai on 28th November 2017.
- Three meetings of the Expert Committee on Access and Benefit Sharing were held, viz., 43rd meeting on 18th April, 2017 and 44th meeting on 8th and 9th August, 2017,

45th meeting on 10th November 2017, to evaluate the applications and recommended to the Authority for consideration. The committee evaluated around 215 applications.

- Benefit sharing agreements were executed by 175 applicants with NBA, for undertaking various activities enshrined in Sections 3, 4, 6 and 20 of the BD Act.
- Pursuant to the decision taken in the 41st Authority meeting held on 27.03.2017, a core expert group was constituted for developing the modalities for utilizing the Benefit sharing amount accrued on the access of bovine cattle embryos. Accordingly, the expert group which met on 16th June, 2017 at NBA, Chennai developed modalities for utilizing the benefit sharing amount.
- As per the decision taken by the 39th Authority meeting, NBA constituted a small group to modify the draft (revised) guidelines for operationalization of BMCs. The small group met on 27-28 September, 2017 and revised the guidelines after having detailed discussion.
- An interface meeting was held between NBA and Protection of Plant Varieties & Farmers' Right Authority (PPVFRA) on 11th September 2017 at the NBA, Chennai to discuss and explore the common areas wherein synergy could be achieved between the works of the two Authorities. It was decided that both the Authorities would work jointly on common areas such as conservation of biodiversity, agro-biodiversity hotspots etc.

- Secretary, MoEFCC visited NBA on 15th July, 2017, and had interactions on techno-legal matters and administrative issues.
- NBA organized the Sixth Meeting (Third of the Reconstituted) of the Expert Committee on Medicinal Plants on 2 June, 2017 at NBA, Chennai.
- NBA organized a consultative meeting of stake holders on 9th October, 2017 at NBA, Chennai to resolve the pending issues, both technical and administrative, at various levels with stakeholders relating to notification of plants and animals as threatened species for those non-notified states, with a view to prohibit or regulate collection thereof for any purpose and take appropriate steps to rehabilitate and preserve those species, under section 38 of the BD Act involving representatives of MoEFCC, Botanical Survey of India, Zoological Survey of India, and SBB of Andhra Pradesh, Arunachal Pradesh and Telangana.
- Expert consultation on “Synergies between ITPGRFA & BD Act” was held at Chennai on 8th May, 2017 to finalise the study report, and the same is now ready for publication.
- Under the ongoing UNEP-GEF-MoEFCC ABS Project on “Strengthening the Implementation of the Biological Diversity Act and Rules with Focus on its Access and Benefit Sharing Provisions”, various activities were carried out, which include:
  - An exhibition organized at the Third Global Exhibition on Services at Greater Noida between 17-20 April, 2017.
  - Second National Dialogue on Traditional Knowledge and ABS held during 2-3 May, 2017 at Shimla.
  - National Conclave of BMCs for Experience Sharing on ABS organized during 2-4 May, 2017 at Shimla.
  - Participation in IDB 2017 celebrations at Goa.
  - Exhibition organised on Biodiversity and Biological Diversity Act at India International Science Festival held at Chennai on 13-16 October, 2017 at Anna University campus, Chennai.
  - Organized an exhibition on Biological Diversity Act at Destination Himachal Pradesh 2017 at Solan on 24-27 October, 2017.
  - Focus group meets with sector specific industries, academicians, scientific agencies and departments, legal groups, line departments, capacity building programmes for BMCs held at all the nine project states.
- Under the CEBPOL, the following activities were carried out:
  - Expert consultation on ‘Synergies between ITPGRFA & Biological Diversity Act’ held at Chennai on 8th May, 2017.
  - As a part of celebrating IDB 2017, a National Level Photography Competition organized for creating awareness on Biodiversity under three Categories - Changing Habitat/landscape, Urban Biodiversity and Creative Renditions. The winners of this





competition were awarded with a cash prize and certificate at the IDB celebration in Goa on 22nd May 2017.

- National Focal Points interaction on Synergies between biodiversity related MEAs held on 5th October, 2017 at MoEFCC, New Delhi.
- Workshop on Nature Index Pilot Study held at Manali, Himachal Pradesh on 12-13 October, 2017.
- Publication of two issues (January and April, 2017) of E-Newsletter “Biodiversity Matters”, which were circulated widely about 5000 recipients.
- CEBPOL brochures, booklets on “India at Cancun and beyond” and “Users’ guidelines on ABS” published
- Under the ongoing BIOFIN project, various the activities carried out include:
  - A National Stakeholder Consultation and Validation Workshop for the BIOFIN on 19th April 2017 in New Delhi, with a view to validate the expenditure on 118 Schemes of 26 Ministries of Government of India identified as biodiversity relevant, and validation of ‘attributable share’ used in respect of each scheme for improving the estimate of expenditure for biodiversity conservation in respect of schemes of various Ministries.
  - BIOFIN Review and Planning meeting on 3rd August 2017 at MoEFCC involving technical partners.
  - Meeting on Reconciling Financial Attribution Methodologies followed

under the Biodiversity Expenditure Review and Finance Needs Assessment on 7-8 August, 2017 at NBA, Chennai.

- A Scoping meeting on 24 August, 2017 towards preparation of a Biodiversity Finance Plan and a Resource Mobilization Strategy for the effective implementation of India’s National Biodiversity Action Plan and its 12 NBTs involving UNDP and CIPS, Hyderabad.

#### **Progress/achievements:**

#### **First 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 86 IRCCs on the ABS Clearing House, out of the total 114 IRCCs published (<https://www.cbd.int/doc/press/2015/pr-2015-10-07-abs-en.pdf>).

#### **Launch of the online application submission process of NBA:**

The Hon’ble MoEF&CC formally launched the e-application process for National Biodiversity Authority (NBA) on 30th March 2017. This online process is user-friendly and has features such as editing, reviewing, printing, digital signature, online payment of fee etc. This is expected to

considerably ease the process of filing of applications by applicants and also reduce the processing time of applications by NBA. The portal provides a step-by-step guide for e-filing of applications, along with tool tips/pop up messages to assist the applicants. The portal provides the facility for making online payment of application fee before submission of the application.

**Number of agreements signed by NBA:** The NBA has received 243 applications which are complete in all respects and taken up for processing. So far, 163 applications have been cleared by the Authority and draft agreements sent to applicants for execution. NBA has granted approval in the form of agreements to 175 applicants.

**Benefit Sharing received through ABS mechanism:**

- NBA has so far received a sum of about Rs. 6.02 crores as benefit sharing component during 2017-2018.
- Out of the benefit sharing amount realized

on the access of Red Sanders wood, NBA has distributed a sum Rs. 3.00 crore to the Andhra Pradesh Forest Department through Andhra Pradesh SBB as per the decision of the Authority.

- In the previous years, NBA had realized benefit sharing component towards access of sea weeds, out of which, NBA has released Rs. 0.37 crore to the Tamil Nadu State SBB for distributing among the beneficiaries in four southern coastal districts of Tamil Nadu.
- So far, NBA has initiated action against 28 patent applications which were filed in European patent office, State Intellectual Property Office China, Canadian Intellectual Property Office, Japan Patent Office, United States Patents and Trademarks Office, Australian Patent Office and WIPO as per Section 18(4) of the BD Act. Of this, opposition measures in 17 cases were initiated during the period 2017-18



Chief Guest inaugurating Green Haat



Launch of the online application submission process of NBA

## Biodiversity Conservation and Rural Livelihood Improvement Project (BCRLIP)

The externally aided project entitled, 'Biodiversity Conservation and Rural Livelihood Improvement Project (BCRLIP)' is being implemented as a centrally sponsored scheme. The project has four landscapes located at Askot, Uttarakhand; Little Rann of Kachchh, Gujarat, Satpura, Madhya Pradesh and Maharashtra and Agasthyamalai, Tamil Nadu and Kerala; and three field learning centres at Gir, Gujarat; KalakadMundanthurai Tiger Reserve, Tamil Nadu and Periyar Tiger Reserve, Kerala. A capacity building centre for the project is at Wildlife Institute of India, Dehradun.

The Project objective is to develop and promote new models of conservation at the landscape through enhanced capacity and

institution building for mainstreaming biodiversity conservation outcomes. This would involve the demonstration and scaling up of landscape conservation approaches by improving tools and techniques and knowledge and capacity developing and supporting multi-stakeholder partnerships for mainstreaming biodiversity conservation objectives, improving rural livelihoods, enhancing learning and replicating successful participatory conservation models at the landscape scale.

The project has four components: (i) Demonstration of Landscapes Conservation Approaches in two Pilot Sites, i.e., landscapes mentioned above; (ii) Strengthening knowledge Management and National Capacity for replication of successful models of Conservation in Additional Landscapes Sites; (iii) Scaling up and Replication of Successful Models of Conservation in Additional

Landscapes Sites; and (iv) National Coordination for Landscape Conservation.

**Progress/achievements:** Some significant achievements made by landscapes/field learning centres/capacity building centre have been summarised below:

#### **Askot landscape**

- 85 Microplans have been prepared and are being implemented through Van Panchayats.
- 5,500 beneficiaries have been identified in 85 Van Panchayats
- Nearly 2000 hectare of degraded land has been ecologically restored
- Scientific reports generated through a two year long research exercise covering mammals, birds, insects, fish and vegetation.
- The Uttarakhand Government announced Hamara Ped Humara Dhan Yojna, BCRLIP Society distributed 30,000 Plants of Akhrot to the villagers.
- Two major medicinal plant nurseries one at munshiyari and another at in Dharchula have been established.

#### **Agasthiyarmalai landscape, Kerala**

- 145 Microplans have been prepared and are being implemented
- Mapping of the entire landscape is being carried out
- A book on best practices (on community-based ecotourism) has been published

#### **Satpura landscape, Madhya Pradesh**

- 25 Microplans have been prepared and are being implemented
- Solar fencing of around 50 kms. has been erected around farmlands near wildlife areas to minimize human-wildlife conflict
- About 25 lakh saplings have been planted in Satpura-Pench Tiger corridor
- Nearly 30 hectares of grass lands have been developed of wildlife

#### **Little Rann of Kachchh landscape Gujarat**

- 73 Micro plans have been prepared so far and out of which 37 are being implemented
- Nearly 70 Entry Point Activities have been completed
- Management Plan for Wild Ass Wildlife Sanctuary has been prepared for the first time
- Under habitat improvement work, 18 earthen bounds, 16 ponds, 10 soil mounds and 3 fodder grass plots in 40 hectares of the area have been established

#### **Gir Field Learning Centre, Gujarat**

- Lion Estimation Orientation Process, Techniques, Individual identification developed.
- A web-portal has been developed
- A Wildlife Rescue Centre has also been established

#### **Wildlife Institute of India, Dehradun**

- Biological indicators have been developed for Askot, using 94 camera traps





- Nine reports prepared on institutional methodological framework
- Landscape mapping of Askot landscape have also been carried out.

Missions conducted by the World Bank: The World Bank has so far conducted nine implementation support missions by visiting all implementing agencies of the BCRLI Project.

Implementing organizations: The project has four landscape located at (i) Askot, Uttarakhand, (ii) Little Rann of Kachchh, Gujarat (iii). Satpura, Madhya Pradesh and Maharashtra and (iv) Agasthyamalai, Tamil Nadu and Kerala; and three field learning centre at (i) Gir, Gujarat, (ii) Kalakad Mundanthurai Tiger Reserve, Tamil Nadu and (iii) Periyar Tiger Reserve, Kerala. A capacity building centre for the project is at Wildlife Institute of India, Dehradun.

## Conservation and Management of Mangroves & Coral Reefs

Ministry of Environment, Forest and Climate Change (MoEFCC) has been implementing a Centrally Sponsored Scheme (CSS) on conservation and management of Mangroves and Coral Reefs in coastal States/UTs of India since 1987. Under the scheme, 38 mangrove and 4 coral reef sites have been identified for on-ground intervention. List of identified sites is at annexure-I. During the financial year 2017-18, the Ministry is providing financial support in the ratio 60:40 to the Forest Departments of the coastal States/UTs on

demand and upon respective approval of their Management Action Plans (MAPs). Besides this, the scheme also supports R&D activities with emphasis on targeted research on mangrove and coral biodiversity conservation and its management.

### 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.

### Progress/Achievements:

- 14 MAPs have been approved under the scheme.
- 5 MAPs have been re-validated under the scheme.
- Increase of 112 sq mangroves cover compared to previous assessment by FSI.
- National Committee on Conservation and Management of Mangroves and Coral Reefs has been re-constituted with the approval of Hon'ble Minister.
- During this financial year, about Rs 11.62 crores have been released under the scheme as on date.

## Biosphere Reserves

The idea of 'Biosphere Reserves' was initiated by UNESCO in 1973-74 under its Man and Biosphere (MAB) Programme. The MAB, launched in 1970 by UNESCO, is a broad based ecological programme aimed to develop within the natural and social sciences a basis for the rational use and conservation of the resources of the biosphere and for the improvement of the relationship between man and the environment,; to predict the consequences of today's actions on tomorrow's world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere.

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 18 Biosphere Reserves, 10 Biosphere Reserves have been included in the World Network of Biosphere Reserves of UNESCO.

### Objectives:

- To conserve the diversity and integrity of plants animals within natural ecosystems;
- To safeguard genetic diversity of species on which their continuing evolution depends;
- To provide facilities for education and training;
- To provide areas for multi-faceted research and monitoring and
- To ensure sustainable use of natural

resources through most appropriate technology for improvement of economic well being of the local people.

### Progress/Achievements:

- 10 number of Management Action Plan (MAP) submitted by the State Governments have been scrutinized and the funds released against them.
- So far Rs. 9.393 cr. (72%) of BE 2017-18 has been released to 10 Biosphere Reserve sites.
- Proposal for inclusion of Khangchendzonga Biosphere Reserve, Sikkim in the World Network of Biosphere Reserves of UNESCO MAB Program submitted to MAB Secretariat, UNESCO.
- Proposal for 10 year Periodic Review of the Nanda Devi Biosphere Reserve, Uttarakhand submitted to MAB Secretariat, UNESCO.

## Biodiversity Conservation Scheme relating to Biosafety

Under the Biodiversity Conservation scheme, there are two main sub-components namely biodiversity and biosafety. The biosafety component includes activities relating to Genetic Engineering Appraisal Committee/ Cartagena Protocol on Biosafety / Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress.

**Genetic Engineering Appraisal Committee (GEAC):** The Ministry of Environment, Forests & Climate Change (MoEFCC), under the Environment (Protection) Act, 1986 has notified the "Rules for the Manufacture, Use, Import, Export and Storage of Hazardous



Microorganisms/Genetically Engineered Organisms or Cells, 1989” (Rules, 1989) The rules also cover application of hazardous microorganisms which may not be genetically modified. Hazardous microorganisms include those which are pathogenic to animals as well as plants.

The GEAC, the apex body under the Rules, 1989 has the mandate to approve large scale trials and environmental release of Genetically Modified Organisms (GMOs) and ensure that research; development and testing of GMOs prior to environment release are conducted in a safe and scientific manner through appropriate implementation of Rule 1989 and biosafety guidelines.

**Cartagena Biosafety Protocol (CPB):** The CPB was negotiated under the aegis of the Convention on Biological Diversity (CBD) and adopted on 29th January 2000. India is a party to the Protocol. The Protocol has come into force on 11th September 2003. As of date 170 countries are Parties to the Protocol.

The main objective of the Protocol is to ensure safe transfer, handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effect on the conservation and sustainable use biological diversity, taking into account risk to human health.

**Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress (Supplementary Protocol) to the CPB:** The Supplementary Protocol on Liability and Redress is a new international treaty adopted in the fifth meeting of the Conference of the Parties serving as the Meeting of the Parties (COP MOP) to the

CPB at Nagoya, Japan on October 15, 2010 after six years of intense negotiations. India has ratified the same on 19.12.2014

**Objective of the Scheme:**

The scheme helps in strengthening the biosafety management systems and awareness in India through implementation of:

- Rules, 1989
- Provisions of Cartagena Protocol on Biosafety (CPB)
- National measures for bringing legislative, administrative and policy regimes in tune with CPB
- National and international workshops / consultation
- Capacity building

**Progress made in the Phase II UNEP-GEF Capacity Building Project on Biosafety:**

The Phase II Capacity Building Project on Biosafety has made significant progress in four thrust areas i.e. RARM, SECs, HTPI and PA which include the following:

- Scientists from MoEF&CC participated in a Training workshop on Risk Analysis for the release of GMOs in the environment held at ICGEB, Trieste, Italy from May 22-26, 2017.
- Officials from MoEF&CC participated in the 23rd National Project Coordinators meeting held at Shiraz, Iran from October 7-11, 2017.
- Training workshops for Customs and Plant Quarantine Officials were organized at various locations like Kandla, Amritsar, Shillong, Mangalore etc.

- Biosafety Resource Kit consisting of five booklets on FAQs, Regulatory Framework, Information Sources, Confined Field Trials etc. have been prepared in 9 languages and circulated to various stakeholders for information dissemination.
- A Monitoring manual and Tool for Trainers on conduct of confined field trials has been prepared.
- A Network of four referral labs for detection of LMOs has been established subsequent at ICAR-NBPGR, DFTCML, PBTI and EIA-Kochi have been strengthened for their LMO detection facilities through infrastructure support and for up gradation of their existing facilities.
- Risk Communication strategy has been developed for effective communication by various stakeholders.
- A dedicated website capturing key features of biosafety related activities have been prepared. [www.geacindia.gov.in](http://www.geacindia.gov.in).
- A Biosafety Newsletter is being published on a Quarterly basis and is distributed to more than 10000 readers

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

The AICOPTAX Project was launched in 1999 and a Steering Committee was constituted for overseeing the activities under the Project. The Steering Committee was originally constituted on July 2, 1999. The Steering Committee was reconstituted on July 3, 2008 and served as a 'think-tank' on Viral, Microbial, Plant & Animal

Taxonomy and would identify new thematic areas and corresponding institutions who can undertake research in such thematic areas. A Project Monitoring Unit (PMU) was also constituted for day-to-day monitoring of the Scheme.

#### Objectives of the Project:

- Survey, collection, and maintenance of collections of taxonomic groups including microbes for which no information is available and of unexplored and under-explored areas.
- Taxonomic analysis of collections made.
- Training in India and abroad to develop taxonomic expertise on various groups.
- Collection of ecological and population data for assessment of conservation status.
- Biosystematics research for the groups which require modern tools for refinement of taxonomy especially of economically important groups.
- Survey, collection, identification, and inventorisation of domesticated biodiversity;
- Storage and retrieval of taxonomic data.
- Creation of higher centers of learning and establishment of chairs in taxonomy; and also exploring the possibility of institution of Indian and foreign associateships for in-service as well as pre-service scientists.
- to promote field biological studies in colleges located in/near areas rich in biodiversity.
- To train school and college teachers and local communities in parataxonomy skills.





- Initiatives for making taxonomy as attractive as biotechnology among graduate and post graduate students.
- Preparation of manuals and other education materials to create awareness on the role of taxonomy in conservation and sustainable utilization of biodiversity among the public.
- To promote awareness and to provide parataxonomic skills among local communities.

### Assistance to Botanic Garden

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 objectives

of the scheme include 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:

In current financial year funds have been released to 7 Lead Botanic Garden and two Small Garden thereby ensuring the ensuring the ex situ conservation of nearly 407 RET plant species. Some of the important RET plant sps conserved are depicted below:



*Bulbophyllum manipurens*  
syn. *Rhododendron formosum*



*Bulbophyllum careyanum*



*Hedychium speciosum*



*Parkia javanica*



*Oroxyllum indicum*



*Actinodaphne obovata*



Nurseries activities of the SU , Kolhapur Botanical Garden



*Alectra chitrakutensis* (Rau) Prasad & Dixit (Orobanchaceae) growing with host *Vitex negundo*;  
in flowering & fruiting under ex-situ conditions in CSIR-NBRI Botanic Garden





*Bentinckia nicobarica* & *Dischidia bengalensis*



*Sapindus emarginatus* Vahl (Sapindaceae)



*Armadorum senapatianum* - a new species of orchid



*Ammomum muricatum*, *Indopiptadenia oudhensis* (Brand.) Brenan (Mimosaceae)



*Chlorophytum malabaricum* a RET Orchi

## Forest Conservation

- Final disposal of proposals under FCA seeking diversion of forest land up to 40 ha. in each case (except those relating to for mining, regularisation of encroachment and Hydel projects) and all proposals relating to linear projects
- Processing of proposals under FCA seeking diversion of forest land up to 40 ha. in each case for mining, regularisation of encroach. and hydel projects
- Approval of Working Plans/ Working Schemes;
- Inspection of forest land proposed to be diverted in case of proposals involving diversion of more than 100 hectares of forest land in each case and proposals related to renewal of mining leases
- Monitoring of status of implementation of conditions stipulated in EC and FC.

### **Regulatory acts / rules governing the programme and promulgation of new Acts in 2017:**

- Guidelines dated 21/12/2017: General approval under Section-2 of the Forest (Conservation) Act, 1980 for diversion of forest land required for creation of border security related infrastructure within five kilometers aerial distance from the International Border by Paramilitary organizations of the Ministry of Home Affairs- general approval granted to

projects involving forest land along Indo-Myanmar and Indo-Bhutan borders upto 16 Km along Indo-Nepal border and within five kilometers of all other International Borders-reg.

- Guidelines dated 12/12/2017: Guidelines for diversion of forest land for non-forest land for non-forestry purpose under the Forest (Conservation) Act, 1980 - guideline related to general approval for underground laying of optical fibre cables, underground laying of telephone lines and underground laying of drinking water supply pipeline - on applicability to the slurry pipelines for transporting mined material-regarding.
- Guidelines dated 05/12/2017: Application of Forest (Conservation) Act, 1980 and Wildlife (Protection) Act, 1972 on the forest land falling in the Right of Way (RoW) of the Railway in light of the provisions of the Railway Act, 1989-regarding.
- Guidelines dated 30/11/2017: Diversion of forest land for non-forest purpose under the Forest(Conservation) Act,1980-Guidelines regarding extension of period of validity of approvals accorded under the Forest(Conservation) Act,1980 for diversion of forest land for mining projects.
- Guidelines dated 08/11/2017: Identification and suitability of Non-forest land for Compensatory Afforestation





- under Forest Conservation Act 1980 - regarding Identification of Land Bank for Compensatory Afforestation (CA)
- Guidelines dated 03/11/2017: General approval under Section - 2 of the Forest (Conservation) Act, 1980 for diversion of forest land required for creation of border security related infrastructure within 100 Km. distance of the LoC (Line of Actual Control),
- Guidelines dated 23/10/2017: Diversion of forest land for non-forest purpose under the Forest Conservation Act, 1980-ensuring compliance of the Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Right) Act-2006.
- Guidelines dated 27/09/2017: Guidelines for diversion of forest land for non-forest purpose under the Forest (Conservation) Act, 1980 - Simplified procedure for grant of permission for felling of trees standing on forest land to be diverted for execution of linear projects-regarding.
- Guidelines dated 20/09/2017: Clarification on guideline dated 01.04.2015 and 01.05.2015 issued by this ministry regarding extension of period of validity of approvals accorded under the Forest (Conservation) Act, 1980 for diversion of forest land for mining projects in light of extension of mining lease under MMDR Amendment Act 2015
- Guidelines dated 06/09/2017: Request for cutting and removing of already marked trees during Joint survey of Railway officials along with Forest officials in between section Seoni-Bhoma from Railway km 63.30 km 67.60 within existing Railways land boundary- reg.
- Guidelines dated 28/08/2017: Clarification regarding inclusion of Army infrastructure project in the 'General approval' under Section-2 of the Forest (Conservation) Act, 1980 for diversion of forest land for construction and widening of two lane roads by the Border Road organization and other road construction agencies entrusted with the job by the Ministry of Defence, in the area falling within the 100 Km aerial distance from the Line of Actual Control-reg.
- Guidelines dated 02/08/2017: Clarification about the applicability of the Guidelines issued on 27th May, 2015 for diversion of forest land for Non-forest purpose under the Forest Conservation Act 1980 regarding area of forest land falling in the Safety Zone
- Guidelines dated 01/08/2017: Guidelines for conducting Cost Benefit Analysis for projects involving diversion of forest land under the provisions of the Forest (Conservation) Act, 1980.
- Guidelines dated 30/05/2017: Establishment of Elephant Rescue and

Rehabilitation Centre in Sarguja Forest Division, Chhattisgarh-regarding.

- Guidelines dated 03/05/2017: Guidelines under the Forest (Conservation) Act, 1980- Clarification on drilling of shot holes for seismic surveys-reg.
- Guidelines dated 03/05/2017: Diversion of forest land for non-forest purposes under the Forest (Conservation) Act, 1980- processing of proposals in respect of Iron Blocks whose allocation has been cancelled by the Supreme Court in the CWP no. 562 of 2009 in the Samaj Parivartan Samudaya & Ors vs State of Karnataka & Ors.
- Guidelines dated 30/03/2017: Guidelines for diversion of forest land for non forestry purposes under the Forest (Conservation) Act 1980- Submission of proposal to obtain approval for diversion of entire forest land located within a mining lease regarding clarification in guidelines issued by Ministry of Environment, Forest & Climate Change vide letter no. F. No. 11-85/2016--FC dated 30.11.2016.
- Guidelines dated 22/03/2017: Review of cases pending beyond timelines in the digitized services of Ministry of Environment, Forest and Climate Change-reg.
- Guidelines dated 23/02/2017: Diversion of forest land for non-forest purpose under the Forest (Conservation) Act, 1980 - Guidelines regarding extension of period of validity of approvals accorded under the Forest (Conservation) Act, 1980 for diversion of forest land for mining of Atomic Minerals.
- Guidelines dated 08/02/2017: Mining leases (ML) applications which have been saved under Section 10A (c) of the Mines & Mineral (Development & Regulations) (MMDR) Act 2015 deemed to have lapsed if not executed before 11.01.2017 - the list of mining leases executed on or before 11.1.2017 involving forest land by the State Government under Section 10A (c) of MMDR Act 2015-reg.
- Guidelines dated 19/01/2017: Clarification regarding diversion of forest land for non-forestry purpose under the Forest (Conservation) Act, 1980 — provision of transferring equivalent non-forest land by Government Departments for compensatory afforestation.



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

Category : All Categories		During the Period : 2017-2018					
S. No.	STATE / UT	In-Principle		Approved		Grand Total	
		No. of Cases	Total Land Diverted (Ha.)	No. of Cases	Total Land Diverted (Ha.)	No. of Cases	Total Land Diverted (Ha.)
1	Andhra Pradesh	31	2948.88	5	1199.57	36	4148.45
2	Arunachal Pradesh	0	0.00	4	222.86	4	222.86
3	Assam	7	20.65	0	0.00	7	20.65
4	Bihar	22	19.98	37	426.73	59	446.71
5	Chhattisgarh	21	3148.30	4	222.24	25	3370.55
6	Dadar & Nagar Haveli	10	6.06	0	0.00	10	6.06
7	Daman and Diu	1	0.97	0	0.00	1	0.97
8	Goa	1	0.66	6	42.49	7	43.16
9	Gujarat	94	2186.22	3	9.60	97	2195.82
10	Haryana	172	202.90	229	254.85	401	457.74
11	Himachal Pradesh	100	308.08	37	240.26	137	548.34
12	Jharkhand	19	582.56	5	58.65	24	641.21
13	Karnataka	32	101.18	14	314.90	46	416.08
14	Kerala	3	0.12	1	0.17	4	0.30
15	Madhya Pradesh	72	8870.81	12	1423.53	84	10294.34
16	Maharashtra	41	828.80	5	1357.65	46	2186.45
17	Manipur	2	111.12	1	58.56	3	169.68
18	Orissa	32	4127.58	11	1609.68	43	5737.26
19	Punjab	142	146.69	240	623.43	382	770.11
20	Rajasthan	29	487.83	15	37.28	44	525.11
21	Sikkim	16	67.76	0	0.00	16	67.76
22	Tamil Nadu	7	31.10	1	0.76	8	31.86
23	Telangana	71	938.50	8	4891.81	79	5830.31
24	Tripura	8	46.31	1	3.33	9	49.64
25	Uttar Pradesh	126	796.00	1	4.20	127	800.20
26	Uttarakhand	190	1821.57	34	452.72	224	2274.30
27	West Bengal	3	12.60	4	75.99	7	88.59
	<b>Total</b>	<b>1252</b>	<b>27813.25</b>	<b>678</b>	<b>13531.24</b>	<b>1930</b>	<b>41344.49</b>

Statement Showing Total Area Diverted (Sector Wise) For Forest Land Under FC ACT, 1980

Category : All Categories		During the Period : 2017-2018					
S. No.	CATEGORY	In-Principle		Approved		Grand Total	
		No. of Cases	Total Land Diverted (Ha.)	No. of Cases	Total Land Diverted (Ha.)	No. of Cases	Total Land Diverted (Ha.)
1	Approach Access	3	0.85	0	0.00	3	0.85
2	Defence	18	212.46	3	1407.78	21	1620.23
3	Dispensary/Hospital	1	0.86	1	0.17	2	1.03
4	Drinking Water	80	320.44	9	14.35	89	334.78
5	Forest Village Conversion	4	405.70	5	809.04	9	1214.74
6	Hydel	8	16.33	7	28.98	15	45.31
7	Industry	10	90.41	13	0.24	23	90.65
8	Irrigation	51	7950.80	15	3517.97	66	11468.77
9	Mining	43	8177.38	18	3704.29	61	11881.67
10	Others	369	4187.04	285	1554.60	654	5741.64
11	Quarrying	4	11.40	3	3.64	7	15.04
12	Railway	20	711.21	12	285.15	32	996.36
13	Rehabilitation	2	10.11	0	0.00	2	10.11
14	Road	476	3145.92	230	1794.19	706	4940.10
15	School	12	16.05	5	2.06	17	18.11
16	Thermal	1	0.07	1	114.36	2	114.42
17	Transmission Line	125	2083.55	67	283.54	192	2367.10
18	Village Electricity	21	34.30	2	0.14	23	34.44
19	Wind Power	4	438.38	2	10.76	6	449.14
	Total	1252	27813.25	678	13531.24	1930	41344.49





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

Category : All Categories		During the Period : 01.04.2017 to 23.01.2018	
S. No.	STATE / UT	Approved	
		No. of Cases	Total Land Diverted (Ha.)
1	Andhra Pradesh	5	1199.57
2	Arunachal Pradesh	4	222.86
3	Bihar	35	414.03
4	Chhattisgarh	3	147.19
5	Goa	4	24.38
6	Gujarat	3	9.60
7	Haryana	148	245.38
8	Himachal Pradesh	33	237.40
9	Jharkhand	5	58.65
10	Karnataka	11	303.09
11	Kerala	1	0.17
12	Madhya Pradesh	12	1423.53
13	Maharashtra	4	890.20
14	Manipur	1	58.56
15	Orissa	9	808.25
16	Punjab	207	618.31
17	Rajasthan	10	36.24
18	Telangana	8	4891.81
19	Tripura	1	3.33
20	Uttarakhand	20	387.31
21	West Bengal	4	75.99
	<b>Grand Total</b>	<b>528</b>	<b>12055.84</b>

### Forest Establishment

The Forest Establishment Division is handling the establishment matters relating to the Indian Council of Forestry Research and

Education (ICFRE), an autonomous organisation under the Ministry of Environment, Forests, and Climate Change and its Institutes/Centers Forest Survey of India

(FSI) and its Regional Centers; National Zoological Park (NZP); Wildlife Crime Control Bureau (WCCB) and its Regional Offices, Indira Gandhi National Forest Academy (IGNFA); Directorate of Forest Education (DFE), Central Academies (3) and Ranger College viz;

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

- Nodal Division for sending requisition to Staff Selection Commission for filling up Direct Recruitment posts of Attached an Subordinate Offices of this Ministry.

**Activities undertaken so far:**

- Selection to the post of Dy. Director General(Research), ICFRE; Director, TFRI. Jabalpur; Director, IFGTB, Coimbatore and Director, IFP, Ranchi – Selection Committee for these posts has been constituted with the approval of DoPT.
- Search-cum-Section committee is being formed with the approval of DoPT for selection of post of Director, FRI, Dehradun.
- Framing/ amendment RRs for Group 'A', 'B' and 'C' posts in r/o FSI, DFE, IGNFA and WCCB.
- Proposal being forwarded to S.S.C. for filling up of various DR posts (Non-Gazetted).
- Promotion cases in r/o Group 'A' officers in WCCB and FSI through UPSC.
- Creation of 67 posts of Front Line Staff in Lakshadweep.
- Recommendation of 7th CPC in r/o pay parity for the posts of ACF and Forest Ranger in UT of A & N Islands.
- Proposal for cadre re-structuring of Govt. of NCT Delhi.
- Re-designation & up-gradation of Asstt. Library & Information Officer to the post of Library & Information Officer in IGNFA,



## 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. In addition Forest Policy Division deals with forest related issues under various conventions such as UNFCCC, UNCCD & UNCBD, etc. 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). The Division is mandated to deal with technical aspects related to NDC related forestry targets and implementation of REDD+ programme in the Country at National level.

### **Activities undertaken so far during the financial year 2017-18-(bullet points only):**

Forest Policy Division does not have any financial targets and therefore, performance in respect of financial and physical achievement cannot be quantified. However, brief on the activities, advisories issued on policy matters and landmark decision undertaken so far on the subject matter pertaining to Forest Policy Division during the financial year 2017-18 is as under:

1. Various steps taken by the Ministry for relaxing the regulatory regime on

commonly grown agroforestry tree species including bamboo grown on non forest land for encouraging tree growers to cultivate agroforestry tree spp and bamboo on private land. These include-

- Advisory dated 18.5.2017 issued to all the States/UTs to consider further relaxing the regulatory regime on bamboo grown on non forest land.
- Advisory dated 19.5.2017 issued to all the States/UTs to consider exempting setting of bamboo units from the requirement of NOC/license.
- Advisory dated 13.06.2017 issued to all the States/UTS to consider exempting royalty on bamboo and its finished products.
- Clarification dated 7.7.2017 issued to all the States/UTs regarding exemption of bamboo from licensing.
- The Wood-based Industry Guidelines have been amended and notified on 12.09.2017. These amendments have further liberalized the setting up of saw mills using bamboo and species grown under Agroforestry. This would encourage setting up of processing units and generate the demand for raw material leading to planting of trees on non forest land.
- Advisory dated 6.10.2017 issued to all States/UTs to consider that commonly grown agro-forestry tree species to be exempted from the requirement of the felling and transit permits.

- Advisory dated 9.10.2017 issued to all the States/UTs regarding issuing of a Pan India Transit Permit for inter-state movement of bamboo.
  - The Indian Forest (Amendment) Act, 2017 has been enacted to amend the section 2(7) of the Indian Forest Act for omission of word bamboos from the definition of tree. This will encourage bamboo cultivation in non-forest land as the restriction on felling and transport of bamboo not grown inside forests will be removed.
  - Advisory dated 30.11.2017 issued to all the States/UTs to consider distribution of good quality seedlings of common agroforestry species to farmers and interested persons.
  - The State Governments have also been requested vide MoEF&CC DO letter dated 4.12.2017 to consider to bring in appropriate amendments in their respective Acts in line with changes in the Indian Forest Act, 1927 brought by the Ministry of Environment, Forest and Climate Change for omission of word “bamboos” from definition of tree. This will bring the uniformity about the legal position of bamboo across the country and help in the promotion of bamboo sector from cultivation to economic use on non forest land by various stakeholders.
  - Advisory dated 22.12.2017 issued to all States/UTs to consider removal of regulatory barriers in production, felling, transit, processing and marketing of bamboo grown on non forest land.
  - Advisory dated 19.01.2018 issued to all States/UTs to consider Pan India Card/Transit Permit for inter-state movement of commonly grown agroforestry species.
2. In a landmark initiative, the Indian Forest (Amendment) Act, 2017 has been enacted on 5.01.2018 to omit the word bamboos from the definition of tree. With this amendment bamboo grown in non forest areas has been exempted from the requirement of felling and transit permit for its economic use. The change in the classification of bamboo will usher in much needed and far-reaching reforms in the bamboo sector. On the one hand, the legal and regulatory hardship being faced by bamboo growers, farmers and private individuals, etc. will be removed and on the other hand, it will create a viable option for cultivation in culturable wasteland. The measure will go a long way in enhancing the agricultural income of farmers and tribals, especially in North East and Central India.
  3. The Ministry has provided inputs and technical comments to PMO, NITI Aayog and the Ministry of Agriculture on the issues related to development of bamboo sector and self sufficiency in timber production. Significant contribution made by the Division in formulation of new





- National Bamboo Mission and preparation of roadmap on National Bamboo Mission.
4. Ministry issued a Model MoU/agreement to all the State/UT Forest Departments for roadside plantations for development of green corridors in the form of avenues and median plantations along National Highways in coordination with NHAI.
  5. V.The Ministry has been proactively involved in facilitating the Ministry of Tribal Affairs being Nodal Ministry for the implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 commonly known as Forest Rights Act, 2006.
  6. A revised Strategy paper for achieving India's NDC targets in forestry sector for creation of an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent in forests has been finalized.
  7. Submitted Forest Reference Level of the country for REDD+ result based payments to UNFCCC.
  8. A national level meeting with all Forest Development Corporation and CSE was organized on Production Forestry on 13.07.2017.
  9. International Day of Forests was celebrated jointly with Delhi Forest Department to create awareness on importance of forests.
  10. The Division organized a National Level Conference on REDD+: Challenges and Opportunities Post Marrakesh under Forest Plus Program from 7-8 March, 2017 in New Delhi.
  11. The Division processed and deputed delegation from FSI and State Forest Department to attend the Study Tour for Indian delegation on use of very high resolution satellite data for forest resources assessment from 27 November to 1 December, 2017.
  12. Indian delegation participated in the UNFF Workshop on UN Forest Instrument in Nairobi, Kenya from 24-26 July, 2017.
  13. Indian delegation participated in the 27th Session of "Asia Pacific Forestry Commission" (APFC-27) held in Sri Lanka from 23-27 October, 2017.

### Forest Protection Division

This is a continuing scheme. The Centrally Sponsored Scheme of Intensification of Forest Management Scheme was reviewed in the Ministry of EF&CC at the end of the XII Five Year Plan and it has been decided that in view of the small allocation the focus of the scheme may only be on one component, i.e. Forest fire management, to address the growing concern over adverse effects of forest fire. With this, the present Centrally Sponsored Scheme of Forest Fire Prevention & management (FPM) has been formulated after restructuring and replacing the erstwhile scheme of IFMS.

This division deals with the following subjects in the Ministry.

- I. Implementation of the Centrally Sponsored Scheme of “Forest Fire Prevention & Management Scheme (FPM).
- II. Major Forest Protection issues such as forest fires, Encroachments, Illegal felling, vacancy position of frontline staff etc.
- III. Nodal Division for dealing with forest fires and Crisis Management Plan for fire in the county.
- IV. Nodal division for issues relating to Left Wing Extremism affected forest areas.
- V. Pest & disease attack relating to forest protection (excludes research aspect).
- VI. Nodal division for use of Space Technology in the Ministry.

Activities undertaken: Accordingly, the Centrally Sponsored Scheme of Intensification of Forest Management Scheme has been restructured to focus on forest. The EFC meeting on the subject was held on 28.08.2017 and the same has been approved from Ministry of Finance. Operational guidelines based on the approval obtained on the EFC note for the approved CSS: Forest Fire Prevention & Management (FPM) will be circulated to States / UTs after finalization the same.

In this regard, it is informed that during 2017-18, an amount of Rs. 26.77 crores (including central sector) has already been released as

ad-hoc release to be specifically utilized for forest fires to the various States / UTs under the CSS: Intensification of Forest Management Scheme. No more funds can be released to the States / UTs till the proposed Forest Fire Prevention & Management scheme is approved.

This ad-hoc release has been made to undertake only the following activities during 2017-18.

- a. Creation of fire line.
- b. Maintenance of fire line.
- c. Construction of watch towers.
- d. Engagement of fire watchers.
- e. Assistance to Joint Forest Management Committee (JFMC).
- f. Construction of water storage structure.
- g. Setting up of fire fighting cells.
- h. Procurement of fire fighting equipments.
- i. Fire mapping and preparation of fire management plan.
- j. Training & awareness.

The remaining amount to the States / UTs as per the allocation will be released after finalization of operational guidelines & based on the Annual Work Programmes received from the respective States / UTs following due procedures.



The Forest Protection Division of MoEF&CC is implementing the Centrally Sponsored “Forest Fire Prevention & Management Scheme”. The allocation of budget to various States / UTs under the scheme is being made based on the transparent criteria’s such as total recorded forest areas, percentage of forest and tree cover, per capita forest cover availability, area under encroachment and vulnerable districts to forest fire. Under the scheme, the State/UT Governments submit the Annual Work Programmes (AWPs) which will be examined by the screening committee headed by Additional Director General of Forests (FC). The sanction will be made to the concerned States / UTs by following due procedures and approval of the competent authority. The State / UT Governments submit the Utilization Certificates, Progress Reports, GPS locations of the works carried out along with the photographic evidences.

The State Forest Departments shall be responsible for implementation of the sanctioned activities in the field and proper utilization funds disbursed as per the norms. State Forest Departments also responsible for the regular review, monitoring & evaluation of the scheme. This Ministry also conducts monitoring, evaluation of the scheme through its officials, Regional Centres of the Ministry and/or independent organizations.

### **Wildlife Conservation**

In the Wildlife Division of the Ministry, the Additional Director General of Forests (WL) and Director, Wildlife Preservation is the head of the Wildlife Wing. The Wildlife Wing has two

Divisions, namely, Project Elephant Division and Wildlife Division, each headed by an officer in the rank of Inspector General of Forests. A Deputy Inspector General of Forest (Wildlife) and an Assistant Inspector General and Joint Director (Wildlife) provide administrative and technical support to the Wildlife Wing. In addition, there are three autonomous bodies, Wildlife Institute of India (WII) for wildlife research & training, Central Zoo Authority (CZA) for conservation and zoo management and National Tiger Conservation Authority (NTCA). The NTCA has been constituted by converting the Project Tiger Directorate into an autonomous body for tiger conservation. The National Zoological Park in the capital is also a part of the Wildlife wing of the Ministry of Environment & Forests.

To combat wildlife related crimes, a Wildlife Crime Control Bureau under the Director, Wildlife Preservation has been constituted with 5 Regional Offices viz, Delhi, Mumbai, Kolkata, Chennai and Jabalpur and 3 Sub-regional offices at Amritsar, Guwahati, and Kochi. And 5 Border Units located at Moreh, Nathula, Motihari, Gorakhpur and Ramanathapuram.

Wildlife Division deals with the policy and law matters and knowledge management for facilitating processes and analysis for evolution of policy and law for conservation of biodiversity and Protected Area network.

Wildlife Division of the Ministry provides technical and financial support to the State/UT Governments for wildlife conservation under the Centrally Sponsored Scheme - Integrated

Development of Wildlife Habitats and also through Central Sector Scheme - Strengthening of Wildlife Division and Consultancies for Special Tasks, and through Grants in Aid to the Central Zoo Authority and Wildlife Institute of India, Dehradun.

**Wildlife Crime Control Bureau (WCCB):** The Wild Life Crime Control Bureau has been created under Section 38Y of the Wild Life (Protection) Act, 1972. The mandate has been specified under Section 38(z) which includes collection, collation of intelligence and its dissemination, establishment of a centralized Wild Life crime databank, coordination of the actions of various enforcement authorities towards the implementation of the provisions of the Act, implementation of the international Conventions, capacity building for scientific and professional investigation, assistance to authorities in other countries for a coordinated universal action towards control of Wild Life crime and to advise the government on various policy and legal requirements.

**Integrated Development of Wildlife Habitats (IDWH):** At present India has a network of 700 Protected Areas (103 National Parks, 528 Wildlife Sanctuaries, 65 Conservation Reserves and 4 Community Reserves). The details of the Protected Areas in India may be seen at: [http://www.wiienvi.nic.in/Database/Protected\\_Area\\_854.aspx](http://www.wiienvi.nic.in/Database/Protected_Area_854.aspx)

The Government of India provides financial and technical assistance to the State/UT Governments for activities aimed at wildlife conservation through the Centrally Sponsored Scheme viz. 'Integrated Development of

Wildlife Habitats'. 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.

**Activities undertaken:**

- Ministry has released an amount of Rs. 5 lakh for the Protection and conservation of Greater Adjutant in Gangetic riverine tract in Bhagalpur district, Bhagalpur Forest Division in Bihar.
- Ministry has released an amount of Rs. 19 lakh for Dolphin Conservation in Non Protected Area Segment of Ganga River in district of Patna, Bhojpur and Buxar, Munger, Bihar.
- For the establishment of Conservation Breeding Centre for Wild water buffalo (*Bubalus bubalis arnee*) in Nandanvan Jungle Safari, Naya Raipur, Chhattisgarh Ministry has released an amount of Rs. 121.84 lakh to the State Government.
- An amount of Rs. 181.448 Lakhs have been released to the State Government of Haryana for recovery programme for Vultures.
- Ministry has released an amount of Rs. 386.505 lakh for the recovery programme for Snow leopard in Leh Division, Jammu and Kashmir.
- Ministry has funded the State Government





of Uttarakhand under the Components Recovery Programme for saving critically endangered species and habitats of CSS- 'Integrated Development of Wildlife Habitats' for the recovery programme for Vulture through conservation breeding in Western Circle, Haldwani, Uttarakhand - Uttarakhand.

- An amount of Rs. 1143.6264 lakh have been released to the State Government of Uttarakhand, for establishment of the State of art, India's first Veterinary care unit and a Man-animals conflict mitigation training centre with trainee's hostel & library.

**Central Zoo Authority (CZA):** The Central Zoo Authority was created by the Central Government through an amendment of the Wild Life (Protection) Act in the year 1992. The main objective was to enforce certain minimum standards and norms for upkeep and health care of animals in Zoos and to restrain mushrooming of unplanned and ill-conceived Zoos that were cropping up as adjuncts to public parks, industrial complex and highways.

**National Zoological Park (NZP):** The National Zoological Park was set up on 1st November 1959 as per the decision taken in the 1st Meeting of the Indian Board for Wild Life in 1952. It is being directly managed by the Ministry of Environment and Forests, Government of India.

The main objective of the National Zoological Park is to complement and strengthen the national efforts in conservation of the rich

biodiversity of the country, particularly the wild fauna. To achieve this objective the following protocol is adopted:

- a. Supporting the conservation of endangered species by attempting their coordinated breeding under ex-situ conditions and raise stocks for rehabilitating them in wild as and when it is appropriate and desirable.
- b. To inspire amongst zoo visitors empathy for wild animals, an understanding and awareness about the need for conservation of natural resources and maintaining ecological balance.
- c. Providing opportunities for scientific studies useful for conservation in general and creation of data base for sharing between the agencies involved in in-situ and ex-situ conservation.

