



## 6th National Report to CBD

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### Introduction

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- Ministry of Environment, Forest and Climate Change (MoEFCC) started the process of setting up NBTs by organising a high-level meeting with the Ministries and Departments concerned in November 2011.
- A round of subject matter specific inter-ministerial meetings and wider stakeholder consultations followed with a view to update India's National Biodiversity Strategy and Action Plan (NBSAP) 2008 by developing NBTs in line with the Strategic Plan (SP) for Biodiversity (2011-2020) and its 20 Aichi Targets.

### National Biodiversity Targets

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Many States have their own State Biodiversity Action Plans (SBAPs), which are being implemented taking note of the NBTs.

#### National Biodiversity Target (NBT) - 1

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By 2020, a significant proportion of the population especially the youth, is aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

#### Conventions that relate to NBT 1:

1. Convention on Biological Diversity (CBD), 1993
2. Convention on the Conservation of Migratory Species of Wild Animals (CMS), 1983
3. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1975
4. Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention), 1975
5. International Plant Protection Convention (IPPC), 1952
6. International Treaty on Plant Genetic Resources for food and Agriculture (ITPGRFA), 2004
7. United Nations Convention to Combat Desertification (UNCCD), 1996

## 8. United Nations Framework Convention on Climate Change (UNFCCC), 1994

Relevance of National Targets to Aichi Targets- Awareness of biodiversity values

### **National Biodiversity Target (NBT) - 2**

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By 2020, values of biodiversity are integrated in national and state planning processes, development programmes and poverty alleviation

#### **Conventions that relate to NBT 2:**

1. Convention on Biological Diversity (CBD), 1993
2. Convention on Wetlands of International importance especially as Waterfowl Habitat (Ramsar Convention), 1975
3. International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), 2004
4. United Nations Framework Convention on Climate Change (UNFCCC), 1994
5. United Nations Forum on Forests (UNFF), 2000

**Relevance of National Targets to Aichi Targets – Integration of biodiversity values**

### **National Biodiversity Target (NBT) - 3**

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Strategies for reducing rate of degradation, fragmentation and loss of all natural habitats are finalized and actions put in place by 2020 for environmental amelioration and human well-being.

#### 1. Conventions that relate to NBT-3:

- o Convention on Biological Diversity (CBD), 1993
- o Convention on Wetlands of International Importance especially Waterfowl Habitat (Ramsar Convention), 1975
- o United Nations Convention to Combat Desertification (UNFCCD), 1996
- o United Nations Convention on the Law of the Sea (UNCLOS), 1994
- o United Nations Forum on Forests (UNFF), 2000
- o United Nations Framework Convention on Climate Change (UNFCCC), 1994

#### 2. Others:

Covers SDG 6, 7, 11, 13, 14 & 15

### **Relevance of National Targets to Aichi Targets**

5. Loss of habitats

15. Ecosystem resilience

## **National Biodiversity Target (NBT) - 4**

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By 2020, invasive alien species and pathways are identified and strategies to manage them developed so that populations of prioritized invasive alien species are managed.

### 1. Conventions that relate to NBT 4:

- Convention on Conservation of Migratory Species of Wild Animals(CMS), 1983
- Convention on International Trade in Endangered Species (CITES), 1975
- Convention on Wetlands of International Importance especially Waterfowl Habitat (Ramsar Convention), 1975
- International Plant Protection Convention (IPPC), 1952
- United Nations Convention on the Law of the Sea (UNCLOS), 1994
- United Nations Framework Convention on Climate Change(UNFCCC), 1994
- The Agreement on the Application of Sanitary and Phytosanitary Measures, 1995
- The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), 2004

### 2. Others:

Covers SDG 15

## **Relevance of National Targets to Aichi Targets**

14. Essential ecosystem services

## **National Biodiversity Target (NBT) - 5**

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By 2020, Measures are adopted for Sustainable Management of Agriculture, Forestry and Fisheries.

### **Conventions that relate to NBT 5:**

1. Convention on Biological Diversity (CBD), 1993
2. International Plant Protection Convention (IPPC), 1952
3. International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA), 2004
4. United Nations Convention to Combat Desertification (UNCCD), 1996
5. United Nations Convention on the Law of the Sea (UNCLOS), 1994
6. United Nations Forum on Forests (UNFF), 2000
7. United Nations Framework Convention on Climate Change (UNFCCC), 1994

## **Relevance of National Targets to Aichi Targets**

6. Sustainable fisheries

7. Areas under sustainable management

## 8. Pollution

### **National Biodiversity Target (NBT) - 6**

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Ecologically representative areas on land and in inland waters, as well as coastal and marine zones, especially those of particular importance for species, biodiversity and ecosystem services, are conserved effectively and equitably, on the basis of protected area designation and management and other area-based conservation measures and are integrated into the wider landscapes and seascapes, covering over 20 % of the geographic area of the country, by 2020.