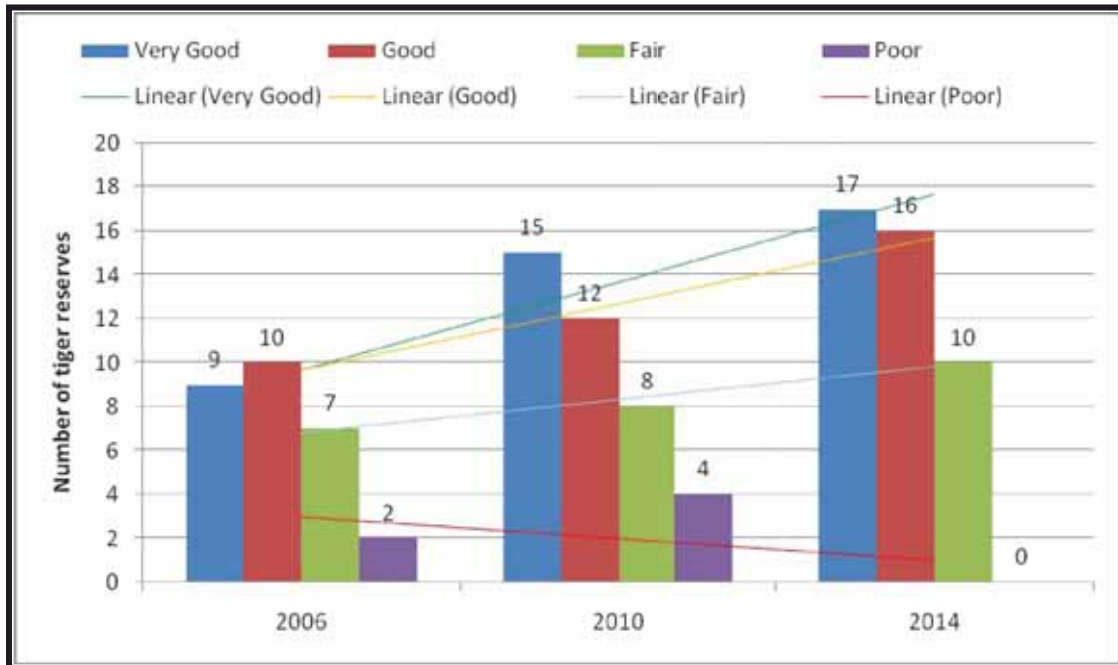
#### **Significant Achievements:**

**Enhancement of Protected Areas:** The percentage of Protected Area is 4.93% of Geographical area of country. Efforts are being made to increase the Protected Area and to create undisturbed habitat for wildlife with better livelihood option and better quality life through relocation of people living inside the forest.

#### **Technology in conservation:**

**Management Effectiveness Evaluation (MEE) of 125 Protected Areas:** So far MEE has been completed in 125 Protected Areas in 31 States/UT. It is proposed to cover all the National Parks and Sanctuaries within 3 years.

The same has been completed in 43 tiger reserves of 17 tiger range States.



**Satellite Tagging of Great Indian Bustards:** As a part of conservation of Great Indian Bustard, two GIB's were tagged and are being tracked.

Over the last fortnight (June 1 - 17, 2017), both the tagged GIBs have been intensively using two grassland patches in Abdasa, Kachchh.



Use of unmanned aerial vehicles / drones are used in Monitoring of wildlives



*Unmanned Aerial Vehicles/Drone are used in PAs*

**Monitoring System for Tigers Intensive Protection and Ecological Status (M-STripES):**

It enables managers to assess intensity and spatial coverage of patrols in a GIS based tool.



*Observation of the Hon'ble Minister, EF&CC at Nairobi National Park*

**Increase in number of wild animals:**

- The population of Asiatic Lions have increased from 177 in 1978 to 523 as per the 2015 census.
- The number of Elephants have increased

from 12,000 in the 1970's to 30,000 recorded in 2015.

- The one horned Rhino was on the brink of extinction during the early 20th century. The number has increased to over 2400 animals in 2016.

Tiger population estimation: The tiger population has steadily increased from 1411 in 2006 to 2226 in 2014.

**National Wildlife Action Plan (2017-2031):** The National Wildlife Action Plan (2017-31) has been prepared.

Effective decision making in development related projects: The frequency of meetings of Standing Committee of NBWL has been increased from four in a year to once in a month, so as to take quick decisions and examining developmental projects around Protected Areas. 257 developmental projects were recommended by the Standing Committee of NBWL during the last three years.

**Guidelines for Eco-tourism in Protected Areas:** To promote nature tourism and awareness of wildlife habitats, the Ministry has prepared Guidelines for Eco-Tourism in Protected Areas.

Identification of Model Protected Areas for Swachh Bharat Mission: Under Swachh Bharat programme, to make plastic free and Swachh Protected Areas is the priority of the

Ministry of Environment, Forest and Climate Change. Last year 21 Protected Areas have been taken up and in coming years, all the Protected Areas of the country will be brought under the Swacch Bharat Mission scheme.

**Human Wildlife Conflict Mitigation:**

- To reduce the conflict between human and wildlife, compensation is provided for loss of life and property to the victims.
- To enhance and enrich the fodder and water in Protected Areas, number of schemes have been initiated by the Government in the last three years.
- The Government has taken up necessary steps as provided in the Wild Life (Protection) Act, 1972 for conflict mitigation. Population management of wild animals, using immuno-contraceptive measures is also being worked.

**International Cooperation:** India has signed the Memorandum of Understanding (MOU) with United States of America for enhancing the cooperation on wildlife conservation and combating wildlife trafficking in Washington D.C.



Embassy of India  
Washington DC

**PRESS RELEASE - Memorandum of Understanding (MoU) between Government of India and Government of the United States to enhance co-operation on Wildlife Conservation and Combating Wildlife Trafficking**

Washington, DC  
June 2, 2016

1. A Memorandum of Understanding ( MoU) between the Government of India and the Government of the United States of America was signed on June 2, 2016 to enhance co-operation on Wildlife Conservation and Combating Wildlife Trafficking. Shri Arun K. Singh, Ambassador of India to the United States and Ms. Catherine A. Novelli, Under Secretary of State for Economic Growth, Energy and the Environment, signed MoU on behalf of Government of India & USA respectively.
2. Both sides recognise that wildlife is increasingly under threat due to habitat loss and illegal harvesting and trading. To tackle these challenges, both sides entered into an understanding to cooperate and strengthen capacity for wildlife conservation and management in India, including efforts to protect critical habitats. Both sides have also committed to cooperate regionally and globally for combating of illegal trade in wildlife through capacity building, strengthening cooperation and sharing best practices.
3. This MoU would help enhance India-US bi-lateral cooperation for wildlife conservation and management and combating wildlife trafficking.



Catherine A. Novelli (@CNovelli)  
New Delhi India, 06/02/16  
U.S. & India working together like never before to protect nature conservation. gov.pl/india/



Catherine A. Novelli (@CNovelli)  
Honored to sign MOU with @india facilitate joint efforts on #wildlife conservation. state.gov/ipl/ps/







A Species Recovery Programme has been launched for critically endangered species i.e. Great Indian Bustard (GIB), Manipur Deer-

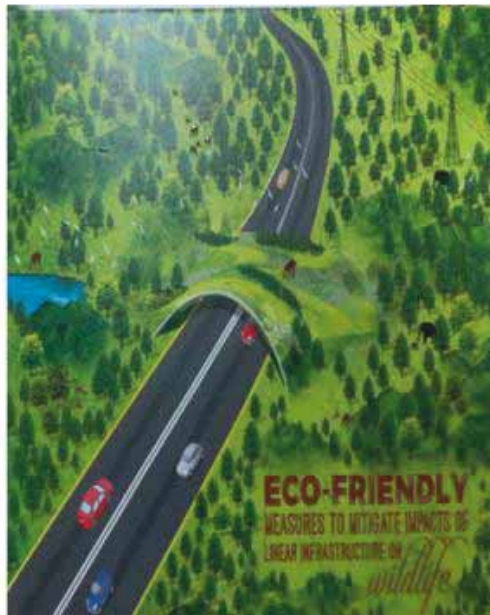
Sangai, Gangetic Dolphin, Dugong and Amur Falcon the Ministry.



Great Indian Bustard (GIB), Manipur Deer-Sangai, Gangetic Dolphin, Dugong and Amur Falcon.

Guidelines on “Eco-friendly measures to mitigate impacts of linear infrastructure on Wildlife” has been prepared to ensure growth

of good network with minimum disturbance to wildlife.

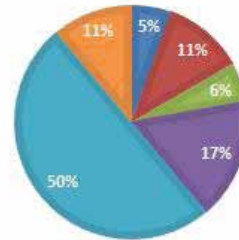


**Wildlife Crime Control**



**CASES DETECTED STATE WISE DURING OPERATION  
SAVE KURMA**

■ Haryana ■ Maharashtra ■ Rajasthan ■ Uttar Pradesh ■ West Bengal ■ Karnataka



Operation “Save Kurma” was launched on 15th October in 10 States to stop poaching,

transportation and illegal trade of live turtles and tortoises

**Operation Thunderbird:** Was launched to intensify enforcement operation in association with INTERPOL.



**Operation Wildnet:** was launched to encounter the menace of the illegal trade through e-commerce platform.

**Seizure of 12 Hatha Jodi and 13 Siyar Singhi at Khargone, Madhya Pradesh on POR No.1725/25 dt.15/06/2017**





As a significant gesture for commitment of protection to wildlife, large number of wildlife articles involved in wildlife offences, were burnt in public, in an event organized at Delhi

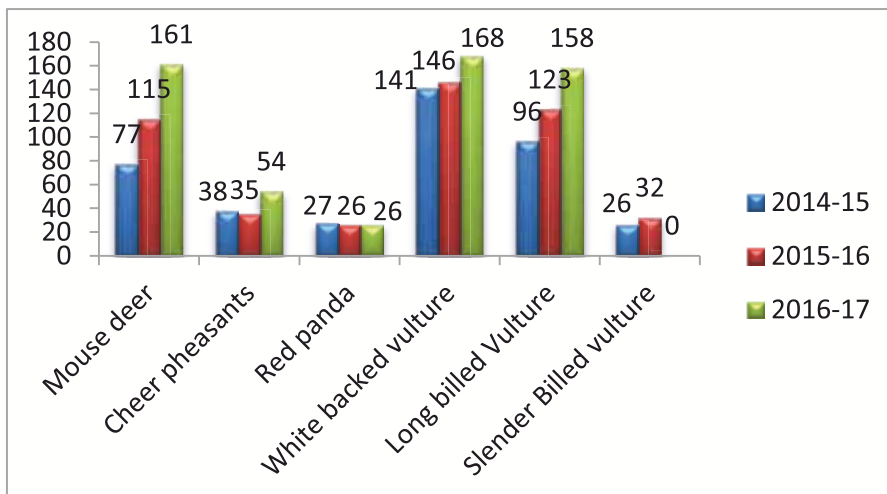
Zoo on 3rd March 2017, under the leadership of Hon'ble Minister of State (Independent Charge) for Environment, Forests and Climate Change.



Hon'ble Minister of State (Independent charge)  
Late Shri Anil Madhav Dave in the Zoo on 23rd March, 2017.

**Ex-situ Conservation:** Ex-situ conservation breeding has been started for 23 species which will be upscaled to 73 critically endangered species within next three years.

The graphical representation of the increasing numbers in few species are illustrated in the graph below:





## Project Elephant

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

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

The implementation of Project Elephant is through the C.S.S. Plan Scheme with the grant to State Governments on items of recurring expenditure on operational costs under Project Elephant at the rate of 100% of approved cost up to October 2015 after that funding pattern changed to the ratio of Central: State share to 60:40 and 90:10 for North East and Himalayan states). Presently the Project is being implemented in 22 States/UTs, viz. Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Nagaland, Odisha, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal, Rajasthan, Andaman & Nicobar, Bihar, Punjab, Gujarat and Haryana (where an elephant rescue centre has been set up supported by Project Elephant). There are 29 notified and 1 proposed Elephant Reserve in the country (Khasi Hills Elephant Reserve in Meghalaya).

### Important Initiatives Taken:

- a. For the first time in India an all India synchronized elephant census was conducted in 2017. One year prior to the

actual enumeration of elephant population, Ministry initiated the process in collaboration with ANCF and conducted two regional workshops, subsequent trainings and dung decay experiments (six months before the elephant census was undertaken). The preliminary census report was released by the Hon'ble Minister, MoEF&CC on 12th August, 2017 on the World Elephant Day.

- b. The Working Group that was constituted for Implementation of Elephant Task Force has been completed in 2015 felt that some of the recommendations of Gajah report of 2010 are not relevant now. Hence it concentrated its efforts on development of "Guidelines for Human Elephant Conflicts", which have been notified on 05.10.2017. Human elephant conflict is one of the most critical issue in India and Gajah Report has also laid considerable importance on this issue. The Working Group examined the matter and such provisions were incorporated in the "Guideline for management of Human - Elephant conflict". The Guideline has been finalised by the Ministry and circulated on 06.10.2017.
- c. Elephants from Dalma Wildlife Sanctuary in Jharkhand spread out all over the eastern region, comprising of Jharkhand, Bihar, Chhattisgarh, Odisha, South Bengal and Northern Andhra Pradesh mostly due to degraded elephant habitat and mixed landscape. According to an estimate the region has 10% of country's elephant





- population and 70% of human mortality due to elephants.
- d. To address the issue, it was decided that a Regional Strategic Action Plan for Conservation of Elephants with special emphasis on HEC should be prepared through a Drafting Committee. The Committee has been notified on 02.01.2017 comprising of ADG (WL), elephant experts and CWLWs of the region and the Drafting Committee has met twice on 19.01.2017 and 06.09.2017. Rs. 7.00 lakhs and Rs. 7.50 lakhs has been released to Director WII and ANCF for compilation of baseline data. Data collation by the two agencies has been completed and the format for the Report has been finalised. The Drafting Committee for Strategic Regional Action Plan for Eastern Region has suggested landscape management and zonation approach for conservation of elephants.
  - e. The Steering Committee of Project Elephant was reconstituted on 04.09.2017 and the 14th Meeting of the Steering Committee of Project Elephant was convened on 09.10.2017 under the Chairmanship of Hon'ble Minister EF&CC.
  - f. "Standards/Norms for Giving Recognition to Captive Elephant Housing Facilities, including temple elephants, in accordance with provisions of WLPA, 1972 have been notified on 29.09.2017.
  - g. The Second Meeting of Focal Points of MIKE (Monitoring of Illegal Killing of Elephants) sites in India for reporting to CITES Secretariat was held on 06.10.2017 where the MIKE sites were requested to share the elephant mortality data with Project Elephant in revised data sheets by end of January each year.
  - h. As the situation of human-elephant conflict has assumed serious proportion, it was critical to bring together selected elephant range countries/experts to share, exchange and showcase successes in resolving human–elephant conflict in their region. To that effect, a side event on "Mitigation of Impacts of Human-Elephant Conflicts in Eastern Region of India" was held at the Twelfth Session of the Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS COP12 on 26th October, 2017 at Manila, Phillipines to showcase the practices taken up in India and also seek information from other countries in resolving human – elephant conflict in their regions.
  - i. The 2nd dialogue between India and Bangladesh Forest Departments for trans-boundary elephant conservation elephants was held on 27th July, 2017 at Shillong under the Chairmanship of Shri Siddhanta Das, Director General of Forests & Special Secretary, Ministry of Environment, Forests and Climate Change, Government of India. A nine member delegation from Bangladesh led by Mohammad Safiul Alam Chowdhary, Chief Conservator of Forests attended the

dialogue. The dialogue was held to develop and implement a coordinated and holistic approach for trans-boundary conservation of elephants; to monitor, minimize and mitigate Human Elephant Conflicts caused by migratory elephants across borders. During the meeting the protocol on “Elephant Conservation and Management in India and Bangladesh” was finalised. At the end of the dialogue the Heads of both the delegation signed the Agreed Points of Action on Trans-Boundary Conservation of Elephants in India-Bangladesh Landscape.

- j. The Steering Committee suggested that human – elephant conflict many a times could be averted if proper dialogue is established between the State Forest Department and other stakeholders. Therefore, it was decided to organize regional level workshops involving the forest department and other stakeholders such as line departments (National Highways, Railways, Power and Canal), civil societies, elephant experts to find measures to protect the elephant corridors and methods to mitigate human – elephant conflict. The first of the regional workshop was held on 11th and 12th January, 2018 at Thiruvananthapuram, Kerala.
- k. The World Elephant Day was conducted at Nehru Memorial and Museum Library, Teen Murti House, New Delhi on 12th August, 2017. The programme included activities with school children where school children prepared clay models of elephants, brought in paintings on elephants and went on a walk and took

pledge to conserve the species along with the Hon’ble Minister EF&CC. During this event, the Hon’ble Minister also released the (a) All India Elephant Census Report, 2017 (b) Agreed Points of Action on Trans-boundary conservation of elephants in India and Bangladesh (c) Elephant corridor document “Right of Passage” and (d) Launched the Gaj Yatra campaign by unveiling an art piece of elephant made of glass fibre and recycled materials. Ministry also has partnered with Wildlife Trust of India for the Gaj Yatra Campaign.

## Project Tiger / National Tiger Conservation Authority (NTCA)

### 1. Commencement of All India Tiger Estimation 2018

#### a. New feature

- Spatially Explicit Capture Recapture (SECR) models in a joint likelihood model shall be employed like the last estimation cycle to ensure statistical comparability.
- M-STripES: The M-STripES platform is being extended to all tiger reserves in Phase II, training for which has been completed for all regions at the Bandipur, Kanha, Similipal and Corbett Tiger Reserves. A special training for computer technicians has already been done at the Wildlife Institute of India, Dehradun in the last week of September, 2017. The said platform is being utilised for the All India Tiger Estimation 2018.



b. A meeting of Chief Wildlife Wardens of Tiger Range States and Field Directors of Tiger Reserves was held on 30.10.2017,

which was chaired by Secretary (EF&CC) and DGF & SS, MoEF&CC.

c. Training of Trainers

Sl. No.	Date	Location	States covered
1.	December 5-7, 2017	Pench Tiger Reserve, Maharashtra	Maharashtra only
2.	December 5-7, 2017	Bandipur Tiger Reserve, Karnataka Mudumalai Tiger Reserve, Tamil Nadu	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana and Goa
3.	December 19-21, 2017	Kanha Tiger Reserve, Madhya Pradesh	Madhya Pradesh, Chhattisgarh, Odisha, Rajasthan and Jharkhand
4.	December 26-28, 2017	Valmiki Tiger Reserve, Bihar	Bihar, Uttar Pradesh and Uttarakhand
5.	January 8-10, 2018	Kaziranga Tiger Reserve, Assam	Assam, Arunachal Pradesh, Buxa (West Bengal), Mizoram, Nagaland and Manipur
6.	January 15-17, 2018	Sundarbans Tiger Reserve, West Bengal	Sundarbans Tiger Reserve (West Bengal)

- Commencement of MEETR : Independent assessment of Tiger Reserves based on IUCN criteria, as adapted to our conditions is done once in four years. The fourth round of MEE has commenced and analysis of team findings shall be finalised in 2018. Evaluation work of twenty five (25) tiger reserves has already been completed.
- Economic Valuation of six tiger reserves done in collaboration with the Indian Institute of Forest Management. Similar exercise is ongoing in 10 more tiger reserves.

- Tiger re-introduction has been approved in-principle at the Satkosia Tiger Reserve, Odisha, Buxa Tiger Reserve, West Bengal and the Mukundra Hills Tiger Reserve, Rajasthan.
- A trainer drone has been fabricated along with preparation of a trainer manual for field staff. Project titled 'E-Bird Technology for Tiger Conservation : Development and Integration of Unmanned Aerial Vehicles as a Surveillance and Monitoring tool for Protection of Tiger and Capacity Building of Frontline Staff' has commenced for the

following 13 tiger reserves, viz. Corbett (Uttarakhand), Dudhwa (Uttar Pradesh), Ranthambhore (Rajasthan), Panna (Madhya Pradesh), Melghat (Maharashtra), Similipal (Odisha), Nagarjunasagar-Srisailem (Andhra Pradesh & Telangana), Bandipur (Karnataka), Sathyamangalam (Tamil Nadu), Parambikulam (Kerala), Kaziranga (Assam), Namdapha (Arunachal Pradesh), Sundarbans (West Bengal).

6. The NTCA has issued generic guidelines, for preparing a security plan which inter alia covers the issue of electrocution. Further, an advisory has been issued in context of electrocution by this Authority which recommends exploring solar fencing.
7. M-STripES : Steps taken for modernizing the infrastructure and field protection, besides launching 'Monitoring system for Tigers' Intensive Protection and Ecological

Status (M-STripES)' for effective field patrolling and monitoring.

8. CAITS : To assess status of tiger bearing areas outside tiger reserves, the CAITS (Conservation Assured|Tiger Standards) framework is being used, which helps to identify inadequacies in management interventions in such areas so that gaps can be addressed through appropriate strategies.
9. Cooperation on tiger conservation with Cambodia: Expert Committee Meeting for Tiger Re-introduction was held in Cambodia from 25th September to 28th September, 2017.
10. Indo-Nepal bilateral: India has a bilateral understanding with Nepal on controlling trans-boundary illegal trade in wildlife and conservation, apart from a protocol on tiger conservation with China.
11. Tiger Mortality : (as reported by States)

Year	Natural and other causes	Unnatural (poaching / seizure)	Unnatural (not poaching)	Cases under scrutiny Total
2013	29	22	2	1568
2014	40	19	7	1379
2015	45	21	5	1081
2016	50	38	5	29122
2017	20	27	2	66115
2018	0	1	0	45

## Animal Welfare

The mandate of the Animal Welfare Division is to prevent the infliction of unnecessary pain or

suffering on animals, in terms of the provision of the Prevention of Cruelty to Animals (PCA) Act, 1960.





**Animal Welfare General- Animal Welfare Board of India (AWBI):** General Animal Welfare covers the welfare of individual animals, mainly domesticated animals, as also wild animals in captivity, through Animal Welfare Board of India (AWBI), Chennai, Tamil Nadu.

AWBI is a statutory body established under Section 4 of the Prevention of Cruelty to Animals Act, 1960, with head quarters at Chennai. The Board is reconstituted once in three years and the present board was reconstituted w.e.f. 01.03.2017.

Its basic mandate is to advise the Government on animal welfare issues, and create awareness in animal welfare and to implement the regular schemes of AWBI and also the Central Sector Schemes for the welfare of animals.

The following Central Sector schemes are being implemented by the Animal Welfare Board of India:-

- a. AWBI Plan Scheme
- b. Scheme for Shelter Houses for looking after the animals.
- c. Scheme for Birth Control and Immunization of Stray Dogs
- d. Scheme for Provision of Ambulance Services to Animals in Distress.
- e. Scheme for Relief to Animals during Natural Calamities and Unforeseen Circumstances.

**Animal Welfare – Experiments on Animals:**

**Committee for Purpose of Control and Supervision of Experiments on Animals (CPCSEA):**

The Committee for Purpose of Control and

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

Till dated 1697 establishments are registered with CPCSEA (upto 21.11.2016).

**Animal Welfare – Education:**

**National Institute of Animal Welfare (NIAW):** The National Institute of Animal Welfare (NIAW) has been set up as a subordinate office of the Ministry of Environment, Forest and Climate Change with the objective to impart training and education on diversified subjects in animal welfare including animal management, behavior and ethics etc.

The institute has been operational since January, 2006.

A Memorandum of Agreement for Operations and Management of Academic Activities of NIAW, Ballabgarh, Haryana have been signed between NIAW and JNU with a view to propagate the wellbeing of the animals Nationwide and also to create professionally competent manpower to occupy various posts in zoos, municipality, slaughterhouses and veterinary hospitals.

**Activities undertaken:**

## Animal Welfare Board of India

Free Mobile Animal Clinic: The Board is providing free, on the spot veterinary treatment to sick and injured animals belonging to poor people through its Mobile Animal Clinic (MAC) programme operating

from the Headquarters at Chennai. During the year 2017-18,- 432 animals were treated / rescued by AWBI Mobile Clinic in Chennai.

Humane Education: During the year 2017-18, the Board conducted the following humane education training programmes:-

Animal Welfare - Hawo Training Programme

Sl.No.	Year	Location where training was imparted	Category of trainees whether students/Social workers/ Govt. Employees/ others (please specify)	Duration of the training
1	2017-18	Mumbai	HAWO training for AW activists	5.8.17 to 6.8.17
2	2017-18	Bengaluru (proposed)	HAWO training for AW activists	24.11.17 to 26.11.17

Awareness Rallies Conducted During World Animal Day Week: The Animal Welfare Board of India has organized rallies to create kindness and compassion with the co-ordination of Schools in Chennai and Karuna International, Chennai under Humane Education programme during the World Animal Day in 2017-18 on 4th October, 2017. The purpose of this rally is to create awareness On Peace, Karuna, Non Violence, Stopping Hinsa to all forms of life and also create an awareness on "Swachh Bharath" So that diseases like chicken quinia, dengue and malaria spread by mosquitoes could be eradicated. Various cultural programs like dance, drama, speech were also conducted to inculcate the value of Karuna.

a. The Board is implementing the Humane education programme through Karuna International, Chennai and C.P.R. Environmental Education Centre (CPREEC), Chennai throughout the Country.

b. The Board will be conducting the Animal Welfare Laws Sensitization training programme in the Judicial Academies of the States/UTs in the year 2017-18. Wherein a workshop will be organized for sensitization of the Judges and Prosecution Officers on Animal Protection Laws and Animal Welfare Laws.

**Registration of Performing Animals:** Under Rule 3 of the Performing Animals (Registration) Rules, 2001, the Board is the prescribed authority to issue registration certificates. During the year viz. 2017-18 (upto 17.11.17) 1016 Films/Ad films etc. were granted NOC and 844 Films/Ad films etc. have been granted pre-shoot permission. Registration Certificates for using animals in their films.

Issue of HAWOId Card: A total of 154 Hony. Animal Welfare Officers (HAWOs) were nominated to carry out animal welfare



activities and awareness on animal welfare.

Issue of Colony Animal Care Taker ID: Board has issued 1156 colony animal care taker ID to the citizens of the Country to carry out the fundamental duties of the citizen as prescribed under the Constitution of India.

Publications of AWBI: The Board brings out publications like Animal Citizen (English), Jeev Sarathi (Hindi) and AWBI monthly Newsletter (English/Hindi) and other booklets/Rules pertaining to Animal Welfare.

Cruelty Matters and Action Taken: The Board has received 100 complaints regarding cruelty to animals from various parts of the country upto 17th November, 2017 and the same was informed to the concerned State Governments and District Collectors/Magistrates/District Superintendent of police for taking suitable action.

#### **CPCSEA:**

- Registration of 38 establishments and constitutions of their Institutional Animals Ethics Committees (IAECs).
- 142 Research Protocols on large animals approved.
- 8 Large Animal House Facilities registered.
- Registration of 257 establishments renewed and Institutional Animals Ethics Committees (IAECs) of 257 establishments reconstituted.

#### **Progress/Achievements:**

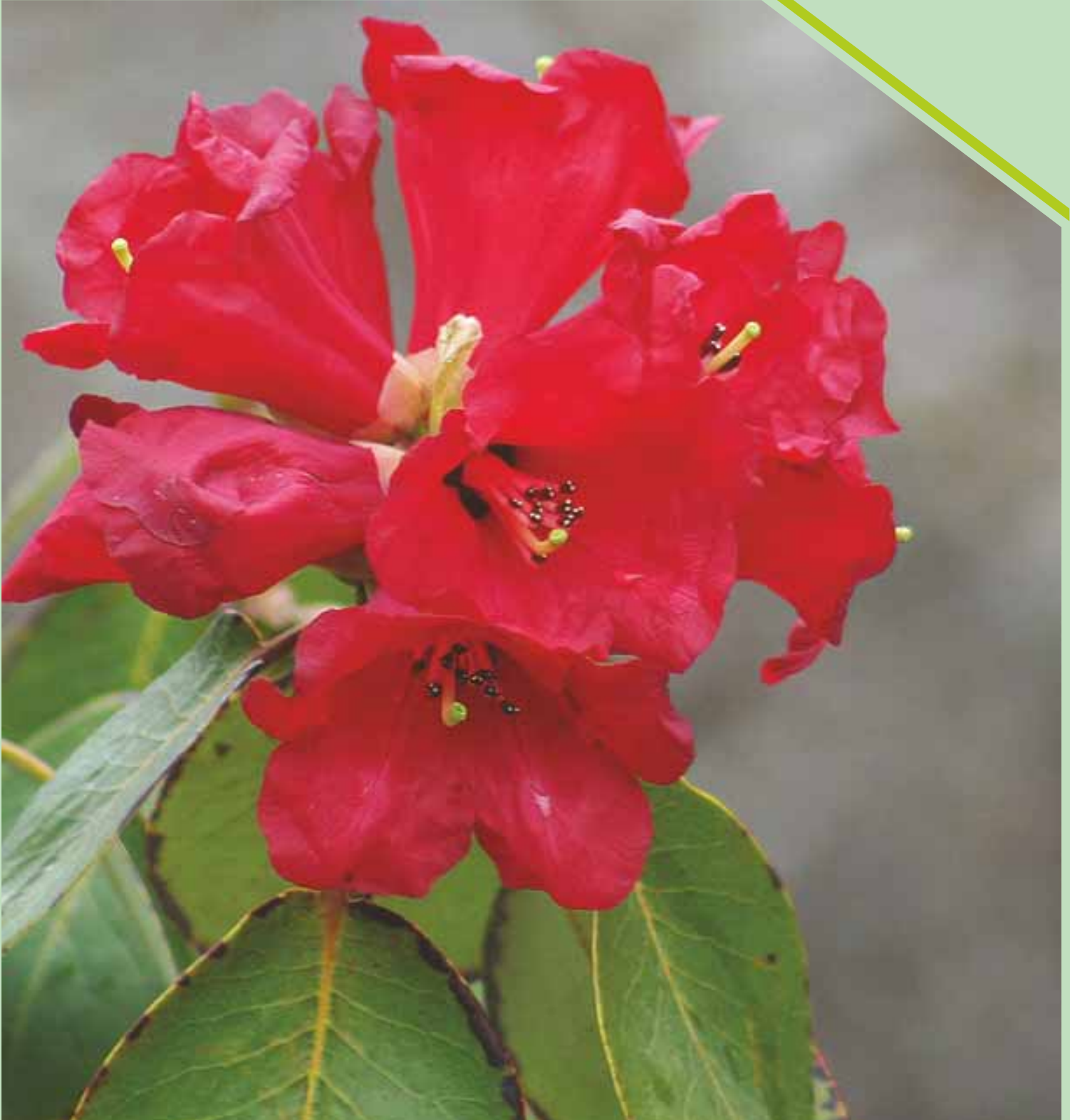
- In order to timely and transparent disposal of work of CPCSEA, the Website of CPCSEA was launched on 24th April, 2015 by the MEF&CC on the occasion of 'World Laboratory Animals Day'. The process of Renewal of Registration/ Reconstitution of

IAEC, Revision of IAEC, Submission of Minutes of IAEC meetings, Submission of Annual Inspection Reports, Submission of Research Protocols and Amendment of registration with CPCSEA has been made "live" on the Website of CPCSEA which has led to transparent, fast and smooth processing of the cases.

- In order to ensure smooth functioning of Website of CPCSEA, 1600 establishments and 1051 nominees of CPCSEA have been communicated along-with login details for online processes of CPCSEA.
- 1 Training programmes for selection of Nominees of CPCSEA conducted at Ganga Auditorium, Indira Paryavaran Bhawan, New Delhi. 83 candidates were trained before their induction into the IAECs of various establishments.
- Academic activities of NIAW were transferred to JNU with a MoA for the period of 5 Years. A Joint Coordination Committee was constituted by Hon'ble Secretary, MoEF&CC to look after the academic activities at NIAW. A total 6 meetings were held at MoEF&CC chaired by JS (AW). JNU was supposed to resume the trainings from December 2017.
- NIAW with its office staff are working for all administrative work. Maintenance work of campus is awarded to CPWD (Civil, Electrical and Horticulture) for the repair and maintenance of building.
- NIAW have organized and celebrated Swachh Bharat Pakhwada, world Environment Day, Yoga Divas and Swachh Bharat Mission and the other regular activities decided by Ministry.

# Environmental Impact Assessment

**03**  
CHAPTER







## 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 428 projects (between April 2017 to December, 2017). The sector-wise list of environmental clearances issued to the projects by the Ministry is given in the Fig.1 and the graphical representation of EC granted for category 'A' projects in current financial year and last 4 years in depicted in the Fig.2.



Fig. 1 - Environmental Clearance (April 2017 - December 2017) Total - 428

**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. Eight SEIAA/SEAC have been constituted in 2017.

**Post Project Monitoring of Environment Clearance Conditions:** Clearances under EIA Notification, 2006 are granted by MoEFCC for Category 'A' projects and by State Level Impact Assessment Authorities (SEIAAs) / UT IAAs for Category 'B' projects and District Level Impact Assessment Authority (DEIAA) for mining lease up to 5 ha. Similarly, clearances under CRZ Notification, 2011 are also granted by MoEFCC 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:

- I. 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
- II. 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 prerequisite 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.

#### **Achievements made during the year:**

- Notified the procedure to appraise / approve projects which started / expanded without prior EC, as a onetime measure.
- A separate Expert Appraisal Committee was

formed under section 3(3) of Environment (Protection) Act, 1986 for expeditions appraisal of the proposal involving violation of EIA Notification.

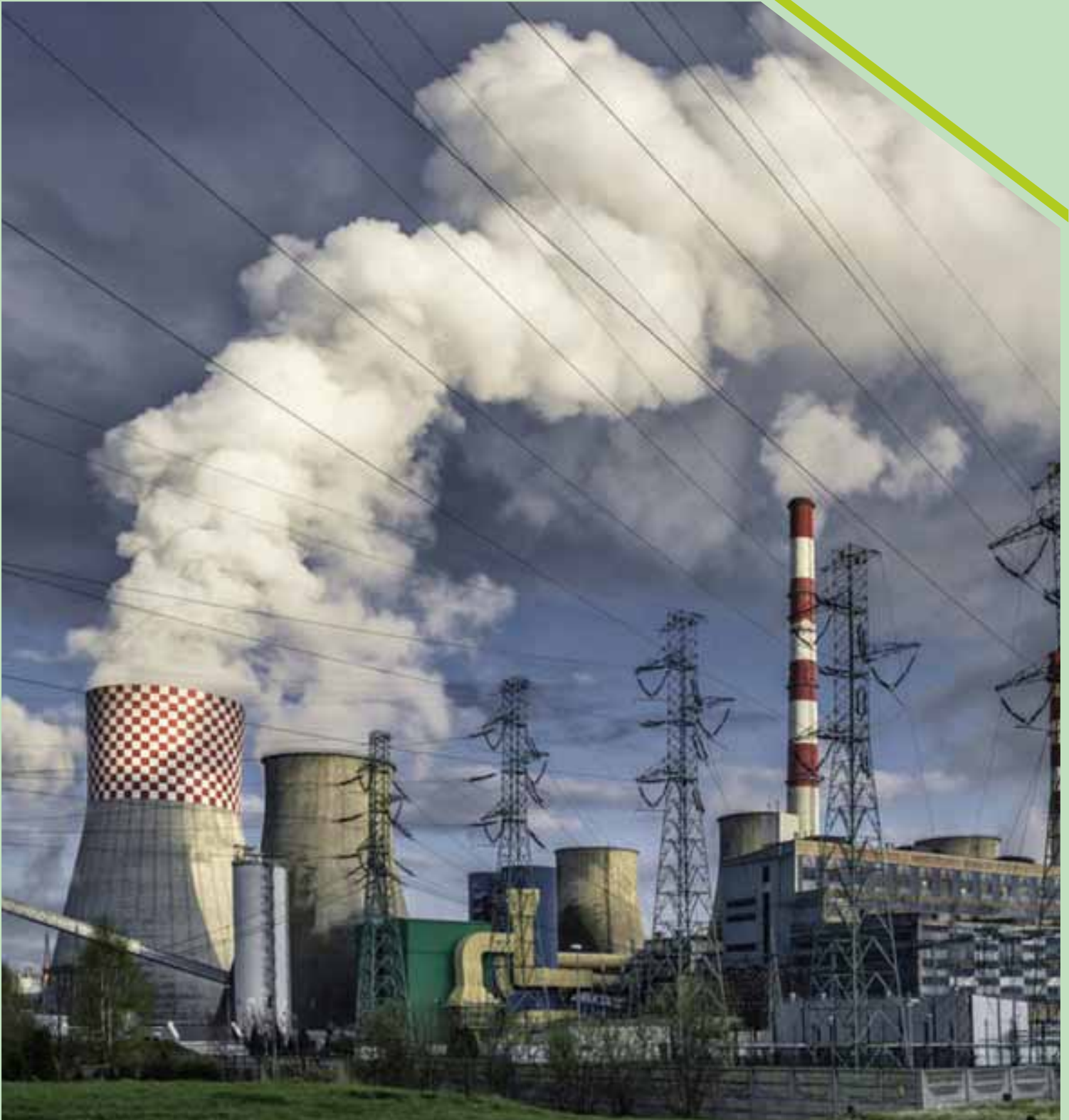
- A draft Notification for further empowerment of SEIAA / SEAC (State level) and DEIAA / DEAC (District level) was issued vide S.O. 3933 (E) dated 19th December, 2017.
- Clarification on non-applicability of Environment Impact Assessment Notification, 2006 in Solar Photo Voltaic (PV) Power project was given on 7th July, 2017 in order to promote the solar power projects in the country.
- An amendment to CRZ Notification, 2011 vide Notification G.S.R. 1227 (E) dated 06.10.2017 was issued regarding manual mining of atomic minerals in the intertidal zone.
- National Coastal Zone Management Authority (NCZMA) constituted vide S.O. 3266 (E) dated 06.10.2017 for protecting and improving the quality of the coastal environment and preventing, abating and controlling environmental pollution in the coastal areas.

#### **Implementing organisations along with details of responsibilities:**

The State Level Environment Impact Assessment Authorities (SEIAAs) have been constituted under the Environment (Protection) Act 1986 to appraise and accord environmental clearance to the projects/activities requiring prior environment clearance, which have been categorized on Category 'B' projects in the schedule under the EIA Notification 2006.

# Control of Pollution

**04**  
CHAPTER







## Control of Pollution

### Air Pollution

Rising issue of air pollution has increasingly been becoming a serious concern, particularly in metro cities. A large number of cities and towns do not meet the standards for pollutants specifically for particulate matter. In a few cities including Delhi, the ambient particulate matter concentrations are much above the standards i.e. three to four times or even higher. 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. The major impact is highlighted with reference to health of people. As per the available data for Delhi and NCR for last five years, Particulate Matter (PM10 and PM2.5) concentrations are the major concern for the entire area, however a few violations are observed in NO<sub>2</sub> concentrations in Delhi, Meerut and Faridabad. The concentration of SO<sub>2</sub> is within the standard limit at all the locations in all the last five years. PM10 are inhalable coarse particles, which are particles with a diameter between 2.5 and 10 micrometers ( $\mu\text{m}$ ) and PM2.5 are fine particles with a diameter of 2.5  $\mu\text{m}$  or less.

### Air Pollution and Health

I. Generally, for young and healthy people, moderate air pollution levels are unlikely to have any serious short term effects. However, elevated levels and/or long term

exposure to air pollution can lead to symptoms and conditions affecting human health. This mainly affects the respiratory and inflammatory systems, but can also lead to more serious conditions such as heart disease. People with lung or heart conditions may be more susceptible to the effects of air pollution.

- II. With several international reports about impact of air pollution on health correlating with diseases and death in India, the issue has assumed greater prominence.
- III. 'Global Burden of Disease' estimates for 2017 that early deaths related to PM<sub>2.5</sub> in India are the second highest in the world and ozone related deaths, are the highest in the world. The assumptions on which the model is based are not clear. These numbers are not validated for Indian conditions and there are no conclusive data available to establish direct correlation of death exclusively with air pollution. Health effects of air pollution are cumulative manifestation of factors which include food habits, occupational habits, socio-economic status, medical history, immunity, heredity etc. of the individuals. Air pollution is one of the triggering factors for respiratory associated ailments and diseases and it is acknowledged that higher the level of air pollution higher is the risk to lungs in a given area. Further in Delhi ozone levels are within the permissible levels; therefore, the estimate of higher number of ozone deaths referred is not clear.

- IV. With focus on environmental health issues, MoEF&CC has constituted a high level Apex Committee and a Working Group under the joint chairmanship of ICMR and the Ministry to identify thrust areas in environment health and to evaluate the related projects. In line with recommendation of Working Group, our Ministry in coordination with M/o Health and ICMR has already initiated action towards study on National Environmental Health Profile, with emphasis on impact of air pollution on health.
- V. ICMR has initiated a project titled “Effect of Air Pollution on Acute Respiratory Symptom in Delhi: A Multicity Study” with effect from June 2017 at 5 centres viz AIIMS-Pulmonary Medicine Department, AIIMS-Paediatric Department, Vallabhai Patel Chest Institute, Kalawati Saran Children’s Hospital and National Institute of Tuberculosis and Respiratory Diseases for a period of 1 year.
- VI. ICMR- National Institute for Research in Environmental Health (NIREH), Bhopal has recently initiated a three year duration study entitled “Aberrant circulating epigenomic signatures: Development and validation of minimal-invasive biomarkers for trans-generational monitoring of air pollution associated cancers” in collaboration with IIT, Kharagpur to develop novel biomarkers bearing epigenetic signatures, for lung cancer.

**Sources for Air pollution in Delhi NCR:** Various

studies conducted to identify the reasons for rise in pollution in country including NCR of Delhi specially during winter months. A study as ‘Comprehensive Study on Air Pollution and Green House Gases in Delhi, 2016’ was conducted by Indian Institute of Technology, Kanpur to identify major air pollution sources in NCT of Delhi, their contributions to ambient air pollution levels and develop an air pollution control plan. The study confirms that Particulate Matter is the main source of pollution and levels of PM10 and PM2.5 are 4-7 times higher than National Ambient Air Quality Standards (NAAQS) in summer and winter months. Based on the air quality measurements in summer and winter months, it is inferred that the contribution of PM10 and PM2.5 from different sources is different in summer and winter. Sources of pollution during winter include secondary particles (25 - 30%), vehicles (20 - 25%), biomass burning (17 – 26%), municipal solid waste burning (9 - 8%) and to a lesser extent soil and road dust. Sources of pollution during summer include, coal and fly ash (37 - 26%), soil and road dust (26 – 27%), secondary particles (10 - 15%), biomass burning (7 - 12%), vehicles (6 – 9%) and municipal solid waste burning (8–7%).

### Initiatives on Air Pollution Mitigation:

- I. National Ambient Air Quality Standards envisaging 12 pollutants have been notified under EPA, 1986 and 115 emission/effluent standards for 104 different sectors of industries, besides 32 general standards for



- ambient air have also been notified.
- II. Government is executing a nation-wide programme of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). The network consists of Six hundred and Ninety-One (691) manual operating stations covering Three Hundred and three (303) cities/towns in twenty-nine (29) states and four (6) Union Territories of the country. In addition, there are 86 real-time Continuous Ambient Air Quality Monitoring stations (CAAQMS) in 57 cities. Delhi has 10 Manual Stations and 18 CAAQMS. 20 additional CAAQMS are at various stages of installation in Delhi.
  - III. With reference to Vehicular pollution the steps taken include introduction of cleaner / alternate fuels like gaseous fuel (CNG, LPG etc.), ethanol blending, universalization of BS-IV by 2017; leapfrogging from BS-IV to BS-VI fuel standards by 1st April, 2020; ongoing promotion of public transport network of metro, buses, e-rickshaws and promotion of carpooling, streamlining granting of Pollution Under Control Certificate, lane discipline, vehicle maintenance etc.
  - IV. National Air Quality index (AQI) was launched by the Prime Minister in April, 2015 starting with 14 cities and now extended to 34 cities.
  - V. A Graded Response Action Plan for control of air pollution in Delhi and NCR region has been notified. This plan specifies actions required for controlling particulate matter (PM emissions from various sources and prevent PM10 and PM2.5 levels to go beyond 'moderate' national Air Quality Index (AQI) category. The measures are cumulative. Emergency and Severe levels include cumulatively all other measures listed in the lower levels of AQI including Very Poor, Poor and Moderate. Actions listed in the Poor to Moderate category need to be implemented though out the year.
  - VI. Central Pollution Control Board (CPCB) has issued a comprehensive set of directions under section 18 (1) (b) of Air (Prevention and Control of Pollution) Act, 1986 for implementation of 42 measures to mitigate air pollution in major cities including Delhi and NCR comprising of action points to counter air pollution in major cities which include control and mitigation measures related to vehicular emissions, re-suspension of road dust and other fugitive emissions, bio-mass/municipal solid waste burning, industrial pollution, construction and demolition activities, and other general steps.
  - VII. In order to involve people in the effort, Government had launched a campaign called 'Harit Diwali and Swasth Diwali' during September 2017 involving over 2000 schools in Delhi and over two lakh schools in the country. The Government had also organized a Mini Marathon for 'Swachh Hawa for Swachh and Swasth

Bharat' on 15th October 2017 at India Gate in which nearly 15,000 school children had participated.

VIII. Regular co-ordination meetings are held in the Ministry at official and ministerial level with Delhi and other State Governments to avoid the emergency situation. In this regard several meetings have been held this year under the chairmanship of Hon'ble Minister for Environment Forest and Climate Change and Secretary (EF&CC) involving Environment Minister of the States and Senior State Functionaries including Chief Ministers, Ministers, Chief Secretaries and Additional Chief Secretaries.

IX. CPCB had taken a number of Proactive steps to help improve ground implementation

- 40 CPCB teams deployed for ground feedback on air polluting activities in Delhi –September 01, 2017 onwards
  - Field visit to four pollution hotspots (Anand Vihar, ITO, Punjabi Bagh and DTU) and suggested interventions – July 2017
  - On the spot reporting to DPCC, and weekly summary reports to Delhi Govt.

X. During air pollution emergency period from 7.11.2017 to 14.11.2017 and measures like ban on construction, sprinkling of water, ban on entry of truck etc. which are there under GRAP were implemented.

XI. A High Level Task Force (HLTF) headed by Principal Secretary to PM has been

constituted by the government for management of air pollution in Delhi and NCR. First meeting of Task Force was held on 4th December 2017. On the basis of direction of the Task Force, Sub-Committee of High Level Task Force for Prevention of Stubble Burning in Haryana, Uttar Pradesh and Punjab has been constituted and report has been submitted for consideration by the HLTF. The Task Force has proposed a draft Air Action Plan on Abatement of Air Pollution in the Delhi National Capital Region in which time bound activities have been outlined. This has been put in the public domain for suggestions/comments from citizens and experts for possible refinements.

Outcome of Initiatives in Delhi: The air quality has improved since the episodic high pollution incidence of November 07-14, 2017. Further, overall the improvement has been observed this year in terms of less numbers of 'severe', 'very poor' and poor days and more number of good, satisfactory and moderate AQI days in Delhi as compared to last year. It may be noted that the number of good, moderate and satisfactory AQI days in 2017 were 151 compared to 109 days in 2016. Similarly, the number of poor, very poor and severe AQI days have shown a drop in the current year as compared to last year: 181 in 2017 against 214 in 2016.

**Noise Pollution:** As a follow-up of Section 5.2.8 (IV) of National Environmental Policy (NEP)-2006, ambient noise has been included as a





regular parameter for monitoring in specified urban areas. Protocol for National Ambient Noise Monitoring Network Programme has been prepared and circulated to State Pollution Control Boards.

Central Pollution Control Board in association with State Pollution Control Boards has established Real Time National Ambient Noise Monitoring Network in 07 metropolitan cities and installed 70 no. of Noise Monitoring System in Mumbai, Delhi, Kolkata, Chennai, Bangalore, Lucknow and Hyderabad (Ten stations in each).

The average level of noise pollution in respect of seven metro cities of the country during last three years is provided in Table. The analysis of data indicates fluctuating trend in the noise levels. During day time, Lucknow recorded the maximum sound level followed by Kolkata, Delhi and Mumbai. Similarly, during night time maximum sound level observed at Chennai followed by Lucknow, Kolkata and Mumbai.

The steps taken to reduce noise pollution inter alia include advisories for noise monitoring on the occasion of Diwali; prohibition of the use of fireworks between 10.00 p.m. and 06.00 a.m.; publicity regarding the ill effects of fire-crackers, sensitisation of students through course curriculum besides general awareness building of public at large to avoid bursting of fire-crackers; and issuance of directions under Section 5 of Environment (Protection) Act, 1986 and under section 18 (1) (b) of Air (Prevention and Control of Pollution) Act, 1981. The noise emission standards related to equipment(s) are prescribed in Schedule VI of

the Environment (Protection) Rules, 1986.

Scheme of Assistance for Abatement of Pollution: The scheme of Assistance for Abatement of Pollution was conceptualized in 1992 during the 7th Five-Year Plan with the objective inter alia to strengthen the CPCB and SPCBs/PCCs for enforcing statutory provisions for pollution abatement. The scheme is a part of a centrally sponsored umbrella scheme of 'Pollution Abatement'. The scheme of assistance for pollution abatement comprise of sub-components are Grants-in-Aid-General; Grants for creation of Capital Assets; Environment Health Cell (EHC) & Trade and Environment (PL) including North Eastern Region Grants-in-Aid-General and North Eastern Region Grants for creation of Capital Assets. The scheme had an allocation of Rs 45 crore in the XI Five Year Plan and Rs. 60 Crore in the XII FYP. The Scheme provides 100 % grant to SPCBs/PCCs, Governmental organizations.

Under this Scheme the Grants are provided to the State Pollution Control Boards/UT Pollution Control Committees, Environment Departments of States/UTs, Central/State Research Institutes, and other government agencies/organizations with the aim of strengthening their technical capabilities to achieve the objectives of the Policy Statement. Assistance is also provided to North Eastern Pollution Control Boards & Pollution Control Committees as salary support for the technical staff. In addition, support is also extended for undertaking projects for Abatement of Pollution.

During this year (2017-18), an allocation of Rs.5.20 crore (including Rs. 1.00 Crore for NE Region) in the BE was made for providing financial assistance to the on-going/new projects. The assistance has been extended to two State Pollution Control Boards/ Pollution Control Committees and one institutes for Environmental Health in the current financial year. A Grant-in-Aid to was made to Centre for Science and Environment for conducting training programme for environmental regulators during this year.

### Scheme of Common Effluent Treatment Plants (CETPs)

- The concept of the Common Effluent Treatment Plants (CETPs) arose in order to make a co-operative movement for pollution control. The main objective of the CETPs is to reduce the treatment cost to be borne by an individual member unit to a minimum while protecting the environment to a maximum. Wastewater treatment and water conservation are the prime objectives of the CETP. The concept of CETPs was envisaged to treat the effluent emanating from the clusters of compatible small - scale industries. It was also envisaged that burden of various Government authorities working for controlling pollution and monitoring of water pollution could be reduced once the CETPs are implemented and commissioned.
- A Centrally Sponsored Scheme (CSS) had been undertaken by the Government for enabling Small Scale Industries (SSI) to set up new and upgrade the existing Common Effluent Treatment Plants to cover all the States in the country. The CSS of CETPs had been revised by the Ministry since 2012 with the following salient features:
  - a) The Central subsidy has been enhanced from 25% to 50% of the project cost.
  - b) All the three levels of treatment, primary, secondary and tertiary are to be covered for assistance. Progressive technologies like Zero Liquid Discharge will also be considered for assistance, subject to a ceiling.
  - c) The management of the CETP is to be entrusted to a Special Purpose Vehicle registered under an appropriate statute.
  - d) Performance guarantee at full design load is to be ensured upfront.
- However, after the evaluation of the Plan Scheme of MoEF&CC in 2016-17, It was decided to discontinue CETP Scheme after funding support to the existing on-going projects.
- During this year (2017-18), an allocation of Rs.14.00 Crore in the BE was made for providing financial assistance to the on-going CETP projects at Ludhiana Palsana & Pali.

**Control of Pollution- Development of Environmental Standards:** The Ministry of Environment, Forest and Climate Change (MoEF&CC) formulates and notifies standards for emission or discharge of environmental pollutants viz. Air pollutants, water pollutants



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

The standards for any industrial process / operation recommended by Central Pollution Control Board (CPCB) are subjected to stakeholder consultation including general public. The comments are compiled and technically examined by CPCB and change, if any, incorporated. The modified standards are placed before the 'Expert Committee (EC)' of MoEF&CC for approval. The EC of MoEF&CC comprises of representatives from industry associations, subject experts, and concerned Ministries of the industrial sectors, besides the officials of MoEF&CC and CPCB. The EC recommended standards for approval and legal vetting are published in Gazette of India. During the year, Standards in respect of following category of Industries have been notified:

**Sewage Treatment Plants (STPPs) Effluent discharge Standards Gazette Notification G.S.R. 1265(E) dated 13/10/2017:** The issue has gained significant because of the stress of water bodies which are getting increasing

polluted and may have severe repercussion in maintain the quality of environment in the country. There is not specific standard related to Sewage Treatment Plants (STPs) currently and effluent standard are governed by general standard including marine discharge of environment pollutant, which do not lay down any norm with respect to fecal coliform. In the absent of such standard, the treated water may not meet the required norms with respect to drinking water or bathing. The Ministry has notified environment standard for STPs for effluent discharge standard (applicable to all mode of disposal) vide No.G.S.R. 1265(E) dated 13/10/2017. Before finalization of the aforesaid notification the Ministry has taken detail consultation with lined Ministries /Departments i.e. Ministry of Housing and Urban Affairs, National Mission for Clean Ganga, Central Public Health and Environmental Engineering Organisation (CPHEEO), Central Pollution Control Board (CPCB) and different stakeholders.

In the notified standard, the permitted pH range of treated effluent is 6.5 to 9.0. Bio-Chemical Demand (BOD) is '20' and '30' and Total Suspended solids (TSS) is <50 and <100 in Metro cities all State Capitals except in the state of Arunachal Pradesh, Assam, Manipur, Sikkim, Himachal Pradesh, Uttarakhand, Jammu and Kashmir, and Union territory of Andaman and Nicobar Islands, Dadar and Nagar Haveli, Daman and Diu, Lakshadweep and areas/regions other than these states respectively. Fecal Coliform (FC) standard is <1000 (Most Probable Number per 100

milliliter). These Standards shall apply to all STPs to be commissioned on or after the 1st June, 2019 and the old/Existing STPs shall achieve these standards within a period of five years from the date of publication of this notification in the Official Gazette. In case of discharge of treated effluent into sea, it shall be through proper marine outfall and the existing shore discharge shall be converted to marine outfall, and in case where the marine outfall provides a minimum initial dilution of 150 times at the point of discharge and a minimum dilution of 1500 times at a point 100 meters away from discharge point, then the existing norms shall apply as specified in the general discharge standards. Reuse/Recycling of treated effluent shall be encouraged and in case where part of the treated effluent is reused and recycled involving possibility of human contact, standards as specified above shall apply. Central Pollution Control Board/State Pollution Control Boards/Pollution Control Committees may issue more stringent norms taking account to local condition under section 5 of the Environmental (Protection) Act, 1986.

**Fertilizer Industry Environmental Standards Gazette Notification G.S.R. 1607 (E) dated 29/12/2017:** The MoEF&CC has notified revised environmental standards for effluent and emissions for Fertilizer Industries vide No. G.S.R. 1607(E) dated 29/12/2017. Before finalization of the aforesaid notification the Ministry has taken detail consultation with lined Ministries /Departments i.e. Ministry of Chemicals and Fertilizers, Central Pollution

Control Board (CPCB) and different stakeholders. The Ministry of Chemicals and Fertilizers has suggested more stringent norms in compared to proposed draft notification by MoEF&CC with respect to free ammonical nitrogen, Cyanide (CN), particulate matter and total Fluoride as Fluorine etc. In the notification effluent standards for Fertilizer Industry covers mainly for i) Straight Nitrogenous Fertilizer Plant/Ammonia (Urea Plant), Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers ii) Straight Phosphatic Fertilizer Plant. iii) Complex Fertilizer Plant and / or NP/NPK (N-Nitrogen, P-Phosphorus and K-Potassium and for Emission standards for i) Straight Nitrogenous i.e a) Ammonia Plant-Reformer and b) Urea Plant – Prilling Tower ii) Ammonium Nitrate/ Calcium Ammonium Nitrate/NPK plant, iii) Phosphatic Fertilizer Plants i.e. Phosphoric Acid Plants/ Rock grinding and Acidulation SSP Plants and iv) Nitric Acid Plant.

The Standards in respect of 18 other categories of industries such as Man Made Fibre Industry; Pulp and Paper Industry; Paint Industry; Brick Kiln Industry; Automobile Service Station, Bus Depot and Workshop; Fermentation Industry; Coffee Processing Industry; Iron and Steel Industry; Tannery Industry; Diesel Locomotive, Airport Noise Standards, Emission Standards for Boilers using industries for SO<sub>2</sub> and NO<sub>x</sub>, Emission Standards for Lime Kiln Industry, Glass Industry, Ceramic Industry, Foundry Industry, Reheating Furnace for SO<sub>2</sub> and NO<sub>x</sub> and Standards for Kerosene are under process/revision.





### **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 build-up monitoring systems. Environmental laboratory requires to be provided with all necessary instruments and equipment's 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 E (P) Act, 1986 the Central Government appoints Government Analyst(s) for carrying-out analysis of samples under E(P)Act, 1986. The Ministry has been recognizing of Environmental Laboratories and Government Analyst(s) under E (P) 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](http://www.moef.nic.in)). In order to recognize the laboratory, laboratory submitting their

application to the Ministry for consideration. These applications for recognition of laboratory are considered by an Expert Committee.

Six (06) Private and One (01) Govt. Laboratories have been recognised and Nineteen (19) private laboratories have been recommended for recognition under E (P) Act, 1986 during the year.

**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. Four (4) projects have been extended financial assistance to carry out studies of impact of pollution on human health.

### **Taj Protection Mission:**

- In pursuance of the Hon'ble Supreme Court's Order, projects for environmental protection of World Heritage Site of Taj Mahal were initiated and funded by the Ministry. The Planning Commission approved Rs.600 crore on a 50:50 cost sharing basis with the State Government to implement various schemes in the Taj Trapezium Zone for environmental protection of the Taj Mahal. In the first phase during the IX Five Year Plan, 10 Projects were approved by the Government and implemented by the State Government of Uttar Pradesh.
- At present, only a token of Rs. One Lakh is available under the scheme.
- The U.P Govt. was requested to submit

fresh proposals to seek provision of more funds during the XII FYP from the Planning Commission. However, till date no comprehensive proposal has been received from the Government of UP.

- The TTZ Authority has been extended up to 30.12.2018 to monitor progress of the implementation of various schemes for protection of the Taj Mahal and programmes for protection and improvement of the environment in the TTZ area.

**Central Pollution Control Board:** The Central Pollution Control Board (CPCB) performs functions as laid down under The Water (Prevention & Control of Pollution) Act, 1974, and The Air (Prevention and Control of Pollution) Act, 1981.

The Central Pollution Control Board has been playing a vital role in abatement and control of pollution in the country by generating environmental quality data, providing scientific information, formulating national policies and programmes, training and promoting awareness.

#### **Name of the Scheme/Programme:**

- Coordinating activities of State Pollution Control Boards/Pollution Control Committees for prevention & control of pollution;
- Development of industry specific national minimal effluent and emission standards and industry specific environmental guidelines and documents;
- Implementation of CREP Compliance of

Standards for major polluting industrial sectors,

- Action plans for improvement of environment in critically polluted areas/clusters and monitoring their implementation;
- Action plans for monitoring air quality in polluted cities;
- National water quality monitoring and publishing annual water quality reports;
- National ambient air quality monitoring and publishing annual air quality reports;
- National Ambient Noise Monitoring and publishing annual noise monitoring report.
- Carrying out and sponsoring research activities relevant to environmental protection;
- Publishing material relevant to environment protection.

Central Pollution Control Board (CPCB) is focusing on strengthening of ambient air quality monitoring network for assessment of air quality at national, regional and local level. NAMP stations operated through State pollution control Boards needs further strengthening to monitor all notified parameters for ambient air, besides emphasis is being given for establishment of Continuous Ambient Air Quality Monitoring Stations (CAAQM) in all major cities.

The manual water quality monitoring network is being expanded further, realizing the need for establishment of a network of real time water quality monitoring stations on river



Ganga to ensure that the water quality is maintained.

Efforts are being made for strengthening of the compliance mechanism, so that no untreated industrial effluent is discharged into the environment. Installation of online effluent and emission monitoring in polluting industry and data connectivity with SPCB/CPCB is a step towards self-monitoring and transparency.

Efforts are for improving the performance of existing sewage treatment plants (STPs) and adopting non-conventional technologies that are in synergy with the conventional methods for improving the water quality of river Ganga and its tributaries.

Initiatives are being taken for water conservation in Industries through process modification and adoption of state of art technology. Zero liquid discharge concepts shall be applied wherever possible to conserve the water and protect the environment.

Problem of Municipal Solid Waste and domestic sewage would be given utmost attention.

**National Water Quality Monitoring Programme:** Central Pollution Control Board (CPCB) in association with State Pollution Control Boards and Pollution Control Committees (SPCBs & PCCs) has established a water quality monitoring network. The network presently comprises of 3000 stations in 29 states and 6 union Territories. 2101 locations are monitored on monthly basis whereas 893 locations on half yearly basis and 6 locations on yearly basis. Time series data of water quality was analyzed periodically and

identified the issue of indiscriminate sewage discharge in 302 polluted stretches of rivers. Polluted river stretches throughout the country have been identified and concerned SPCBs have been requested for taking measures for restoration of water quality through identification of sources of pollution and interventions through treatment of municipal as well as industrial effluents.

**Interstate River Boundary Monitoring:** Water Quality Monitoring of Rivers at the Interstate Borders is carried out at 86 locations on 42 rivers on quarterly basis though few river locations are monitored once in a year. A detailed report on “Status of Water Quality of Rivers at Interstate Borders” already published under series IRBM/01/2015 and also posted on website of CPCB.

### **Real Time Water Quality Monitoring System (RTWQMS) On River Ganga and Yamuna:**

44 Real Time Water Quality Monitoring Stations (RTWQMS) have been established on river Ganga to assess the water quality.

02 RTWQMS have been installed on river Yamuna viz. Wazirabad and Okhla in Delhi to assess water quality of river Yamuna.

CPCB's Activities on Ganga Rejuvenation:

### **Activities executed under NGRBA Project are summarized as follows:**

- Compliance verification of Grossly Polluting Industries.
- Performance evaluation of Sewage

Treatment Plants.

- Intensive water quality monitoring in polluted stretches
- Periodic pollution assessment of major drains falling into River Ganga.
- Groundwater monitoring in adjacent districts of River Ganga.
- Installation of Real Time Water Quality Monitoring Stations (RTWQMS).

**Development of Standards for Treated Effluent of Sewage Treatment Plants:** Central Pollution Control Board (CPCB) carried out study on status of Municipal wastewater generation and treatment capacity in Metropolitan cities, Class I cities and Class II towns of India and published a document (CUPS/61/2005-06). CPCB reported during 2010-2011 that out of 38254 MLD of sewage generated by class I cities and class II towns, only 11787 MLD has been treated and thereby leaving huge gap between sewage generation and sewage treatment. CPCB, reassessed sewage generation and treatment capacity for Urban Population of India for the year 2015. The sewage generation estimated to be 62000 MLD approximately and sewage treatment capacity developed so far is only 23277 MLD from 816 STPs.

There are no specific standards for discharge of treated sewage into streams. So far, General Standards for Discharge of Environmental Pollutants into inland surface, public Sewers, land for irrigation, marine coastal areas under Schedule-VI of The Environment (Protection) Rules, 1986 have been used for design of STPs

and assessment of performance of STPs. General Standards does not account for coliform standards.

State Pollution Control Boards and Pollution Control Committee are also using General Standards for Discharge of Environmental Pollutants for granting consent to Sewage Treatment Plants and there are no specific standards for effluent of sewage treatment plants.

Standards for effluent of Sewage Treatment Plants are framed with respect to physio-chemical and bacteriological parameters and notified vide Notification dated 13th October 2017.

**National Ambient Air Quality Monitoring Programme:** CPCB is executing a nation-wide National Air Quality Monitoring Programme (NAMP). The ambient air quality monitoring network has 691 operating stations covering 303 cities/towns in 29 States and 6 Union Territories.

**Growth of Continuous Ambient Air Quality Monitoring Station (CAAQMS) & Air Quality index:** CPCB, SPCBs and PCCs are monitoring ambient air quality of different cities and publish real-time data in public domain for taking corrective measures in time. Presently about 90 Continuous Ambient Air Quality Monitoring stations (CAAQMS) are operating in the country.

In the beginning of the year, CPCB network had data connected from 58 stations in 35 cities spread over 13 States. National Air Quality Index, which combines the effect of all air

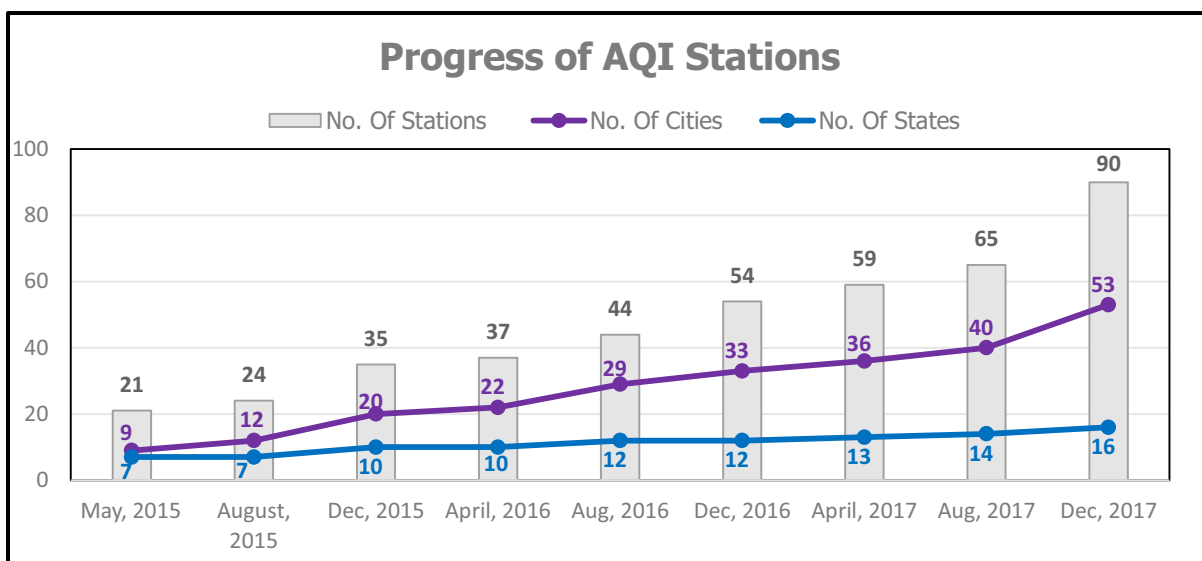
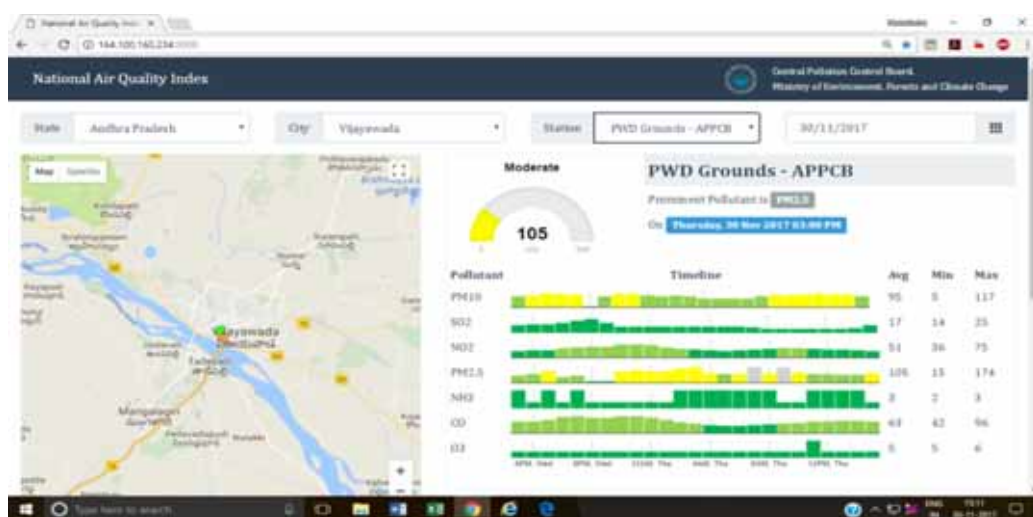




quality parameters and generates a single number, has been developed by CPCB. The National AQI communicates air quality in terms of one number and one color for general public. Air Quality Index (AQI), inaugurated by the Hon'ble Prime Minister of India, is being continuously published on a web portal 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 without human interference. 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 city. At present, this network has been expanded to include 90 stations located in 53 cities of 16 States.

AQI Bulletin containing the data for each city is published every day at 4:00 pm for further easy understanding of the citizens. The entire process of generating AQI values, publishing every hour, preparation of bulletin and



**Mobile APP 'SAMEER' for AQI display and Public Complaints:** An APP 'SAMEER' is developed and available for Android and iOS devices, to display of AQI at city and station level, AQI Bulletin. A Public Forum is available at the APP, which helps the public in submitting suggestions or complaints related to air pollution issues along with photos in support of complaint.

It also facilitates public to lodge their complaints regarding Air Pollution which automatically collects the locations and forward it to the respective agency for redressal.

**Air Quality Monitoring Network in Delhi and NCR:** Delhi is currently having 10 manual monitoring stations and 38 CAAQMS (6 CPCB, 8 IMD and 24 DPCC). The existing monitoring network in other states under NCR has 30 monitoring stations. There are 21 manual stations (2 Haryana, 10 Uttar Pradesh and 9 Rajasthan) and 9 CAAQM (4 Haryana, 3 Uttar Pradesh and 2 Rajasthan).

In the monitoring network expansion plan in NCR submitted to the Hon'ble Supreme Court 21 more CAAQM stations was proposed; whereas 28 (22 in Haryana and 6 in Uttar Pradesh) more manual monitoring stations are to be added soon. On completion of proposed network on ambient air quality monitoring in the region, a total of 117 monitoring stations in Delhi – NCR would be in place: 68 CAAQMS for online line real time data disseminations and 49 manual stations for trend analyses (total 117).

**Special air quality monitoring during**

**Deepawali 2016 and 2107:** With a view to study the impact of Deepawali festival CPCB conducted monitoring at selected location. Fireworks always add particulates and other criteria pollutants like SO<sub>2</sub> and NO<sub>2</sub> to air. As the ingredients in firecrackers have different elements and metals, these are instantaneously added to ambient air in the form of particulate (particularly in PM<sub>2.5</sub>) during Deepawali festivals. CPCB has performed detail analysis of metals elements in PM<sub>2.5</sub>.

With the reduction of fire cracking activities due to Hon'ble Court's direction for banning on sale, this year Deepawali was marked with less dust pollution. PM<sub>2.5</sub> was reduced by 39% compared to 2016 Deepawali day. The reduction of PM<sub>2.5</sub> was related to less fire cracking activities is further justified as the major signature elements were also found considerably reduced this year. Sulphur got reduced by 20%, Potassium by 30%, Ca, Cu, Zn, Sb by about 35-40%, Fe and Ba by 50% and Al and Cl<sub>2</sub> by 10%.

**Pollution in Delhi during 2016 and 2017:** It was observed in Delhi, the transitional phase towards winter is always critical due to lower mixing height, higher humidity on dry season, fall of ambient air temperature coupled with lower temperature difference between maximum and minimum, calm to low wind speed etc. The continuity of episode days in 2017 was more or less same as compared to 2016, however the meteorological conditions were much more critical in 2017, as compared to 2016. This may be seen the following table:



Comparison of Air Pollution Episode days in Delhi		
Parameters	2016 (October 30 - November 7)	2017 (November 7- November 12)
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	197 - 709	357 - 611
Mixing height (m)	146 - 618	336 - 479
Wind speed (m/s)	1.0 - 3.0	1.0 - 1.3
Temperature (oC)	22.9 - 26.1	21.6 - 23.6
Relative Humidity (%)	47.8 - 63.3	60.2 - 75.8

**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).

**Real-Time Emission & Effluent Monitoring Systems:** With the advancements made in technology of pollution monitoring, automation in instrumentation/ equipment, CPCB has planned to bring data in CPCB server through online measurements from industrial units for emissions and effluents discharged into the environment. This activity is started with highly polluting industries in 17 Categories of Industries and Grossly Polluting Industries located on the banks of River Ganga.

Presently 2266 industries under 17 Categories of industries and 744 GPI Industries have

installed Emission Monitoring Systems and Effluent Monitoring Systems and data is being transmitted continuously to CPCB and various SPCBs. The online data is being scrutinized and alerts are generated for respective industrial Unit Heads, officials looking after the specific sector/ category of industries at CPCB and SPCBs/PCCs. These alerts act as useful and timely information to act immediately to stop the identified pollution source within shortest possible time.

**E-Track for Industries:**

India E-Track Industries is an online portal and MIS System for GPI and 17 categories industries. In this portal there is provision to enter GPI and 17 categories industries data/information in numbers. There is also provision for update compliance and connectivity status of GPI and 17 categories Industries through MS Excel file.

## Progress/Achievements of Various Activities:

### Assessment of Pollution:

- Operation and maintenance of 691 manual Ambient Air Quality Monitoring Stations (AAQMS) covering 303 cities/towns in 29 States and 6 Union Territories.
- CPCB has developed a network of real time data from CAAQM stations being operated by CPCB, SPCBs and PCCs. This data is provided to all stake holders and being published in public domain for taking corrective measures in time. In the beginning of the year 2015, CPCB network has data connected from 27 stations in 10 cities spread in 06 states, has been expanded to total 40 stations located in 22 cities of 11 states.
- Operation of 3000 Water Quality Monitoring Stations (WQMS) at various aquatic resources. Time series data of water quality was analysed and identified the issue of sewage disposal in 302 river polluted stretches.
- 70 National Ambient Noise Monitoring Network (NANMN) stations have been installed spreading over 10 cities and data is being disseminated.

### Industrial Pollution Control

#### Development of Environmental Standards:

The Ministry of Environment, Forest & Climate Change (MoEF&CC) formulates and notifies standards for emission for discharge of

environmental pollutants viz. Air pollutants, water pollutants 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 all concerned stakeholders for the benefit of environment. The process is based on the best practices and techno-economic viability. The notification of standards also involves formulation of load based standards i.e., emission/discharge limits of pollutants per unit of product obtained/processes performed to encourage resource utilization efficiency and conservation aspects.

MoEF&CC has notified regulation on Lead Contents in House hold & Decorative Paints. The limit for lead has been fixed 90 ppm. As per Rule 7 of this notification, CPCB has developed the compliance and testing procedure in association with Central Power Research Institute (CPRI) and placed at CPCB website.

### Hazardous Substance Management (HSM)

The Hazardous Substances Management Division (HSMD) is the nodal point within the MoEF&CC for management of waste, hazardous substances and chemical emergencies. 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 human health and environment. To achieve the objectives of the





division, the Ministry initiated a review of the rules and in the year, 2016, comprehensively revised following waste management Rules under the provisions of Environment (Protection) Act, 1986 to introduce a fresh regulatory framework for sustainable and environmentally sound waste management:

**Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016:**

The Central Government in the Ministry of Environment Forest and Climate Change has notified the Hazardous and Other Wastes (Management and Transboundary Movement) Rules 2016 vide dated 4th April, 2016. The new Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 have incorporated Waste Management hierarchy in the sequence of priority of prevention, minimization, reuse, recycling, recovery, co-processing; and safe disposal. The provisions of the new Rules are in line with this Government's priority for Ease of Doing Business and Make in India, but with responsible concerns for sustainable development.

**Bio-Medical Waste Management Rules, 2016:**

Preceding the Bio Medical Waste Management Rules 1998, the Government has notified the new rule Bio-Medical Waste Management Rules, 2016 vide dated 28th March, 2016. The New Bio-Medical Waste Management Rules, 2016, apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio-medical waste in any form including include vaccination camps, blood donation camps, surgical camps or any other

healthcare activity; Under the new rules Phase-out the use of chlorinated plastic bags, gloves and blood bags within two years has been mandated; a new Bar-Code System for bags or containers containing bio-medical waste for disposal has been mandated under the new rules.

**Regulation of Polychlorinated Biphenyls Order, 2016:**

The Central Government in the Ministry of Environment Forest and Climate Change has issued a notification on Regulation of Polychlorinated Biphenyls (PCBs) Order, 2016 vide dated 6th April, 2016. As per notification, manufacture, import, use of PCBs, PCB contained equipment and PCB contaminated equipment is banned.

**Regulation on Lead contents in Household and Decorative Paints Rules, 2016:**

The Central Government in the Ministry of Environment Forest and Climate Change has issued a notification on Regulation on Lead contents in Household and Decorative Paints Rules, 2016 vide dated 1st November, 2016. The main purpose of the said notification is to prohibit of manufacture, trade, import and export of Household and Decorative Paints (hereinafter referred to as product) containing lead or lead compounds (calculated as lead metal) in excess of 90 parts per million (0.009 per cent.) of the weight of the total non-volatile content of the weight of the dried paints film.

**Progress/ Achievement/Activities undertaken:**

**Multilateral Environmental Agreements:** The MoEF&CC participated in the meetings of

Conference of Parties to the Basel, Rotterdam and Stockholm Conventions held during April 24-May 5, 2017 at Geneva, Switzerland.

- Under Stockholm Convention, India was able to seek specific exemptions for Short Chain Chlorinated Paraffins (in PVC, lubricants etc.) and Commercial decabromodiphenyl ether (in automobile spare parts and textile etc.) through a positive negotiation process. Further India was able to secure membership for Persistent Organic Pollutants Review Committee (POPRC) for the period of 2018-2022.
- Under Rotterdam Convention, India supported listing of Short Chain Chlorinated Paraffins, Trichlorfon, Tributyltin Compounds and Carbofuran, whereas, as per the approved country position, India was able to defend listing of Chrysotile Asbestos for Prior Informed Consent procedure.
- Under Basel Convention, India successfully intervened in various technical guidelines on waste management through submission of Conference Room Papers and positive negotiations. Further, India was able to secure position of Bureau member of Basel Convention for the period of 2017-2019.

The first meeting of the Conference of the Parties (COP 1) to the Minamata Convention on Mercury was convened from September 23-29, 2017 in Geneva, Switzerland. India participated in the meeting as an observer, but was able to protect its interest, particularly, in reference to

the guidance on BAT/BEP for emissions wherein India was able to amend the decision to reflect its dynamic nature and non-applicability of the guidance on certain type of coal.

During the meeting of Chemical Review Committee held during October 23-27, 2017 in Rome, Italy, MoEF&CC successfully defended the approved country position through technical interventions during the meeting. India was able to defend Triazophos, Hexazinone, Lambda cyhalothrin (CS and EC) and Atrazine.

During the meeting of POPs Review Committee held during October 17-20, 2017 in Rome, Italy, MoEF&CC was successful to amend the Draft Risk Management Evaluation documents for Dicofol and PFOA.

**Chemical Management:** Compliance and Testing Procedure for Measurement of Lead Content in Household and Decorative Paints were published on October 31, 2017 for effective implementation of Lead contents in Household and Decorative Paints Rules, 2016. The rules came into force on November 1, 2017.

The MoEF&CC has published draft rules on "Regulation of Persistent Organic Pollutants Rules, 2017" dated August 29, 2017 to regulate select POPs in India. The chemicals proposed to be regulated are (i) Chlordane, (ii) Hexabromobiphenyl, (iii) Hexabromodiphenyl ether and heptabromodiphenyl ether (commercial octa-BDE), (iv) Tetrabromodiphenyl ether and



pentabromodiphenyl ether (commercial penta-BDE), (v) Pentachlorobenzene, (vi) Hexabromocyclododecane, (vii) Hexachlorobutadine. This is one of the important step towards Ratification of newly listed POPs and thus towards implementation of obligations of Stockholm Convention. Various stakeholders across the country supported the draft notification. The notification is under finalization.

Hazard Analysis, Rapid Safety Audit and Off-site Emergency Plan of 35 major accident hazard units in the states of Tamil Nadu, Haryana, Jharkhand, West Bengal, Rajasthan, Bihar, Uttarakhand, Gujarat etc. have been finalized by this Ministry.

The capacity building of stakeholders for implementation of waste management Rules is being carried out in 68 cities which includes state capitals and million plus cities.

World Bank-aided project on Capacity Building for Industrial Pollution Management (CBIPMP)  
The World Bank aided Capacity Building and Industrial Pollution Management (CBIPM) project is being implemented by Government of India as Externally Aided Project (EAP) under the Hazardous Substance Management Scheme to help the Government to build capacity at the state and central level, and develop a framework to address the issues of remediation of contaminated sites in a comprehensive and systemic manner under an area-wide management approach. One of the components is National Programme for Rehabilitation of Polluted Sites (NPRPS), which

envisages formulation of Policy document encompassing legal, institutional and financial framework towards remediation of hazardous waste site falls under the purview of MoEF&CC. Under this component, following three studies have been conducted and completed:

- I. Inventory and Mapping of Probably Contaminated Sites in India by M/s COWI India Ltd;
- II. Development of Methodologies for NPRPS by M/s Grontmij Netherlands BV;
- III. Development of NPRPS by M/s Pricewaterhouse Cooper Ltd. (PWC).

**Under this component, following draft policy w.r.t. remediation of contaminated sites are under preparation:**

- I. Preparation of National Action Plan for Chemicals and development of Soil Standards. The likely date of completion (deadline) of the two components is 31st March, 2018

**Following pilot projects on remediation of contaminated sites are being undertaken:**

- I. **Containment and Closure of MSW Site at Kadapa, Andhra Pradesh** - Work has already started from March, 2016. Likely date of completion (deadline) is July, 2017. Environmental Monitoring has been initiated at project site which will go up to August, 2018. The proposal for establishment of a Separate Central

Laboratory for the State of Andhra Pradesh at the cost of Rs.19.32 crores has also been finalised. The likely date of completion (deadline) as estimated by APPCB is 31st March, 2018.

- II. **Dhapa MSW Site, Kolkata, West Bengal** – The said pilot project involves closure and containment of Dhapa MSW site. The likely date of completion of the work as estimated by WBPCB is 31st March, 2018.

### Regulatory Acts/Rules governing the programme and promulgation of new Acts, if any, along with the details

- I. Compliance and Testing Procedure for Measurement of Lead Content in Household and Decorative Paints were published on October 31, 2017 for effective implementation of Lead contents in Household and Decorative Paints Rules, 2016.
- II. Hazardous and Other Wastes (Management and Transboundary Movement) Amendment Rules 2017 published on 28 February 2017.

### Implementing organization along with details of responsibilities

#### EAP:

- I. West Bengal Pollution Control Board
- II. Telangana State Pollution Control Board
- III. Andhra Pradesh Pollution Control Board

#### Non-EAP:

- I. State Pollution Control Board / Central Pollution Control Board

**Fly ash utilization:** The fast-increasing demand of power coupled with its dependence on coal for about 2/3rd of its energy requirement is leading to generation of large volume of fly ash. The management of Fly ash has been a matter of concern in view of requirement of large area of land for its disposal. Such a huge quantity of flyash poses challenges not only in the form of land use but also for health hazards and environmental damages. To reduce the requirement of land for disposal of fly ash in ash ponds and to address the problem of pollution caused by fly ash, Ministry of Environment, Forest and Climate Change has issued various Notifications on fly ash utilization, first Notification was issued on 14th September, 1999 which was subsequently amended in 2003, 2009 and 2016 vide Notifications dated 27th August, 2003, 3rd November, 2009 and 25th January, 2016 respectively. As per CEA report, FlyAsh generation and utilization in 2016-17 from 155 coal/lignite based thermal power stations of various power utilities in the country is 169.25 and 107.10 million-ton respectively. The utilization of fly ash has increased from 6.64 million ton in 1996-97 to a level of 107.10 million-ton in 2016-17. The percentage of fly ash utilization during 2016-17 has been 63.28%. Fly ash earlier considered to be “hazardous industrial waste” material, is now considered to be useful and saleable





commodity. Now-a-days fly ash has been used for various purposes: for producing 'green building' materials, construction of roads and embankments, for improving the property of the soil, as mine back filling material etc. The objectives of this notification are to protect environment, conserve the top soil, prevent dumping of fly ash from Thermal Power Stations on land and to promote utilization of ash in the manufacture of building materials and construction activity. The implementation of this Notification has resulted in steady increase in the utilization of fly ash. However, the utilization has not reached to 100% and certain additional measures are required to be taken to promote and facilitate its use. In the recently amended notification dated 25.01.2016 the scope of the notification is broaden to enhance the utilization of the fly ash for various gainful activities and to promote and facilitate utilisation of ash based products in construction activities and using ash as soil conditioner. This shall result in reduction of pollution and requirement of land for ash disposal. The following are the specific amendments and their implication-

- I The mandatory jurisdiction of the area of application of the notification is increased from 100 km to 300 km. According to the amendment, every construction agency engaged in the construction of buildings within a radius of 300 km from a coal or lignite based thermal power plant (TPP) shall use only fly ash based products for construction. This will encourage more stakeholders to utilise the fly ash.
- II TPPs shall bear the cost of transportation of ash for manufacturing of ash based products, road construction projects and for use as soil conditioner in agriculture activity up to 100 km distance. Beyond the distance of 100 km and up to 300 km, the transportation cost shall be shared equally between the user and the TPPs. This will bring down the cost of manufacturing of fly ash based products thereby increasing the affordability of ash based products by the consumers as well as increase the utilisation of ash.
- III The amendment mandates use of fly ash based products in road construction projects under Pradhan Mantri Gramin Sadak Yojna and asset creation programmes of the Government involving construction of buildings, road, dams and embankments and the entire cost of transportation of ash to these project sites shall be borne by the TPPs.
- IV The amendment provides for the use of fly ash as soil conditioner which will enhance utilisation / demand of fly ash.
- V Amendment also mandates use of ash based bricks or products in construction under all Government Scheme or programmes e.g. Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MNREGA), Swachh Bharat Abiyan, Urban and Rural Housing Scheme where built up area is more than 1000 square feet and in infrastructure construction including buildings in designated Industrial Estates or

- Parks or Special Economic Zone.
- VI The mandatory provision of providing 20% of dry fly ash free of cost to the brick manufacturers shall not be applicable to such Thermal Power Plants which are able to utilise / dispose of 100 % fly ash in the prescribed manner.
  - VII TPPs, within three months from the date of notification, shall upload on their website the details of stock of ash available and thereafter update the stock position at least once every month. By this, the users would be able to look for the sources where ash is available and can approach such TPPs for obtaining fly ash.
  - VIII The amendment mandates the TPPs to provide dedicated dry ash silos and separate access roads. This shall ease the delivery of fly ash.
  - IX Coal or lignite based thermal power plants located in coastal districts shall support, assist or directly engage into construction of shore line protection and other measures. This would further increase the ash utilisation.
  - X Mandating setting up of fly ash based product manufacturing industries by TPPs within their premises or in the vicinity or near the cities will reduce the transportation of ash and encourage utilisation of fly ash products.
  - XI State Authorities shall amend Building Bye Laws of the cities having population One million or more so as to ensure the mandatory use of ash based bricks.

- XII Payments to the contractors for road making or any other infrastructure projects within the mandated distance shall be linked to submission of certificate of fly ash supply from the TPP/s.
- XIII The Ministry of Agriculture shall promote Fly Ash utilization in Agriculture as soil conditioner.

### **Development and Promotion of Clean Technology and Waste Minimization Strategies:**

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

### **The Objectives of the Scheme were:**

- I. 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.
- II. 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,

- III. 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 XIth Five Year Plan and has been discontinued by the Ministry.**

#### **Achievements and Progress:**

- I. One project titled “Oxidative Desulphurization of Feedstock” by M/s Continental Carbon India Limited, Ghaziabad is completed and its outcomes and Final Technical Report was accepted by the Project Monitoring Committee. A workshop under the project has also organized for dissemination of the project findings among the stakeholders.

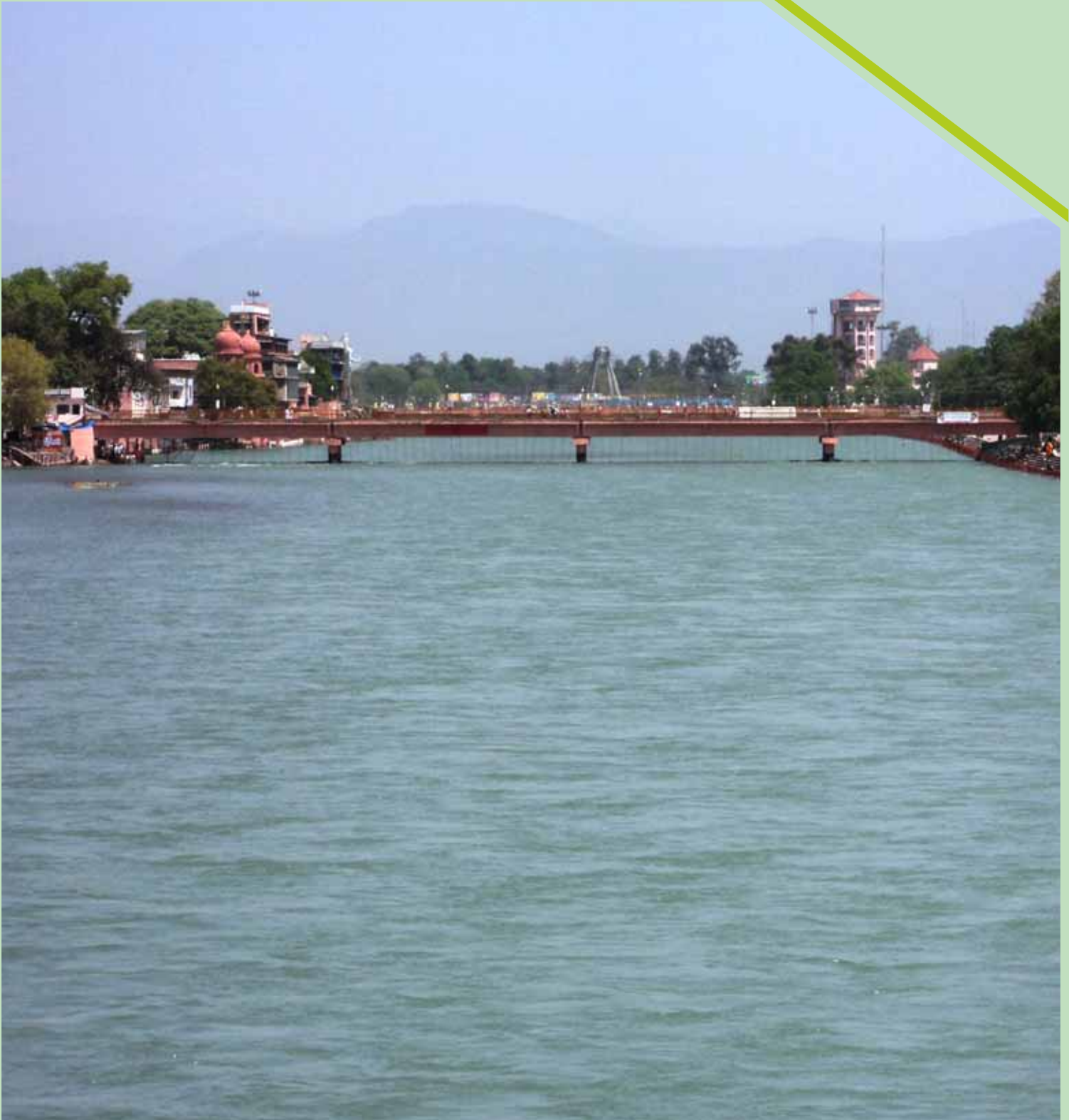
The objective of the project was to address the problem of high sulphur content in the Carbon Black Feedstock (CBFS) through application of Ultrasonically Assisted Oxidative Desulphurization (UAODS) using ozone as an oxidant including establishment of a the pilot plant. The project established that the ozone has the highest oxidation potential as a non-aqueous alternative to hydrogen peroxide and

can be generated on-site but requires intense sonification for proper reaction to take place in the wake of high viscosity of the feedstock. The results revealed successful reduction of sulphur to an extent of 62% after UAODS. The results get further improved as further optimization is carried out with the help of catalysts/phase transfer agents. Minor equipment modification (Reactor transducers) was found to enhance the sulphur reduction by another 5 to 10 percent.