#### 1. Conventions that relate to NBT 6:

- Convention on the Conservation of Migratory Species of Wild Animals(CMS), 1983
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1975
- Convention on Wetlands on International importance especially as Waterfowl Habitat (Ramsar Convention), 1975
- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA), 2004
- The World Heritage Convention, 1977
- United Nations Forum on Forests (UNFF), 2000
- Convention on Biological Diversity (CBD), 1993

#### 2. Others:

contributes to achievement of SDGs 6, 11, 14 & 15.

### **Relevance of National Targets to Aichi Targets**

10. Vulnerable ecosystems

11. Protected areas

12. Preventing extinctions

### **National Biodiversity Target (NBT) - 7**

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By 2020, genetic diversity of cultivated plants, farm livestock, and their wild relatives including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

1. Conventions that relate to NBT 7:

- Convention on Biological Diversity (CBD), 1993
- International Plant Protection Convention (IPPC), 1952
- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPRGFA), 2004
- The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, 2014

2. Others:

Sustainable Development Goals 2 and 3

**Relevance of National Targets to Aichi Targets**

13. Agricultural biodiversity

**National Biodiversity Target (NBT) - 8**

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By 2020, ecosystem services especially those relating to water, human health, livelihoods and well-being, are enumerated and measures to safeguard them are identified taking into account the needs of women and local communities particularly the poor and vulnerable section.

**It meets the requirement of SDGs 3, 4, 5, 6, 7, 10, 11, 12, 14 and 15.**

**Relevance of National Targets to Aichi Targets**

14. Essential ecosystem services

**National Biodiversity Target (NBT) - 9**

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By 2015, Access to Genetic Resources (GRs) and the Fair and Equitable Sharing of Benefits Arising from their Utilization as per the Nagoya Protocol are operational, consistent with national legislation.

**Conventions that relate to NBT 9:**

1. Convention on Biological Diversity (CBD), 1993
2. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD (NP), 2014

**Relevance of National Targets to Aichi Targets**

16. Nagoya Protocol on ABS

**National Biodiversity Target (NBT) - 10**

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By 2020, an effective participatory and updated national biodiversity plan is made operational at different levels of governance.

### **Conventions that relate to NBT 10:**

1. Convention on Biological Diversity (CBD), 1993
2. Convention on the Conservation of Migratory Species of Wild Animals (CMS), 1983
3. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1975
4. Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), 1975
5. International Plant Protection Convention (IPPC), 1952
6. International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), 2004
7. Stockholm Convention on Persistent Organic Pollutants (POPs), 2004
8. United Nations Convention to Combat Desertification (UNCCD), 1996
9. United Nations Forum on Forests (UNFF), 2000
10. United Nations Framework Convention on Climate Change (UNFCCC), 1994
11. World Heritage Convention (WHC), 1977

### **Relevance of National Targets to Aichi Targets**

3. Incentives

4. Use of natural resources

17. NBSAPs

### **National Biodiversity Target (NBT) - 11**

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By 2020, national initiatives using communities' traditional knowledge relating to biodiversity are strengthened, with the view to protecting this knowledge in accordance with national legislations and international obligations.

1. Conventions that relate to NBT 11:

- Convention on Biological Diversity (CBD) (1993)
- International Plant Protection Convention (IPPC) (1952)
- World Heritage Convention (WHC) (1977)
- World Intellectual Property Rights Organisations (WIPO) Convention (1967)

2. Others

Related to SDG 6, 9, 11, 12 & 14

### **Relevance of National Targets to Aichi Targets**

18. Traditional knowledge

## **National Biodiversity Target (NBT) - 12**

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By 2020, opportunities to increase the availability of financial human and technical resources to facilitate effective implementation of the Strategic Plan for Biodiversity 2011-2020 and the national targets are identified and the Strategy for Resource Mobilization is adopted.