The project proved to reduce emissions at source rather than the end of the pipe and is based on high level of innovation and demonstrated breakthrough combinatorial application of best available technologies and equipment for the carbon black industry in particular and petrochemical industries sector in general. The visible advantages include high value addition to the cheap feedstock post desulphurization, enhanced plant life and reduced breakdowns, better quality and price for the sulphur free carbon black manufactured, avoidance of heavy investment in flue gas desulphurization equipment and finally, getting over the hassles of non-compliance, drastic emission reduction and resource conservation in the carbon black industry, petrochemical industry and above all in the petroleum refinery sector. Thus, the benefits of this research will contribute to the development of other similar industries offering a significant multiplier at the National level.

# National River and Lake Conservation

**05**  
CHAPTER







### National River and Lake Conservation

The National River Conservation Directorate, functioning under the Ministry of Environment, Forest & Climate Change is providing financial assistance to the State Governments for conservation of rivers, lakes and wetlands under the Centrally Sponsored Schemes of 'National River Conservation Plan (NRCP)' and 'National Plan for Conservation of Aquatic Eco-systems (NPCA)'.

### National River Conservation Plan

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

The pollution abatement works taken up under the NRCP include:

- Interception and diversion works/ laying of

sewerage system to capture raw sewage flowing into the rivers through open drains and diverting them for treatment.

- Setting up of Sewage Treatment Plants (STPs) for treating the diverted sewage.
- Construction of Low Cost Sanitation Toilets to prevent open defecation on river banks.
- Construction of Electric Crematoria and Improved Wood Crematoria to conserve the use of wood.
- River Front Development works, such as improvement of bathing ghats.
- Public participation & awareness and capacity building, etc.

Presently NRCP (excluding Ganga and its tributaries) has covered polluted stretches of 31 rivers in 75 towns spread over 14 States at a sanctioned cost of Rs.4517.82 crore. An amount of Rs.2180.97 crore has been released to various State Governments for implementation of various pollution abatement schemes and a treatment capacity of 2455.43 million litres per day (mld) has been created so far under NRCP (excluding Ganga and its tributaries).

The following rivers are covered under NRCP:

S. No	River	S. No	River	S. No	River	S. No	River
1	Adyar	10	Krishna	19	Panchganga	28	Tamrabarani
2	Beas	11	Mahanadi	20	Rani Chu	29	Vaigai
3	Bhadra	12	Mandovi	21	Sabarmati	30	Vennar
4	Brahmani	13	Mindhola	22	Satluj	31	Wainganga

S. No	River	S. No	River	S. No	River	S. No	River
5.	Cauvery	14	MulaMutha	23	Subarnarekha		
6	Cooum	15	Musi	24	Tapti		
7	Diphu & Dhansiri	16	Narmada	25	Tapi		
8	Ghaggar	17	Pennar	26	Tunga		
9	Godavari	18	Pamba	27	Tungabadra		

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

### National River Conservation Plan (Non-Externally Aided Projects):

**Pollution Abatement of Rivers Satluj, Beas & Ghaggar in Punjab:** Under Phase-I of NRCP, pollution abatement works in 6 towns namely Ludhiana, Jalandhar, Phagwara, Phillaur, Kapurthala and Sultanpur Lodhi amounting to Rs.215.71 crore were sanctioned for pollution abatement of rivers Satluj and Beas. Under these projects, 8 STPs having total capacity of 461.2 mld have been created in the above mentioned towns. These STPs are being maintained by the State Government agencies, as operation and maintenance of the assets created under NRCP is the responsibility of the

concerned State Governments and their agencies.

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

Projects amounting to Rs. 57.10 crore have also been sanctioned for pollution abatement of river Ghaggar in 4 towns, namely Patran, Moonak, Lehragaga and Khanauri and creation of 15 mld treatment capacity has been envisaged under these projects. The project is under implementation and scheduled for completion in 2017-18.

**Sabarmati River Conservation Project at Ahmedabad, Gujarat:** For conservation of river Sabarmati in Ahmedabad, projects amounting to Rs. 365.01 crore were sanctioned under Phase-I of NRCP works. All the works sanctioned under this Phase stand completed and a total sewage treatment capacity of 232 mld has been created in 2 STPs alongwith other sewerage infrastructure facilities, including



community toilet complexes at various locations in the town.

The ongoing Sabarmati River Conservation Project Phase-II at Ahmedabad has been sanctioned at a cost of Rs.444.44 crore. Under this phase, works related to laying of new sewers, strengthening/rehabilitation of the existing sewerage system, construction of sewage pumping stations and 4 STPs having a total treatment capacity of 210.5 mld is envisaged. The project is under implementation and scheduled for completion in 2018-19.

**Pollution Abatement of River Mindhola at Surat, Gujarat:** Under the project for 'Conservation of river Mindhola at Surat', works relating to sewerage networks, sewage pumping stations along with creation of sewage treatment capacity of 53 mld has been sanctioned at a cost of Rs.262.13 crore. The project is almost in the final stages of completion and is scheduled to end in 2017-18. Under the project, a STP of 53 mld has already been commissioned along with other sewerage infrastructure facilities and river front development works.

**Pollution Abatement of Rivers in Odisha and Coastal area of Puri, Odisha:** For pollution abatement of rivers Mahanadi and Brahmini in the towns of Cuttack, Talcher, Chandbali and Dharamshala, projects at a total cost of Rs. 12.29 crore stand sanctioned under NRCP. The works sanctioned under the project pertain to interception & diversion of sewage, sewage treatment plants (STPs), low-cost sanitation, bathing ghats and improved wood crematoria. Sewage treatment capacity of 33mld in Cuttack

has also been created, apart from other municipal infrastructure works.

For pollution abatement of coastal area in the town of Puri, a project amounting to Rs. 80.45 crore has been sanctioned under NRCP. Under the project, intermediate pumping stations, sewerage system and construction of a STP having capacity of 15 mld along with main pumping station were sanctioned. All these works, including the STP, have been completed and commissioned. The commissioning of these works sanctioned under the project has helped in prevention of pollution of the sea and beaches at Puri.

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

The major components proposed under the project include construction of 11 new Sewage Treatment Plants (STPs) which will result in creation of additional treatment capacity of 396 mld (over & above the existing treatment capacity of 477 mld), laying of 113.6 kms of sewer lines and renovation/rehabilitation of 4 existing intermediate pumping stations. On completion of the project, the total STP

capacity available in Pune would be 873 mld, which would be sufficient to cater to sewage generation for the year 2027. The project also includes installation of Central Supervisory Control and Data Acquisition (SCADA) system for centralized monitoring of functioning of STPs, construction of 24 units of community toilet facilities in slum and fringe areas, public participation and awareness programme, GIS mapping of sewerage facilities for better asset management, etc. Funds amounting to Rs. 25.99 crore have been released to the State Government for the project, so far.

### **National River Conservation Plan works in North Eastern States:**

**Sikkim:** Under NRCP, 7 projects were sanctioned for conservation and pollution abatement of rivers Rani Chu and Roro Chu in Sikkim at a cost of Rs. 181.09 crore in 3 towns namely Gangtok, Ranipool and Singtam. The works sanctioned under the projects pertain to interception & diversion of sewage, sewage treatment plants, rehabilitation of sewer mains, low-cost sanitation, river front development and improved wood crematoria. Sewage treatment capacity of 20.12 mld is envisaged to be created in these towns. Works on 6 projects have been completed and 18.52 mld sewage treatment capacity has been created so far.

**Nagaland;** For pollution abatement of rivers Diphu and Dhansiri at Dimapur, Nagaland, works have been sanctioned under NRCP at an estimated cost of Rs.82.80 crore. The works envisaged under the project pertain to construction of sewage treatment plant having

treatment capacity of 25.43 mld and other allied sewerage works, low-cost sanitation, afforestation, etc. The scheme is presently under implementation.

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

**New Initiative: Way forward – Draft River Policy:** The primary focus and emphasis of river conservation under NRCP has been so far on implementation of schemes of interception, diversion and treatment of municipal sewage falling out into the river. Non-core works such as river front development (mainly for renovation of existing bathing ghats) and low-cost community toilets, crematoria, public participation & awareness, etc are also being taken up under the programme, even though they constitute a small component of the total project cost.

However, issues like environmental flow, catchment area treatment, development of a suitable vegetative cover along the river banks, interventions for non-point pollution mitigation, especially agricultural runoff, awareness campaign on adoption of organic farming & efficient irrigation systems along with appropriate cropping pattern, etc. have not been addressed adequately under the NRCP.





To achieve more focused results in conserving our rivers, this Ministry is in process of revamping its river conservation & rejuvenation strategy. In this regard, a Draft concept Note on 'Integrated and Holistic Approach for Rejuvenation of Rivers' has been prepared and circulated to all the States Governments for their valuable suggestions and comments. Comments have been received from a few States, which are being examined for finalisation of the strategy.

**Progress during the year 2017-18 under NRCP:** Sewage Treatment Capacity of 53.00 mld was targeted to be created under NRCP during the year 2017-18 (August, 2017) against which, 9.19 mld has been created so far during the year.

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

**National Plan for Conservation of Aquatic Eco-Systems (NPCA):** For conservation of lakes and wetlands, Ministry of Environment, Forest and Climate Change was earlier implementing two separate Centrally Sponsored Schemes, namely the 'National Wetlands Conservation Programme' (NWCP) and the 'National Lake Conservation Plan' (NLCP).

To avoid overlap and promote better synergies, NLCP has been merged with the scheme of NWCP, into one integrated scheme of National Plan for Conservation of Aquatic Eco-systems (NPCA). The scheme aims at holistic conservation and restoration of lakes and wetlands for achieving the desired water quality enhancement besides improvement in

biodiversity and ecosystem through an integrated and multidisciplinary approach and a common regulatory framework. The scheme contributes to reduction of pollution loads in lakes and wise use of wetland resources & their services and enhance wetlands biodiversity. NPCA is presently operational on cost sharing between Central Government and respective State Governments.

**Conservation of Lakes:** So far under NLCP/NPCA, a total of 46 projects for conservation of 63 lakes have been sanctioned in 14 States at a total cost of Rs.1096.09 crore for undertaking works like providing sewerage system and sewage treatment plants, interception and diversion of sewage, desilting, catchment area treatment, storm water management etc. Conservation works for 36 lakes have been completed.

**Conservation of Wetlands:** Wetlands are lifelines for a very large number of people and an important source of fresh water to mankind. They provide a host of ecosystem services to humanity in addition to being host to rich biodiversity. However, due to anthropogenic activities, wetlands are getting degraded. Major pressures on wetlands include fragmentation of hydrological regimes, siltation from degraded catchments, pollution, spread of invasive species and over-harvesting of resources.

To control degradation and conserve wetlands, the National Wetland Conservation Programme (NWCP) was initiated in 1987 and financial assistance is being provided to the State Governments for implementing action

plans for conservation and management of identified wetlands.

**Ramsar Convention:** As a commitment for conserving potential wetlands, India became signatory to the Ramsar Convention in 1982. As per this convention, India is committed for International Cooperation and to take national action for conservation and wise use of wetlands. At present there are 26 Ramsar sites in India.

**The Wetlands (Conservation and Management) Rules 2010 and 2017:** To implement the objectives of the convention, a regulatory mechanism was put in place through Wetlands (Conservation and Management) Rules in December, 2010 vide GSR-951(E). Central Wetland Regulatory Authority (CWRA) has been constituted under the Wetlands Rules, 2010. A total of eight meetings of CWRA were held under the chairmanship of Secretary, Ministry of Environment, Forest and Climate Change of which one meeting was held during the current financial year i.e. on 29.06.2017.

Based on the comments received on draft Rules, recommendations of the said Committees and consultations with the State Governments, UT Administrations and the concerned Central line Ministries, the Wetlands (Conservation & Management) Rules, 2017 were notified on 26.09.2017 superseding the 2010 Rules.

The following are the salient features of the 2017 Rules:

- River channels, paddy fields, water bodies/tanks specifically constructed for

drinking water purposes and structures specifically constructed for aquaculture, salt production, recreation and irrigation purposes are not covered under the definition of wetland.

- The rules shall not apply to the wetlands falling in forest areas, protected areas and CRZ areas.
- The State/UT Wetland Authorities have been constituted (in place of CWRA) and powers for notification of wetlands have been delegated to the State Governments and UT Administrations.
- The Wetlands Authorities to prepare a list of all wetlands and wetlands to be notified within three months and six months respectively from the date of publication of the rules;
- The wetlands shall be conserved and managed in accordance with the principle of 'wise use' as determined by the State/UT Wetlands Authority.
- Additions made in the list of prohibited activities while regulated and permitted activities in wetlands and their zone of influence to be determined by the Wetlands Authority.
- National Wetlands Committee has been constituted, which shall advise Central Government on appropriate policies and action programmes for conservation and wise use of wetlands, monitor implementation of the Wetlands Rules by concerned Wetland Authorities, recommend new Ramsar Sites, recommend trans-boundary wetlands for



notification under these rules, review progress of integrated management of Ramsar sites and transboundary wetlands etc.

**World Wetlands Day:** Each year, World Wetland Day is celebrated on 2nd February for increasing awareness and spreading need for conservation and wise-use of wetlands all over the world. The World Wetland Day - 2018 with the theme "Wetlands for a Sustainable Urban

Future" will be celebrated at one wetland site in collaboration with the State Government.

**Progress during the year:** Against the target of completion of works in 2 lakes (Sagar lake, Madhya Pradesh and Anasagar lake, Rajasthan) rejuvenation/conservation works have been completed in both the lakes during 2017-18. Against the target of sanctioning Management Action Plans of 20 Wetlands, the management action plan of 10 wetlands have been sanctioned during current financial year.



*3.5 mld Sewage Treatment Plant at Zone-IV (Gangtok) constructed under NRCP*



*53 mld Sewage Treatment Plant at Gavier, Surat constructed under NRCP*



# National Afforestation and Eco-Development Board (NAEB)

**06**  
CHAPTER







## 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. Plantations are taken up in 7 different models and 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. A expenditure of Rs. 3698.63 crore to treat an area of 21.38 lakh hectares since inception of the NAP scheme till 2016-17. During the year 2017-18, Rs. 76.70 lakhs (till Dec 2017) has been released under the NAP scheme. An advance area of 39,697 ha has been sanctioned

for 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.

Year-wise and State-wise progress of National Afforestation Programme including current year till 31.12.2017 is given in Table No.1.

**New Initiatives under the Scheme:** A number of initiatives have been taken by the Ministry to expedite the implementation of the scheme as well as to improve the qualitative aspects of implementation. These include:

- Comprehensive amendment in Guidelines of NAP scheme has been made to promote further decentralization by delegating more responsibilities to State Forest Departments with respect to processing of the FDA project proposals, greater organic linkage of JFMCs with Gram Panchayats, increased security of the elected members of JFMCs through longer tenure of JFMC presidency, capacity building in particular of frontline staff of Forest Department and JFMC members especially with regard to local management and administrative responsibilities.
- In general, women are the largest beneficiary group of all interventions by the NAEB. In addition to being users of the resource, and their participation in the labor force, the empowerment of women is being also ensured by requesting the States to increase their representation to 50% in FDA. Similarly, the revised guidelines of NAP scheme also require 50% women in

the JFMCs. It is proposed to monitor the benefit of the NAP scheme to women members in quantifiable terms. Accordingly, the formats for progress reports of FDA projects under NAP scheme have been modified.

- While formulating proposals under National Afforestation Programme, States have been advised to give adequate representation to SC/ST in FDA and JFMC at village level. Information received from FDAs reveal a larger participation of SCs/STs, in afforestation programme, and there has been corresponding increase in generation of employment in the project areas.
- A website of NAEB has been launched and the relevant information on the approvals is being provided on the website. SFDA/FDA is required to discuss the approved works in the General Body of the JFMCs.

Apart from the above initiatives the following thrust areas are being addressed under NAP

**Up scaling the afforestation efforts:** So far NAP has been contributing around 15 to 17% annually to afforestation efforts in the country and it is proposed to upscale the afforestation to the tune of 50,000 ha. during the year 2017-18.

**Augmentation of people's participation:** Around 42,000 villages/JFMCs have been associated with NAP at present. Efforts are initiated for atleast 25% increase in the number of additional villages/JFMCs to be covered under the scheme.



**Inventory of plantations of NAP using IT systems and web based monitoring:** An initiatives in co-ordination with FSI for web based monitoring of plantations have been taken up and the programme states have been asked to submit geo-coordinates in the form of polygon data of all the plantation taken up during last 3 years so as to enable FSI to carry out dynamic monitoring of status of them.

**Water and Fodder availability:** An advisory to the States for emphatic utilization of the flexi-fund under NAP for augmentation of water and fodder availability.

**B. Eco-Development Forces (EDF) Scheme:**

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

objectives of ecological regeneration in difficult areas, and promotion of meaningful employment to ex-servicemen. Under this scheme, the establishment and operational expenditure on the Eco Task Force (ETF) Battalions raised by Ministry of Defence is reimbursed by Ministry of Environment and Forests while the inputs like sapling, fencing, etc. and also the professional and managerial guidance is provided by the State Forest Departments. In ETF battalions, the Ministry of Defence deploys its ex-servicemen, preferably from within the area of operation, whereas the nuclear core of the force is constituted of regular servicemen. Some of the ETF Battalions have undertaken successful eco-restoration of highly degraded sites, for example the limestone mining areas in the Mussoorie Hills. The progress of ETF Battalions is given in Table No.7

Table No. 7 – The progress of ETF Battalions

Batallion	Location	No. of plants planted (in lakh)	Area Covered (in ha.)
1	2	3	4
127 Inf. Bn(TA) Eco	District Tehri Garhwal (Uttarakhand)	4.81	400
128 Inf. Bn(TA) Eco	Shri Mohangarh, District Jaisalmer (Rajasthan)	1.20	150
129 Inf. Bn(TA) Eco	Bahu Purmandal Project, Samba (J&K)	0.82	115
130 Inf. Bn(TA) Eco	Pithoragarh (Uttarakhand)	5.00	500
134 Inf. Bn(TA) Eco	Sonitpur District (Assam)	2.42	199.2
135 Inf. Bn(TA) Eco	Chirang Res. Forest, Kokrajhar, (Assam)	3.00	300
<b>Total/Ave.</b>		<b>17.25</b>	<b>1664.2</b>

Six ETF battalions are being supported by the Ministry under the EDF Scheme in the States of Uttarakhand, Rajasthan, Jammu & Kashmir and Assam. Revised Budget Estimate for the scheme during 2017-18 is Rs. 120.00 crores and the same has been released to the Ministry of Defence.

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.

### Implementation of NAP



*NAP Planting in Progress*



*Eco-restoration under NAP*

### 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 diminishing 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 to the extent of 5 million hectares (mha) and improve quality of forest/tree cover on another 5 mha of forest/non-forest lands;
- To improve/enhance eco-system services like carbon sequestration and storage (in

forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, and timber and non-timber forest products (NTFPs); and

- To increase forest based livelihood income of about 3 million households.

#### Activities undertaken:

- 9 revamped SFDA Projects has been operationalized in the country at an expenditure of Rs. 150.96 crore to treat an area of 66848.7 hectares since inception of the GIM till 2016-17. During the current financial year, 2017-18, Rs. 38.774 Cr. has been released so far as the 1st installment to four States namely Chhattisgarh, Odisha, Mizoram and Manipur. Under the Mission, funds are routed through the State





Governments to the State Forest Development Agencies for implementation of the GIM activities.

Amounts released to Kerala, Punjab and Uttarakhand during the year 2015-16 could not be utilized in the year 2015-16 which was revalidated for utilization during the year 2016-17. The year wise sanctioned targets and achievements since inception of National Mission for a Green India till 31st December, 2017.

**New Initiatives under the Mission:** A number of initiatives have been taken by the Ministry to expedite the implementation of Mission. These include:

- Ecosystem Services Improvement Project (ESIP) under GIM in two States (Chhattisgarh and Madhya Pradesh) has been formally cleared by World Bank and Ministry of Finance as part of Global Environmental Facility (GEF).
- GIM participated in 3rd India International Science Festival at Chennai jointly organized by Ministry of Science and Technology and Ministry of Earth Sciences during 13-16 October, 2017.
- In order to synergise output, outlays and optimize the decision making processes, the Government has been decided to merge National Afforestation Programme (NAP) and Desertification Cell under the new structure called revamped GIM.

**Implementing organizations along with details of responsibilities:** It will be the Gram Sabha and the Committees mandated by the Gram Sabha, including revamped JFMCs, which will plan and implement the Mission activities

at the village level. It will have explicit linkages with Panchayat level planning to ensure maximum convergence. In urban areas, ward level committees/RWAs linked to Municipality/Municipal Corporation will have role in implementation of the Mission activities.

At District/Division Level it will be revamped Forest Development Agency (FDA), under the Chair of elected representative for General Body of the FDA, that will facilitate the Mission activities at the district level. It will have explicit linkages with District Planning Committee. Each State Government shall appoint a Member Secretary for District FDA and District level Steering Committee which will ensure convergence of schemes and programs.

At State Level, a revamped State Forest Development Agency will facilitate the Mission implementation within the State. To provide for maximum convergence opportunities and strategic direction to the Mission, a steering Committee under the Chairmanship of Chief Secretary shall be setup by each State Government.

At National level, the Mission has an all-inclusive Governing Council, chaired by the Minister, Environment and Forests to provide for overall guidance and synergy of action and the Mission Director as Member Secretary. There is also a National Executive Council chaired by the Secretary (E&F) which has overall responsibility for the Mission. There is a Mission Directorate at the National level with the Mission Director with overall accountability for the Mission deliverables and supported by a team of experts and secretarial staff.

# Research in Environment

**07**  
CHAPTER





## Research in Environment

The R&D scheme is an important decision support system for Policy and Planning of the Ministry's Programmes and activities. The Scheme will support and fund R&D projects in important Thematic areas of the Ministry. The scheme will provide support to institutes and organisations working in identified thematic areas for undertaking research and build capacity of trained researchers across the country. The objectives of the Scheme are as below:

- To find practical solutions to problems of environment protection.
- To build indigenous capacities and strengthen scientific manpower in multidisciplinary and emerging areas of the environment and ecology.
- To generate information/data for taking policy interventions, integration of outputs and outcomes with relevant on-going schemes of the Ministry, use of data/outcomes in international negotiations.
- To support basic and applied research in environment, ecology and related fields.
- To facilitate database management at one single point in the Ministry.

## Progress achievements made during 2017-18:

- Out of GIA, total of sixteen Sanction Letters for the amount of Rs. 93,84,549/- have been issued with the break – up as Five sanction letters for Environment Research

Programme(EnvRP), nine sanctions letters for Ecosystem Research Programme(EcRP) and two Sanction Letters wrt to Research Programme on Socio Economic Issues (RPSE) have been issued as on 18th January, 2018.

- 28 ongoing projects under the Research in Environment Programme, 29 ongoing projects on Ecosystem Research Programme (EcRP) and 3 ongoing projects under Research Programme on Socio Economic Issues (RPSE) have been processed for the appraisal, evaluation, grant release and monitoring.
- The revamping of the PMIS portal of the RE division are being finalized.

## Ecologically Sensitive Areas

**Declaring Ecologically Sensitive Zones (ESZs) around Protected Areas in the country:** 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.

The Ministry of Environment, Forests and Climate Change notifies Eco-sensitive Zones under Section 3 of the Environment (Protection) Act, 1986, wherein, inter alia

certain identified projects/activities are regulated/ prohibited as the case may be. Rule 5(1) of the Environment (Protection) Rules, 1986, stipulates, inter alia factors which may be taken into consideration while prohibiting or restricting the location of industries and the

carrying on of processes and operations within such ESZs.

As on 31.01.2018, the ESZ Division of the Ministry has issued 39 Draft ESZ Notifications and 85 Final ESZ Notifications during the financial year. The details of the Draft and Final ESZ Notifications are given in Table 1 and Table 2.

**Table 1: Draft ESZ Notifications Issued as on 31.01.2018**

Sl.N.	States/UTs	Name of Draft Notification	Date of notification
1.	Gujarat	Rattan Mahal Sanctuary	10.11.2017
2.		Khijadiya WLS	Afresh Draft Published on 06.09.2017
3.		Porbandar WLS	Afresh Draft Published on 21.09.2017
4.		Jambugodha Sanctuary	29.12.2017
5.	Jammu & Kashmir	Surinsar-Mansar WLS	20.07.2017
6.		Jasrota WLS	06.11.2017
7.	Karnataka	Nagarahole Tiger Reserve	25.07.2017
8.		Adichunchanagri Peacock Sanctuary	06.09.2017
9.	Kerala	Mangalavanam Bird Sanctuary	29.08.2017
10.	Madhya Pradesh	Van Vihar NP	19.01.2017
11.		Veerangana Durgawati	14.02.2017
12.		Narsingharh WLS	26.04.2017
13.		Orchha WLS	26.05.2017
14.		Kheoni WLS	16.10.2017
15.		Kunopalpur WLS	10.11.2017
16.	Maharashtra	Tamhini Sanctuary	10.08.2017
17.		Tansa Sanctuary	10.08.2017
18.		Yawal WLS	29.09.2017
19.	Odisha	Chilika (Nalaban) Sanctuary	28.07.2017
20.		Sunabeda WLS	Afresh Draft Published on 13.10.2017





Sl.N.	States/UTs	Name of Draft Notification	Date of notification
21.		Kotagarh WLS	Afresh Draft Published on 27.10.2017
22.	Rajasthan	Nahargarh WLS	Afresh Draft Published on 12.09.2017
23.	Uttar Pradesh	Sohelwa Sanctuary	20.07.2017
24.	West Bengal	Chintamoni Kar Bird Sanctuary	16.10.2017
25.		Raiganj Sanctuary	16.10.2017
26.		Senchal Sanctuary	10.11.2017
27.	Andaman & Nicobar Islands	Cuthbert Bay Sanctuary	06.09.2017
28.		Saddle Peak NP	13.10.2017
29.	Chhatisgarh	Udanti Sitanadi Tiger Reserve	22.11.2017
30.	Haryana	Asola bhattie WLS	29.12.2017
31.	Mizoram	Khawanglung Sanctuary	14.12.2017
32.		Tawi Sanctuary	29.12.2017
33.		Pualreng Sanctuary	29.12.2017
34.		Thorangtlang Sanctuary	15.01.2018
35.		Lengteng Sanctuary	15.01.2018
36.		Murlen National Park	15.01.2018
37.	Uttarakhand	Nanda Devi NP	22.11.2017
38.		Kedarnath Musk Deer Sanctuary	14.12.2017
39.		Nandhar WLS	Afresh Draft Published on 14.12.2017

Table 2: Final ESZ Notifications Issued as on 31.01.2018

Sl.N.	States/UTs	Name of Draft Notification	Date of notification
1.	Andhra Pradesh	Lankamalleshwra WLS, Andhra Pradesh	13.04.2017
2.		Kambalakonda WLS, Andhra Pradesh	28.04.2017
3.		Rajiv Gandhi NP, Andhra Pradesh	15.05.2017
4.		Great Indian Bustard Rollapadau WLS, AP	15.05.2017
5.		Nelapattu WLS, Andhra Pradesh	09.06.2017

Sl.N.	States/UTs	Name of Draft Notification	Date of notification
6.	Assam	Amchang WLS, Assam	07.06.2017
7.	Bihar	Udaipur WLS, Bihar	28.06.2017
8.		Gautam Budha WLS, Bihar	12.07.2017
9.		Kushwarasthan Bird Sanctuary, Bihar	27.08.2017
10.		Valmiki NP and Tiger Reserve, Bihar	13.09.2017
11.	Chattisgarh	Barnawapara WLS, Chattisgarh	12.07.2017
12.		Pamed WLS, Chattisgarh	20.07.2017
13.	Delhi	Asola bhattie WLS, New Delhi	12.09.2017
14.	Gujarat	Barda WLS, Gujarat	28.04.2017
15.		Nalsarovar WLS, Gujarat	07.06.2017
16.		Gaga Great indian Bustard WLS, Gujarat	09.06.2017
17.		Hingolghadh Nature Reserve WLS, Gujarat	20.06.2017
18.		Velavadar Black Buck NP, Gujarat	06.07.2017
19.		Jessore Sanctuary, Gujarat	16.10.2017
20.		Rampara WLS, Gujarat	29.12.2017
21.		Himachal Pradesh	Majathal WLS, Himachal Pradesh
22.	Shimla Water Catchment WLS, H.P		08.06.2017
23.	Sangla Valley (Rakchham-Chitkul) Sanctuary, H.P.		28.07.2017
24.	Sech Tuan Nala Sanctuary, H.P.		29.09.2017
25.	Talra Sanctuary, H.P.		22.11.2017
26.	Inderkila National park, H.P.		17.01.2018
27.	Karnataka	Mookambika WLS, Karnataka	13.04.2017
28.		Talacauvery WLS, Karnataka	15.05.2017
29.		Brahmagiri WLS, Karnataka	26.05.2017
30.		Attiveri WLS, Karnataka	07.06.2017
31.		Rangayyandurga 4horned Antelope Santuary, Karnataka	07.06.2017
32.		Arabithittu WLS, Karnataka	08.06.2017
33.		Pushpagiri WLS, Karnataka	28.06.2017
34.		Ghataprabha WLS, Karnataka	28.06.2017



Sl.N.	States/UTs	Name of Draft Notification	Date of notification
35.		Gudekote Sloth Bear Sanctuary, Karnataka	06.07.2017
36.		Gudavi WLS, Karnataka	06.07.2017
37.		Ranebennur Blackbuck WLS, Karnataka	06.07.2017
38.		Cauvery WLS, Karnataka	22.08.2017
39.		Ramadevarabetla Vulture Sanctuary, Karnataka	12.09.2017
40.		Malai Mahadeshwara WLS, Karnataka	14.09.2017
41.		Melukote WLS, Karnataka	21.09.2017
42.		Nugu WLS, Karnataka	27.09.2017
43.		Ranganathittu WLS, Karnataka	10.11.2017
44.	Madhya Pradesh	Satpura Tiger Reserve, Panchmari and Bori, MP	09.08.2017
45.		Ratapani WLS, and Singhori WLS, MP (2 PAs)	11.08.2017
46.		Dinosaur NP, Madhya Pradesh	17.08.2017
47.		Sanjay Dubri and Sanjay NP, MP	29.08.2017
48.		Madhav NP, Madhya Pradesh	13.09.2017
49.		Bagdara WLS, Madhya Pradesh	13.09.2017
50.		Ghuga Fossil NP, Madhya Pradesh	18.09.2017
51.		Karera WLS, Madhya Pradesh	18.09.2017
52.		Ken Ghariyal, MP	21.09.2017
53.		Nauradehi WLS, Madhya Pradesh	27.09.2017
54.		Van Vihar NP, MP	29.11.2017
55.		Orchha WLS, Madhya Pradesh	03.01.2018
56.	Maharashtra	Bhamragarh WLS, Maharashtra	13.04.2017
57.		Kalsubai Harishchandragad WLS, Maharashtra	28.04.2017
58.		Phasand WLS, Maharashtra	17.05.2017
59.		Dyanganga WLS, Maharashtra	17.05.2017
60.		Sagareswar WLS, Maharashtra	15.05.2017
61.		Yedshi Ramling Ghat WLS, Maharashtra	31.05.2017
62.		Gangewadi Great Indian Bustard, Maharashtra	31.05.2017
63.		Jaikawadi WLS, Maharashtra	12.07.2017
64.		Pench national Park, Maharashtra (2)	13.09.2017

Sl.N.	States/UTs	Name of Draft Notification	Date of notification
65.	Manipur	Keibul Lamjao NP, Manipur	26.04.2017
66.		Jiri-Makru Sanctuary, Manipur	06.07.2017
67.	Meghalaya	Nongkhylllem WLS, Meghalaya	07.06.2017
68.		Narpuh, East Jantia Hills, Meghalaya	06.09.2017
69.	Odisha	Balukhanda-Konark WLS, Odisha	19.05.2017
70.		Debrigarh WLS, Odisha	07.06.2017
71.		Kuldiha Sanctuary, Odisha	09.08.2017
72.	Punjab	Harika Lake WLS, Punjab	15.05.2017
73.	Rajasthan	Todgarh Raoli WLS, Rajasthan	13.04.2017
74.	Telangana	Manjeera Crocodile WLS, Telangana	05.05.2017
75.		Pocharam WLS, Telangana	26.05.2017
76.		Mahavir Harina Vanasthali NP, telangana	26.05.2017
77.		Kinnersani Sanctuary, Telangana	01.09.2017
78.	Tripura	Rowa WLS, Tripura	15.05.2017
79.	Uttar Pradesh	Ranipur, U.P.	10.11.2017
80.		Saman Bird Sanctuary, UP	22.11.2017
81.		Parwati Arga WLS, UP	29.11.2017
82.		Sohagi Barwa Sanctuary, UP	29.11.2017
83.	West Bengal	Jaldapara NP, West Bengal	22.08.2017
84.		Neora Valley NP, West Bengal	12.09.2017
85.		Singalila NP, West Bengal	17.11.2017

### Declaring Eco-Sensitive Areas in Western Ghats:

The Western Ghats is a global biodiversity hotspot and a treasure trove of biological diversity harbouring many endemic species of flowering plants, fishes, amphibians, reptiles, birds, mammals and invertebrates. It is also the origin of Godavari, Krishna, Cauvery and a number of other rivers of Peninsular India, upon which much of the economy of the

region is dependent. Therefore, there is a need to conserve and protect the unique biodiversity of Western Ghats, while allowing for sustainable and inclusive development of the region. The concept of Ecologically Sensitive Area (ESA) provides a mechanism to conserve biological diversity of an area while allowing for sustainable development to take place.





It was earlier resolved to reassure the local people that nothing substantial will change within the ESA as far as their livelihoods and day to day activities are concerned. There would be no dislocation of people living within the ESA. As such no fresh regulations have been proposed on existing land use, agriculture, plantation and continued occupation of land in possession of the local people.

To proceed further in this direction, the Hon'ble Minister of State (Independent Charge), Environment, Forest and Climate Change, Late Shri Anil Madhav Dave held a meeting with the Members of the Parliament from the Western Ghats region on 11th August, 2016. During the deliberation in this meeting, it was emphasised that there should be balance between habitat, forests and society in the Western Ghats region. It was mentioned that the Draft Notification dated 4.09.2015, would be the basis for moving forward through a consultative process involving State Governments and other stakeholders to redress the concerns of people living in the Western Ghats region and for conservation of the Western Ghats. Accordingly, the Ministry has republished the draft notification on dated 27th February, 2017 to declare Ecologically Sensitive Areas in the Western Ghats.

**National Natural Resources Management System (NNRMS):** The Scheme "National Natural Resources Management System (NNRMS)" of the Ministry was a part of an umbrella scheme of the erstwhile Planning Commission-Planning Committee-National

Natural Resources Management System (PC-NNRMS) and is in operation since, 1985.

In the Ministry, the NNRMS scheme was earlier carried out as a separate scheme. The NNRMS scheme has now been merged with the R&D scheme under RE division as such, there will be only one R&D Scheme in the Ministry for conservation and development, which will include the schemes R&D and NNRMS.

### Objectives of the Scheme:

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

- The NNRMS scheme helps in addressing gaps in ongoing activities/schemes/objectives of the Ministry is 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.

About 130 projects addressing the key environmental and ecological issues were sponsored under NNRMS scheme. Out of these, about 110 projects have been completed. Some of the mega projects undertaken/completed under this programme inter-alia include the following:

1. Forest Type Mapping on 1:50,000 scale of Entire Country Coordinated by FSI.
2. Mapping of Wildlife Sanctuaries and National Parks on 1:25,000 scale Coordinated by Wildlife Institute of India
3. Coastal Studies (Land use, Mangroves, Coral Reefs, etc.) for entire Indian Coast (1:25,000 scale)
4. Snow & Glaciers mapping of entire Himalayas (1:250,000/50,000 scale) Coordinated by SAC (ISRO)
5. National Wetland Inventory and Assessment (1:50,000 scale) Coordinated by SAC (ISRO)
6. Desertification Status Mapping of India using AWiFS data (2011-12) and LISS III on 1:500,000 scale, coordinated by Space Application Centre, ISRO, Ahmedabad.

7. 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.
8. Application of Remote Sensing for Integrated Land use, Water and Energy Management in Rural Areas: Exploring Energy Plantation Opportunities. Indian Institute of Management Ahmedabad, Vastrapur, Ahmedabad.

**Progress/Achievements:** There are about 20 ongoing projects under NNRMS scheme, with total financial liability of more than ~ 2.0 Crore. During the year, the following three projects were supported by the Ministry under NNRMS scheme:

- I. 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.
- II. Land use dynamics and its impact on microelements, structure, composition and diversity of Achanakumar - Amarkantak Biosphere Reserve using satellite remote sensing and GIS techniques, I. G. National Tribal University, Amarkantak (M.P).
- III. Application of RS & GIS for Integrated Management of Hasdeo River Watershed (A tributary of Mahanadi River) in Chhattisgarh, Department of Forestry,



Guru Ghasidas University, Bilaspur, Chattisgarh.

The projects such as “Development of Knowledge Based Decision Tool to Stimulate Mechanisms of Vegetation Change due to Climate Change in Western Himalayan Eco-region (part of Uttarakhand) - a precursor to understanding responses to climate change and development scenarios for adaptive strategies”, Dept. of Natural Resources, TERI University, New Delhi and “Biodiversity Assessment of Central Gujarat using Geospatial and Conventional Approach with Emphasis on Conservation of important Threatened Taxa”, Department of Botany, M.S. University of Baroda, Vadodara are under pipe-line for financial concurrence/release.

### **G. B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora, Uttarakhand**

G.B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD) was established in August 1988 by the Ministry of Environment and Forests, 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 Units located at Mohal - Kullu (Himachal Pradesh), Srinagar-Garhwal

(Uttarakhand), Pangthang (Sikkim), Itanagar (Arunachal Pradesh) and the Mountain Division (housed at MoEF&CC, New Delhi). The Institute designs and implements R&D activities on priority environmental problems; develops and demonstrates best practices and delivers technology packages for improved livelihood options for the people of IHR. The identified thematic categories for Institute R&D activities include: (1) Watershed Processes and Management (WPM), (2) Environment Assessment and Management (EAM), (3) Environmental Governance and Policy (EGP), (4) Biodiversity Conservation and Management (BCM), (5) Ecosystem Services (ES), (6) Climate Change (CC), (7) Socio-economic Development (SED), (8) Biotechnological Applications (BTA), (9) Environmental Physiology and Biochemistry (EPB), (10) Knowledge Products and Capacity Building (KCB). Recently, w.e.f. November 16, 2017, as a follow up of the approved up-gradation structure of the Institute, the above-mentioned themes have been merged and upgraded as 4 centers at the HQs of the Institute: (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). The regional units of the Institute have also been upgraded and renamed as regional centers, such as, (i) Himachal Regional Centre; (ii) Garhwal

Regional Centre; (iii) Sikkim Regional Centre; (iv) North-East Regional Centre; and (v) Mountain Division Regional Centre. Research, demonstration and dissemination are essential underlying elements of all activities in the Institute. In addition, GBPNIHESD also provides evidence based inputs having wider policy.

### **The Institute has three broad objectives:**

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

### **Progress/Achievements:**

#### **a. Centres of Eminence**

##### **I. Center for Land and Water Resource Management (CLWRM)**

- The center was created with the aim to work on integrated management and sustainable use of goods and services in a watershed along with advancement of science-based solutions for conservation and access to resource. The focal areas of activities of the center are land and soil management, water sustainability, glacier

system and climate and geo-hazard assessment. During the year three In-House research projects namely - 'Ecological, Social and Policy Implications of Changing Water Resource Scenario in Indian Himalayan Context', 'Farming systems and changing climate regime: Impact of biophysical and social drivers on the farm yields in Central Himalaya' and 'Strategic Environmental Assessment of Hydro-power in Indian Himalayan Region' were completed and their FTRs finalized.

##### **II. Center for Socio-Economic Development (CSED)**

- This center was created with the aim to promote activities that lead to ecological and economic security, and sustainable development in the IHR. Poverty, out-migration, natural resource management for sustainable livelihood, technology development and demonstration are the focal areas of activities of the center. Towards development of model villages through technology transfer for livelihood enhancement in the Central Himalaya, three villages in different geo-environmental conditions were identified and various activities such as yield increasing, income generating, life supporting, value addition and other technologies are being initiated. Baseline data using in-depth rapid rural appraisal method has been collected.





### III. Center for Biodiversity Conservation and Management (CBCM)

- The center has been created to assess and monitor Himalayan biodiversity using state-of-art approach, and transform data and information into knowledge that supports sustainable management of biodiversity. Collaborative and multidisciplinary research on biodiversity, ecosystem services and biotechnological applications are the focal areas of R&D activities of the center.
- In order to establish Long-term Ecological Monitoring (LTEM) sites in Western Himalaya, preliminarily survey in Gaula Catchment of the Kumaun Himalaya was conducted. The catchment encompasses an altitudinal range of 500 - 3600 m asl and represented by different types of forests ranging from subtropical sal (*Shorea robusta*), chir - pine (*Pinus roxburghii*), to temperate broad leaved banj - oak (*Quercus leucotricophora*), rianj - oak (*Q. lanuginosa*), tilonj - oak (*Q. floribunda*) kharsu - oak (*Q. semicarpifolia*). A total of 13 forest sites were screened based on their characteristics during the survey and field work has been initiated to collect data on different parameters such as community structure, regeneration, soil, etc. Towards establishing LTEM sites consultation with local stakeholders, including forest department, Govt. of Uttarakhand were made.

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

- The center aims (i) to assess and monitor physical, biological and socio-economic environmental attributes to the development in IHR, (ii) design robust measures for climate change mitigation and (iii) secure community and ecosystem resilience with appropriate adaptation strategy to cope with climate change risk. The focal areas of activities of the center are assessment of environmental parameters, impact of CC on resources, critical ecosystem, develop knowledge to combat CC.
- During the reporting period the center has established permanent Sites for Long Term Monitoring of Tree line Vegetation in Pindar Valley of Uttarakhand State - 8 plots of 20x20 meter at three different locations ranging between 3180m and 3420m were established (location and geo-spatial attributes) for permanent monitoring. Tree vegetation in each plot was marked and measurements were taken. Tree species (8 species of 6 genera) of 5 families (4 Angiosperm and 1 Gymnosperm) were recorded in these plots. Ericaceae was dominant family represented by two genera (*Rhododendron* & *Lyonia*) and 4 species (*R. arboreum*, *R. barbatum*, *R. campanulatum* & *Lyonia ovalifolia*).

#### b. Regional Centers

##### I. Himachal Regional Centre

- The center has initiated work on

community driven solid waste management in different regions of Kullu and Manali (Kullu district), Mandi (Mandi district), Bilaspur (Bilaspur district), Hamirpur (Hamirpur district), Kangra (Kangra district) and Chamba (Chamba district). Review of literature was done and relevant information on the solid waste has been gathered. Interactions with 98 hoteliers of Kullu Planning Area i.e., Manali and nearby areas, Kullu, Bhuntar and Banjar having >25 rooms were done and information on their solid waste management was generated. During the year the center has given exposure to students and teachers and a total of 1385 students of 36 different organizations (Government Schools, Public Schools, Degree colleges and Universities) were exposed to different activities and demonstration sites.

## II. Garhwal Regional Centre

- The center aims to reinvent pilgrimage potential for tourism development in the sacred landscape of Garhwal Himalaya, Uttarakhand. In this context, the center has developed a checklist for resource inventory and impact assessment (environmental, economic, and socio-cultural) of Kedar valley that includes physical, human, cultural, financial, and Institutional resources. Assessment of potential and needs for sustainable tourism development was also carried out.

## III. Sikkim Regional Centre

- In order to develop gridded biodiversity database for woody taxa of Sikkim Himalaya, spatial sampling grids of 6.25 × 6.25 km<sup>2</sup> using Survey of India toposheet of 1:50,000 scale for Sikkim Himalaya were generated.

## IV. North-East Regional Centre (NERC)

- A total of 67 ethno medicinal plant species were recorded during field survey. These species belong to 46 genera and 26 families. These species used for the preparation of herbal medicine and the Monpa tribal community use different parts of these plant species. Mostly the roots/rhizomes/tubers (49%), followed by flower (18%), whole plant (13%), leaf (10%), and fruit (8%) is used by the tribes (Fig. 3). Various diseases such as cold, cough, flu, fever & head ache (18 spp.), anti-poisonous (12 spp.), epilepsy, skin problem (herpes) and purgative (6 spp. each), Oedema, wounds & cut, malaria treatment (5 spp. each), respiratory disorder & rheumatic pains (4 spp. each) and other ailments are cured by using these medicinal plants. The most frequent type of preparation is used as decoction and paste of plant parts. Plant decoction is extracted by crushing the plant parts and sometimes plant parts are boiled with water and the liquid decanted. Conserving and promoting these plants in the region



could be used for enhancing the livelihood of the local people.

## V. Mountain Division Regional Centre

- In order to prepare a user friendly database of tree diversity of Indian Himalayan Region, available information on native and invasive, endemic and threatened species were collected. In IHR, a total of 1,682 tree taxa from 103 families of angiosperms and 9 families of gymnosperms have been inventorized.
- An assessment for tradeoffs between conservation and social outcomes based on stakeholder analysis was carried out for protected area management in Binsar wild life sanctuary. Preliminarily information collected so far indicates that there are significant impacts on the livelihoods of the rural communities living in and around Binsar Wildlife Sanctuary, however, efforts are being made by government to compensate negative effects by implementing livelihood promotion activities in the villages.
- In order to address the issue of adaptation and identification of suitable environmental condition for plant growth and metabolite production, effect of different light intensities (full sunlight and 50% shade) was studied in *Valeriana jatamansi*. Preliminary results reveal that light intensities influence the morphological, physiological and biochemical attributes.

- Assessment of floristic diversity and microbial association in Birch forest was carried out. Preliminarily results identified various mycorrhizal structures, namely, intercellular, intracellular fungal and dark septate mycelium during quantification of root colonization of *Betula utilis*.
- Effect of climatic variables and their impact on environmental flow in the River Sutlej Basin in Himachal Pradesh was evaluated. Water quality parameters such as hardness, alkalinity, TDS, EC, DO, etc. for post, winter and pre-monsoon were assessed and analysis is under progress.

## c. National Initiatives

- The Institute received funding through various National projects like National Mission for Sustaining the Himalayan Ecosystem, as a nodal organization for implementing Task Force 3: Forest resources and plant diversity and also a network partner for Task Force 5: Traditional Knowledge System. The Institute also provided inputs in (i) technical committee of National Water Mission, (ii) National Forest Policy, and (iii) preparing State Specific Action Plan for Water Resources (SSAP) for Uttarakhand.
- Under National Mission on Himalayan Studies (NMHS), a total of 51 projects are ongoing under in the various organizations of 12 Indian Himalayan States. Also Himalayan Fellowship granted to 12 Universities/Institutions in the IHR, which

engaged a total of 119 (30 Research Associates (RAs) and 89 Junior Research Fellow/ Project Fellows (JRFs/JPFs) and actively involved in various demand driven research and development issues.

- A final report on NITI-Aayog work group on "Data/Information for Informed Decision Making by Multiple Stakeholders for Sustainable development in mountains of Indian Himalayan region" was prepared and submitted to NITI Aayog.

#### d. Transboundary Initiatives

- As coordinating Institute for three transboundary initiatives, Institute continued to contribute for Regional cooperation through scientific researches. For Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI), the Institute was able to establish strong convergence with line departments to follow research based evidences while implementing various developmental programme. Three days "Diversity- Our Identity, Our Heritage" event was organized to communicate outcomes of the Phase I implementation of KSLCDI among diverse stakeholders. Implementation Phase of Khangchendzonga Landscape Conservation and Development Initiative (KSLCDI)-India has been started and various research activities like stakeholders consultation, promotion of livelihood improvement, skill and capacity building, promotion of ecotourism, etc are initiated.

#### National Mission on Himalayan Studies (NMHS)

- The National Mission on Himalayan Studies (NMHS), a Central Sector Grant-in-aid Scheme, therefore, targets to provide much needed focus, through holistic understanding of systems components and their linkages, in addressing the key issues relating to conservation and sustainable management of natural resources in Indian Himalayan Region (IHR). The jurisdiction of NMHS includes all IHR states with a broad Vision to support the sustenance and enhancement of the ecological, natural, cultural, and socio-economic capital assets and values of the IHR. The mission is to launch and support innovative studies and related knowledge interventions. Mission strategy is to focus on enhancing livelihoods of local communities, in line with the National Environment Policy, 2006 of the Government.
- The broad objectives of the Mission are (i) to build a body of scientific and traditional knowledge on the aforesaid indicative thematic areas, (ii) to build a network of practitioners (individual and institutions) engaged in working solutions to problems in the thematic areas and (iii) to demonstrate workable / implementable/replicable solutions to the problems in the thematic areas.
- The NMHS has identified a list of 25 indicative thematic areas under 6 broad





thematic thrusts: (i) Sustainable management of land and water resources; (ii) Environmental assessment and management; (iii) Conservation and sustainable use of biodiversity; (iv) Sustainable infrastructure and energy security; (v) Supplementary livelihood options; and (vi) Awareness and capacity building. While targeting the above-mentioned goals and thematic thrusts, the Mission specifically focuses on achieving the objectives of: (a) building a body of scientific and traditional knowledge on the aforesaid indicative thematic areas; (b) building a network of practitioners engaged in working solutions to problems in the thematic areas; (c) demonstrating workable/implementable/replicable solutions to the problems in the thematic areas. The core philosophy is to enhance the focus and funding to support demand-driven research and technological innovations by way of supporting Studies, Pilots and Interventions along with institutional strengthening and capacity building.

### Major achievements of the Mission till date are as follows.

- Total 241 project intervention/monitoring sites are being studied and/or developed in terms of various critical issues ranging from spring rejuvenation to river bank filtration, watershed development, installation of surface-weather stations in various parts of IHR, identification of species and their conservation, etc.
- Total 9 innovative models or methods are progressing at present in different Himalayan States, which include “Ecological Niche Modelling” in Uttarakhand, a low-cost “Bio-waste Conversion Model” in J&K, an alternative model for “Acid Mine Drainage (AMD)” in Meghalaya, etc.
- One patent has also been filed on a very critical issue of pollution in Himalaya due to solid-plastic waste, also prone to health hazards. The proponent is setting up a plant for turning Solid Plastic Waste into an additive bio-fuel “Graphene”, which has multi-facet utilities and applications ranging from additives for concrete mixture to futuristic solar photovoltaics, etc.
- Total 27 trainings have been conducted on several important issues like Food Processing Technologies, Bio-briquetting, Bio-waste conversion and utilization for enhancing crop production and soil health, etc. Total 62 households have started income-generating from the bio-briquetting model in Uttarakhand.
- The Himalayan Database is another priority of the Scheme, which has started covering 26 types of database in the present phase viz., Hydrological and Hydraulic Database, Water Quality Database, GIS Database on LULC and spatial distribution of certain important Himalayan species, Biodiversity database, weather and climate database, etc.

- Total 3 Training Manuals and 12 research papers have been published and distributed among stakeholders as knowledge products on topics like Bio-briquetting, Study of Timber line and Tree line, Wildlife Population Estimation Protocol for Sikkim, Biodiversity of Surya-Kunj, etc.
- Total 16 Demonstration Models have been set as examples highlighting Protected Cultivation Models, Vermi-compost Models, Waste Land Rehabilitation Model, etc.

### Forestry Research

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 of ICFRE:

- To undertake, aid, promote and coordinate forestry education, research and their applications
- To develop and maintain a national library and information centre for forestry and allied sciences
- To act as a clearing-house for research and general information related to forests and wildlife
- To develop forestry extension programmes and propagate the same through mass media & audio-visual aids
- To provide consultancy services in the field of forestry research, education and allied sciences
- To undertake other jobs considered necessary to attain these objectives

### Progress/Achievements:

- A Regional Research Conference was held at Institute of Wood Science and Technology, Bangalore on 17 July 2017. Director General of Forests and Special Secretary to Ministry of Environment, Forest and Climate Change, Government of India, Director General ICFRE, all the Deputy Director Generals of ICFRE, Directors of ICFRE Institutes, PCCFs and Senior Officers of Karnataka, Tamil Nadu, Andhra Pradesh, Telangana and Kerala Forest departments, representatives from Universities, Research institutes, Industries, NGOs, Farmers and other Stake holders participated in the conference. About 100 participants attended the conference.
- Orientation Programme on 'Process of Developing State REDD+ Action Plan for Mizoram' was organised at Advanced Research Centre for Bamboo and Rattan



(ARCBR), Aizawl (Mizoram) in collaboration with International Centre for Integrated Mountain Development (ICIMOD), Kathmandu (Nepal) from 9 to 10 March 2017. The programme was attended by 20 participants from ICIMOD, ICFRE, Dehradun, RFRI, Jorhat Assam, Mizoram State Forest Department, ARCBR, Aizawl (Mizoram) and Mizoram University.

- ICFRE was represented by IFGTB and IWST, Bengaluru in the third edition of India International Science Festival organized by the Ministries of Science and Technology and Earth Sciences, together with Vigyan Bharathi at Chennai, Tamil Nadu from 13 to 16 October 2017. A Mega Science, Technology and Industry Expo was arranged as a part of this Fest. The ICFRE stall was enriched with mega blowups, standees, publications and products. Research highlights including clones released, milestones of 25 years of Forestry research etc. were also demonstrated.

More than 50,000 people visited the stall.

- 21 State Agricultural Universities were accredited by the Accreditation Board of ICFRE till 9 June 2017.

**Forest Research Institute (FRI), Dehradun:**

**Forest Research Institute, Dehradun** organized the XIX Commonwealth Forestry Conference at Dehradun from 3 to 7 April 2017. About 700 participants from many Commonwealth Countries, including India, attended the event. The theme of the event was “Forests for Prosperity and Posterity”. The event was inaugurated by Dr. K.K. Paul, Hon’ble Governor of Uttarakhand while the Valedictory Function was presided over by Dr John Innes, Chair, Standing Committee of Commonwealth Forestry Association. Twelve keynote addresses in four plenary sessions, 95 oral presentations and 216 poster presentations in 19 technical sessions, four special sessions, seven side events, field excursion, exhibition and cultural events were held during the event.



*Dignitaries on the dais during inauguration of XIX Commonwealth Forestry Conference*

- A project entitled “Health Status and Age Assessment of the Trees of Rashtrapati Bhavan” has been completed recently. Oldest tree of Rashtrapati Bhavan was identified by determining the age of older trees. Pathological, entomological, physiological and edaphic problems on the trees of Rashtrapati Bhavan were recorded and remedial measures suggested. The practices for improving the tree health were also suggested.
- Conservation of heritage tree Bodhivriksha at Bodhgaya (Bihar) in which health status of the tree is being monitored and treatments is being given accordingly. Besides this advisory for protection from insect pests and diseases and boosting their growth is also being monitored which will be continued up to 2026.

**Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore:** IFGTB has developed fast growing seed and clone varieties of Acacia, Casuarina and Eucalyptus capable of increasing pulpwood production in a short rotation of 3 to 5 years. During 2017-18, five high-yielding clones of Casuarina released by IFGTB are registered with the Protection of Plant Varieties and Farmers’ Rights Authority (PPVFRA), Government of India to secure the intellectual property right under the provisions of Protection of Plant Varieties and Farmers’ Rights Act, 2001.



*IFGTB Clone CJ-9 in a rain-fed plantation at Tindivanam, Tamil Nadu (age: 28 months)*

- Trainings on the development of Tree Rich Biobooster, an alternative to conventional potting medium were imparted to WSHGs of Irular tribes inhabiting in forest fringe villages of Palamalai, Pillur and Paralikadu in Coimbatore District at IFGTB.



*Members of tribal Women Self Help Groups (WSHG) of Forest fringe villages in Coimbatore undergoing training on Tree Rich*

- IFGTB, Coimbatore in collaboration with National Skill Development Agency (NSDA), Ministry of Skill Development & Entrepreneurship, Government of India, organised a one day workshop on 25 October, 2017 to prepare the scientists for framing the forestry skill curriculum for alignment to NSQF. Ms. Pangkhuri





Boroghain, Principal Consultant, NSDA and Ms. Gaganpreet Kaur, Consultant, NSDA elaborated on the technical aspects of the NSQF.

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

- Linear models were developed to estimate density of Teak wood using Near Infrared

Spectroscopy, a non-destructive technique.

- Nanocellulose networked random oriented fiber composites using arecanut shell fibers, banana stem fibers and jute fibers have been successfully prepared. These composites have potential in developing completely biodegradable packaging materials.



*Nanocellulose networked natural fiber based composites*

- Wood Polymer Composites prepared with different coupling agent were found to exhibit colour changes during natural weathering after one year. The strength properties of composites were also found

to get affected by weathering. However, the prepared composites were found to be resistant against termite and other bio-deteriorating agents.



*Wood Polymer Composite before and after weathering*

- A germplasm bank consisting of 100 candidate plus clumps (CPCs) of *Dendrocalamus stocksii* was established at Hebhhavi nursery area, Belgaum in Karnataka. Training was imparted to Karnataka Forest Department (KFD) personnel on preparation of vegetative propagation beds for raising rooted cuttings of *D. stocksii* and also on selection and preparation of mature cuttings from

CPC's in Khanapur bamboo plantations of KFD near Belgaum.

#### Tropical Forest Research Institute (TFRI), Jabalpur

- The 2 species of spiders, *Cyrtophora moluccensis* (Doleschall) (Tent-Web Spider) and *Ordgarius sexspinosus* (Thorell) (Thread casting bolas spider) were recorded for the first time from Madhya Pradesh.



*Cyrtophora moluccensis*



*Ordgarius sexspinosus*

- IPM of white grubs and use of EPNs: Experiments laid out in nursery beds by introducing EPNs in forest nurseries Saraswahi, Katni (Research & Extension Circle) and Kanchangaon, Mandla (MPFDC) for the management of white grubs revealed 70-80 % control of the problem. Culture of *G. mellonella* was maintained in laboratory for EPN culture throughout the year. Cadavers and stock culture was prepared for field testing. Six native populations of entomopathogenic nematodes were maintained in the laboratory.
- Documentation of biodiversity of forest fungi of Central India: Samples of forest fungi were collected from forest areas of MP, MS and CG and 60 forest fungi were identified including *Laetiporus sulphurous*

on yellow bamboo, *Polyporus grammacephalus* on ber, *Amanita pantherina* on sal, *Astraeus hygrometricus* from sal forest and *Pleurotus ostreatus*. Twenty two documents of forest fungi were prepared from collected samples as well samples present in mycology herbarium.



Local woman selling *Astraeus hygrometricus* with other mushrooms and leafy vegetables at Bajag, Dindori,



## Rain Forest Research Institute (RFRI), Jorhat

- By survey and sampling of soil in areas under shifting cultivation in Nagaland and Karbi-Anglong, 15 Plant Growth Promoting Rhizobacteria (PGPR) were isolated for mass multiplications and introduction in shifting cultivation areas for improving the productivity. Twenty three isolates of Phosphate solubilizing bacteria (PSB) and 8 isolates of Potassium solubilizing bacteria (KSB) were isolated. The cultures are being maintained at RFRI.
- RFRI, Jorhat organized "Skill Development Training on Lac Cultivation and Processing at Chessa VVK, Arunachal Pradesh" on 7-8th June, 2017.
- Organized skill Development training on "Wild Mushrooms Cultivation" at RFRI, Jorhat from 20 to 24 June 2017 for trainees of "Meghalaya Basin Development Authority" (MBDA), Meghalaya.
- Training organized on "Forestry in Addressing Livelihood Issues of People of North Eastern States" sponsored by Ministry of Environment, Forest & Climate Change, Government of India for the stakeholders viz., NGO, JFMC Members, Panchayat members, students, Banking and Media Personnel from 6 to 8 September 2017.

## Arid Forest Research Institute (AFRI), Jodhpur

- A training on "Dry Land Forestry: Propagation, Development &

Conservation" from 12 to 14 September 2017 for 38 officers from PWD, PHED, JDA, Vidyt Vitaran Nigam, Watershed Development and Soil Conservation, Agriculture, Horticulture, Tourism, etc.

- Three days training on 'Role of Forestry in Sustainable Livelihood' was organized from 19 to 21 September 2017 for other stakeholders under umbrella scheme of MoEFCC. 37 participants (member from VFPMC, watershed development committees, NGO, Scouts, school teachers and students from Ayurved University & Botany Dept., J.N.V. University, Jodhpur) participated in the training programme.
- Training programme on "Innovations in Forestry and Dry Land Forestry" from 29 to 31 August, 2017 under umbrella scheme of MoEF & CC for Panchayati Raj Institutions, Member of VFPMCs, NGOs, and School Teachers, Research Scholars from University and Scout Rovers.

## Himalayan Forest Research Institute (HFRI), Shimla

- A total of 106 medicinal plants mentioned as medicinal and used by local people of the region have been documented by interviewing people from the villagers. Of these, 55 were herbs, 24 shrubs, 17 trees, 5 climbers and one fungi.
- Floristic inventory was also carried out in these ranges to document the medicinal plants available in the region. More than 160 MAP's have been inventorised. Geo-referencing of important medicinal plants

such as *Polygonatum multiflorum*, *Angelica glauca*, *Malaxis mucifera*, *Podophyllum hexandrum* etc were carried out.

- Two training programme on 'Sustainable utilization, conservation and cultivation of medicinal plants' were also organized for the frontline field staff of SFD and local villagers of the Chopal.
- HFRI, Shimla organized MoEF&CC, New Delhi sponsored training programme on "Cultivation of Important Temperate Medicinal Plants: an Option for Diversification and Augmentation of Rural Income" from 28 to 30 August 2017, which was attended by 35 Other stake holders.
- HFRI, Shimla organized five day's Skill Development training programme on "Native Bamboo - Utilization, Value Addition and Craftsmanship". About 25 participants from different districts of Himachal Pradesh are participated in this training programme.

### **Institute of Forest Productivity (IFP), Ranchi**

- Dissertation Training Programme on "Basics of Plant Molecular Biology Techniques" from 1 to 30 June 2017 organized for the students of Kalinga Institute of Industrial Technology University (KIIT), Bhubaneshwar, Orissa, St. Xavier's College, Ranchi, Jharkhand and Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad.

- 15 local level trainings were organized in 9 forest divisions of Bihar under Agroforestry Capacity Building Project of Bihar during April 2017 for 631 farmers and 30 forest officials.

### **Institute of Forest Biodiversity (IFB), Hyderabad**

- Farmer clusters were identified to cultivate paddy along with bach organically by introducing Algae, (Blue green algae) *Azolla*, Phosphobacteria, *Trichoderma viride* and also introduce fish and trees in the system. Trees of *Phoenix dactylifera* (dates ) were planted on bunds. Legume fodder crops like *Medicago sativa* were planted on bunds for fish fodder. The paddy was harvested in November/December and bach and fish continued to grow till March. Presently there is 50 acres of paddy + bach system established for nursery multiplication and in that 8 acres is for further evaluation. The Telangana State Medicinal Plants Board (TSMPB) is willing to help subsidy of Rs 11000 per acre and supply free planting material till it is commercially viable with 1000 acres and industry takes over. The Andhra Pradesh Medicinal & Aromatic Plants Board (APMAPB) has sanctioned 6.25 lakhs for propagating a similar system in Bapatla of A.P.





*Farmer who planted Acorus and paddy and cultivated fish on his farm showing the growth of both the crops*

- Cultivated agricultural crops and medicinal plants in 6 agroforestry models and established red sanders and *Flamingia semialata* combination for lac cultivation in 0.5 ha area apart from *Santalum album* with rose wood, teak and eucalyptus system. *Ocimum*, *Andrographis* and cotton, Jowar and pigeon pea were raised in the above systems. The systems have been demonstrated and popularized to a total of 1860 farmers by conducting on campus trainings.

**Indian Institute of Forest Management (IIFM), Bhopal:** The Institute, as a sectoral management institute, imparts education in forest management, which is a judicious

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

### **Progress/Achievements:**

- The Institute offers two academic programmes, Post Graduate Programme in Forestry Management (equivalent to Master's Degree) and M.Phil. (Natural Resource Management). The Institute is also recognized as a Nodal Centre for

Research by Forest Research Institute, Deemed University (FRI), Dehradun for Doctoral programme. The details of

students admitted in the Academic programmes are as under :-

S.No.	Academic Programme	Batch	No. of students
01.	Post Graduate Diploma in Forestry Management	2017-19	95
02.	M. Phil(NRM)	2017-18	07

**Indian Plywood Industries Research & Training Institute (IPIRTI), Bangalore:** Indian Plywood Industries Research and Training Institute (IPIRTI), Bangalore nurtures a vision to come up as an Apex Body of International stature by developing cutting edge State-of-the-art Technology along with in-house expertise to carry-out R & D towards advising and/or providing competitive consultancy to the Academia as well as Panel Industry at large. This is always aimed at adoption of efficient technologies for engineered products from renewable fibres including plantation timbers and bamboo which while meeting the vital needs of the developing society entails conservation of Natural Forests' and Environment as a whole.

The research activities are periodically reviewed and rationalized to keep pace with changing needs of the industry, national policies, raw material scenario and needs of the people for panel products. Side by the Global concerns for protection of Environment and conservation of Bio-diversity are kept in mind while formulating research programmes.

#### **Achievements/Progress:**

- There were in all 89 projects since 61st RAC

meeting held on 07th April, 2017 of which 50 projects were funded by the Institute and 39 projects sponsored by various organizations. Of the 50 Institute funded projects, 21 were completed of which 13 reports so far published & 10 new projects were placed before RAC for approval & 10 were approved by RAC. Among 19 on-going Sponsored Projects, 10 Reports have been submitted to the sponsors 20 consultancy projects were received from various firms and organizations.

- Technology transferred to the industry through 5 sponsored and 2 consultancy projects.
- During the period, training for 28th batch Course for One year Post-graduate Diploma in Wood and Panel Industries Technology for graduates in Science and Engineering was started and the course is in progress wherein 34 candidates (including industry sponsored candidates) are undergoing training.
- Various Short term vocational training courses for fresh graduates and technicians from plywood factories have been conducted for technical personnel from



industry to improve their skill in the specialized field of interest such as veneer peeling, bamboo processing technology resin manufacture, panel/sheet manufacture, saw milling & saw doctoring and testing and standardization as well as specific training in the mode of transfer of technologies. Total 14 training courses with participation of 513 candidates were conducted in Bangalore and IPIRTI Field

Station, Kolkata and IPIRTI Centre, Mohali.

- The 53rd Annual General Meeting (AGM) of IPIRTI held on 21st April 2017 at MoEF&CC, New Delhi under the chairmanship of Late Shri. Anil Madhav Dave, Hon'ble Minister of State (Independent Incharge) for Environment, Forest and Climate Change, Government of India and President, IPIRTI Society.



- Dr. B.N. Mohanty, IFS, Director convened 126th BoG Meeting of IPIRTI under the Chairmanship of Shri. Ajay Narayan Jha, Secretary to Govt. of India at Bangalore. On

this occasion, a video CD about "Bamboo: The Game-Changer for North-East India" was released in the interest of Bamboo sector of the Country.



Secretary, EF&CC released the book "Bamboo The Game-Changer for North East India"



- The 54th Annual General Meeting (AGM) of IPIRTI was held at MoEF&CC, New Delhi. This meeting was presided by Dr. Harsh Vardhan, Hon'ble Minister for Environment, Forests & Climate Change, Govt. of India. During the course of Meeting, the Hon'ble Minister released the

book named "Synthetic Resin Adhesives for Panel Products in India" authored by Ms. Sujatha, Dr. Mamatha and Dr. B. N. Mohanty. Two Research Reports of the completed projects were also released by Hon'ble Minister on this occasion.



*Dr. Harsh Vardhan, Hon'ble Minister & Secretary, EF&CC in the 54th Annual General Meeting (AGM) of IPIRTI.*

**Development of Composite using Bamboo Saw Dust and Bamboo Fibers:** Bamboo saw dust composite and bamboo fiber bundle reinforced saw dust composite were developed without using any external resin/adhesive. Bamboo saw dust was hot pressed to make the panel product. The temperatures employed were 160°C, 180°C and 200°C at 4.5 MPa pressure of flat press. Samples were tested for mechanical and water absorption properties. The mechanical and water absorption properties improved with increasing temperature.



**Development of Light Weight Composite Panel Products:** The aim of this study was to provide an engineered wood panel of lightweight construction that can be manufactured in a cost-efficient manner and meets the strength properties as per relevant standards.





Light weight panels were made using Melamine Urea Formaldehyde and Phenol Formaldehyde resin with foaming agent for all the categories of particle boards. Developed product has yielded better physical and mechanical properties compared to control boards made without foaming agents.



**Development of new fire-retardant adhesive composition for manufacturing of wood based panel products:** A cost effective, fire retardant, wood binding adhesive composition was developed by taking thermosetting resin used in plywood industry like phenolic and amino plastic resin to substitute chemicals used in conventional fire retardant plywood making process.

It was observed that satisfactory fire retardancy properties like flame penetration, flammability and rate of burning were achieved when tested as per IS:5509:2000.



**Indira Gandhi National Forest Academy (IGNFA), Dehradun:** IGNFA was constituted in the year 1987 by renaming the erstwhile Indian Forest College vide Ministry of Environment and Forest order No. 1-6/87-RT dated 25.05.87. This Academy is engaged in imparting Induction training to IFS (Probationers) and in service training of one week/two week/three weeks to the in-service officers. Academy has also started Professional skills up gradation training for the officers promoted to Indian Forest Service from SFS and officers of other services including judiciary. Brief objective/activities of the Academy are as under:

1. Conducting initial training of IFS probationers extended over a period of three years (changed to two years from 2005).
2. Organizing Professional skill up gradation training programme for officers of SFS promoted into IFS.
3. Conducting compulsory course for in service IFS officers at middle/senior level.
4. Organizing thematic seminar/workshop on relevant sectoral issues.
5. Conducting Advanced Forest Management Courses for in service officers with 10, 17 and 21 years of service in IFS upto 2001 YOA.
6. Organizing Senior Foresters Workshop for senior IFS Officers of 50 years (retired foresters) and 30 years of service.
7. Conducting Mid Career Training Programme for IFS officers of 7-9 (Phase-

III), 14-16 (Phase-IV) and 24-26 years (Phase-V) of service.

**State Forest Service and Rangers College:** The Directorate of Forest Education (DFE) under the Ministry is responsible for imparting professional/technical training of direct recruit of the State Forest Service (SFS) Officers and Forest Range Officers (FROs). The Directorate also supplements the efforts of various States for the training and capacity building of the Forest Frontline Staff (Deputy Rangers, Foresters and Forest Guards) through the respective Forest Training Institutes. There are 4 (four) Academies under the Directorate. The names and intake capacity (Per batch) of these Academies are as under:

- Central Academy for State Forest Service, Dehradun - 40
- Central Academy for State Forest Service, Coimbatore - 40
- Central Academy for State Forest Service, Burnihat - 40
- Central Academy for State Forest Service, 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 & 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

### 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).





**CASFOS, Coimbatore:** Established in 1980, the Central Academy for State Forest Service or CASFOS, Coimbatore is located in the picturesque Forest Campus, at R.S. Puram in the city of, Coimbatore, Tamil Nadu. The academy shares the space of the exquisite Forest Campus alongwith two more premier

forestry institutions viz., Tamil Nadu Forest Academy-TNFA (erstwhile Madras Forest College) and Institute of Forest Genetics and Tree Breeding (IFGTB) one of the leading research institutes under Indian Council of Forest Research and Education. This campus also houses the famous 'Gass Museum'.



**CAFE, Kurseong:** The Central Academy of Forest Education (CAFE) is the only forest training institution under Government of India exclusively to train Forest Range Officers. Established in 1974, the institute is located on picturesque St. Mary's Hill in Kurseong near Darjeeling, overlooking the mighty Kanchenjunga. The Forest Rangers training in India is over 100 years old. Rangers Training was imparted upto 1978 centrally through 5 colleges located at Dehradun, Coimbatore, Kurseong, Chandrapur and Balaghat. These colleges were managed by the Government of India and had a training program of 2 years. After 1987, the erstwhile Eastern Forest

Rangers' College, Kurseong now called as Central Academy of Forest Education (CAFE) is the only Rangers college under the Government of India training Forest Range Officers.



## Wildlife Institute of India (WII), Dehradun

Wildlife Institute of India was established in 1982 as an attached office of the Ministry of Environment and Forests. Subsequently, it was granted autonomous status in 1986. The institute is mandated by Government of India to carry out research on various aspects on Wild Life conservation, conduct training programmes for capacity building of Wild Life managers, build up repository of knowledge of Wild Life and provide technical and advisory services to the State and Central Governments in the country.

- Higher Education and Academic Activities
  - 16th M.Sc. Course in Wildlife Science
- Workshops, Seminars, Meetings and Other Activities
  - World Heritage Day 2017 Celebrations at WII, Dehradun, 18th April, 2017.
  - Visit of Shri Suresh P. Prabhu, Hon'ble Minister of Railways, WII, Dehradun, 13th May, 2017
  - Braille Version of the SECAS Booklet Released, New Delhi, 23rd May, 2017.
  - WII - HESCO Workshop, Dehradun, 23-24th May 2017.
  - Swachhta Pakhwada celebrations at WII, Dehradun, 1-15th June 2017.
  - World Environment Day Celebrations at WII, Dehradun, 4-6th June 2017.
  - Training Programme on "Eco-Friendly Measures to Mitigate Impacts of Rail Projects on Wildlife", Dehradun, 15-17th June 2017.
  - Training-cum-Sensitization Workshop for Forest Officials on "Biodiversity Conservation and Monitoring Techniques of Aquatic Species of Ganga River", Sarnath, 3rd July 2017.
  - One-day Workshop on "Biology and Conservation of Turtles in Ganga River", Sarnath, 4th July 2017.
  - Conservation Awareness and Sensitization Programme for Students of Government Secondary School, Sarnath, 4th July 2017.
  - Training Program on 'Application of Very High Resolution Satellite Data in Natural Heritage Management' Dehradun, 11-14th July, 2017.
  - Training programme on 'Advances in Wildlife Research and Conservation', Dehradun, 10-14th August, 2017.
  - NMCG-WII project "Biodiversity conservation and Ganga Rejuvenation" August, 2017.
  - Consultative Meeting on 'Preparation of the Zonal Master Plan for Eco-Sensitive Zone (ESZ) around Protected Areas', Dehradun, 28-30th August, 2017.
  - 2nd Himalayan Research Seminar, Dehradun, 1st September 2017.
  - XIII Internal Annual Research Seminar, Dehradun, 30th August 2017.
  - The XXXI Annual Research Seminar (ARS), Dehradun, 5-6th September 2017.





- Ten days Orientation Workshop on Wildlife & Health Management for Veterinary Officers of Uttarakhand State, Dehradun, 11-20th September, 2017.
- MStrIPES Workshop, Dehradun, 11-13th September 2017.
- World Ozone Day, Dehradun, 15th September 2017.
- First Meeting of the Independent Regional Expert Committees for Management Effectiveness Evaluation (MEE) of National Parks and Wildlife Sanctuaries in India in 2017-18, New Delhi, 19th September, 2017.
- Presentation on Work Environment for the Women Employees: Statutory and Organizational Aspects, Dehradun, 25th September, 2017.
- Study Tour of Wildlife Officials from Sri Lanka, Dehradun, 1-15th October 2017.
- XV WII-FODS "Wildlife and Environment Quiz" 2017, Dehradun, 6th October, 2017.
- Hands-on Training on Marine Biodiversity Monitoring with Scuba Diving by CAMPA-Dugong Recovery Programme, Gulf of Mannar Marine National Park, Tamil Nadu, 8-15th October, 2017.
- MStrIPES Workshop, Dehradun, 9-11th October 2017.
- Conservation Awareness Workshop for School Children, Dehradun, 12th October, 2017.
- One-Week Special Courses in Wildlife Protection, Law and Forensic Science for Officer Trainees of Indian Revenue Service (Customs and Central Excise) Group-'A', 68th Batch, Dehradun, 18-23 September; 30th October-3rd November and 13-17th November, 2017.

# Education and Awareness

**08**  
CHAPTER





## Education and Awareness

Under Environmental Education, Awareness and Training (EEAT) scheme, there are three programmes namely National Green Corps (NGC) “Ecoclubs”, National Nature Camping Programme (NNCP) and Capacity Building activities.

EEAT scheme is central sector scheme launched during financial year 1983-84 and aims to promote environmental awareness and mobilize student’s participation for environment conservation.

### **National Green Corps (NGC) Programme:**

MoEFCC embarked upon a major initiative for creating environmental awareness among children by formulating National Green Corps (NGC) in 2001-02. There are around 1,00,000 Eco clubs across the country. A financial assistance of Rs 5,000/- per school and college is provided under this programme. The ceiling limit of 250 schools per district and 100 colleges per state has been kept. The following activities are undertaken:

- Awareness on solid waste management through waste segregation (biodegradable and non-biodegradable) and on concept of 4Rs i.e. ‘Reduce, Reuse, Recycle and Recover’ amongst students through establishing 2-Bins in schools– (1) Blue Bin for dry waste like Paper waste, Glass waste, E-waste and (2) Green Bin for wet waste.
- Celebration of important environmental days in schools such as World Environment Day, World Wetland Day, Earth Day, etc. by organising debates, quiz, slogan

competitions, drawing/poster competitions etc, on the related theme.

- Plantation drives in and around the school campus, organised in the district/locality, preferably during the monsoon season.
- Cleanliness drives to be conducted twice a year i.e. October and December (preferably post examination period during October & December holidays).

### **National Nature Camping Programme:**

The ‘Nature experience’ to children and teachers has huge potential to trigger the sensitivity towards nature appreciation and conservation, leading to positive environmental actions at different levels. Under this programme field visits (nature camps) are organised in different protected areas/ Nature parks/Tiger Reserves of the country for 3 days to create awareness amongst school/college students on environment and nature. The following activities are undertaken:

- ‘Apna 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; 17 Sustainable Development Goals, Climate Change related issues with focus on Adaptation and Mitigation, Control of pollution and any other related theme of MoEF&CC.

### Progress/Achievements:

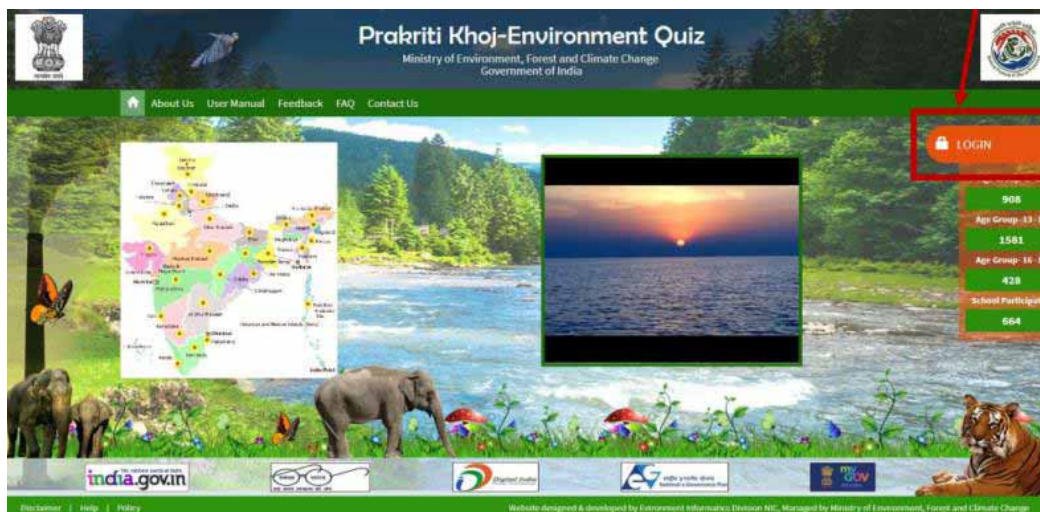
- Under NGC programme, the financial assistance has been increased from 2500/- per Ecoclub to 5000/- per Ecoclub. As on date, 70602 Ecoclubs have been supported across 16 States/UTs.



*Meeting with State Nodal Agencies under the chairpersonship of Additional Secretary on 31.8.2017 in the Ministry of Environment, Forest & Climate Change*

- Around 30,000 students from 3499 schools got registered ([www.pkeq.nic.in](http://www.pkeq.nic.in)) in the “Prakriti –Khoj”- online Environment Quiz’

an environment initiative and 11,000 participated across the 26 States/UTs.







- Around 15000 students of Eco-clubs from Delhi participated in the Mini Marathon “Run for Clean Air” Swachh Hawa for Swachh and Swasth Bharat on 15.10.2017 at India Gate, New Delhi inaugurated by Hon’ble Minister for Environment, Forest

and Climate Change, Dr. Harsh Vardhan and Hon’ble Minister for State for Environment, Forest and Climate Change, Dr. Mahesh Sharma. Teachers were provided the participation certificate and Green pledge was also administered among the students.



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC in Swachh Bharat Abhiyaan*

### Swachh aur Swastha Bharat Cell

Hon’ble Prime Minister of India launched Swachh Bharat Abhiyaan on 2nd October, 2014 at Rajghat, New Delhi to realise the dream of Clean India. He envisaged a vision of achieving total sanitation and cleanliness by 2nd October 2019 to pay a befitting tribute to Mahatma on his 150th birth anniversary.

As a part of carrying forward the ambitions of Swachhta to a whole new level, Ministry of Environment Forest and Climate Change took

this challenge to usher cleanliness in Air, Water & Land improving air and water quality. Accordingly, major goals of the ministry with respect to Swachhta Abhiyaan were identified and rigorous comprehensive plan was devised for four sectors:-

- Pollution abatement ( Air, Water, Soil)
- Plantation
- Waste Management
- Environment Education/ Awareness

During FY 2017-18, SSB Cell launched a number of initiatives to create awareness among masses about the importance of clean air, water and land as under:

**Swachhta Hi Seva Campaign:** Ministry of Environment, Forest and Climate Change organized “Swachhta Hi Seva” Campaign from 15th September to 2nd October 2017. SSB Cell through Ministry’s Regional offices, Subordinate/Autonomous Bodies undertook cleanliness Drives across the nation creating awareness about cleanliness among masses.

**Celebration of Swachhta Pakhwada:** MoEF&CC, Government of India has been celebrating Swachhta Pakhwada during 1st – 15th June for past two years under the Swachh Bharat Mission and has called the effort “Clean India- Green India.” As a part of celebration of Swachhta Pakhwada during 1-15, July, 2017, Cleanliness Drives along with plantation of saplings were carried out in identified areas namely B.R Ambedkar Park, Nehru Park, Lodhi Garden and INA market area. Other activities undertaken at other subordinate /attached offices of MoEF&CC are as follows:

- Cleaning, disposal of waste, educating the community
- ShramDaan, Rallies, NukadNataks/Skits, etc., at villages / cities/towns.
- Exhibition and promotion of films on environment, wildlife and forests conservation in India through relevant Ministries/Departments.
- Sensitizing children, students, youths on environment issues including, waste

management, water conservation, and energy conservation.

- Organise Spardha through Eco Clubs and other youth’s functions.

**“PrakritiParyavaran Aur Hum” Initiative:** Hon’ble Minister for Environment, Forest & Climate Change has launched the major initiative “Prakriti Paryavaran Aur Hum” under Swachh Bharat Mission on 15 June, 2017 in National Zoological Park. This initiative intends to intensify the implementation of the activities detailed out under the Swachh Bharat Abhiyan in each of States/Union Territories in order to achieve aforesaid objectives. Under this initiative, Senior Officers of this ministry were assigned one State/UTs. The Officers assigned visited villages / district and other localities of the concerned States/ Union Territories and submitted their report.

**Swachhta Action Plan:** A two year Swachhta Action Plan for 2017-18 and 2018-19 has been prepared and shared with M/o Drinking, Water and sanitation whose progress is to be reviewed by Cabinet Secretary on quarterly basis.

### Progress /Achievements:

**Run for Clean Air Campaign:** In a bid to discourage burning of crackers, SSB Cell conducted a Mini-Marathon at India Gate on 15th October, 2017 before Diwali to make aware about ill-effects of crackers. Around 16,000 students and public participated in this event with great enthusiasm wherein our Hon’ble MEFC as well as MoS (EF&CC) urged public to do away with crackers and jointly work towards Clean & Green India.



*Dr. Harsh Vardhan, Hon'ble Minister at "Run for Clean Air Campaign" at India Gate.*



## Media Cell

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.

MoEF&CC has undertaken several initiatives towards environment, forest and climate change of which the public is not aware of. Secondly, the mandate of MoEF&CC includes increasing awareness of the masses on the impact and changes in environment. This involves collection and dissemination of environmental information and creation of awareness at the national level. The Environment Education, Awareness and Training is a flagship scheme of the Ministry, inter-alia, for enhancing the understanding of people at all levels about the relationship between human beings and the environment. The scheme, inter-alia, has an objective to engage mass media and other concerned organisations for promoting awareness about environmental issues among people at all levels.

## Broad Objectives:

- I. Creation of Environment awareness at all levels.
- II. Information dissemination about all Environment and Forest programmes and Biodiversity conservation.
- III. People are made aware of their responsibilities towards environment.

## Major Activities of Media Division:

**World Environment Day:** Day 5th of June is observed and celebrated as the World Environment Day (WED) to commemorate the hosting of the historic UN Conference on Human Environment in 1972. Each year, UNEP provides a theme, based on which all countries organize their programmes, including functions, lectures, campaigns, rallies, and discussions, etc.

UNEP theme for WED was 'Connecting people to Nature'. The theme for World Environment Day 2017, implores us to get outdoors and into nature, to appreciate its beauty and its importance, and to take forward the call to protect the Earth that we share. WED is the biggest annual event for positive environmental



action and takes place every 5th June. This year's host country Canada got to choose the theme and will be at the centre of celebrations around the planet.

This year's theme invites us to think about how we are part of nature and how intimately we depend on it. It challenges us to find new and exciting ways to experience and cherish this vital relationship.

World Environment Day 2017 was celebrated

by the Ministry at New Delhi and at Indian Council of Forestry Research and Education (ICFRE), Dehradun. Various activities were organised on WED by different organisations on the request of Ministry of Environment, Forests and Climate Change. Some of the activities were – film festival, Screening of movie – The Wishing Tree (Kalpvriksh), participation in slogan competition, Drawing and painting competition, photography competition, etc.



*Celebration of World Environment Day on 5th June, 2017 at IPB, New Delhi*



*World Environment Day Celebration at FRI, Dehradun on 05-06.2017*





Science Express Climate Action Special (SECAS II): Science Express Phase 9 was based on the theme 'Climate Change and Science & Technology'. It ran as the second edition of Science Express Climate Action Special (SECAS II) across India from 17 February to 8 September 2017. SECAS II was a unique collaborative initiative of Department of Science & Technology (DST), Ministry of Environment, Forest & Climate Change (MoEF&CC), Department of Biotechnology (DBT), Ministry of Railways, Govt of India, Wildlife Institute of India (WII) and Vikram A Sarabhai Community Science Centre (VASCSC).

SECAS II was flagged off on 17 February 2017 from Delhi Safdarjung Railway Station by Shri Suresh Prabhu, Hon'ble Minister of Railways; Dr. Harsh Vardhan, Hon'ble Minister of Science & Technology and Earth Sciences; and Late Shri Anil Madhav Dave, Hon'ble Minister of State (I/C) for Environment, Forest and Climate Change, Govt. of India.

The state-of-the-art exhibition aboard the SECAS II aimed to create awareness among various sections of society, especially students, about Climate Change and also provided a good opportunity to generate dialogue and discussion. In addition to the exhibition, the SECAS II hosted activity spaces on board, viz. Joy of Science Lab, Kid Zone and Teachers Orientation. Solar Panels installed on 3 coaches and external window panes displaying drawings by students were an attractive feature. Platform Activity and Outreach Activity serve to spread further the reach of this exhibition.

During its tour of the country from 17 February to 8 September 2017, the SECAS II was exhibited at 74 locations, covering 19,500 km. In all, more than 24.71 lakh people visited this exhibition which is highest across all phases of the Science Express since 2007.



Organised one day event on Swachhta Abhiyan in collaboration with Swachhta Cell of the Ministry at Delhi Zoo. The function was participated by Hon'ble Minister of Environment, Forest and Climate Change along with Senior Officers of the Ministry.

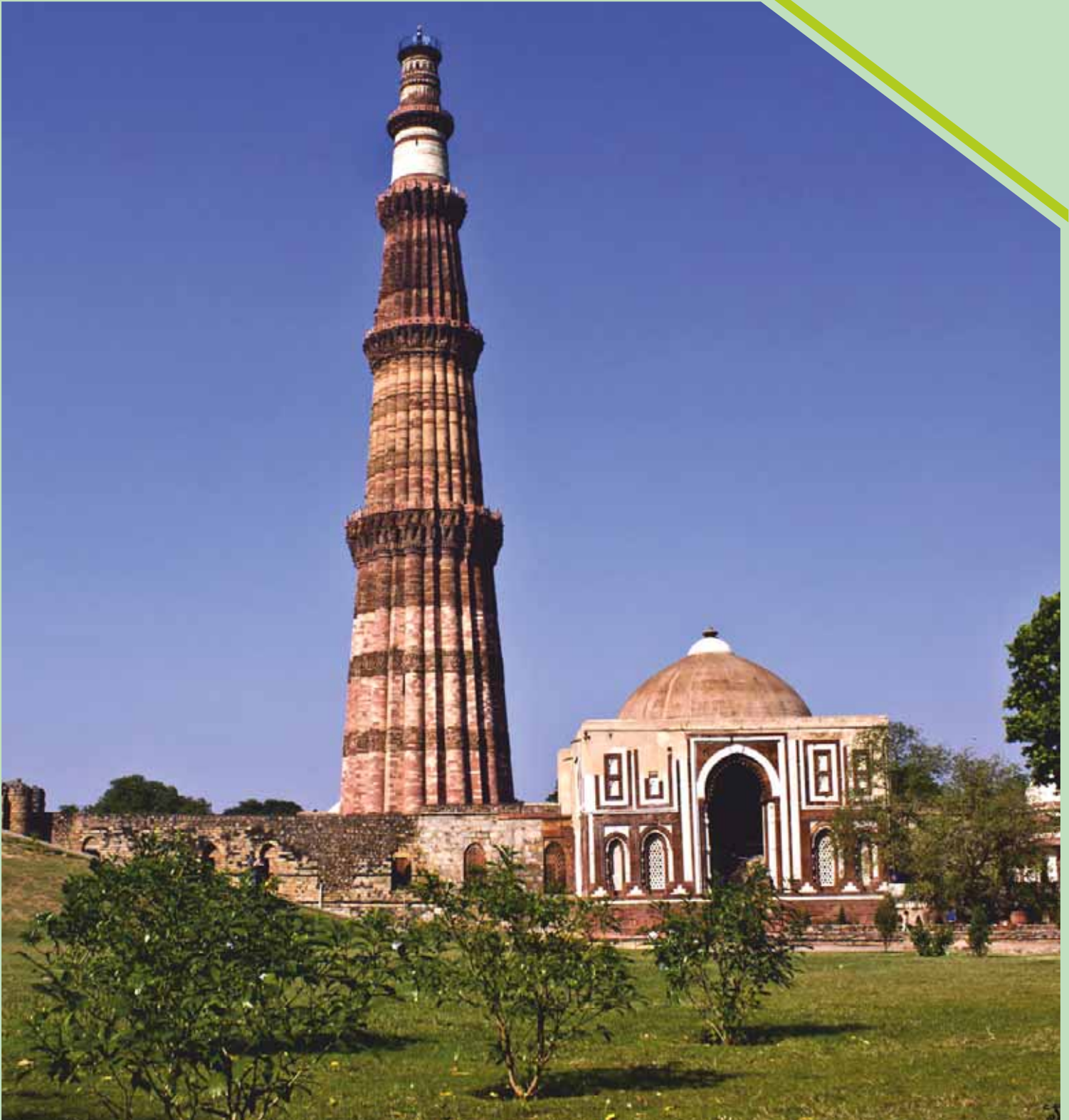
Exhibitions and Students' visit have been conducted on Special Occasions/ Days like

World Water Day, Tiger Conservation Day, Wetland Day, etc. for generating awareness among common masses especially Children/ Students.

2 Radio Jingles on Pollution aired during the programme "Chandi ke Parde Se" during the month November-December 2017 through Prasar Bharti.

# Centers of Excellence

**09**  
CHAPTER





## Centre of Excellence

The scheme on Centres of Excellence was initiated by the Ministry of Environment, Forest and Climate Change in the year 1983. During its initial stage it was realised that there is a tremendous challenge of bringing in environmental considerations in developmental process of India required a multi-pronged institutional strategy. Certain functions were best done entirely through government systems, others needed new institutions set up by government.

The CoE scheme is being revamped with the end of XIIth Five Year Plan, on the basis of Evaluation Committee report, whereby all institutions of excellence in the country in relevant thematic areas including all existing Centres of Excellence can apply for financial

assistance in project mode on various thematic areas of the Ministry.

The Ministry has decided to grant the autonomous status for SACON and the process is being finalized.