### **Relevance of National Targets to Aichi Targets**

20. Resource mobilization

## **Implementation Measures, Their Effectiveness, and Associated Obstacles**

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### **NBT-1**

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#### **Main Measures:**

##### **A. Major Policy, Legal and Programme Measures, include:**

1. Biological Diversity Act, 2002 provides that government incentivise research, training and public education to increase awareness with respect to biodiversity.
2. National Environment Policy, 2006 emphasizes the importance of enhancing environmental awareness to harmonise patterns of individual behaviour with the requirement of environmental conservation.
3. National Youth Policy, 2014 calls for engagement of youth in various initiatives including environment protection.
4. National Policy on Education, 1986 (modified in 1992) mandates that environmental consciousness should inform teaching in schools and colleges.
5. States/UTs implement their own CEPA programmes.
6. Every year, the International Day for Biological Diversity (IDB) is celebrated on 22nd May to increase understanding and awareness about biodiversity issues.

##### **B. Other Measures:**

A holistic approach to CEPA has been adopted through specific programmes / initiatives.

#### **CEPA Programmes and Initiatives**

1. Inclusion of Environmental Education at all school and college levels
2. Co-curricular programmes for school children
3. Awareness and capacity building programmes for youth and others
4. Industry and Corporate Sector Initiatives
5. Measures at local level through BMCs, PRIs, communities and CSOs

## **B1. Inclusion of Environmental Education (EE) at all school and college levels**

**B1.1** Biodiversity conservation and sustainable use are integral part of environment education (EE). EE has been made a compulsory component in curricula at all levels of education throughout the country.

**B1.2** Capacity building of teachers and faculty has been undertaken through various training programmes. Pedagogical tools for transaction of EE have been professionally created.

## **B2. Co-curricular programmes for school children**

- Eco-clubs Programme
- Paryavaran Mitra (Friends of Nature) Programme
- DBT's Natural Resource Awareness Clubs (DNA Clubs)

## **B3. Awareness and Capacity Building Programmes for Youth and Others**

People, youth and children out of school stream are reached through other means also such as:

- Mobile exhibitions e.g., Science Express, an exhibition mounted on a train which travels across India and has completed nine phases on diverse themes.
- Prakriti Bus, a mobile exhibition on biodiversity launched by the State of Uttar Pradesh and similar other initiatives by other states.
- Use of public media.

### **B3.1 Awareness and Capacity Building: Initiatives taken for Awareness and Capacity Building**

1. UNDP-GEF-ABS Capacity Building Project
2. UNEP-GEF-MoEFCC-ABS Project
3. GIZ supported ABS partnership Project
4. GEF UNDP secure Himalaya Project
5. GEF UNDP Small Grants Program
6. ASEAN India Green Fund
7. Trans-boundary project
8. Regional Initiatives

CEPA has proved to be an effective tool to create awareness and generate capacity for taking actions at grassroots level. Habitats, species of flora and fauna have been identified, protected and conserved by people at times through motivations from others and often also on their own.

A few sample case studies are given hereafter.

### **The Women's Hargilla (Greater Adjutant) Army**



Fourteen self-help groups comprising five members each in villages of Dadara, Pacharia and Singimari villages of Assam, styled themselves as 70 women Hargilla army to defy and change the commonly held adversarial attitudes against Greater Adjutant Stork and save this IUCN red listed bird from disappearance from their villages, which used to be an important habitat of these birds.

It all started with the effective use of CEPA by a keen woman bird researcher determined to save the Greater Adjutant habitat in these villages. Once motivated these women widened the support base for the Greater Adjutant by including children and other members of their households and surrounding. The persistent action of women secured the support of the district authorities in departments of administration, police, forest, health and the State Zoo Authority, each contributing to “Save the Greater Adjutant” goal in a coordinated manner.

Significant outcomes include saving of all the Kadamba (*Neolamarckia cadamba*) trees which serve as Greater Adjutant Stork habitats, increase in nests from 28 in 2008 to 143 in 2015, establishment of rescue and rehabilitation system for injured birds in collaboration with Assam State Zoo, programmes for alternative livelihood options for the community under which 28 handlooms have been distributed among the 14 self-help groups. A Fashion and Textile Designing diploma course with a specially-designed Greater Adjutant stork introduced for women. Over 10,000 people mobilised and sensitised for the conservation of the bird.

### **Mowgli Utsav in the State of Madhya Pradesh (MP)**

Named after Mowgli, a fictional character of Rudyard Kipling’s novel ‘Jungle Book’, this Utsav (festival) is organised annually organised by the State of MP to sensitize school children to biodiversity related issues. The SBB organised the 2017 festival in the State in four National Parks- Kanha National Park, Madhav National Park, Bandhavgarh National Park and Satpura National Park and engaged children in activities such as nature trail, park safari, habitat search, quiz activity, painting competitions, message writing on banners, plays and other adventures. Nearly 300 students and over 100 teachers participated in the Utsav in 2017. Certificates and prizes are awarded to the winners of events in the Utsav every year. It proves as an effective means of reaching out to young minds to make them aware of the values of biodiversity and turn them into stakeholders in conservation.