SACON was set up by the MoEF&CC in 01/11/1988 mandating broad functions in the sphere of biodiversity conservation, namely i) Conducting research in Ornithology including Post Graduate research ii) Applied research of direct relevance to Ornithology and short-term orientation courses in specialized aspects of Ornithology and Natural History, and iii) Creation of Databank on Ornithology. SACON's mission is "help conserve India's biodiversity and its sustainable use through research, education, and people's participation, with birds at the centre stage".

## Annual General Meeting (AGM)



The 25<sup>th</sup> Annual General Meeting (AGM) of the Salim Ali Centre for Ornithology and Natural History (SACON) was held at 3.00 PM on 16th May 2017 at the Ministry of Environment, Forest and Climate Change, New Delhi and

presided over by Late Shri Anil Madhav Dave, Hon'ble Minister of State (I/C) for Environment, Forest and Climate Change, Govt. of India. On the occasion, the Hon'ble Minister released a book titled "Bibliography of Tamil Nadu



Wetlands”, a publication of SACON and the second copy of the publication was released by Shri. Nasimuddin, IAS, Principal Secretary, Dept. of Environment and Forests, Govt. of Tamil Nadu.

The 26<sup>th</sup> Annual General Meeting (AGM) of Salim Ali Centre for Ornithology and Natural

History (SACON) was held at 9.00 AM on 4<sup>th</sup> September 2017 at Coimbatore, Tamil Nadu under the presidentship of Dr. Harsh Vardhan, Hon'ble Minister for Environment, Forest and Climate Change (MoEF&CC), Govt. of India (President – SACON Society).



*Hon'ble Minister in 26th Annual General Meeting (AGM) of Salim Ali Centre for Ornithology and Natural History (SACON) at Coimbatore.*





# Environmental Information

**10**  
CHAPTER







## Environmental Information

ENVIS, a Central Sector Scheme is being implemented through a network of 67 ENVIS Hubs and Resource Partners (RPs) of which 31 Hubs dealing with "State of the Environment and Related Issues" are hosted by the respective State Government /UT Administration and 35 RPs are hosted by environment-related governmental and non- governmental organizations/ institutes of professional excellence, with varied thematic mandates pertaining to environment, forests, climate change, pollution abatement, health/ hygiene etc. The primary mandate of the scheme to collect and disseminate information relating to a variety of themes associated with Environment, Forest, Wildlife and Climate Change sectors has been expanded after the termination of the XII Five Year Plan period in 2016-17 to include skilling in 'green' sectors, Community based sustainable development of villages, District level grid based survey for sustainable management of natural resources, etc.

**Activities undertaken in 2017-18:** From 2017-18, ENVIS Scheme has been placed under the Umbrella Scheme 'Decision Support System for Environmental Policy, Planning and Outcome Evaluation'. In order to develop a robust decision support system and to strengthen the ENVIS Scheme in the remaining years of the 14th Finance Commission (FC) period (2017-18 to 2019-20) and for future FC cycles, various new initiatives have been introduced under the Scheme, in addition to the existing mandate.

- **Green Skill Development Programme (GSDP)** - for skilling the youth in the country. The first GSDP course was formulated for skilling Biodiversity Conservationists (Basic Course) and Parataxonomists (Advance Course) of 3

monthys' duration each, on a pilot basis in ten select districts of the country (covering nine bio-geographic regions). Hon'ble Minister, EF&CC launched the GSDP and released the training course Modules on June 4, 2017, on the eve of World Environment Day.

- **Community-driven Environmentally Sustainable Village Program (CESVP)**- with an objective of mobilising communities on environmental issues, creating decentralized models of development to empower local communities and build an awareness-driven atmosphere in villages to adopt environmentally sustainable practices at community level. Under the programme, ENVIS Resource Partners would serve as subject/technical experts for implementing the environmental development agenda under Saansad Adarsh Gram Yojana (SAGY) and Member of Parliament Local Area Development Scheme (MPLADS). The Delhi based 7 ENVIS RPs (hosted by JNU, WWF, IHH (Sulabh), CPCB, CMS, SPA, and TERI) are involved in carrying out coordinated activities since October, 2017, aimed at creation of awareness about major environmental issues covering pollution, waste management, water management, soil management, biodiversity preservation, setting up of community driven projects, such as solar energy, health status, etc. in three villages, viz., Dheerpur, Ghoga and Singhola in Delhi.
- **Grid Based Decision Support System (GRIDSS)**- for Sustainable Management of Natural Resources: In order to ascertain the status of environment at district level and facilitate policy decisions, the ENVIS

Hubs /Resource Partners would carry out environmental survey of the country through a grid-based approach, for grids measuring 9×9 kms or a suitable measurement, depending on the requirement, for effective survey of various environmental parameters such as air, water, noise, soil quality, solid, hazardous & e-waste, forest & wildlife, flora & fauna, wetlands, lakes, rivers & other water bodies, public health etc. The district-wise information on various environmental parameters would be geo-mapped, which would help in appraisal of environmental proposals at the District, State and Centre level. GRIDSS would also contribute significantly towards preparation of State of Environment Reports/ Atlases, valuation of Eco System Services, estimation of Green GDP at State/ District levels. The ENVIS Hubs and RPs have identified the districts based on different eco-sensitive zones, the survey work in which would commence from 2018-19.

- On the occasion of World Environment Day, various programmes such as Paryavaran Sanrakshan Rally, Green Pledge, Nature Walk, Plantation Drive, Slogan Writing, Nukkad Natak, Debate Competition, Film Shows on Environment Conservation, etc., were organized by ENVIS Hubs and RPs, across the country.
- Officers of the Environmental Information Division of the Ministry conducted visits to 10 ENVIS Hubs/ RPs upto January 2018, for physical verification and assessment in order to strengthen and enrich the activities of ENVIS and review the matters specific to these Hubs/RPs.
- A Workshop-cum-training programme on

GIS/Geo- mapping for the officials of the ENVIS Hubs and Resource Partners was held at Bhaskaracharya Institute for Space Applications and Geo-informatics (BISAG), Gandhinagar, Gujarat BISAG, on September 22-23, 2017. 160 ENVIS Coordinators and staff attended the training programme.

- ENVIS Hubs and RPs were actively involved in the promotion of Swachh Bharat Abhiyaan in their respective areas. Delhi based ENVIS RPs published a booklet on "Swachhata Pakhwada". 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. They conducted a series of events committed to "Van Mahotsava". The impact has generated a sense of responsibility among the locals, especially the young generations towards the need for environment sustainability.
- ENVIS Hubs and RPs displayed ENVIS information products/organised various activities at 14 Railway Stations enroute during the ninth phase of the Climate Change Science Express which was flagged off on 17 February, 2017 from Delhi and concluded its nation-wide journey in September 2017.

#### **Progress /Achievement made during 2017-18:**

- Under the pilot of GSDP, 94 Trainees successfully completed the basic course qualifying as skilled Biodiversity Conservationists and 154 students are enrolled for the Advance Course on Parataxonomy which is expected to conclude in March, 2018. BSI and ZSI are the nodal centres for this skill programme.





- With the success of the pilot, the scope of the programme is being extended to an all India level covering other green skills such as Pollution Monitoring (Air/Water/Noise/Soil), ETP Operation, Waste Management, Valuation of Ecosystem Services, Green GDP, Carbon Stock, Water Budgeting & Auditing, Conservation of River Dolphins, etc.
- During the year, ENVIS Network printed, published and uploaded more than 350 Knowledge products including newsletters, books, theme based special publications, e-books, e-bulletins, booklets, environment calendars, brochures, pamphlets, DVDs, CDs, Mobile Apps, etc.
- 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 2.60 crore hits till 31.12.2017, which is expected to reach 3.25 crore by 31.03.2018.
- ENVIS Focal Point at the Ministry and its partners together responded to more than 2,23,000 queries till December, 2017 on various subject-areas of environment and provided substantive information to users as far as possible, on climate change, ozone layer, environmental conservation, water and air pollution, water management, waste management, environmental standards, applicable laws, environmental education and awareness, etc. Wherever information was not readily available, “Referral Service” was provided to the users concerned.
- During the year, three new ENVIS Hubs on “Status of Environment and related issues”

were established in three States in the following institutions/bodies:

- a. EGREE (East Godavari River Estuarine Ecosystem) Foundation, Andhra Pradesh,
- b. EPTRI (Environment Protection Training and Research Institute), Telangana, and
- c. State Pollution Control Board, Nagaland

Four ENVIS RPs were set up at the following institutions with the relevant themes:

- a. Asian Development Research Institute (ADRI), Patna on the theme ‘Water Management and Climate Change’,
- b. National Law School of India University (NLSIU), Bengaluru with the theme on ‘Environmental Law and Policy’,
- c. North Eastern Hill University (NEHU), Shillong on the theme ‘Establishing E-waste, biomedical waste and hazardous waste management system’, and
- d. Thiagarajar College of Engineering (TCE), Madurai on the theme ‘Plastic Waste Management’.

EPTRI has successfully standardised the tissue culture protocol for mass propagation: Aloe cameronii (Cameron’s Ruwari Aloe, Red Aloe) was first discovered by Kenneth Cameron of the African Lakes Corporation, who sent it to the Royal Botanic Garden at Kew in 1854. A medium-sized, clustering aloe with leaves that turn from green to intensely red or purplish in summer. Red aloe vera doesn’t have bitter taste and becomes red on cutting it into pieces. Red Aloe Vera is about 22 times more powerful than common Aloe Vera, as it has higher nutrient concentrations. The amino acid content of red aloe vera is double to that of common aloe vera. Like the common aloe vera, red aloe vera products are 100% safe to use.

Red aloe vera is used in various ayurvedic medicines for treatment of cancer, cholesterol, diabetes, inflammation and other health conditions. Red Aloe vera is a cleansing agent for various complaints.

Vegetative propagation is not sufficient for meeting the market demands. EPTRI has successfully standardized the tissue culture protocol for mass propagation of red aloe vera and thus producing thousands of Aloe vera plants.



*Tissue culture raised plant at EPTRI*

## Statistical Cell

The Ministry of Environment, Forest & Climate Change created a Statistical Cell with the objective to develop an efficient and centralised statistical database on environment, forest & climate change with the assistance of various Environment Centres, under the 'ENVIS' Scheme. Secondly to Liaison with State/UT Governments and UT Administrations, and where necessary, to strengthen the processes of data collection, validation, processing and interpretation of statistical data, with the assistance of ENVIS Centres and Centre for excellence.

Earlier, State agencies used to prepare the Report, but to enhance its intrinsic value, it was

decided to prepare it by an independent agency along with expert institutions of high repute, with the active involvement of planners and policy makers so that its utility increases. The list of few Experts Institutions has already been drawn up which needs to be extended. However, the involvement of the State Government and its Planning Department/Board would be vital. The environment issues should be taken in planning process by the respective States as the stakeholders are planning departments and environment departments. SoER reporting will be a continuous and rigorous process. The Report would be reviewed after two year of additionality and improvement. There is a need to make it an online tool in planning process so that impacts on the environment may be analyzed well in time.

The State of Environment Report 2015 (National) has been finalized and is likely to be released soon. SoER for the state of Telangana has been finalized and released on 6th January, 2018 by Dr. Mahesh Sharma, Hon'ble Minister of State, MoEF&CC, Govt. of India and Shri. Jogu Ramanna, Minister, EFS&T, Govt. of Telangana. SoER Mizoram, Sikkim and Nagaland are at final stage. Preparation of SoER Karnataka has already been started. Preparation of SoER for other states are likely to start soon.

The statistical cell has also already initiated work for development of National Green Accounting, Development of Environmental Statistics & Indicators and Interaction with National and International organization etc. the statistical adviser is the nodal officer in the Ministry.



*Release of SoER, Telangana by Dr. Mahesh Sharma, Minister of State, MoEFCC, Govt. of India and Shri. Jogu Ramanna, Minister, EFS&T, Govt. of Telangana*

## Non-Governmental Organization (NGO) Cell

A Non-Governmental Organisation (NGO) Cell has been set up in the Ministry to handle various policy matters relating to NGO's work in diverse field of environment. The basic functions of the Cell are:

- Collection and dissemination of information to various NGOs.
- Liaison with the NITI AAYOG and other Government Ministries in respect of various guidelines/directions concerning NGOs. Besides replying to Parliament Questions responding various Public

Grievances received from PMO, MoEF&CC, Individuals etc and also handles RTI applications.

An IT Software for end-to-end processing of applications for sanction/release of grants/financial assistance to NGOs. It will provide the facility to NGOs to apply online to avail grants etc under various schemes of this Ministry. Also has been linked with NITI Aayog NGO-Darpan Portal for the Non-Governmental Organisation (NGOs) with the objective of bringing in transparency in their operations.



# Legislation and Institutional Support

# 11

CHAPTER







## Policy and Law

The Policy and Law Division is allocated funds under the Budget Head “National Green Tribunal” and the allocation is done to the following:-

- National Green Tribunal
- Loss of Ecology Authority.
- Dhanu Taluka Environment Protection Authority.

Out of the above mentioned authorities, the ESZ and CP Division are administrative incharge of Dhanu Taluka Environment Protection Authority and Loss of Ecology Authority respectively, while Policy and Law Division handles administrative issues of NGT.

## National Green Tribunal (NGT)

The National Green Tribunal was set up on 18th October, 2010 under the NGT Act, 2010, for the purpose of effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for damages to persons and property and for matters connected therewith or incidental thereto.

NGT has five places of sitting with the Principal Bench located in Delhi and four Zonal Benches in Pune, Kolkata, Bhopal and Chennai for the West, East and North East, Central and South Zone respectively.

Since its inception and upto 30.11.2017, the Tribunal has received a total of 24256 cases, against which 21438 cases have been disposed of and 2818 cases are pending.

**Legal Monitoring Cell (LMC):** A Legal

Monitoring Cell has been constituted to monitor the progress in court cases and also to act as an effective coordinator between various Divisions of the Ministry regarding court cases. The total number of cases wherein the Ministry is a Respondent/Party as on 31/12/2017 was 1934.

**Eco-labelling Scheme:** The Eco-labelling Scheme was first introduced in 1991. It had been decided to provide impetus to the Scheme during 2017-18.

Self Certification has been initially envisaged for enabling faster Eco-labelling process. The products are required to adhere to compulsory quality standards specified by BIS, as a prerequisite to get a license for Eco-labelling.

Consequent to the decisions taken in the Steering Committee meeting held on 11.05.2016 under the chairmanship of Secretary(EF&CC) the Ministry vide its order dated 15.06.2016 constituted a Sub-Committee of the Steering Committee to identify product categories to be included in the first phase and to develop criteria/guidelines for the identified product categories for further consideration of Steering Committee. The officials from CPCB and BIS would propose a list of product categories produced from wastes for consideration of Technical committee.

Draft Ecomark criteria for coir and coir products has been finalised and uploaded on the Ministry’s website for comments from stakeholders.

**Regulatory Acts/Rules governing the programme and promulgation of new acts:** PL Division vide Notification No. G.S.R.1362(E) dated 2nd November, 2017 amended the

National Green Tribunal( Recruitment, salaries and other terms and conditions of Service of Officers and other employees) Rules, 2011.

PL Division vide Notification No. G.S.R.1473(E) dated 1st December, 2017 amended the National Green Tribunal(Practice and Procedure) Rules, 2011.

PL Division vide Notification No. S.O. 3936(E) dated 20th December, 2017 authorised Mr. Justice Umesh Dattatraya Salvi, Judicial Member, NGT to act as a Chairperson of the NGT until the date on which a new Chairperson is appointed or till the date of his superannuation, whichever is earlier.

### Economic Cell

**Functions of the Economic Cell:** Economic Cell of the Ministry is headed by the Economic Adviser working under the supervision of the Senior Adviser. It is responsible for the following areas of work:

- Nodal Division for matters referred by the Department of Economic Affairs, including Notes for Cabinet/ Cabinet Committee/ Committee of Secretaries.
- All matters having a bearing on internal and external economic management in the Ministry and reforms in the environment and forest sectors.
- Appraisal of environment friendly proposals related to fiscal incentives and recommending appropriate proposals for inclusion in the Union Budget.
- Providing inputs/ material for the Economic Survey.
- Nodal Division to monitor implementation of specific announcements in the Union Budget concerning Ministry of

Environment, Forest & Climate Change.

- Secretariat for the Sectoral Committee to Review the Release and Utilization of the Grants-in-Aid for State Specific Needs recommended by the Thirteenth Finance Commission/Fourteenth Finance Commission.
- Compliance under the Fiscal Responsibility and Budget Management Act, 2003.
- Parliament Questions on policy matters.

**Activities undertaken:** The Economic Cell drafted and finalised comments on different economic and environmental issues, particularly on Cabinet Notes, EFC Memos, parliament matters, NITI Aayog references etc.

### Trade & Environment Division:

Trade and Environment Division of the Ministry headed by the Economic Adviser, working under the supervision of the Senior Adviser, has the following areas of responsibility:

- Coordinating formulation of Ministry's views/ position on trade-related matters referred to it by other Ministries, including issues related to Regional/ Bilateral/ Multilateral Trade Agreements on environmental, ecology, wildlife and forestry issues.
- Acting as Nodal Division within the Ministry to deal with references received from M/o Commerce & Industry relating to Trade & Environment including Cabinet/ Cabinet Committee/ Committee of Secretaries matters.

#### Activities undertaken:

- The Trade and Environment Division coordinated and furnished comments on issues pertaining to environment, ecology,



forestry and wildlife to the Department of Commerce for drawing up India's position on trade related matters in Regional Comprehensive Economic Partnership (RCEP) Negotiations, particularly in the negotiations under trade in goods and services and domestic regulations. The Trade and Environment Division has been actively engaged with M/o Commerce and Industry in consultations regarding rules of origin for trade under Chapter 45 [of the ITC (HS) Codes] and also consolidated inputs on specific items related to environment and forest sector, identified by Ministry of Commerce which involves high value of imports and contribute to trade deficit.

- The Division has coordinated meetings related to **National Committee on Trade Facilitation (NCTF)** headed by the Cabinet Secretary, wherein Secretary, EF&CC is a Member. This Committee has been formed as part of the mandatory institutional arrangement of the WTO Agreement on Trade Facilitation Agreement (TFA).
- The Division has also provided comments/inputs on specific products viz. Sal, Kokum, etc. to be included in the **Merchandise Exports from India Scheme (MEIS)** announced under Foreign Trade Policy 2015-20.

**Direct Benefit Transfer (DBT) Cell:** The DBT Cell of the Ministry has constantly engaged with Direct Benefit Transfer (DBT) Mission, Cabinet Secretariat for onboarding of schemes on DBT Platform. The Cell has on-boarded 21 schemes on DBT Portal ([www.dbtbharat.gov.in](http://www.dbtbharat.gov.in)) managing strict deadlines and coordinating

with all Divisions in the Ministry. A meeting was organized 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 Schemes on boarded on the DBT Portal.

**Goods and Services Tax (GST) Cell:** As per the directions of the Cabinet Secretary, a 'GST Facilitation Cell' has been created in the Ministry to serve as the first point of contact for addressing issues being faced by the sectors related to the Ministry. It consists of members from CS-III Division, Wildlife Division, Project Elephant and SU Division as well as Wildlife Crime Control Bureau (WCCB) and National Biodiversity Authority (NBA). The GST Cell is responsible for examining requests received on proposed increase/decrease in applicable tax rates in the post-GST period, compared to the pre-GST tax regime and taking up the same with GST Council. The GST cell consolidates comments on representations received from various industry Associations, institutes and organizations. The proposals are referred to the Divisions concerned in the Ministry for examination and recommendations are forwarded to GST Council for their consideration. The Cell operates a Helpline number (011-24695386) to address the queries of different stakeholders. It is active from 10:00 AM to 5:30 PM on all working days.

Ministry's recommendations for reduction/exemption on bamboo products and plywood products; wood and wood based products; and fly-ash were sent to GST Council for their consideration.

# Climate Change

# 12

CHAPTER







## Climate Change

The layer of Greenhouse Gases (GHG), including carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide and others, in their optimum concentration in Earth's atmosphere, acts like a protective blanket which maintains its temperature and the natural ecosystem. Lately, anthropogenic (human induced) activities, mainly burning of fossil fuels, have resulted in increasing the concentration of these gases which in turn trap extra heat and increase Earth's average temperature leading to climate change. This in turn leads to a wide ranging impact including sea level rise, melting of snow and glaciers, changes in weather patterns, increased frequency and intensity of extreme events and natural disasters etc.

The Climate Change Division looks after the issues related to climate change, including the International negotiations and domestic policies and actions. The Division is also responsible for submission of National Communications (NATCOMs) and the Biennial Update Reports (BURs) to the United Nations Framework Convention on Climate Change (UNFCCC). The Ministry of Environment, Forest and Climate Change (MoEF&CC) is the nodal Ministry for climate change negotiations under UNFCCC. In order to create and strengthen the scientific and analytical capacity for assessment of climate change in the country, different studies has been initiated under the Climate Change Action Programme (CCAP), including National Carbonaceous Aerosols Programme (NCAP), Long Term Ecological Observatories (LTEO) Programme, and GHG

Modelling Studies.

During the year 2017-18, many important bilateral and multilateral meetings and negotiations, including 23rd Conference of the Parties (COP-23) to the UNFCCC, were held in which Hon'ble Minister, EF&CC and senior officials of the Ministry participated.

### **National communication and Biennial Update Report submitted to the UNFCCC:**

India is a Party to the UNFCCC. The Convention requires all the Parties to furnish information on implementation of the Convention in the form of periodic National Communications. India furnished its Initial National Communication in 2004 and Second National Communication in 2012 to UNFCCC. Conference of Parties to the UNFCCC in its sixteenth session (COP-16) decided that developing countries should also submit Biennial Update Report (BUR) as an update to the most recently submitted national communication. India furnished its first Biennial Update Report (BUR-1) on 22nd January, 2016. BUR-1 contains information on National Circumstances, National Greenhouse Gas Inventory, Mitigation Actions, Domestic Monitoring, Reporting and Verification (MRV) arrangements, Finance, Technology and Capacity Building Needs, and Support Received.

India's first BUR highlighted that 12% of India's GHG emissions were offset by carbon sink action of forests and croplands. It also highlighted that India's per capita GHG emission in 2010 was 1.56 tCO<sub>2</sub> equivalent which is less than one third of the world's per capita emissions and far below than many

developed and developing countries. In BUR-1, 137 national level and 286 state level policies and measures relevant to climate change have been mapped on non-exhaustive basis. BUR-1 stated that a reduction of emission intensity of GDP by about 12% between 2005 and 2010 has been achieved.

As per the requirements of UNFCCC, all BURs undergo a process of International Consultation and Analysis (ICA) which is conducted through a two-step process, a technical analysis by team of technical experts and a facilitative sharing of views (FSV). The process for India's first BUR was concluded successfully in May 2017. A Facilitative Sharing of Views (FSV) workshop was held on 15th May, 2017 under the aegis of 46th session of Subsidiary Body for Implementation (SBI) to UNFCCC. During the FSV workshop, India made presented its BUR. A number of questions were asked, which mainly focused on substantial increase in solar capacity achieved in 2016 over 2015 and domestic Measurement, Reporting and Verification (MRV) system. India's presentation was widely acknowledged and applauded by the participating countries.

Currently the Ministry is preparing India's second Biennial Update Report and Third National Communication to be submitted to UNFCCC.

**National Action Plan on Climate Change (NAPCC):** Government of India is implementing the National Action Plan on Climate Change (NAPCC) with a focus on promoting understanding of climate change and establishing linkage between adaptation and

mitigation consistent with the national priority for achieving sustainable development. It comprises of eight national missions representing multipronged, long term and integrated strategies for achieving key goals in the context of climate change. These missions focus on specific areas of Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustaining the Himalayan Ecosystem, Green India, Sustainable Agriculture and Strategic knowledge for Climate Change anchored by various Ministries.

All national missions were approved by the Prime Minister's Council on Climate Change (PMCCC) and are being implemented now. The Missions are under constant review by the Prime Minister's Council on Climate Change. An Executive Committee on Climate Change (ECCC) under the Chairmanship of Principal Secretary to Prime Minister has been set up for assisting the Prime Minister's Council on Climate Change in evolving a coordinating response to issues relating to climate change with regular monitoring of the eight National missions along with other initiatives on Climate Change and coordinating with various agencies.

**State Action Plan on Climate Change (SAPCC):** With the formulation of the NAPCC, the need to achieve coherence between actions at national and sub-national level became apparent. Therefore, the Ministry motivated the State Governments to prepare their State Action Plans on Climate Change (SAPCC) in line with the strategies outlined in NAPCC. So far, 32



States/UTs namely Andaman and Nicobar Islands, Andhra Pradesh, Telangana, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Kerala, Karnataka, Lakshadweep, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal have prepared their SAPCCs.

MoEF&CC has also provided financial support to states for enhancing their capacities for undertaking climate change activities. A sum of Rs. 10 lakhs has been provided to 19 states for strengthening capacity of nodal agencies for implementation of SAPCCs. Projects on adaptation and mitigation measures are also funded as demonstration projects under CCAP. Till date, three demonstration projects in Punjab, Madhya Pradesh and Tamil Nadu have been sanctioned.

**National Adaptation Fund on Climate Change (NAFCC):** National Adaptation Fund on Climate Change (NAFCC) was launched in 2015 with an initial outlay of Rs. 350 crore to meet the cost of adaptation to climate change for the State and Union Territories of India that are particularly vulnerable to the adverse effects of climate change. The overall aim of the fund is to support concrete adaptation activities which are not covered under on-going activities through the schemes of State and National Government that reduce the adverse effects of climate change facing community, sector and states. The Scheme will be continuing beyond

12th Five Year Plan till 31st March, 2020 with an additional outlay of Rs. 364 Crore. The Fund is meant to assist National and State level activities to meet the cost of adaptation measures in areas that are particularly vulnerable to the adverse impacts of climate Change. The Scheme has been taken as Central Sector Scheme with National Bank for Agriculture and Rural Development (NABARD) as the National Implementing Entity (NIE). Besides, enhancing adaptive capacity at national and state level, national conference / workshop, awareness/ information dissemination, Research and Development and establishing a coordination and monitoring unit have also been proposed.

Till date 23 projects have been approved at a total cost of Rs. 483.80 Crore and Rs. 263.31 Crore have been sanctioned. The projects approved under the scheme are in the initial stages of implementation.

**Climate Change Action Programme (CCAP):** Climate Change Action Programme (CCAP) is a central scheme which was approved by the Cabinet in January 2014 at a total cost of Rs. 290 crore for duration of five years. Its objective is to create and strengthen the scientific and analytical capacity for assessment of climate change in the country, putting in place appropriate institutional framework for scientific and policy initiatives and implementation of climate change related actions in the context of sustainable development. Some of the components of the CCAP scheme include the National Carbonaceous Aerosols Programme (NCAP),

Long Term Ecological Observatories (LTEO), and Coordinated Studies on Climate Change for North East Region (CSCCNER).

NCAP is a multi-institutional programme developed with a view to monitor and study carbonaceous aerosols including black carbon, and has three components viz., (i) Working Group I: Monitoring and assessing impacts of black carbon on snow undertaken by Ministry of Science and Technology (MoST) (ii) Working Group II: Observational activities relating to aerosol and black carbon by Ministry of Earth Sciences (MoES) and Indian Space Research Organization (ISRO) (iii) Working Group III: Inventory and modeling of carbonaceous aerosols including black carbon being undertaken by MoEFCC, which also coordinates overall activities under NCAP. NCAP Working Group III has been officially launched by Hon'ble Minister, EF&CC on 7th July 2017 at IIT Bombay, Powai, Mumbai and is being implemented by a consortium of 17 institutions led by IIT Bombay.

LTEO is another project under the CCAP scheme with a total budget allocation of Rs. 40 crore for duration of 5 years. It aims at creating a network of field sites at various ecological regions in the country viz. Western Himalayas, Eastern Himalayas, North-Western Arid Zone, Central Indian Forests, Western Ghats, Andaman & Nicobar Islands, Jammu & Kashmir, and Sundarbans, for undertaking long term observations of the effects of climate change. These field sites will be used by several institutions and scientists with expertise in various disciplines to identify patterns and

drivers of change in the natural ecosystems. The project will focus on monitoring climatic variables, carbon stock, hydrology, groundwater, forests dynamics, sensitivity of tree species, fire ecology etc. The Science Plan of LTEO was released by Hon'ble Minister, EF&CC on the sideline of the 21st Conference of the Parties (COP-21) to the United Nations Framework Convention on Climate Change (UNFCCC) at Paris, France in 2015. Under the project, it is proposed to establish 31 weather stations across all the LTEO field sites for recording bioclimatic variable etc. A Coordination Cell will be established at the Centre for Ecological Science, Indian Institute of Science, Bangalore for proper implementation of the LTEO project. 11 activities have been shortlisted for funding under this project during the year 2017.

**India's post-2020 climate goals:** For post-2020 period, in response to the decisions of the Conference to the Parties, India submitted its Nationally Determined Contribution (NDC) to the UNFCCC on 2nd October, 2015, outlining the climate actions intended to be taken under the Paris agreement. The eight goals put forth by India in its NDC are:

1. To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation.
2. To adopt a climate friendly and a cleaner path than the one followed hitherto by others at corresponding level of economic development.





3. To reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level.
4. 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).
5. To create an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent through additional forest and tree cover by 2030.
6. 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.
7. 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.
8. 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.

For preparing the of roadmap for implementation of India's NDC in post-2020 period, in the year 2016, the MoEF&CC constituted an NDC Implementation committee Chaired by Secretary, EF&CC, and six thematic Sub-committees, involving key

Ministries and Departments of the Government of India. The committee and sub-committees are working on to identify specific policies and actions aimed at achieving the NDC goals. They are also working on to indicate the financial outlays and technology interventions needed from domestic and international sources at various stages to achieve these goals. The consultation meetings of the NDC Implementation committee and sub-committees were being held after their constitution and continue to be held in the financial year 2017-18.

**International Negotiations:** The financial year 2017-18 witnessed a number of bilateral and multilateral meetings on climate change where Hon'ble Minister, Environment, Forest and Climate Change and senior officials of the Ministry participated. These meetings were crucial in run up to the 23rd Conference of Parties to UNFCCC held from 6th – 17th November, 2017 in Bonn, Germany.

Delegates participated in the Informal Meeting of Heads of Delegation in Rabat on 07-08 September 2017, Like Minded Developing Countries (LMDC) meeting held on 14-16 August 2017 at Penang, Malaysia, 24th BASIC Ministerial Meeting on Climate Change held on 11th April 2017 in Beijing, China, 25th BASIC Ministerial Meeting held on 13th November 2017 in Bonn, Germany, Ministerial meeting on Climate Action held on 15 - 16 September 2017 in Montreal, Canada, and Pre-COP Ministerial Meeting of the UNFCCC held on 16-18 October, 2017 in Nadi, Fiji.

The 23rd Conference of Parties (COP 23) to

UNFCCC was held from 6th – 17th November 2017 in Bonn, Germany. Dr. Harsh Vardhan, Hon'ble Minister, EF&CC led an inter-ministerial delegation that participated in the COP 23. This was the second COP since the adoption of the Paris Agreement at COP 21 in 2015 and since the Agreement entered into force on 4 November 2016.

The key outcome of COP 23 was decision 1/CP.23, 'Fiji Momentum for Implementation'. The decision calls for enhanced Pre-2020 Implementation and Ambition, reiterates the overall Paris Agreement Work Programme, and the design of the Facilitative Dialogue, termed by COP 23 Presidency of Fiji as the Talanoa Dialogue. Despite continuous resistance, Pre-2020 actions were brought back on the forefront with the persistent efforts of India. It now forms a major part of final outcome with

concrete steps to accelerate and enhance pre-2020 action and ambition. It includes high level focus from both UNFCCC secretariat and COP Presidency as well as request to UN Secretary General for his intervention in speeding up the ratification of Doha Amendment to Kyoto Protocol. A number of procedural decisions were taken regarding the evolution of rules/guidelines/ modalities for the implementation of Paris Agreement including guidance for Nationally Determined Contributions, adaptation communication, modalities, procedures and guidelines for the transparency framework for action and support, global stocktake, compliance mechanism, technology framework, and cooperative (market and non-market) approaches under the Paris Agreement.



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC delivering country statement at COP-23 held in Bonn*



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC and Shri C.K. Mishra, Secretary COP-23 held in Bonn*

India participated in the Conference with a constructive and positive approach with the aim to protect India's long-term interests and its developmental priorities. India's position

was firmly rooted in the core principles of equity and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC). India also underscored the



importance of fulfilling the commitment of developed countries to achieve the goal of mobilizing USD 100 billion annually by 2020 and further scaling up thereafter. As a result, developed countries have been requested to prepare their next round of updated biennial submissions on strategies and approaches for scaling up climate finance for 2018-2020, with a view to updating information available on a pathway towards the goal of jointly mobilizing US\$100 billion per year by 2020. A high-level

ministerial dialogue will also be organized in 2018 on access to climate finance. India was also able to incorporate equity and sustainable lifestyles in appropriate texts.

A number of Ministerial level bilateral meetings were also held during COP 23 including with Prime Minister of Fiji, Mr. Frank Bainimarama (COP 23 Presidency), United Arab Emirates, Australia, Norway, Finland, Turkey, Marshall Islands, European Union, Ecuador, UK, and Bangladesh.



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC meeting Mr. Vidar Helgesen, Minister of Climate and Environment, Norway during COP-23 held in Bonn, Germany from 6th – 18th November, 2017*

**India Pavilion set up at COP 23:** The India Pavilion setup during COP 23 was a major attraction amongst the visitors with approx. 10000-12000 people visiting the pavilion. The India pavilion became a platform to bring together various stakeholders such as Central Ministries, State Governments/ Departments, Think Tanks, Civil Society organisations, etc. to deliberate and discuss various climate change

related topics. Twenty-two side event sessions were organised at India pavilion including presentations and panel discussions on various thematic areas in climate change. These 22 sessions spread across 2 weeks were appreciated and well attended with active participation of more than 1000 people from various countries.



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC inaugurating India Pavilion at COP-23 held in Bonn, Germany from 6th – 18th November, 2017*

**Curtain Raiser Event:** The India Pavilion also hosted the Curtain Raiser Event for International Solar Alliance's (ISA's) upcoming Founding Conference which also featured an extended panel discussion with international industry leaders covering project implementation, financing, technology

transfer, and collaboratively building a global solar market.

**Release of book 'Samanvay' at India Pavilion:** A book titled "**Samanvay – Harmonizing Traditions and Modernity**" was launched at the India Pavilion by Dr. Harsh Vardhan, Hon'ble Minister, EF&CC. The book highlights





the importance of integrating traditional wisdom and modern technologies/concepts. This book depicts the sustainable consumption patterns of India in comparison to other countries. It also showcases the harmonisation of India's traditional practices with the modern ones, leapfrogging over the energy-intensive intermediate phase for a low-carbon growth. Drawing from the experiences and trends resulting from conventional consumption patterns, the document reinforces the need to

follow a sustainable lifestyle at the individual and community level by stressing upon the traditional practices that are rooted in our culture and can easily find a way to our modern lifestyle, making it more sustainable and environment-friendly. The book discusses relevant national and local level strategies to address climate change, with a view to encourage sustainable practices originating from the roots of climate-friendly Indian lifestyle.



*(Left to Right) Sh. A. K. Mehta, Additional Secretary, Dr. Harsh Vardhan, Hon'ble Minister, Sh. C. K. Mishra, Secretary, and Dr. J. R. Bhatt, Adviser, MoEF&CC releasing book 'Samanvay' at India Pavilion at COP-23 held in Bonn, Germany from 6th – 18th November, 2017*

**Yoga Sessions:** In an attempt to showcase India's age-old tradition of sustainable lifestyle, daily Yoga sessions, conducted by trained Yoga

instructors, were organised at the India pavilion. These sessions witnessed enthusiastic participation of visitors from different countries.



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC in Yoga Sessions during COP-23 held in Bonn*



*The youngest participant at one of the Yoga Sessions in COP-23*

**Cooperation with bilateral and multilateral donors on climate change:** The Ministry has been implementing several projects with the assistance of bilateral and multilateral funding agencies such as Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, The Department for International Development (DFID) and United Nations Development Programme (UNDP).

Since 2002, GIZ has been supporting the Climate Division of MoEFCC in strengthening the Designated National Authority (DNA), support in Clean Development Mechanism (CDM). MOEFCC and GIZ jointly organised a

workshop on 27th June 2017 in New Delhi on 'Market mechanisms as a means to effectively implement India's climate mitigation objectives'. A project on Nationally Appropriate Mitigation Actions (NAMAs) is also operational to support the MoEF&CC. Further, Climate Change Adaptation in Rural Areas of India (CCA-RAI) project being implemented at national and state level for financing, planning, implementing and for the monitoring of climate adaptation measures.

Two projects under Indo-EU Cooperation are also operational viz. 1. Indo-EU Technical Cooperation for Environment in India and 2.



India-EU Cooperation on Clean technologies and Energy Efficiency for Eco-Cities.

Climate Change Innovation Programme, a partnership initiative between MoEF&CC and DFID has been supporting six states namely, Assam, Bihar, Chhattisgarh, Kerala, Maharashtra and Odisha, in implementing the SAPCC. Through Climate Change Innovation Programme (CCIP), the state Governments are provided with technical assistance in preparing and refining SAPCCs. It also assists in preparing sectoral action plans and projects to address climate change adaptation in thematic areas such as water, urban flooding, agriculture, forestry, coastal vulnerability, health as well as securing finance for implementing the plans

**Clean Development Mechanism (CDM):** The Clean Development Mechanism (CDM) has been a flagship programme addressing climate change mitigation and simultaneously giving an opportunity to developing countries in meeting their sustainable development objectives. CDM allows emission reduction or removal projects in developing countries to generate carbon offset credit, each equivalent to one tonne of carbon dioxide. These certified emission reduction credits (CERs) could be traded, sold and used by industrialized countries to meet part of their emission reduction targets under Kyoto Protocol.

The Government of India has set up a National CDM Authority (NCDMA) in December 2003 with Secretary, Environment, Forest and Climate Change as the Chairman and it consists of various Secretaries, such as of External Affairs, Finance, Power, Industrial Policy and

Promotion, New and Renewable Energy, Planning Commission, and Department of Science and Technology as Members to consider various projects for grant of Host Country Approval (HCA) from Sustainable Development point of view. Some of India's achievements in CDM are:

- As on 26th November, 2017, 1653 out of total 7788 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 235 million (12.6%) of the total 1869 million CERs issued.
- The National CDM Authority (NCDMA) in the Ministry has accorded Host Country Approval to 3028 projects. These projects are in the sectors of energy efficiency, fuel switching, industrial processes, municipal solid waste, renewable energy and forestry spread across the country (covering all states in India).
- About 90% of the CDM projects are developed by private sectors which has facilitated huge private sector investments in the country.

World Bank Partnership for Market Readiness (PMR): India's proposal to develop a voluntary carbon market was approved by the World Bank under Partnership for Market Readiness (PMR). The PMR Project aims to support and incentivize a market and piloting new approaches that allow emission reductions in a cost effective manner, while also addressing

other priorities such as incentivizing waste, energy security, growth and development in the country.

The 8 million US Dollar grant allotted to India under the PMR Project will be utilised to develop voluntary carbon market in waste management and Micro, Small and Medium Scale Enterprises (MSME) sectors with carbon credits. These sectors have been identified to have significant mitigation potential and the ability to contribute to India achieving its NDCs targets. Background work regarding the same has been initiated, and the Project is aimed to be completed in 2020.

## Ozone Cell

**Ozone Layer Protection:** Ozone, a tri-atomic molecule of oxygen is formed from oxygen naturally in the upper levels of the Earth's atmosphere by high-energy Ultraviolet (UV) radiation from the Sun. The UV radiation breaks down oxygen molecules, releasing free atoms, some of which bond with other oxygen molecule to form ozone. About 90 per cent of ozone formed in this way lies between 10 and 50 kilometers above the Earth's surface, called the Stratosphere. The ozone found in this part of the atmosphere is called the ozone layer.

The ozone layer absorbs all the harmful UV-B radiations emanating from the Sun. It protects plant and animal life from UV-B radiation. The UV-B radiation 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 mandate of the Montreal Protocol is to phase out the production and consumption of the Ozone Depleting Substances (ODSs). India is a Party to the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer and it's all the amendments/adjustments.

India has been producing and using nine of the 96 ODSs controlled under the Montreal Protocol. These are Chlorofluorocarbons (CFCs) viz. CFC-11, CFC-12, CFC-113; Carbon Tetrachloride (CTC), Hydrochlorofluorocarbons (HCFCs), Halon-1211, Halon-1301, Methyl Chloroform and Methyl Bromide. Out of these, all ODSs except HCFCs, have been phased out. Currently HCFCs are being phased out as per the accelerated phase out schedule of the Montreal Protocol

The Ministry of Environment, Forest and Climate Change (MoEF&CC) handles the work relating to ozone layer protection and implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer.

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 ODS phase-out program in India. The Ministry has also constituted an Empowered Steering Committee (ESC) Chaired by the Secretary (EF&CC) which is supported by two Standing Committees viz. Technology and Finance Standing Committee (TFSC) and Standing Committee on Monitoring. The ESC is





responsible for overall implementation of the Montreal Protocol provisions, review of various policy and implementation options, project approval and monitoring.

A detailed India Country Program for phase out of ODSs was prepared in 1993 to ensure the phase out of ODSs according to the National Industrial Development Strategy, without undue burden to both consumers and industry by accessing the Protocol's Financial Mechanism in accordance with the stipulated phase-out schedule of the Montreal Protocol. The Country Program was updated in 2006.

The Project Management Unit (PMU) was set up in 2002 to implement the National ODS Phase-out Plans.

### **The Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer**

The Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer are the international treaties specific for the protection of the Stratospheric Ozone (Ozone layer). The Montreal Protocol has been recognized as the most successful international environmental treaty in history. It has been universally ratified and all the 197 United Nations Member countries of the world are the Parties to the Vienna Convention and its Montreal Protocol. In the 29 years of operation of the Montreal Protocol, extraordinary international cooperation under this agreement has led to phase-out of production

and consumption of several major ODSs such as CFCs, CTC and halons globally from 1st January, 2010. The production and consumption of Methyl Chloroform has been phased out globally as on 1.1.2015, with possible essential use exemptions. The production and consumption of Methyl Bromide has been phased out globally as on 1.1.2015, except use in quarantine and pre-shipment applications. Global systematic observations have confirmed that atmospheric levels of key ODSs are declining and it is estimated that with continued, full implementation of the Montreal Protocol's provisions, the global ozone layer should return to pre-1980 levels by around the middle of this century. The Montreal Protocol has also delivered substantial climate benefits.

The Protocol is currently addressing the phase-out of HCFCs with an accelerated phase-out schedule.

The UN General Assembly on 19th December, 1994 adopted a resolution 49/114 which proclaims 16th September as the International Day for the Preservation of the Ozone Layer, to commemorate the signing of the Montreal Protocol on Substances that Deplete the Ozone Layer which was signed on 16th September, 1987.

#### **Implementation of phase-out of ODSs**

- India successfully phased out CFC (except in MDI), CTC and Halons by 2010.
- India has successfully implemented the National Strategy for transition to non-CFC Metered Dose Inhalers (MDIs) and plan for

phase-out of CFCs in the manufacture of pharmaceutical MDIs. The phase-out was achieved 11 months prior to the schedule approved by the Executive Committee (Ex-Com) of the Multilateral Fund (MLF) for Implementation of the Montreal Protocol.

### **Implementation of HCFC Phase-out Management Plan (HPMP)**

#### **HPMP Phase I**

- The phase-out of HCFCs was accelerated by 10 years with reduction schedule vide decision XIX/6 of the 19th MOP in 2007.
- A Roadmap for phasing-out of HCFCs was launched in October 2009 which provides the long term vision and action plan including the policy instruments for phasing out of production and consumption of HCFCs in India.
- The HPMP Stage-I was approved by the Ex-Com of the MLF in its 66th Meeting held in April, 2012 to reduce 341.77 ODP tonne of HCFC from the starting point of 1691.25 ODP tonne with a total funding of US \$ 23,011,537 including implementing agency support costs.
- The India's HPMP Stage-I addressed the conversion of foam manufacturing facilities from HCFCs to non-ODS technologies and provided technical assistance to the Systems Houses for developing HCFC free pre-blended polyol system. Refrigeration and Air-conditioning (RAC) servicing sector was also addressed in HPMP I and enabling activities for policy development and awareness generation were carried out.

- The HPMP Stage-I is being implemented in close cooperation with United Nations Development Programme (UNDP), the lead implementing agency, United Nations Environment Programme (UNEP) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).
- India has successfully achieved the freeze as on 1.1.2013 and 10% reduction of production and consumption of HCFCs as on 1.1.2015, in line with the accelerated phase-out schedule of the Montreal Protocol.

#### **HPMP Stage-II**

- The HPMP Stage-II proposal was submitted by UNDP on behalf of India for the consideration of the 77th Meeting of the Ex-Com of the MLF held from 28th November to 2nd December, 2016.
- The 77th Meeting of the Ex-Com of the MLF held from 28th November to 2nd December, 2016 approved a total funding of US \$48,315,261 for reduction of 769.49 ODP tonnes of HCFCs under HPMP Stage II.

#### **Launch of HPMP Stage II**

- The then Hon'ble Minister of State (Independent Charge), Environment, Forest and Climate Change, Government of India, launched the implementation of HPMP stage II on 6th March 2017, in a stakeholder meeting where officers of the Ministries and Organizations of the Central Government, State Governments, representatives from industries, stakeholders including NGOs and



implementing agencies associated with the implementation of the HPMP II viz. UNDP, GIZ and UNEP, were present.

- More than 400 enterprises, including 300+ Micro, Small and Medium Enterprises (MSMEs) in the foam manufacturing sector and 6 large air-conditioning manufacturing enterprises will be supported under HPMP-II for conversion from HCFCs to non-HCFC technologies.
- The HPMP II also provides for promotion of energy efficiency, development building codes integrating HCFC phase out issues, cold chain development with non-HCFC alternatives and development of standards

for new non-ODS and low GWP alternatives, while transitioning away from HCFCs. It is expected that there would be a net direct CO<sub>2</sub>-equivalent emission reductions of about 8.5 million metric tonne annually from 2023.

- HPMP Stage-II also specifically focusses on the MSME sector in foam manufacturing. Adequate attention has also been given to synergize the Refrigeration and Servicing (RAC) servicing sector trainings under HPMP II, with the Skill India Mission, in order to multiply the impact of skilling and training. According to estimates, nearly 16, 000 service technicians will be trained under HPMP-II.



*Launch of the HCFC Phase-Out Management Plan Stage – II in a function held on 6th March, 2017, at New Delhi, India*

- The Stakeholders' meeting discussed the implementation of HPMP Stage II, the Kigali Amendment to the Montreal Protocol for phase down of Hydrofluorocarbons (HFCs) and the post-Kigali developments.

### Kigali Amendment to the Montreal Protocol for phase-down of HFCs

- The 28th Meeting of Parties to the Protocol held in Kigali adopted an amendment to the Protocol which is historic and aimed at phasing down the HFCs that contribute to global warming.
- HFCs do not deplete the Ozone layer, however, they have high global warming potential.
- The negotiations for phasing down of HFCs under the Montreal Protocol were initiated way back in 2009, but these negotiations gathered momentum only after India submitted an amendment proposal for phase down of HFCs under the Montreal Protocol in April, 2015.
- India represents only around 2 % of the global production and consumption of HFCs but our manufacturing and consumption sector is expected to grow in future.
- India has been a strong advocate of the principle of Common but Differentiated Responsibility and relevance of national circumstances in the matter of global actions to protect environment.
- In the Kigali Amendment, it has been agreed that the developing countries will have two set of baselines – one for the early movers in which case it will be 2020-2021-2022 and the other for those whose national circumstances were different and the manufacturing of HFCs and consumption in whose case was still rising in the absence of clear alternative technologies. In case of such countries the agreed baseline years are 2024, 2025 and 2026.
- The developed countries will have baseline years of 2011-2013 with separate reduction schedule starting 10% in 2019, 40% in 2024, 70% in 2029, 80% in 2034 and 85% in 2036. For Belarus, Russian Federation, Kazakhstan, Tajikistan, Uzbekistan initial two steps will be different as 5% reduction in 2020 and 35% reduction in 2025.
- India piloted a realistic baseline of 2024-2026 for production and consumption of HFCs in developing countries for phase-down of HFCs. As per the agreement reached in Kigali, India will freeze its manufacturing and consumption of HFCs in 2028 with reference to the baseline years 2024, 2025 and 2026. The Freeze year is subject to technology review and could be further deferred to 2030. India will complete its phase down in 4 steps from 2032 onwards with cumulative reduction of 10% in 2032, 20% in 2037, 30% in 2042 and 85% in 2047.
- This agreement facilitates adequate carbon space for growth on domestic industry





while minimizing the cost to the economy during the transition period.

The agreed baseline years, freeze year and reduction schedule as Kigali Amendment of the Montreal Protocol for phase-down of HFCs:

	A5 Group 1 (Developing)	A5 Group 2 (Developing)	A2 (Developed)
Baseline	2020-2022	2024-2026	2011-2013
Formula	Average HFC consumption	Average HFC consumption	Average HFC consumption
HCFC	65% baseline	65% baseline	15% baseline*
Freeze	2024	2028	-
1st step	2029 – 10%	2032 – 10%	2019 – 10%
2nd step	2035 – 30%	2037 – 20%	2024 – 40%
3rd step	2040 – 50%	2042 – 30%	2029 – 70%
4th step			2034 – 80%
Plateau	2045 – 80%	2047 – 85%	2036 – 85%

\* For Belarus, Russian Federation, Kazakhstan, Tajikistan, Uzbekistan 25% HCFC component of baseline and different initial two steps (1) 5% reduction in 2020 and (2) 35% reduction in 2025

**Notes:**

- Group 1: Article 5 parties not part of Group
- Group 2: GCC, India, Iran, Iraq, Pakistan
- Technology review in 2022 and every 5 years
- Technology review 4-5 years before 2028 to consider the compliance deferral of 2 years from the freeze of 2028 of Article 5 Group 2 to address growth in relevant sectors above certain threshold.
- On India’s initiative, it was agreed in Kigali that the Multilateral Fund under the Montreal Protocol will provide funds for maintaining or increasing the energy efficiency with new technology. Funding for

R&D and servicing sector in developing countries has also been included in the agreed solutions on finance.

- India has been able to secure an agreement that provides adequate space for growth of our economy, while providing adequate time for industry to shift to sustainable alternatives in the interest of environment. The agreed arrangements will minimize the cost to consumers in transitioning away from HFCs and provide for domestic innovation to develop in the sector of new generation refrigerants and related technologies.
- As there is a national focus on research, innovation and technology development

reflected in Make in India Programme of the Government, and to have least cost to economy while transitioning away from HFCs, and maintain the position of exporter of refrigerants, the Ministry had decided to launch a collaborative research programme in development of low GWP non ODS cost effective alternative technologies to HFCs indigenously involving research and academia institutions, industry and civil society organization.

### Kigali Amendment Energy Efficiency

- India introduced a Conference Room Paper (CRP) with other proponents in the 39th Open Ended Working Group (OEWG) held from 11th to 14th July, 2017 on the issues related to financial and technical support for energy efficiency in Article-5 Parties.
  - The CRP was considered and deliberated in the 29th Meeting of Parties to the Montreal Protocol (MOP) held from 20th to 24th November, 2017. India was able to pilot after sustained and intensive negotiations the adoption of the CRP on the issues related to financial and technical support for energy efficiency in Article-5 Parties submitted by India and other proponents. It is a significant first step in dovetailing energy efficiency and refrigerant transition under the Montreal Protocol.
- The decision is a significant first step towards maintaining and/or enhancing energy efficiency of Refrigeration and Air-Conditioning (RAC) equipment with refrigerant transition under HFC phase down, which will enhance the overall climate benefit. The decision is embodied in Decision XXIX/10 of the MOP.
  - Secretary, EF&CC made the statement during the high level segment of 29th MOP on behalf of India. Secretary, MoEFCC also participated in Ministerial Round-table in the High Level Segment of MOP on “Identifying future opportunities and priorities” wherein he underlined the past successes of the Montreal Protocol highlighting the key points which led to its success globally and in India which were wide and comprehensive stakeholder participation and technical and financial assistance mechanism under the Protocol. He also set forth the future opportunities and priorities under the protocol including for effective implementation of the Kigali Amendment. Many of the ideas stated by Secretary EFCC were echoed by Mr. Erik Solheim, Executive Director, UN Environment.



*Ministerial Round table organized during the high level segment of the 29th MOP on 23rd November, 2017*

- MoEFCC, Government of India and UN Environment OzonAction's Compliance Assistance Programme, during the margins of the High-Level Segment of the Joint 11th COP to the Vienna Convention and 29th MOP to the Montreal Protocol organized a side event on 23rd November 2017 on the theme "An Integrated Approach to Cooling: Maximizing Climate Benefits under the Kigali Amendment". The event had wide participation of Parties and Stakeholders. The event was attended by Mr. Erik Solheim, Executive Director, UN Environment, Mr. Gilbert Bankobeza, Chief Legal Officer, Ozone Secretariat, Ms. Shamilla Nair Bedouille, Head, OzonAction Branch, UN Environment.

#### **Awareness Activities**

- Awareness activities at the national and state levels were organized to sensitize the stakeholders to phase-out the ODSs in various sectors.

#### **30th anniversary of the Montreal Protocol and 23rd World Ozone Day**

- The International Day for the Preservation of the Ozone Layer is being organized every year in the country on 16th September, at national and state levels since 1995.
- Booklet on "Montreal Protocol : India's Success Story", posters, stickers are published every year on the occasion of International Day for the Preservation of the Ozone Layer giving latest information

on ODS phase-out in the country and technologies adopted for phasing-out of ODSs.

- The 23rd World Ozone Day was organized on 16th September, 2017 at New Delhi

with the theme: "Caring for all life under the Sun". A large number of stakeholders and school children participated in the event.



*Release of "The Montreal Protocol: India's Success Story" during "30th Anniversary of the Montreal Protocol and 23rd World Ozone Day for the Preservation of the Ozone Layer" function held on 16th September, 2017 at New Delhi, India*

- A pan-India awareness campaign launched by the Environment Ministry on the occasion. This campaign was among the most widespread countrywide engagements of the Ministry for awareness generation, carried out with the active partnership of States through schools and academic/research institutions spread across the country. The awareness campaign saw participation of students from more than 13, 000 schools and reached out to 214 districts across 16 states of the country.
- The awareness campaign was implemented with active collaboration from State Governments, Regional Offices of the Ministry, Subordinate organizations and Autonomous bodies of the Ministry, State Nodal Agencies under the National





Green Corp Scheme of the Ministry, and the ENVIS centers spread across the country. A special website was created for wider participation and engagement of stakeholders <http://ozone30mp.nic.in>.

- Ten information posters for school students were developed on Montreal Protocol. These were disseminated across the country.
- The following publications were launched by the Hon'ble Minister on the occasion:
  - Handbook on HCFC Phase-out and Energy Efficiency in Buildings; and
  - The first edition of 'newsTRAC; and a newsletter for service technicians in Refrigeration and Air-conditioning (RAC) sector.
- These two publications were launched as part of the enabling component of India's HCFC Phase out Management Plan, for which United Nations Environment is the cooperating agency and Energy Efficiency Services Ltd. (EESL) and The Energy and Resources Institute (TERI) are the national implementing partners.
- The following two videos were launched:
  - India's achievements in implementation of Montreal Protocol, and
  - HCFCs phase-out and Energy Efficiency in buildings.
- On this occasion, the publication "Montreal Protocol: India's Success Story"

was released by the Chief Guest and distributed to the participants. In addition, poster design, painting, slogan writing competitions were organized among school children. Prizes for the winning entries in each category of the competitions were awarded by the Chief Guest.

- Piquor – on line selfie stand and infographic relating to past achievements of Montreal Protocol were arranged for wider public engagement.

#### Achievements made

- India has met the following compliance targets with respect to phaseout of ODSs either on or ahead of the control schedule of the Montreal Protocol:-
- The Ex-Com of the MLF so far has approved a total of 305 projects involving MLF funding of US \$ 327,657,464 to the Indian industry for phase-out of production and consumption of 59,749.49 ODP tonne of the ODSs in India.
- Complete phase-out of production and consumption of CFCs, CTC and halons with effect from 1.1. 2010.
- Successful implementation of the National Strategy for transition to non-CFC MDIs and plan for phase-out of CFCs in the manufacture of MDIs in India.
- The production and consumption of Methyl Chloroform has been phased out globally as on 1.1.2015, with possible essential use exemptions.

- The production and consumption of Methyl Bromide has been phased out globally as on 1.1.2015, except use in quarantine and pre-shipment applications
- India has successfully met the freeze as on 1.1.2013 and 10% reduction of production and consumption of HCFCs as on 1.1.2015 in line with the accelerated phase out schedule of the Montreal Protocol.
- India has been elected as a Member of the Ex-Com of the MLF for the implementation of the Montreal Protocol for the year 2018.
- The 77th Meeting of the Ex-Com of the MLF approved HPMP Stage-II with a total funding of US \$48,315,261 for reduction of 769.49 ODP tonnes of HCFCs from the remaining HCFC consumption eligible for funding.
- The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer reached agreement at the 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down HFCs.
- The MoEFCC, Government of India hosted the South Asia Ozone Officers Annual Network meeting at Agra, India from 23-26 May, 2017 in collaboration with the UN Environment. The meeting was attended by National Ozone Officers of South Asian Region. Ms. Tina Birmipili, Executive Secretary, Ozone Secretariat, Mr. Eduardo Ganem, Chief Officer, Multilateral Fund for Implementation of the Montreal Protocol, Ms. Dechen Tsering, Regional Director, South Asia, Un Environment, Ms. Shamila Nair Beduolle, Head Ozon Action Branch, UN Environment along with many international experts participated in the event. The then Secretary (EFCC) inaugurated the event.



*South Asia National Ozone Officers Network Meeting – 2017, at Agra, Uttar Pradesh, India*



- An "Ozone2Climate Technology Roadshow" was also organized for the first time as part of the annual network meeting to showcase technologies which are based on non- ODS with low GWP. The Roadshow was organized in association with RAMA, IPUA, EESL, GIZ and UNDP. The Roadshow had 13 exhibitors, who showcased current refrigeration and air conditioning equipment, designed to be more energy efficient that promoted ozone and climate-friendly alternative technologies to HCFCs and HFCs in the RAC sector. This was the first time the Ozone2Climate Technology Roadshow was organized as a part of the annual network meeting.
- India has taken a lead and issued an order for incinerating the HFC-23, a by-product of HCFC22 refrigerant production, voluntarily by the producers of HCFC - 22. HFC-23 gas, a potent greenhouse gas, with GWP of 14800, is produced as a by-product of HCFC-22 manufacturing, and if vented out in environment, is a threat to the environment. India announced this step voluntarily without a commitment of financial support from the MLF, which shows the determination and commitment of the country on climate issues.
- Recognizing the cross cutting use of refrigeration and air conditioning technologies in various sectors and close linkage of energy efficiency with refrigerant transitions while phasing down HFCs, it has been decided to develop a National Cooling Action Plan. This plan would inter-alia integrate the phase out of ODSs/phase down of HFCs while maximizing energy efficiency of air-conditioning equipment's. National Cooling Action Plan will lend a long term perspective to different sectors using refrigerants, foaming agents and cooling technologies etc.
- India piloted Decision XXIX/10 in the 29th Meeting of Parties on Issues related to energy efficiency while phasing down hydrofluorocarbons Vide the Decision of the MOP the Technology and Economic Assessment Panel of the Montreal Protocol shall submit a focused report inter alia on technology and capacity building requirements, Related costs including capital and operating costs in relation to maintaining and/or enhancing energy efficiency in the refrigeration, air-conditioning and heat-pump sectors, including in high-ambient-temperature conditions, while phasing down hydrofluorocarbons under the Kigali Amendment to the Montreal Protocol. This is an important step for moving towards integration of Energy efficiency issues under Montreal Protocol.
- India was one of the active member of the contact group on the replenishment of funds of the Multilateral Fund for period 2018 to 2020 during the 29th MOP and played a key role in the discussion on the replenishment. The Parties agreed for replenishment of US \$540 million to the MLF for the triennium 2018-2020. It may

be mentioned here in the prevailing international regime a replenishment of 540 million USD for the 2018 to 2020 of the MLF is a very significant achievement. The decision to this effect was adopted by the high-level segment of the 29th MOP.

#### Awards & Appreciations received so far

- The Ozone Cell of India has been conferred with several awards/appreciations/recognitions for successful implementation of the Montreal Protocol and its ODS phase out activities.
- On the 30th anniversary of the Montreal protocol, the Ozone Secretariat in cooperation with Government of Canada, hosted the Award distribution ceremony on 23rd November 2017. The Award were

handed over by Ms Catherine McKenna, Minister of Environment, Government of Canada, at the glittering Award Ceremony.

- The awards recognised the achievements of individuals, groups and organizations that have demonstrated extraordinary contribution to the progress of protocol in last 10 years.
- Late Shri Anil Madhav Dave, the then Hon'ble Minister of State (independent charge) environment, forest and climate change, Government of India was given the Ozone Award under the Political Leadership category for the Leadership provided by India during the Kigali Amendment Negotiations.



*Shri C. K. Mishra in the ceremony held in Montreal during 29th MoP.*





- On behalf of India, the award was received by Secretary, Ministry of Environment, Forest, and Climate Change. The Award

ceremony was held in Montreal during the first day of high level segment of 29th MoP.



*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC at Nairobi*

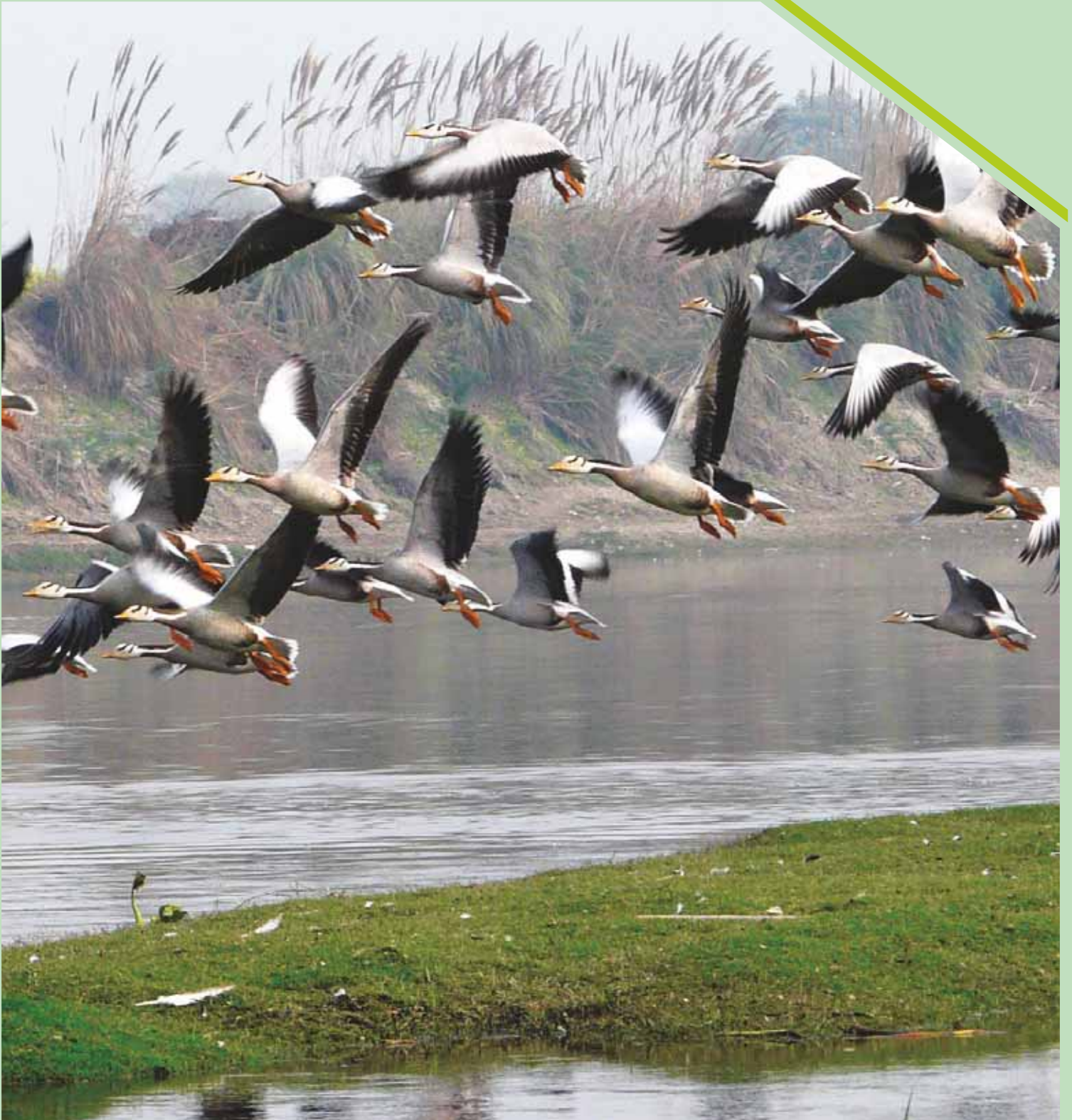


*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC with foreign dignitary*

# International Cooperation and Sustainable Development

# 13

CHAPTER







## International Cooperation and Sustainable Development

International Cooperation and Sustainable Development (IC&SD) Division of the Ministry coordinates matters related to international environmental cooperation and sustainable development including Sustainable Development Goals (SDGs). The major achievements of the division in the year 2017-2018 are as follows:

**International Cooperation - Multilateral Matters:** The division is nodal for UN Environment (erstwhile United Nations Environment Programme), Global Environment Facility (GEF), United Nations Development Programme (UNDP), International Resource Panel (IRP), the World Bank (WB) and regional bodies like Economic & Social Commission for Asia & Pacific (ESCAP), 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. The Division directly contributes USD 31,850 annually to South Asia Cooperative Environment Programme (SACEP).

**UN Environment (UNE):** India is a member of UNE and provides annual financial contribution of USD 100,000 to UNE Environment Fund. The Ministry is a member of the International Resource Panel (IRP) Steering Committee. IRP supports UNE's Resource Efficiency/

Sustainable Consumption and Production (SCP) sub-programme and is carrying out assessments of the world's most critical resource issues with a view to developing practical solutions for government policymakers, industry and society. The 20th meeting of International Resource Panel (IRP) and Steering Committee was held in Helsinki, Finland on 6-9 June 2017. The 21st Meeting of the International Resource Panel and Steering Committee was held in Lima, Peru on 20-24 November, 2017. This Ministry represented in both the meetings.

United Nations Environment Assembly (UNEA) is the governing body of UNE. The third session of UNEA was held in Nairobi, Kenya from 4-6 December, 2017 focusing on "Towards a Pollution Free Planet". A delegation from this Ministry led by Hon'ble Minister for Environment, Forest and Climate Change actively participated in the 3rd Session of UNEA preceded by 3rd Open-ended Meeting of the Committee of Permanent Representative (OECPR-3) held in Nairobi, Kenya from 29th November, 2017 to 1st December, 2017. India has also made a symbolic contribution to UNE to support the hosting of 3rd Session of United Nations Environment Assembly, 2017.

Mr. Eric Solheim, Executive Director, United Nations Environment, Nairobi had visited India during the reporting period and had a meeting with Hon'ble Minister for Environment, Forest and Climate Change. In the said meeting, ED announced to offer (i) hosting of World Environment Day, 2018 in India at global level and (ii) host meeting of Conference of Parties to the United Nations Convention to Combat Desertification (UNCCD) in 2019.

Ministerial Conference on Environment and Development in Asia and the Pacific: United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in collaboration with UN Environment had organized the 7th Session of Ministerial Conference on Environment and Development in Asia and the Pacific and 2nd Forum of Ministers and Environment Authorities of Asia Pacific in Bangkok, Thailand from 5-8 September, 2017 with the objective to feed regional input to the outcomes of the 3rd Session of United Nations Environment Assembly held on 4-6 December, 2017 in Nairobi, Kenya. The Ministry was duly represented in the meetings.

The Indian delegation observed that issues such as promotion of voluntary efforts, financing for “tools and vehicles” for implementation, pollution cess (polluters principle), Zero Waste project, whether introducing electric vehicles would be effective in reducing overall emissions, (noting that the electricity used to power the vehicles may not necessarily be from renewable sources) etc. were insisted upon. The Delegation also observed that there were skepticism among delegates about the possibility of achieving a “pollution-free planet,” but delegates were committed and encouraged to be optimistic, noting, for example, the increased numbers of electric vehicles used in US and Europe; Proposition of alternatives to plastic bags must be available before changes in consumer behavior can occur etc. Alternatives should promote behavioral change, including through setting national standards and promoting awareness raising in education programs.

World Environment Day, 2018 (WED 2018): India is the global host for celebrating the World Environment Day (WED), 2018. The theme for WED 2018 is Plastic Pollution. The World Environment Day is celebrated globally on 5th June every year to commemorate the opening of the Stockholm Conference on the Human Environment to serve as an important vehicle to stimulate worldwide awareness of the environment with a view to give human face to environmental issues, promote an understanding that communities are pivotal to changing attitudes towards environmental issues.

The WED 2018 shall be through UN Environment and Indian Embassies across the globe. At national level it will involve various stakeholder Ministries/ Departments, all States and UTs, districts, local bodies, organizations, civil societies etc. across the length and breadth of the country, thus giving it the widest possible geographical and demographic coverage.

Government will avail the opportunity of sensitization of masses to minimise uses of plastic, hazards linked to accumulation of plastic, encourage research and innovation of harmless and eco-friendly alternative of plastic and many more.

**International Cooperation – Bilateral Matters:** The Ministry has entered into Agreements / Memorandum of Understanding (MoUs) with 22 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.

Dr. Harsh Vardhan, Hon'ble Minister of Environment, Forest and Climate Change as also Dr. Mahesh Sharma, Hon'ble Minister of State, Environment, Forest and Climate Change encouraged dialogue with the international community to invite investment, knowledge and cooperation to meet country's environment-related priorities and needs. The Hon'ble Minister/s met with the following, among others, and discussed environmental issues:

- Mr. Greg Clark, UK Secretary of State for Business, Energy and Industrial Strategy on 7th April 2017.

- Ms. Eva Svedlin, Secretary of State, Sweden on 28th April 2017.
- Mr. Kenji Hiramatsu, Ambassador of Japan on 29th July, 2017.
- Mr. Erik Solheim, Executive Director, UN Environment Programme on 10th August, 2017.
- Dr. Thani Bin Ahmed Al Zeyoudi, Hon'ble Minister of Climate Change and Environment, UAE on 30th August, 2017.
- Mrs. Brune Poirson, Hon'ble Minister of Ecological and Inclusive Transition, France on 1st September, 2017
- Mr. Kimmo Tiilikainen, Hon'ble Minister for Housing, Energy & Environment, Finland on 5th October, 2017.
- Mr. Achim Steiner, Under Secretary General and UNDP Administrator on 8th December, 2017.



*Visit of Mr. Achim Steiner, Under Secretary General and UNDP Administrator and meeting with Hon'ble Minister for Environment, Forest and Climate Change and Hon'ble Minister of State for Environment, Forest and Climate Change*



*Meeting of Hon'ble Minister for Environment, Forest and Climate Change with  
H.E Mr. Esben Lunde Larsen, Danish Minister for Environment and Food*



*Mr. Kimmo Tiilikainen, Hon'ble Minister for Housing, Energy & Environment,  
Finland meets with Hon'ble Minister of State for Environment Forest and Climate Change*



**India-Australia Memorandum of Understanding (MoU):** A Memorandum of Understanding (MoU) between India and Australia on cooperation in the field of Environment, Climate and Wildlife was signed by the Secretary, EF&CC and Australian High Commissioner, New Delhi and exchanged between the Hon'ble Prime Ministers of both the countries on 10.04.2017 in New Delhi.

The MoU opens up a corridor for discussion between the two countries in the field of Environment, Climate, Wildlife and other areas of cooperation specified in the MoU. The scope of the MoU is as under:

- Environmental Information Systems;
- Waste water management, treatment and re-use of treated effluents;
- Coastal and marine ecosystems;
- Marine wildlife ecosystems, with a particular focus on dugongs, sharks, turtles and cetaceans that occur in the Indian Ocean;
- Management of UNESCO world heritage sites;
- Addressing illegal trade in fauna and flora, including cooperation to support well-managed, legal and sustainable trade under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- Conservation and recovery of threatened species;
- Climate change;
- Ecosystem conservation and sustainable use;
- Control of air and water pollution;

- Clean Coal Technology, including both pre-mining and post mining technologies; and
- Other areas related to protection of environment

**India-France bilateral meeting:** An Indo-French meeting for cooperation in the field of environment was held on April 25, 2017. The meeting agreed on mutual collaboration in the areas of Climate Change and Facilitative Dialogue, 2018 as well at the development of the Rulebook, Technology Transfer on RE and Waste to Energy, supporting a global strategy on phase out of chemicals under Montreal Protocol and Partnerships and Coalitions.

**India - European Union (EU) JWG meeting:** 9th Meeting of Indo-EU Joint Working Groups on Environment was held on 29th June, 2017. There were presentations followed by discussions on varied topics viz. Resource Efficiency, Circular Economy, Waste Management, Air Quality, Bio-diversity, Clean Energy, Climate Change, Water, Chemicals, Green Finance etc.

It was also agreed to discuss Circular economy further through business to business contact between Indian and EU groups in conjunction with the imminent Sustainability World Summit and to hold targeted discussions with experts on eco labeling and more information on how the legal system works given the voluntary nature of eco labeling.

It was highlighted that India is the first country to have a panel at the national level on topic of Resource Efficiency viz. Indian Resource Panel (InRP). The launch of air quality index by the Hon'ble Prime Minister of India for dissemination of information through 'a single

no, single digit, single action technique for public which also focuses on the health breaking point was highlighted. EU expressed interest in understanding the bio diversity actions in India.

**India-European Union Environment Forum:**

The 8th India-European Union Environment Forum was held on 30.06.2017 at New Delhi. The theme of Forum was “Resource Efficiency and Circular Economy – Benefits beyond Environment”.

This Forum brought together the Indian Resource Panel (InRP) with policy makers, industry associations, academia, research organizations and civil society for discussions on resource efficiency transformations and circular economy. The Forum also addressed the following issues:

- The building blocks for an enabling framework to promote resource efficiency oriented circular economy in India.
- Policy measures that would be required to make a transition from linear economic systems towards resource decoupling to deliver social, environmental and economic benefits.
- Role of Eco Innovation policies and innovative economic instruments played in promoting the integration of resource efficiency measures across the value chain.

**Technical Cooperation (TC) projects under Indo-German Bilateral Development Cooperation**

**Fostering Resource Efficiency & Secondary Raw Material Management” (RE Project):**

Indian Resource Panel (InRP) constituted by MoEFCC (making India to be the only country

to have national panel on RE) developed and released “Recommendations for an Indian Resource Efficiency Programme (IREP)” on April 20, 2017 in New Delhi. The project and InRP also recounted their journey and outlined the way forward as it concluded in 2017, but InRP will continue its work under MoEFCC.

Following three documents under this project have been developed:

- Training manual for implementing RE interventions in Automotive Components Manufacturing Companies
- C&D Waste Deconstruction Manual’ for demolition contractors and recycling companies
- Tender Template (as per Waste Management
- Rules 2016) for capacity development of ULB’s
- considering PPP-based C&D management approach

**Demonstration Plant Commissioned under “Waste to Energy (WtE) - Nasik Projects”:**

On 29th November 2017, a pilot demonstration of waste to energy plant based on an innovative technology was commissioned in Nasik. WtE project was implemented jointly with MoEFCC, under the International Climate Initiative (IKI) of German Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB) with support from Urban Development Department, Govt. of Maharashtra.

The WtE plant is estimated to produce around 5000 units of electricity daily. It’s a pilot demonstration plant for solid and liquid waste





management to reduce GHG emissions and generate energy (as bi-product) through co-fermentation of organic solid waste and septage (faecal sludge) & project showcased viable business model for implementation of

waste to energy projects through a Public Private Partnership (PPP) and is built on a comprehensive financial and operational model.



*Waste to Energy (Bio-methanation) Plant commissioned at Nasik, Maharashtra on November 29, 2017*

**Sustainable and Environment Friendly Industrial Production (SEIP Project):** Under ongoing Indo-German bilateral project on industrial waste/ waste water management, the project achieved following results:-

- 1) Pollution reduction activities: Technical solutions as well as business and management models to reduce pollution and to improve resource efficiency and wastewater management in industrial production are piloted in five industrial estates viz., 1) Gujarat Industrial Development Corporation's (GIDC) Industrial Estate at Vapi, 2) Delhi Industrial

Infrastructure Development Corporation's (DSIIDC) Industrial Area at Patparganj and CETPs of Mayapuri and Lawrence Road, as well as 3) Integrated Industrial Estate of the State Industrial Infrastructure Development Corporation of Uttarakhand Ltd. (SIIDCUL) in Haridwar.

- 2) Improvements in ETPs
- 3) Resource efficiency and cleaner production
- 4) Improvement in CETPs
- 5) Developing promotional schemes/guidelines
- 6) Developing policy measures



*German experts visiting Effluent Treatment Plants*

### **The Global Environment Facility (GEF) India:**

India is a founder member of Global Environment Facility (GEF). Set up in 1991, GEF is the designated multilateral funding mechanism of 183 countries to provide incremental finance for addressing global environmental benefits which are also identified national priorities. The Ministry of Environment, Forest and Climate Change is India's GEF Operational Focal Point (OFP) responsible for all in-country coordination. The Department of Economic Affairs (DEA) is India's GEF Political Focal Point. India is both a donor and recipient of GEF grant.

India has received around USD 110 Million for GEF 6 programming. Five new projects were approved for implementation by the Ministry of Housing and Urban Affairs, Ministry of Non-Renewable Energy (MNRE), Ministry of Power/Bureau of Energy Efficiency (BEE) with the support of WB, ADB, UNIDO, UNDP.

GEF cycle consists of 4 years period. The GEF-7 Replenishment Process was initiated in October 2016 and several consultative meetings were held. The first official meeting of the 7th Replenishment of the GEF was held in Paris on March 28-30, 2017. The replenishment meetings provide an

opportunity for Contributing Participants to review GEF performance and evaluate progress, assess future funding needs, and agree on a financing framework. India is a member of a constituency comprising of Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka.

The GEF 6 Sustainable Cities project was launched in its second global conference in India on 31st October, 2017. Ms Naoko Ishi, Chief Executive Officer, GEF visited India for launching the project.

The GEF CEO met with Dr. Mahesh Sharma, Honorable Minister of State for Environment, Forest and Climate Change and discussed way forward for future of GEF in India. Subsequently, a National Consultation Workshop was organized on 1st November, 2017 to discuss GEF 7 Country Programming Strategy with concerned stakeholders.

Dr. Mahesh Sharma, Honorable Minister of State for Environment, Forest and Climate Change and Ms Naoko Ishi, Chief Executive Officer, GEF jointly inaugurated 'Green Haat' at the Ministry's premises, wherein green products manufactured under the GEF Small Grants Programme were showcased.



*Dr. Mahesh Sharma, Honorable Minister of State for Environment, Forest and Climate Change and Ms Naoko Ishi, Chief Executive Officer, GEF jointly inaugurated 'Green Haat' at the Ministry's premises*

**GEF Small Grants Program (SGP):** The GEF's SGP 'works exclusively with NGOs and CBOs providing project grants up to USD 50,000 to undertake activities in identified priority sectors. The Centre for Environment Education (CEE) is working on behalf of the Ministry as National Host Institution (NHI) for GEF SGP India program.

Some of the salient achievements for the year 2017-18 have been:

- 97,000 hectares of land brought under sustainable land resource management (SLRM) in the Western Ghats (WG), Himalayan Front (HF) and Arid and Semi-Arid Regions (ASAR).

- Nearly 130,000MT of CO<sub>2</sub> have been reduced (This is a cumulative figure since the beginning of the project). This figure is the overall emission reductions through the use of energy efficient technologies such as smokeless stoves, solar cookers, and briquettes etc
- During the reporting period, an additional 1,101 new women collectives, such as Self Help Groups, Energy Producer Groups, Fodder Management and Development Committees, have been formed and strengthened

62 SGP projects were completed during the year 2017-18. Ten new upscaling projects have been identified and commenced in the month

of December 2017.

**The World Bank (WB):** The Ministry-WB project portfolio comprises of four projects worth USD 322.56 m. of these two projects are GEF projects managed by the Bank with a GEF grant of USD 32.78 m. All these projects are implemented by the respective thematic divisions. The project details are as follows:

- Integrated Coastal Zone Management (IDA USD 221.96 m)
- Capacity Building for Industrial Pollution Management (USD 54.18 m ~IDA USD 28.97 m and IBRD USD 25.21m)
- Biodiversity Conservation and Rural livelihood Improvement project (USD 21.78 m - IDA USD 13.64 m; GEF USD 8.14m)
- Ecosystem Services Improvement project (GEF USD 24.64 m)
- The Ministry is in the process of developing a future strategy of cooperation with the Bank.

**South Asian Association for Regional Cooperation (SAARC):** SAARC is an intergovernmental body which was established in 1985 to promote regional cooperation on sustainable development related issues amongst its eight member states namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. In this regard, the SAARC secretariat organizes a meeting of the Heads of States once a year also known as SAARC summit.

**South Asia Cooperative Environment Programme (SACEP):** The South Asia Cooperative Environment Programme (SACEP) was set up in 1982 with headquarters in Colombo, Sri Lanka. It aims to promote regional

Co-operation 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. It supports conservation and management of natural resources of the region by working closely with all national, regional, and international institutions, governmental and non-governmental, as well as experts and groups engaged in such co-operation and conservation efforts.

**Sustainable Development:** 17 Sustainable Development Goals (SDGs) and 169 associated targets were adopted by the UN General Assembly in September 2015. The outcome document is known as "Transforming Our World: The 2030 Agenda for Sustainable Development" highlights poverty eradication as the overarching goal of the new development agenda and has at its core the integration of the economic, social and environmental dimensions of sustainable development. The emerging development agenda is unique in the sense that it calls for action by all countries, poor, rich and middle-income. The 'five Ps': People, Planet, Prosperity, Peace, and Partnership-capture the broad scope of the agenda. The SDGs are expected to be achieved by 2030.

As SDGs are cross-cutting in nature. NITI Aayog has been given the task of coordinating the achievement of these targets with the concerned ministries and line departments. The Ministry has been made nodal for the achievement of the following SDGs:

**Sustainable Development Goals:**

- No Poverty





- Zero Hunger
- Good Health and Well-being
- Quality Education
- Gender Equality
- Clean Water and Sanitation
- Affordable and Clean Energy
- Decent Work and Economic Growth
- Industry, Innovation and Infrastructure
- Reduced Inequalities
- Sustainable Cities and Communities
- Responsible Consumption and Production
- Climate Action
- Life Below Water
- Life on Land
- Peace and Justice Strong Institutions
- Partnership for the Goals

The aim of this Ministry is to ensure clean air, water, environment and energy, maintain healthy ecosystems and combat climate change with sustainable development. As per tabulation of responsibilities prepared by NITI Aayog, this Ministry is nodal ministry for SDGs 12,13,15 (fully) and for 3,6,8,9,11,14 and 17 (partially) interlinking with concerned Ministries.

This Ministry is actively working with Ministry of Statistics and Programme Implementation (MoSPI) by contributing in the development of global indicators for each of the SDG and targets. Development of indicators for achieving the targets under the SDGs is delicate and intricate process requiring a series of consultations with stakeholder Ministries and State Governments to assess their appropriateness and implementability. Many of the targets are overlapping and may require a composite indicator. In fact, this may also require a few data system to be created to

facilitate this process.

This Ministry is of the view that the primary 'focus of India should be on means of implementation, capacity building and transfer of technology. Through a study commissioned by this Ministry, it has been estimated that roughly an amount of Rs.35 lakh crores per annum will be required for achieving the targets under the SDGs. The developed countries should be asked to assist the developing countries in achieving these targets through financial assistance and transfer of cutting edge technology.

The Ministry has organized a National Workshop on Environmental Dimension of Sustainable Development Goals (SDGs) in New Delhi on 30th September 2016. This was a public consultation to discuss the ways, means, roadmap and measurable indicators for achieving 41 SDG environment- related targets assigned by NITI Aayog to the Ministry. The workshop was inaugurated by Hon'ble Minister for Environment, Forest and Climate Change and attended by senior officers from NITI Aayog, ministries, states, multilateral/bilateral agencies, civil society organizations, academia and experts. The Ministry has initiated the process of developing national indicators for monitoring 41 SDG targets while sending inputs to MoSPI for ongoing global negotiations.

In addition, this Ministry is closely working with NITI Aayog and participated in various consultation meetings to finalize the indicators for the Sustainable Development Goals and to discuss the data availability for the final list of Indicators of targets pertaining to SDG - 7,9,11,13,14,15.

# Administration and Civil Construction

# 14

CHAPTER





## Administration and Civil Construction

There are three sections in Administration viz. P-I, P-II and P-III. Section-wise brief description is given hereunder:-

### P-I Section

- Cadre Management of scientific posts of the Ministry and 10 Regional Offices, creation of scientific posts of Ministry. Establishment/service matters of all scientific posts of the Ministry (Main) viz. appointment, promotion, work allocation, court cases, leave cases and retirement benefits (only of those posted in Ministry Main). Disciplinary proceedings of Group 'A' 'B' and 'C' officials of Ministry other than IFS officers under Central Staffing Scheme of the Ministry;
- Cadre management of Technical posts of the Ministry viz. creation, appointment, promotion, work allocation, establishment/service matters, Recruitment Rules, court cases, retirement benefits and leave cases (only of those posted in Ministry Main);
- Cadre management of canteen staff of the Ministry viz. creation, appointment, promotion, establishment/service matters Recruitment Rules, leave cases, retirement benefits, court cases, etc;
- Maintenance of ACRs/APARs of Group 'A' 'B' and 'C' officials of MoEF&CC other than IFS officers of the Ministry;
- Processing of LTC, GPF, House Building Advance, Computer Advances of all personnel of the Ministry;

- Issue of Foreign Deputation Orders in respect of Environment Wing of the Ministry;
- Processing of medical advance and reimbursement cases of scientific, technical and canteen staff;
- Processing and finalization of complaints, suspension cases and disciplinary proceedings having administrative angle;
- Framing of training policy for Scientists and 360 degree evaluation policy;
- Internship Scheme of Ministry of Environment, Forest and Climate Change; and
- Review of services under FR 56(j).

### P- II Section:

- Cadre management of CSS/CSSS/CSCS;
- Establishment/service matters of Secretariat Group 'A', 'B' and 'C' posts (except Officers working at the strength of IFS, NRCD and NAEB Divisions) viz. appointment, review cases, leave cases, retirement and retirement benefits, medical claims, tuition fee reimbursement, leave encashment, children education allowance, court cases etc.;
- Training cases of All India Services and Central Secretariat Services Officers;
- Personnel matters relating to Minister's staff.

### P-III Section:

- Recruitment of Group 'A' Scientists in the Ministry, including regional and attached/subordinate offices;

- Review/assessment of Group 'A' Scientists for promotion under Flexible Complementing Scheme in the Ministry, including regional and attached/subordinate offices;
- Framing/Amendment of Recruitment Rules relating to Ministry of Environment, Forest and Climate Change, Group 'A' Scientific Posts; and
- Policy matters of Group 'A' Scientific Posts in connection with Flexible Complementing Scheme.

**Activities undertaken:** During the year 2017-2018, the major activities undertaken by Administration division are as under:-

**Promotion:** The details of cases of promotion of Scientists of the Ministry under Flexible Complementing Scheme, including its

attached/subordinate offices are hereunder:-

- 03 cases of promotion from the grade of Scientist 'F' to 'G'.
- 01 case of promotion from the grade of Scientist 'E' to 'F'.
- 05 cases of promotion from the grade of Scientist 'C' to 'D'.
- 07 cases of promotion from the grade of Scientist 'B' to 'C'.

Besides, one Research Officer (Environment) Grade-I was promoted to the grade of Scientist 'B'.

**Recruitment:** The details of Direct Recruitment of Group 'A' Scientists undertaken in various grades in the Ministry, including its Regional and attached/subordinate offices have been tabulated hereunder:-

Grade	Ministry (Main)	ZSI	NMNH	NRCD	Total
Scientist 'B'	01	03	-	01	05
Scientist 'C'	09	02	02	-	13
Scientist 'D'	05	01	-	01	07
Scientist 'E'	-	-	01	02	03
Scientist 'F'	04	-	-	-	04
<b>Total</b>	<b>19</b>	<b>06</b>	<b>03</b>	<b>04</b>	<b>32</b>

- Introduction of online recording of APARs in respect of Scientists in the Ministry (including Regional Offices in the SPARROW platform for the year 2016-2017 onwards);
- Services of 82 officers (2 Group 'A', 31 Group 'B' Gazetted, 30 Group 'B' Non- Gazetted

and 19 Group 'C') reviewed under FR 56(j);

- Sanction orders of 65 delegations of foreign tours of Minister and officers were issued upto 16/01/2018;
- Formulation of "Internship Scheme" of Ministry and implementation of Winter





Internship 2017-18 schedule with 31 interns in 22 disciplines;

- The process of filling up of one post of Technical Officer (Forestry) Gr. II, four posts of Research Investigator (Forestry), nine posts of Research Officer (Environment) Grade II and nine posts of Research Assistant (Environment) has been initiated;
- Recruitment of one Research Officer (Environment) Grade II on deputation basis and one Research Investigator (Forestry) through SSC;
- The process of formulation of "Training Policy" for the Scientists and "360 Degree Evaluation Policy" initiated;
- Training of staff conducted through Institute of Secretariat Training and Management (ISTM), New Delhi, ASCI, Hyderabad and Indian Institute of Forest Management (IIFM), Bhopal;
- Online recording of APARs in respect of Under Secretaries of CSS and Principal Personal Secretaries of CSSS has been introduced in the SPARROW platform from the year 2016-17;
- The process of filling of two vacancies of Scientists, in relevant grades, for the year 2017-18 initiated;
- Revision of pension of 209 pre-revised pensioners on recommendation of 7th CPC and timely processing of retirement benefits of 20 officials; and
- A total of 27 cases relating to MACP were processed and approved by the DPC during the year in respect of Assistant Section

Officer, Senior Hindi Translator, Junior Hindi Translator, Personal Assistant and Multi Tasking Staff.

## 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, 2017 is '3157' (three thousand one hundred fifty seven) which includes '2200' Direct Recruits and '957' Promotion posts. The Total Senior Duty Posts (SDP) in the Indian Forest Service are 1939 and remaining under various reserves. Besides serving the 31 Forest Departments in the States and Union Territories managing the country's natural resources, a large number of the IFS officers are in various Ministries and institutions both in the State and at the Cadre.

### Activities of IFS Division

- Determination of vacancies and framing of rules for Direct Recruitment through Union Public Service Commission and allocation of cadres to IFS probationers.
- Determination of vacancies for induction of State Forest Service Officers by promotion into Indian Forest Service, Coordination of Selection Committee Meetings, Notification

- of Select List and year of allotment to officers inducted in Indian Forest Service.
  - Review of cadre and revision in the composition and strength of IFS in various cadres.
  - Selection/ appointment of IFS officers to various posts under Central Staffing Scheme of the Ministry and cadre clearance for appointment to various autonomous bodies including Indian Council of Forestry Research & Education, Dehradun, Indian Institute of Forests Management, Bhopal and Wildlife Institute of India, Dehradun.
  - Facilitation of Selection /Appointment of IFS officers against the Central Staffing Scheme of Department of Personnel & Training (DoPT).
  - Finalization of various service matters like inter-cadre transfers, Inter cadre deputation, Cadre clearance for placements/training and post-retirement benefits to the officers.
  - Management of AGMUT cadre including promotions, transfers, postings and other service matters.
  - Publication of Civil List of IFS Officers.
  - Confirmation of IFS officers in Service.
- Achievements**
- Vacancy determination for IFS batch 2017 is notified and Cadre Allocation is under process.
  - Cadre review completed in respect of Gujarat, Nagaland, Manipur, Tamil Nadu, Sikkim, Haryana, Telangana & West Bengal during January to December, 2017.
  - Smart Performance Appraisal Report Recording Online Window (SPARROW) implementation for online filing of PAR in respect of IFS Officers is under process. So far, Digital Signature has been assigned to '1930' IFS officers.
  - Up-to- date Civil List of IFS officers is available on the website of this Ministry at [www.ifs.nic.in](http://www.ifs.nic.in). The website also has information pertaining to the vacancy circulars, training programme circulars, Rules and Regulations concerning IFS. Further website also has Annual Confidential Report (ACR), availability status of IFS officers which can be accessed by concerned officer. Each and every members of the Service has been provided facility to have his unique Email account through NIC on this site and members of Service have been provided facility to update data relating to their posting details online for periodical up gradation.
  - Eighty-Seven State Forest Service officers were included into the Indian Forest Service under IFS (Appointment by Promotion) Regulations, during January– December, 2017.
  - Twenty IFS officers joined at various levels under the Central Staffing Scheme of the Ministry and Thirty-six IFS officers joined under the Central Staffing Scheme of the Department of Personnel & Training. Forty-four IFS officers have been empanelled at the level of Joint Secretary and equivalent at the centre.
  - Cadre Review of Uttar Pradesh, Andhra Pradesh and Karnataka are under process



for approval of Department of Personnel & Training. Cadre review of IFS of Jammu & Kashmir, Odisha and Rajasthan is under process for approval of Cadre Review Committee.