## **NBT-2**

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- Culturally and historically people in India have valued biodiversity. Urbanisation and modern imperatives of development create their own challenges for biodiversity conservation.
- Increasing integration of biodiversity concerns and values in development planning and poverty alleviation strategies has been promoted to meet these challenges.

- Programmes like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme, co-management of forests, implementation of Forest Rights Act, 2006, soil mapping and soil health cards have helped improve landscapes and seascapes promoting sustainable use of biodiversity, land and water resources.

#### A. Main Policy and Legislative Measures include:

1. National Biodiversity Strategy and Action Plan (NBSAP) provides for making valuation of biodiversity an integral part of pre-appraisal of projects and programmes to minimise adverse impact on biodiversity.
2. National Environment Policy (NEP), 2006 calls for appraisal of developmental project through cost benefit analysis by assigning values to biodiversity resources and emphasises consideration of hotspots and biodiversity heritage sites as entities with incomparable values.
3. The Biological Diversity Act, 2002 recognises the value of biodiversity and is aimed towards ensuring its conservation and sustainable use.
4. National Forest Policy, 1988 stipulates that projects involving diversion of forest land for non-forest purpose should provide in their investment funds for regeneration/compensatory afforestation.
5. National Forest Policy 1988, Forest Conservation Act 1980, Rules and Guidelines issued under the Forest Conservation Act, 1980 mandate realisation of net present value, funds for compensatory afforestation on land equal to the forest area diverted for any purpose.

#### B. Other Measures:

1. The Economics of Ecosystems and Biodiversity (TEEB) India Initiative (TII) project implemented by MoEFCC in coordination with universities, national and state level institutions and experts on valuation of ecosystems.
2. National Food Security Mission (NFSM), Pradhan Mantri Krishi Sinchayee Yojna (PMKSY), Har Khet Ko Paani, Market Development of Tribal Products/Produce (TRIFED), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), poverty alleviation programmes such as MGNREGA and other relevant programmes include consideration of biodiversity values in planning and designing of their strategies.
3. The ultimate policy objective is to make solar energy compete with fossil-based energy options, through measures such as:
  - Setting up of exclusive solar parks and giving infrastructure status to solar projects.
  - Development of power transmission network through Green Energy Corridor project.
  - National Offshore Wind Energy Policy.
  - Identification of large government complexes/ buildings for rooftop projects.
  - Raising funds including through Green Climate Fund to achieve the target.

## **NBT-3:**

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Forests, aquatic including coastal, and terrestrial habitats comprising agricultural and non-agricultural land are covered under the target. Pre-existing legislative and policy mechanisms provide the basic framework to build upon for effective implementation of the target. Together with other legislative, policy and programmes, a strong ecosystem of designing and implementing strategies to achieve this target(s) has been created.

### **A. Main Measures**

Legislative and policy measures in place for forest, aquatic and other terrestrial habitats have been taken.

### **Forest Habitats**

- National Afforestation Plan (NAP) for ecological restoration of degraded forest areas with people's participation, through JFMCs at the village level, and Forest Development Agency (FDA) at the forest division level, State Forest Development Agency (SFDA) at State level.
- National Wildlife Action Plan 2017-2030 includes inclusionary approach, linkage with wider landscapes and seascapes as its important focal areas.
- Eco-Task Forces (ETF), based on twin objectives of ecological restoration in difficult areas and promotion of meaningful employment to ex-servicemen.
- Floral and Faunal Surveys for taxonomic identification and enumeration by BSI and ZSI.
- Green India Mission (GIM) is mandated to protect, restore and enhance forest cover and respond to climate change.
- Pradhan Mantri Ujjwala Yojana (PMUY) for alternative cooking energy through LPG connections to BPL households to safeguard the health of women and children and divert pressure of cooking fuel from forests.
- Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA) to enhance livelihood security in rural areas. Most of employment generation activities relate to restoration, rehabilitation and conservation of natural resources. It is one of the biggest social security schemes of the world.

### **Aquatic Habitats**

- Namami Gange (NG), A Ganga Conservation Mission, programme for effective abatement of pollution, conservation and rejuvenation of river Ganga. NG aims at Ganga rejuvenation.
- National Water Quality Monitoring Programme (NWQMP), through Central Pollution Control Board (CPCB) at National level and State Pollution Control Boards (SPCBs) at State /UTs created under the Water (Prevention and Control of Pollution) Rules, 1974.