- Around '16' Court Cases pending in various Courts across the Country were liquidated.

### Vigilance Division

The Vigilance Division is mandated to deal with all vigilance/disciplinary matters relating to the Indian Forest Service (IFS) officers and officers/staff of Ministry of Environment, Forest and Climate Change, its attached/subordinate offices including autonomous organizations/PSUs. The Vigilance Division is headed by Joint Secretary & Chief Vigilance Officer (CVO) and work under overall supervision of Secretary, Environment, Forest and Climate Change.

The Vigilance Division is responsible for examination and processing of complaints, disciplinary cases, appeals, reviews and memorials preferred by Indian Forest Service Officers and other officials and maintenance/scrutiny of Annual Immovable Property Returns (AIPRs) etc. Besides, examination and processing of cases referred by the Central Bureau of Investigation (CBI/ACB) relating to grant of sanction for prosecution/RDA in respect of officers/staff of the Ministry and IFS officers is also handled by the division.

The Division carries out necessary consultations with the Central Vigilance Commission (CVC), Union Public Service Commission (UPSC) and Department of

Personnel and Training (DOPT) as per laid down rules/procedures in corruption and disciplinary cases. The Vigilance Division also interacts with Central Bureau of Investigation (CBI) in various matters. The Division further deals with the court cases filed in Supreme Court/High Courts and various Benches of Central Administrative Tribunal relating to disciplinary matters.

A total of 305 complaints including old ones were received during the year, 107 complaints including old ones were finally disposed of during the year, 39 Disciplinary Proceedings cases including old ones, 07 Appeal cases and 09 Prosecution cases were processed in the Vigilance Division. Out of these, 07 Disciplinary cases, 03 Appeal case and 04 Prosecution case of previous years were finally disposed of. Court cases were also pursued in the respective Court/CAT Bench. Total 32 numbers of RTI applications and Appeals were received and disposed of with suitable replies.

The Vigilance Awareness Week was observed in the Ministry during the period from 30th October to 4th November, 2017, with the theme "My Vision- Corruption Free India" and a pledge was administered by Secretary (E,F&CC) to the officers & staff on the occasion for eradication of corruption from all spheres of life and adherence to principles of transparency and integrity. As per CVC's instructions/guidelines the Slogan Writing Competition and Essay Writing Competition were organised in the Ministry.

The Monthly Report of CVO on the cases relating to prosecution sanctions, disciplinary proceedings, complaints etc. was regularly sent to the CVC during the year.

## 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 2017-18, a total number of 935 Parliament Questions pertaining to various aspects of environment were answered by the Ministry (588 questions in the Lok Sabha, out of which 47 were starred and 541 were un-starred. A total of 347 questions were asked in the Rajya Sabha, out of which 37 were starred and 310 were un-starred). The questions covered a wide range of issues with which the Ministry is concerned, prominent among them

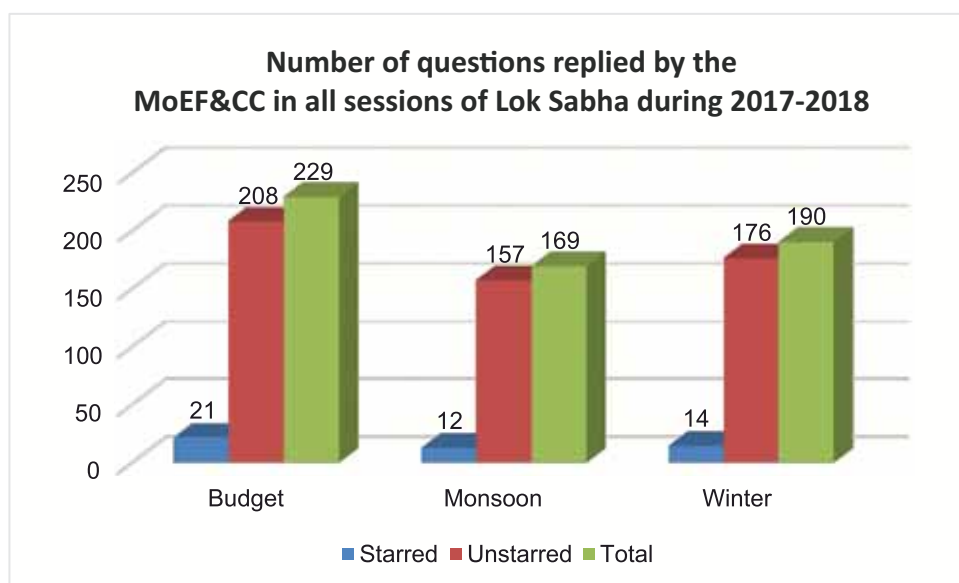
being questions related to Wildlife Management, Pollution, Forest Conservation, Environmental Conservation, Climate Change, Water Management, Environment Impact Assessment, Environmental Education, Freshwater and Marine Conservation etc.

The ENVIS Centre at WWF-India, under ENVIS scheme of the Ministry compiles the above mentioned Parliament Questions as replied by MoEF& CC and other Ministries pertaining to various environmental issues.

Graphical representation of the Parliament Questions replied by the Ministry during 2017-18 both in Lok Sabha and Rajya Sabha in various Sessions are given.

## Lok Sabha

Type	Budget	Monsoon	Winter	Grand Total
Starred	21	12	14	47
Unstarred	208	157	176	541
Total	229	169	190	588

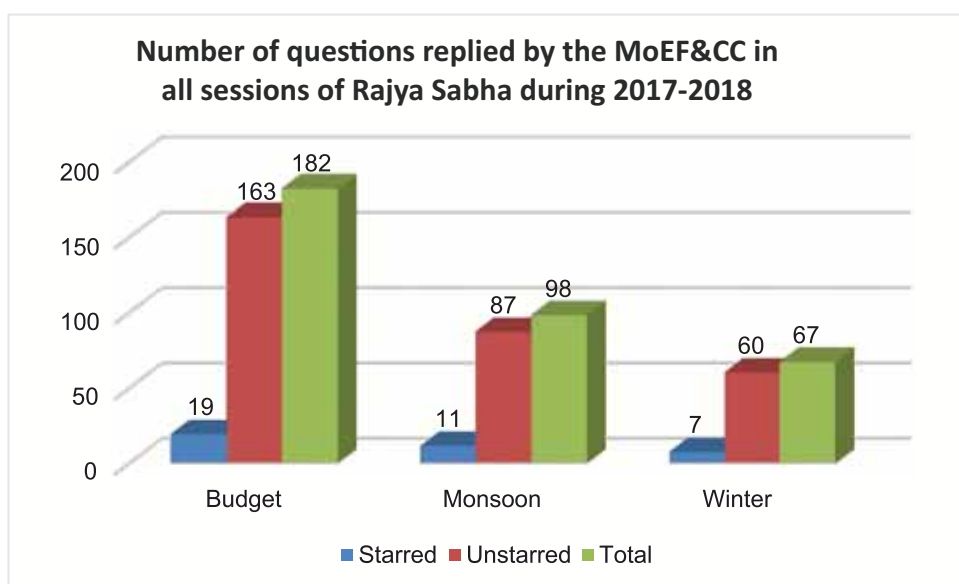






## Rajya Sabha

Type	Budget	Monsoon	Winter	Grand Total
Starred	19	11	7	37
Unstarred	163	87	60	310
<b>Total</b>	<b>182</b>	<b>98</b>	<b>67</b>	<b>347</b>



During the year 2017-18, Parliament Section coordinated nine meetings of Department related Parliamentary Standing Committee of Science and Technology, Environment, Forest and Climate Change and three meetings of Consultative Committee of the Ministry.

The subject matter of Deptt. Related Parliamentary Standing Committee of Science and Technology, Environment, Forest and Climate Change are as under:-

- 1) G.M. Crops and its Impacts on Environment,
- 2) Demands for Grants,
- 3) G.M. Crops and its Impacts on Environment,
- 4) Pollution/Environmental Issues in

Rajasthan,

- 5) Impact of G.M. Crops on Animals,
- 6) G.M. Crops and its Impacts on Environment,
- 7) (a) Environmental concerns of the Islands in the country,
- (b) 'Reforestation status in India,
- 8) Impact of G.M. Crops and adulteration of food on Human and Animal Health's,
- 9) Air Pollution in Delhi,

The subject matter of three Consultative Committees are as under:-

- I. Solid Waste Management,
- II. National River Conservation,
- III. Wildlife in India,

In addition of 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.

### Information Technology (IT) and e-Governance

Government working is based on intensive knowledge and information sharing. Effective communication and sound Information and Communication Technology (ICT) go hand in hand. For speedy implementation and monitoring of various programmes / schemes and to make most of ICT to secure efficiency in working, Ministry has embarked up on a comprehensive exercise to implement various e-Governance activities / projects.

#### Progress/Achievements:

- Continued the implementation of e-Office in the Ministry under Digital India Programme (collected details of officers and staff, Registered 1104 Users in eOffice portal, Posting and Promotion, Role Post, Setting of Workflow, Updation of Leave Balance details, Provided Training, updation in Notice Board).
- Created email IDs in @gov.in domain for all the users of eOffice.
- Management of Wi-Fi System at Indira Paryavaran Bhawan including addition/deletion of users, configuration in mobile phones, installation of certificates in iPhones.
- Management of Biometric Attendance System including sending reports to all divisional heads.
- Photographic digitization of 7200 images (including Dorsal, Ventral, Lateral) of Faunal Type Specimens at Zoological Survey of India, Kolkata has been completed.
- Monitored the regular updation of material in eSamikSha (<http://cabsecmis.gov.in>) - a real time, on-line system to review follow-up action.
- Developed and implemented Online Application for inviting entries for Painting and Slogan writing competition for School Students on the occasion of 30th Anniversary of the Montreal Protocol and 23rd World Ozone Day (<http://164.100.160.232/ozone/>).
- Developed and implemented Online Application inhouse for inviting entries for Online Competition on the theme "Harit Diwali - Swasth Diwali" (<http://164.100.160.232/hdsd/>) in 3 categories viz. i) Video ii) Audio & iii) Poster+caption. Ten best entries from each category were given a 'Certificate of Appreciation' from the Minister, MoEF&CC.
- Developed and implemented Online Application inhouse for inviting applications and selection / rejection of applicants under Internship Scheme for students (<http://164.100.160.232/internship/>). This Scheme seeks to engage students with Graduation/ Post Graduation Degrees and Research Scholars enrolled in recognized University/Institution within India or abroad, as "Interns". These "Interns" shall



be given exposure to various Divisions/ Units of the Ministry. These “Interns”, in turn, would be expected to supplement the process of analyzing within Ministry through empirical collection and collation of details in-house. For the "Interns" the exposure to the functioning of the Ministry may be an add-on in furthering their future interests.

- Management of Budget Expenditure Management System for IFD, PAO, B&A, PC and other Divisions.
- Management of Online Stationary Request Management System for submitting the request for stationary.
- Management of Smart Performance Appraisal Report Recording Online Window (SPARROW) for online submission of APAR of IAS, CSS & CSSS Officers.
- Management of Smart Performance Appraisal Report Recording Online Window for submission of APAR of Scientists in the Ministry.
- Arrangement of Video Conferencing System for PRAGATI and other meetings.
- IT infrastructure of the Ministry was strengthened.
- Examination of all policy issues pertaining to Information Technology.

Online Consent Management & Monitoring System: Online Consent Management & Monitoring System (OCMMS) developed for State Pollution Control Boards (SPCBs) / Pollution Control Committees (PCCs) to automate the existing workflow which allows the industries for the online submission of

application for Consent to Establish (CTE) / Consent to Operate (CTO), authorization for various categories of Industries / Institutions / Hotels / Hospitals. This system helps the officials of SPCB for online processing of industries application for CTE/CTO, Authorization as well as monitoring of various activities of SPCBs/PCCs.

### Features of OCMMS

- Online industry registration.
- Online Submission of application (CTE, CTO, authorization) of various categories of Industries / Institutions / Hotels / Hospitals.
- Online processing of application, approval, clarification, inspection by officials of SPCBs.
- Online Industry Inspection facility for SPCBs officials using State OCMMS Mobile Apps.
- Random allocation of industries for SPCB officers for inspection.
- Online Application status tracking for Industry/SPCB officials.
- Integration of OCMMS with DIPP /State Government Single Window System.
- Digitally signed Certificate for Consent/Authorization.
- E-Payment facility (NEFT / RTGS / Internet Banking / Debit and Credit Card / E-Wallet).
- Centralized Dashboard for SPCB/MoEFCC/CPCB/Other Ministries/ General Public for CTE/ CTO/ BMW/MSW/HWM application Monitoring.
- Online generation of Reports and Queries.
- Alert Notification to industry, SPCBs/PCCs officials through Email and SMS

- Enhance transparency and reduce the processing time in the existing processing of application.
- Overall improvement in the functioning and performance of the SPCB
- Dedicated online technical support 12x7 for all SPCBs/PCC OCMMS through Help Desk service.

Online Consent Management & Monitoring System (OCMMS) has been implemented in 17 States/UTs viz. Andhra Pradesh, Bihar, Chhattisgarh, Chandigarh, Daman & Diu, Haryana, Jharkhand, Jammu & Kashmir, Kerala Meghalaya, Odisha, Punjab, Puducherry, Telangana, Tripura, Tamil Nadu and Uttar Pradesh. Development of OCMMS is under process in Sikkim, Delhi, Goa, Andaman & Nicobar. The OCMMS is integrated with DIPP / State Government Single Window System for seven (7) States viz. Andhra Pradesh, Chattisgarh, Haryana, Jharkhand, Kerala, Odisha and Tamil Nadu. The mobile version of OCMMS is implemented in seven (7) State of Bihar, Haryana, Jharkhand, Kerala, Punjab and Tamil Nadu and the same are amade available under Play Store.

Prakriti Khoz Online Environment Quiz (PKEQ): The Ministry has decided to develop an online environmental quiz competition named as Online Prakriti Khoj - Environment Quiz (PKEQ) at national level. The Quiz is an ideal medium to reach out to young mind through a fun filled and interactive learning experience to trigger their sensitivity towards environment protection and conservation. PKEQ is an

unique platform for students to measure their awareness level regarding environmental issues. Besides, students shall also be motivated towards their effective participation in major programmes of Ministry. PKEQ is an online quiz system with multiple choice questions for students of different age (8-12, 13-15, 16-18).

**Objective:**

- to impart knowledge
- to school children about their immediate environment, interactions within it and the problems therein
- to sensitize children to issues related to environment and development
- to motivate children towards environment conservation - oriented lifestyles; and
- to trigger the sensitivity towards nature appreciation and conservation, leading to positive environmental actions at different levels

**Vision** The programme aims to inculcate the feeling of responsibility towards the environment protection and bring the behavioural change.

**Thematic areas:**

- Biodiversity Conservation,
- Climate change
- Pollution
- Waste Management
- Sanitation and Swachh Bharat Mission
- Forests and Wildlife
- Science and Environment





*Dr. Harsh Vardhan, Hon'ble Minister, EF&CC, Dr. Mahesh Sharma, Hon'ble Minister of State and Dr. Amita Prasad during launch of PKEQ system.*

The PKEQ system (<http://pkeq.nic.in>) has been launched by Dr. Harsh Vardhan, Hon. Minister of Environment, Forest and Climate Change and Dr. Mahesh Sharma, Hon. Minister of State Climate Change on 5th September, 2017 at New Delhi.

The Quiz comprises of four rounds of the competition at State/National level. The first three rounds will be at the state level. Thereafter the students will have to appear for National level which will again be conducted as fourth round. The First round of online Quiz for the students of different age group in the country has started from 25th September, 2017.

### RTI Cell

The Ministry received 2736 applications and 239 appeals under RTI Act 2005 during the year 2017-18 (1.4.2017 to 31.12.2017) as per RTI-MIS portal. The Central Public Information Officer (CPIOs) and First Appellate Authorities (FAAs) in the Ministry have been designated for effective implementation of the RTI Act 2005. The notification designating CPIOs/FAAs is revised periodically as and when there is any change in the work among CPIOs/FAAs. The list of CPIOs/FAAs of the Ministry has also been uploaded on the Ministry's website.

### Public Grievance Cell

A Public Grievance Cell has been functioning in the Ministry to attend to the complaints of public regarding forestry and environmental matters etc. Presently Shri A. Senthelvel, Advisor (PG) is the Nodal Public Grievance Officer of the Ministry.

As on 16th November, 2017 out of total 24310 public grievances, 23781 grievances had been disposed of online and 529 grievances are pending for disposal. The rate of disposal was 98%. Efforts are however, being continued by the Public Grievance Cell to raise the disposal rate up to 100% by issuing periodical reminders to the Division/Sections concerned for settlement/disposal of pending grievance.

### 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 Languages 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, Administrative and other Reports 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.

**Progress of Activities undertaken:**

**Meetings of Official Language Implementation Committee:** Meetings of official Language Implementation Committee were organised in every quarter under the Chairmanship of Joint Secretary/Scientist 'G', wherein position of implementation of Official Language Policy in the Divisions/Sections of the Ministry was 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.

**Inspections:** The Committee of Parliament on Official Language inspected our Attached/Subordinate Office namely Govind Ballabh Pant Institute of Himalayan Environment & Development.

In addition to above, with a view to review the position of implementating Official Language Policy of the Union, inspections of Attached/Subordinate Offices under the Administrative Control of the Ministry of Environment, Forest and Climate Change were also carried out by Officer(s) of Official Language Division of the Ministry.

**Meeting of Hindi Salahkar Samiti:** Meeting of Hindi Salahkar Samiti of the Ministry under the

Chairmanship of Minister of State (Independent Charge) was organised. The meeting was attended by Non-Official inclusive of Hon'ble Member of Parliament and Official Members as well.

**Publication of Paryavaran Magazine:** Special issue on Climate Change of 'Paryavaran' magazine of the Ministry was released by the Hon'ble Minister of State (Independent Charge) during the meeting of Hindi Salahkar Samiti.

**Release of Calendars of ZSI and BSI:** Hindi-English bilingual Calendars of ZSI and BSI were released during the meeting of Hindi Salahkar Samiti Chaired by the Hon'ble Minister of State (Independent Charge).

**Hindi Month:** Hindi Month was organised from 1st to 30th September, 2017 during which various Hindi competitions aimed at increasing progressive use of Official Language Hindi were organised. Employees of the Ministry, NAEB, NRCD and CCU participated the these competitions.

### Civil Construction Unit (CCU)

Civil Construction Unit (CCU), headed by Chief Engineer (Civil), was set up in the Ministry of Environment & Forests in March, 1987 for taking up important works of the Ministry on priority basis.

The works being taken up by CCU consist of construction of office-cum-laboratory buildings, herbariums, national regional museums of natural history, staff quarters and other building works relating to various units of the Ministry of Environment, Forests and Climate change viz. Botanical Survey of India, Zoological Survey of India, National Museum of Natural History, State Forest Service Colleges, Indira Gandhi National Forest Academy, Forest



Survey of India, National Zoological Park, New Delhi and Regional Offices of Ministry located in different part of the country. The CCU also undertakes works of renovation/up-gradation of existing Residential as well as Non residential buildings as per requirement.

In order to avoid use of wood in the buildings constructed by CCU a number of alternatives have been adopted. For doors, windows and cupboards mostly steel sections, bamboo jute composite, UPVC, pressed steel frames, aluminum sections are being used depending on importance of the buildings.

Similarly, solar energy is being used in various areas like street lighting, power generation etc. Solar water heating system for heating water in the hostel buildings also being used. To affect savings in energy, LED bulbs/ tubes are being used in place of conventional fluorescent

lights/CFL in Offices, houses and guest houses. Important buildings are also being designed on solar passive architecture. The Economy Measure – a Mandate of Govt. of India is being Monitored by this unit to provide LED light and efficient electrical fittings in all buildings of Ministry and also being executed by this unit. This unit is coordinating the uploading of Land data in govt portal and achieved 100% in respect of MoEF&CC.

The following buildings costing more than 100 lakhs have been completed during this period.

C/o additional shed for MDF facilities including electrical works for IPIRTI at Yashwanthpur, Bangalore.( Sanctioned Cost of Project: 214.32 lacs).



*Development of Galleries of BSI and ZSI Kolkata .*



*Porta cabin Gallery for National Museum of Natural History at BGIR Campus, Noida (UP).*

# Development Monitoring & Evaluation, Budget and Accounts

**15**  
CHAPTER







### **Development Monitoring & Evaluation**

**Division:** Erstwhile Plan Coordination (PC) Division was entrusted with the coordination of all Plan Schemes and Programme of the Ministry of Environment, Forest & Climate Change. However, with restructuring of Planning Commission by Government of India and evolution of NITI Aayog, on a similar direction; Plan Coordination Division was also restructured and henceforth the work relating to Budget allocation/ Outcome Budget is now being looked after by Budget Section of the Ministry.

PC Division has been renamed as 'Development Monitoring & Evaluation Division' (DMED) functioning under the supervision of Sr. Economic Advisor.

The work of DMED is linked with the Development, Monitoring, Evaluation Office (DMEO) in NITI Aayog. DMED would also function towards convergence of efforts through Government Funded Programmes to achieve Sustainable Development Goals (SDG) and Nationally Determined Contributions (NDCs). The work of DMED is detailed as under:

- a. To carry out monitoring and impact Evaluation of the Ministry's funded programmes.
- b. To focus on outcomes and take it into account during appraisal for continuation of the ongoing schemes.
- c. To constitute Evaluation Monitoring Committee (EMC).
- d. To prepare TOR for Evaluation Monitoring Committee (EMC).

- e. To get TOR vetted by Inter Ministerial Group (IMG).
- f. Coordination with NITI Aayog.
- g. Nodal Division for coordination with NITI Aayog in the matter of monitoring and evaluation of programmes of the Ministry.
- h. Any other matter as assigned by the competent authority in the Ministry.

### **Budget and Accounts**

**Budget Division:** Budget Division is entrusted with the 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 covers 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 Chief Controller of Accounts is the divisional head of the Budget Division and reports to the Chief Accounting Authority of the Ministry through AS&FA. The work of Budget Division is detailed as under:

#### **I. SBE, RE, Supplementary and Reappropriation**

- Preparation of Statement of Budget Estimates (SBE), Revised Estimates (RE) and Final Estimates (FE).

- Preparation of Supplementary Demands for Grants.
- Re-appropriation proposals within the delegated Powers of the Ministry and processing of re-appropriation proposals beyond the Powers of the Ministry.
- Preparation and printing of Detailed Demands for Grants (DDG).
- Coordination of all Schemes and Non-schemes of the Ministry of Environment, Forest & Climate Change and work in close association with Ministry of Finance & NITI Aayog.

## II. Department related Parliamentary Standing Committee

- Coordination with PDs for submission of replies on questionnaires.
- Presentation before the Parliamentary Standing Committee.
- Submission of Action Taken Note (ATN).

## III. Cash Management

- Compliance of Cash Management (MEP/QEA) instructions and reporting to Ministry of Finance.
- Monitoring of Expenditure and reporting in Senior Officers Meeting (SOM).

## IV. Outcome-Output Framework for Schemes

- Preparation of Outcome Budget

- Coordinating with PDs on Outcome Budget indicators through the web based interactive dashboard developed by NITI Aayog.
- Monitoring and reporting on Special Component Plans, namely Scheduled Caste Sub-Plan (SCSP), Tribal Sub-Plan (TSP) and North Eastern Region (NER) to respective nodal Ministries & NITI Aayog.

## V. Allocation of funds under Advances to Government Servants

**Annual Plan 2017-18:** The Ministry has been allocated an outlay of Rs 2675.42 crore in the Budget Estimates (BE) for Financial Year 2017-18 and retained at the same level at Revised Estimates (RE) stage. Several structural reforms were undertaken during 2017-18, including removal of distinction between Plan and Non-plan expenditure. Accordingly, the budget outlay for 2017-18 is bifurcated into Scheme and Non-Scheme components as below:

- Scheme component:
  - Central Sector Scheme
  - Centrally Sponsored Scheme
- Non-Scheme component:
  - Secretariat
  - Attached/Subordinate offices
  - Other Central Expenditure of Autonomous Bodies, Statutory Bodies.



The financial outlays and expenditure during 2017-18 is given in the following Table:

**Umbrella Scheme-wise Allocation (2017-18)**

(In Rs. Crore)

Sl. No.	Scheme	BE 2017-18	RE 2017-18	Actual Expenditure as on 31.12.2017
1	Environmental Knowledge & Capacity Building (CS)	53.00	135.50	130.21
2	Environmental Protection, Management & Sustainable Development (CS)	275.52	265.25	112.81
3	National Coastal Management Programme (CS)	446.98	152.50	64.54
4	Decision Support System for Environmental Awareness, Policy, Planning & Outcome Evaluation (CS)	139.71	110.90	70.62
5	National Mission for a Green India (CSS)	157.80	173.05	142.47
6	Integrated Development of Wildlife Habitats (CSS)	522.50	532.50	387.05
7	Conservation of Natural Resources and Ecosystems (CSS)	108.21	96.00	73.49
8	National River Conservation Programme (CSS)	173.50	173.50	130.99
	<b>Total</b>	<b>1877.22</b>	<b>1639.20</b>	<b>1112.18</b>

**Umbrella Non Scheme-wise Allocation (2017-18)**

(In Rs. Crore)

Sl. No.	Scheme	BE 2017-18	RE 2017-18	Actual Expenditure as on 31.12.2017
1	Secretariat	83.59	88.30	70.56
2	Attached/ Subordinate Offices	355.97	365.85	250.47
3	Assistance to Autonomous Bodies	244.80	279.00	203.35
4	Statutory & Regulatory Bodies	113.84	177.35	95.98
5	Other Expenditure	0.00	125.72	100
	<b>Total</b>	<b>798.20</b>	<b>1036.22</b>	<b>720.36</b>
	<b>Grand Total (Scheme + Non Scheme)</b>	<b>2675.42</b>	<b>2675.42</b>	<b>1832.54</b>

## Important Activities during 2017-18

- Merger of Plan & Non-Plan distinction in expenditure budgeting and focus on classification of expenditure as Revenue & Capital.
- Shift towards a Medium Term Expenditure Framework (MTEF) to give greater resource predictability to Ministry' outlay.
- Shift from input based budgeting towards Output and Outcome based budgeting.
- Instead of Five year Plan post 12th Plan, the three years medium term (2017-18 to 2019-20) to align with the remaining period of the Fourteenth Finance Commission (2017-2020).

**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 including 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; 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). Process of roll out of CDDO Module for enabling electronic transfer of funds through PFMS and Employee Information System (EIS) among all the NCDDOs/CDDOs under the Ministry is in progress. 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 is also being implemented.





Significant Audit Paras as on 30.01.2018

Sl. No.	Report No. & Year	Para No.	Brief Subject
1	3B of 2001 CA 1 of 2001	1	Implementation of Environment Acts relating to water pollution
2	21 of 2012- 13	Entire Report	Report on Compensatory Afforestation in India
3	27 of 2014	6.3	Wasteful expenditure on hiring of office accommodation
4	27 of 2014	6.4	Non-establishment of model facilities for management of Municipal Solid Wastes
5	30 of 2015	7.1	Implementation of E-waste (Management and Handling) Rules, 2011 by Central Pollution Control Board – regarding
6	30 of 2015	7.2	Inordinate delay in completion for pilot projects for sewage treatment- regarding
7	39 of 2016	Entire Report	Environment and Sustainable Development

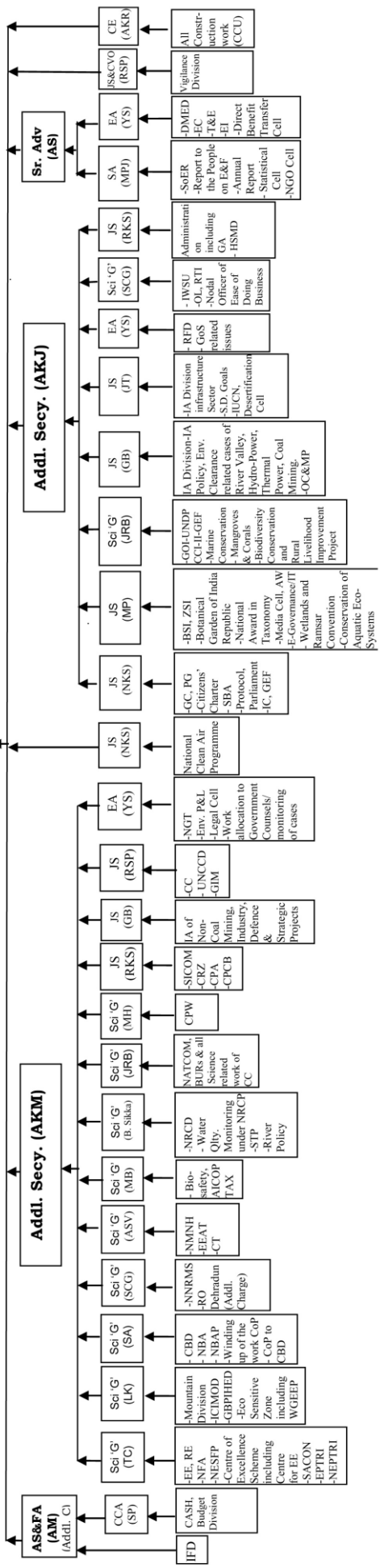
**ORGANISATIONAL STRUCTURE OF MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (DIVISIONS UNDER ENVIRONMENT WINGS)**

**MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE**

Minister of State for Environment, Forest and Climate Change

As on 23 January 2018

**SECRETARY**



**ORGANISATIONAL STRUCTURE OF MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (DIVISIONS UNDER FORESTRY & WILDLIFE WINGS)**

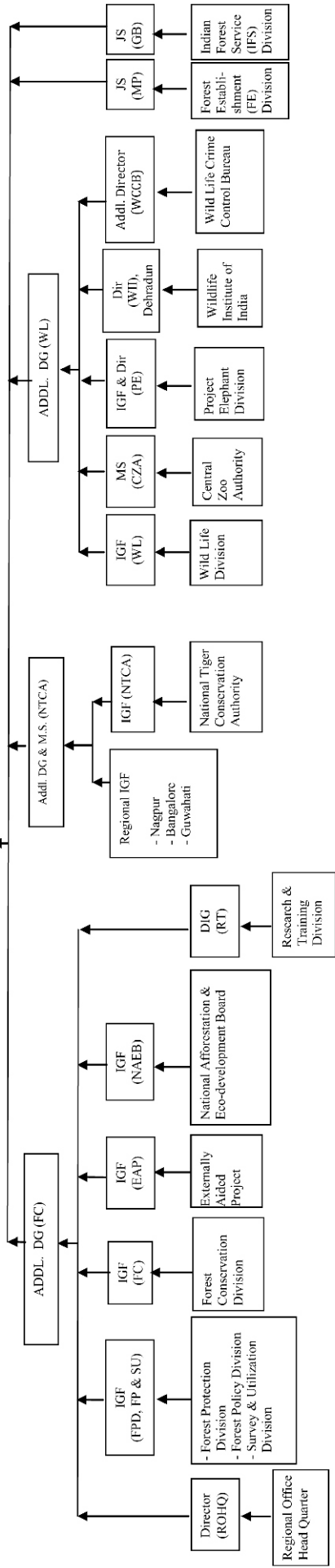
**MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE**

**Minister of State for Environment, Forest and Climate Change**

As on 23 January, 2018

SECRETARY

DGF & SS



Annexure-IV

List of Wetlands of International Importance in India under Ramsar Convention

S. No.	State/UT	S. No.	Name of Ramsar Site	Area in ha	Date of Declaration
1.	Andhra Pradesh	1.	Kolleru	90100	19/08/02
2.	Assam	2.	Deepar Beel	4000	19/08/02
3.	Gujarat	3.	Nalsarovar Bird Sanctuary	12000	24/09/12
4.	Himachal Pradesh	4.	Pongdam	15662	19/08/02
		5.	Renuka	20	8/11/05
		6.	Chandratal	49	8/11/05
5.	Jammu & Kashmir	7.	Wullar	18900	23/3/90
		8.	Tso Morari	12000	19/8/02
		9.	Hokersar	1375	8/11/05
		10.	Mansar & Surinsar	350	8/11/05
6.	Kerala	11.	Ashtamudi	61400	19/08/02
		12.	Sasthamkotta	373	19/8/02
		13.	Vembanad kol	151250	19/8/02
7.	Madhya Pradesh	14.	Bhoj	3201	19/8/02
8.	Manipur	15.	Loktak	26600	23/3/90
9.	Orissa	16.	Chilika	116500	1/10/81
		17.	Bhtarkanika	65000	19/8/02
10.	Punjab	18.	Harike	4100	23/3/90
		19.	Kanjli	183	22/1/02
		20.	Ropar	1365	22/1/02
11.	Rajasthan	21.	Sambhar	24000	23/3/90
		22.	Keoladeo NP	2873	1/10/83
12.	Tamil Nadu	23.	Point Calimere	38500	19/8/02
13.	Tripura	24.	Rudra Sagar	240	8/11/05
14.	Uttar Prdaesh.	25.	Uppar Ganga	26590	8/11/05
15.	West Bengal	26.	East Kolkatta wetland	12500	19/8/02
	<b>Total</b>		<b>26 sites</b>	<b>689131 ha</b>	

MR: Montreux Record

\* Names of Ramsar sites for which funds have been provided by the Ministry under the scheme.





**Statewise and Townwise Details STP Capacity  
Created in 75 Towns under National River Conservation Plan (Excluding Ganga & Tributaries)**

S. No.	State/Town Cost (DPR)	River No.	Name of River
I	ANDHRA PRADESH		
1	Rajamundry	1	Godavari
II	GOA		
2	Panaji	2	Mandovi
III	GUJARAT		
3	Ahemedabad	3	Sabarmati
4	Surat	4	Mindhola
IV	JHARKHAND		
5	Ghatshila	5	Subarnarekha
6	Jamshedpur		Subarnarekha
7	Ranchi		Subarnarekha
V	KARNATAKA		
8	Bangalore	6	Pennar
9	Bhadravati	7	Bhadra
10	Davangere	8	Tungabhadra
11	Harihara		Tungabhadra
12	K.R.Nagar	9	Cauvery
13	Kollegal		Cauvery
14	Nanjangud		Cauvery
15	Shimoga	10	Tunga
16	Srirangapatna		Cauvery
VI	KERALA		
17	Pamba	11	Pamba
VII	MADHYA PRADESH		
18	Burhanpur	12	Tapti
19	Chapara	13	Wainganga

S. No.	State/Town Cost (DPR)	River No.	Name of River
20	Hoshangabad		Narmada
21	Jabalpur	14	Narmada
22	Keolari		Wainganga
23	Seoni		Wainganga
VIII	MAHARASHTRA		
24	Karad	15	Krishna
25	Kolhapur	16	Panchganga
26	Nanded		Godavari
27	Nashik		Godavari
28	Prakkasha	17	Tapi
29	Sangli		Krishna
30	Trimbakeshwar		Godavari
31	Pune	18	Mula Mutha
IX	NAGALAND		
32	Dimapur	19	Diphu and Dhansiri
X	ODISHA		
33	Chandbali	20	Brahamini
34	Cuttack	21	Mahanadi
35	Dharamshala		Brahamini
36	Puri		Coastal Area
37	Talcher		Brahamini
XI	PUNJAB		
38	Banga	22	Satluj
39	Bholath	23	Beas & Satluj
40	Dasuya		Beas & Satluj
41	Hoshiyarpur		Beas & Satluj
42	Jalandhar		Satluj
43	Kapurthala		Satluj



S. No.	State/Town Cost (DPR)	River No.	Name of River
44	Ludhiana		Satluj
45	Moga		Beas & Satluj
46	Mukerian		Beas & Satluj
47	Nawanshehar		Satluj
48	Phagwara		Satluj
49	Phillaur		Satluj
50	Sultanpur Lodhi		Satluj
51	Tanda		Beas & Satluj
52	Khanauri	24	Ghaggar
53	Moonak		Ghaggar
54	Patran		Ghaggar
55	Lehragaga		Ghaggar
XII	SIKKIM		
56	Gangtok	25	Rani Chu
57	Ranipool		Rani Chu
58	Singtom		Rani Chu
XIII	TAMIL NADU		
59	Bhiwani		Cauvery
60	Chennai	26, 27	Adyar, Cooum
61	Erode		Cauvery
62	Karur		Cauvery
63	Kumarapalayam		Cauvery
64	Kumbakonam		Cauvery
65	Madurai	28	Vaigai
66	Mayiladuthurai		Cauvery
67	Pallipalayam		Cauvery
68	Thanjavur	29	Vennar
69	Tirunelveli	30	Tamrabarani

S. No.	State/Town Cost (DPR)	River No.	Name of River
70	Trichirappalli		Cauvery
71	Trichy		Cauvery
XIV	Telangana		
72	Bhadrachalam		Godavari
73	Hyderabad	31	Musi
74	Mancherial		Godavari
75	Ramagundam		Godavari





Details of wetland projects approved under NWCP/NPCA

S. No.	State/Union Territory	S. No.	Wetland	Amount Released wetland wise (till 31.10.2017) Amt. in Rs. lakh)	Amount Released (till 31.10.2017) (Amt. in Rs. lakh)
1	Andhra Pradesh	1.	Kolleru	249.569	249.569
2	Assam	2.	Deepar Beel	362.00	362.00
3	Bihar	3.	Kabar	31.34	47.34
		4.	Barilla	8.00	
		5.	Kusheshwar Asthan	8.00	
4	Gujarat	6.	Nalsarovar	305.22	736.9525
		7.	Thol Bird Sanctuary	98.32	
		8.	Khijadiya Bird Sanctuary	83.465	
		9.	Pariej	122.7725	
		10.	Wadhvana	109.175	
		11.	Nanikakrad	18.00	
5	Haryana	12.	Sultanpur	244.255	388.485
		13.	Bhindawas	144.23	
6	Himachal Pradesh	14.	Renuka	259.924	674.122
		15.	Pong Dam	251.93	
		16.	Chandratal	46.758	
		17.	Rewalsar	54.51	
		18.	Khajjiar	61.00	
7	Jammu & Kashmir	19.	Wullar	318.215	825.502
		20.	Tso Morari	126.44	
		21.	Tisgul Tso & Chisul Marshes	41.06	
		22.	Hokersar	83.84	
		23.	Mansar-Surinsar	235.947	
		24.	Pangong Tsar		20.00
8	Karnataka	25.	Magadhi	57.40	217.809
		26.	Gudavi Bird Sanctuary	73.997	
		27.	Bonal	36.222	

S. No.	State/Union Territory	S. No.	Wetland	Amount Released wetland wise (till 31.10.2017) Amt. in Rs. lakh)	Amount Released (till 31.10.2017) (Amt. in Rs. lakh)
		28.	Hidkal & Ghataprabha	17.34	
		29.	Ranganthittu	32.85	
9	Kerala	30.	Ashtamudi	97.192	280.197
		31.	Sasthamkotta		53.08
		32.	Kottuli	60.00	
		33.	Vembnad Kol ( Kuttanad)	69.925	
10	Madhya Pradesh	34.	Barna	5.00	204.31
		35.	Yashwant Sagar	5.00	
		36.	Ghatigaon	8.00	
		37.	Ratapani	29.48	
		38.	Sakhyasagar	91.83	
		39.	Sirpur	65.00	
11	Manipur	40.	Loktak	1208.31	1208.31
12	Mizoram	41.	Tamdil	476.155	926.876
		42.	Palak	450.721	
13	Odisha	43.	Chilika	1765.88	2014.87
		44.	Kanjia wetland	30.68	
		45.	Daha wetland	5.00	
		46.	Anusupa	213.31	
14	Punjab	47.	Harike	493.06447	1113.34547
		48.	Ropar	271.645	
		49.	Kanjli	167.541	
		50.	Nangal	181.095	
15	Rajasthan	51.	Sambhar	719.1575	719.1575
16	Sikkim	52.	Khechuperi Holy Lake	134.92	431.56
		53.	Phendang Wetland Complex	64.95	
		54.	Gurudokmar Wetland	103.53	
		55.	Tsomgo wetland	68.76	
		56.	Tamzey	59.40	
17	Tamil Nadu	57.	Point Calimere	508.6375	1136.2375



S. No.	State/Union Territory	S. No.	Wetland	Amount Released wetland wise (till 31.10.2017) (Amt. in Rs. lakh)	Amount Released (till 31.10.2017) (Amt. in Rs. lakh)
		58.	Kaliveli	449.4455	
		59.	Pallaikarni	178.1545	
18	Tripura	60.	Rudrasagar	125.085	125.085
19	Uttar Pradesh	61.	Nawabganj	145.785	1650.462
		62.	Sandi	208.9425	
		63.	Lakh Bahoshi	222.975	
		64.	Samaspur	244.191	
		65.	Semarai Lake	144.236	
		66.	Nagaria lake		
		67.	Keetham Lake	138.735	
		68.	Shekha wetland	56.638	
		69.	Saman Bird Sanctuary	88.1495	
		70.	Sarsai Nawar	133.39	
		71.	Patna Bird Sanctuary	92.333	
		72.	Chandotal	77.76	
		73.	Taal Bhaghel	97.327	
20	Uttarakhand	74.	Ban Ganga Jhilmil Tal	42.40	44.734
		75.	Asan	2.334	
21	West Bengal	76.	East Kolkata Wetland	239.34	1791.186
		77.	Sunderbans		1162.70
		78.	Ahiron Beel	174.26	
		79.	Rasik Beel	136.60	
		80.	Santragachi	38.066	
		81.	Patlakhawa- Rasomati	40.22	
22	Puducherry ( UT)	82.	Ousteri lake	75.239	75.239
	R&D + Others	-	-	1026.05592	1026.05592
	Total			16249.40489 or say 162.49	16249.40489 or say 162.49

Annexure-VII

List of wetlands identified under National wetland Conservation Programme

SI No.	State/UT States	S.No.	Name of Wetlands
1.	Andhra Pradesh	1.*	Kolleru
2.	Assam	2.*	Deepar Beel
		3.	Urpada Beel
		4.	Sone Beel
3.	Bihar	5.*	Kabar
		6.*	Barilla
		7.*	Kusheshwar Asthan
4.	Gujarat	8.*	Nalsarovar
		9.	Great Rann of Kachh
		10.*	Thol Bird Sanctuary
		11.*	Khijadiya Bird Sanctuary
		12.	Little Rann of Kachh
		13.*	Pariej
		14.*	Wadhvana
		15.*	Nanikakrad
5.	Haryana	16.*	Sultanpur
		17.*	Bhindawas
6.	Himachal Pradesh	18.*	Renuka
		19.*	Pong Dam
		20.*	Chandratal
		21.*	Rewalsar
		22.*	Khajjiar
7.	Jammu & Kashmir	23.*	Wullar
		24.*	Tso Morari
		25.*	Tisgul Tso & Chisul Marshes
		26.*	Hokersar
		27.*	Mansar-Surinsar
		28.	Ranjitsagar
		29.*	Pangong Tsar
		30.	Gharana
		31.	Hygam,





SI No.	State/UT States	S.No.	Name of Wetlands
		32.	Mirgund
		33.	Shalbugh
		34.	Chushul & Hanley
8.	Jharkhand	35.	Udhwa
		36.	Tilaiya Dam
9.	Karnataka	37.*	Magadhi
		38.*	Gudavi Bird Sanctuary
		39.*	Bonal
		40.*	Hidkal & Ghataprabha
		41.	Heggeri
		42.*	Ranganthittu
		43.	K.G. Koppa wetland
10.	Kerala	44.	*Ashtamudi
		45.*	Sasthamkotta
		46.*	Kottuli
		47.	Kadulandi
		48.*	Vembnad Kol ( Kuttanad)
11.	Madhya Pradesh	49.*	Barna
		50.*	Yashwant Sagar
		51.	Wetland of Ken River
		52.	National Chambal Sanctuary
		53.*	Ghatigaon
		54.	*Ratapani
		55.	Denwa Tawa
		56.	Kanha Tiger Reserve
		57.	Pench Tiger Reserve
		58.*	Sakhyasagar
		59.	Dihaila
		60.	Govindsagar
61.*	Sirpur		
12.	Maharashtra	62.	Ujni
		63.	Jayakawadi

SI No.	State/UT States	S.No.	Name of Wetlands
		64.	Nalganga
13.	Manipur	65.*	Loktak
14.	Meghalaya	66.	Umiam lake
15.	Mizoram	67.*	Tamdil
		68.*	Palak
16.	Odisha	69.*	Chilka
		70.	Kuanria
		71.*	Kanjia
		72.*	Daha
		73.*	Anusupa
17.	Punjab	74.*	Harike
		75.*	Ropar
		76.*	Kanjli
		77.*	Nangal
18.	Rajasthan	78.*	Sambhar
19.	Sikkim	79.*	Khechuperi holy lake
		80.*	Tamze
		81.	Tembao Wetland Complex
		82.*	Phendang Wetland Complex
		83.*	Gurudokmar
		84.*	Tsomgo
20.	Tamil Nadu	85.*	Point Calimere
		86.*	Kaliveli
		87.*	Pallaikarni
21.	Tripura	88.*	Rudrasagar
		89.	Gumti reservoir
22.	Uttar Pradesh.	90.*	Nawabganj
		91.*	Sandi
		92.*	Lakh Bahoshi
		93.*	Samaspur
		94.	Alwara
		95.*	Semarai



SI No.	State/UT States	S.No.	Name of Wetlands
		96.*	Nagaria
		97.*	Keetham
		98.*	Shekha
		99.*	Saman Bird Sanctuary
		100.*	Sarsai Nawar
		101.*	Patna Bird Sanctuary
		102.*	Chandotal
		103.*	Taal Bhaghel
		104.	Taal Gambhirvan & Taal Salona
		105.	Aadi jal Jeev Jheel
23.	Uttarakhand	106.*	Ban Ganga Jhilmil Tal
		107.*	Asan
24.	West Bengal	108.*	East Kolkata wetlands
		109.*	Sunderbans
		110.*	Ahiron Beel
		111.*	Rasik Beel
		112.*	Santragachi
		113.*	Patlakhawa- Rasomati
25	Chandigarh (UT)	114.	Sukhna
26.	Puducherry ( UT)	115.*	Ousteri

*\*Names of wetlands (82 Nos in 22 States and 1 UT) for which funds have been provided by the Ministry under the programme.*



INDIRA PARYAVARAN BHAWAN





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