- National Plan for Conservation of Aquatic Ecosystem (NPCA) for conserving wetlands through Integrated Management Plans.
- National River Conservation Plan, in operation since 1995, aims to reduce pollution load of rivers, improve water quality through pollution abatement works.
- Aquifer Management Programme, under The Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD&GR) to map and manage aquifer systems in the country.
- Jal Kranti Abhiyaan, aims at increasing water security applying modern techniques and traditional wisdom, conjunctive use of surface and groundwater; rain-water harvesting and to promote accountability of users.
- Central Ground Water Board is responsible for developing / disseminating technologies, monitor and implement national policies for ground water resources.
- Integrated Coastal and Marine Area Management (ICMAM) programme under Ministry of Earth Sciences (MoES), promotes and facilitates sustainable management of the coastal zone and rational utilization of resources by incorporating environmental and social concerns in all sectoral developmental activities.
- Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), launched in 2015, with the objective of 'Har Khet ko pani' (water to each farm) to improve water use efficiency with the motto 'Per drop more crop' finding end to end solutions on source creation, distribution, management, field application and extension activities relating to water.

### **Combating Desertification**

- PMKSY includes watershed development programme by consolidating erstwhile Drought Prone Area Development Programme and Desert Development Programme and Integrated Wasteland Development Programme.
- Desertification and Land Degradation Atlas of India 2016 compares status of 2003-05 and 2011-2013 and provides baseline data for prioritizing action based on vulnerability and risk assessment.

### **Other Terrestrial Habitats**

- Soil Resource Mapping by Soil and Land Use Survey of India to generate district wise information on nature, extent and potential of soil resources by interpretative grouping of soils for land capability and soil and land irrigability assessment.
- Fodder and Feed Development Scheme, for grasslands development including creating grass reserves, improvement of degraded grasslands and vegetation cover of problematic soils like saline, acidic and heavy soil.
- National Carbon Project (NCP) for digital mapping of organic and inorganic carbon density of the soil using intensive field and remote sensing data under ISRO Geosphere Biosphere Programme.
- EIA: EIA notifications under Environment (Protection) Act 1986 mandate clearance after environment impact assessment and EMP in case of notified industries and enterprises therein.

- Actors involved: National Government, Sub-national Governments, Panchayati Raj Institutions, JFMCs, Forest Right Act Committees (Gram Sabhas), Women, School Children, Research Institutes.
- The target is being monitored through indicators. The time period for monitoring of each indicators is fixed.

#### B. Other Measures including Institutional Arrangements:

- Mandates and programmes of the National Missions constituted under the National Action Plan on Climate Change (NAPCC) namely
  - Green India Mission,
  - National Solar Mission,
  - National Mission on Enhanced Energy Efficiency,
  - National Mission for Sustainable Agriculture,
  - National Mission on Sustainable Habitat,
  - National Mission for Sustaining Himalayan Ecosystem,
  - National Mission on Strategic Knowledge for Climate Change and
  - National Water Mission recognise the value of biodiversity and contribute to arresting degradation and rehabilitating degraded habitats.
- India has released **National REDD+ Strategy 2018** which addresses “degradation, land tenure issues, forest governance issues, gender considerations and the safeguard identified, ensuring the full and effective participation of effective stakeholders, indigenous peoples and local communities.”

#### **Sustainable Tourism promoted by Ministry of Tourism:**

Initiatives taken by Ministry of Tourism (MoT) to promote responsible tourism and protect natural habitats from any damaging impacts of tourism are summarized hereafter.

Ministry encourages stakeholders to promote and practice ecotourism through the annual National Tourism Awards such as for the best eco-friendly hotel, best responsible tourism project, best eco friendly practices by tour operators to various segments.

- **Comprehensive Sustainable Tourism Criteria (STCI)** for major segments of the tourism industry, namely, accommodation, tour operators, beaches, backwaters, lakes and river sectors applicable for the entire country. The criteria have been evolved after consultation with various stakeholders. Ministry has been encouraging the tourism stakeholders to adopt the criteria for responsible and eco-friendly tourism practices.
- **A Code of Conduct** for tourism requiring the tourism service provider to fully implement sustainable tourism practices such as discouraging litter of waste and plastic material in places visited etc.
- **MoU** signed between MoT and Ecotourism Society of India (ESOI) during 2016 to create awareness on Responsible Tourism practices among the stakeholders. Two workshops were held in 2017 and six more are proposed during 2018-19.

## NBT-4

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### A. Measures

- National Working Plan Code, 2014 for Sustainable Management of Forest and Biodiversity in India includes management of invasive species for maintenance and enhancement of forest health and vitality.
- National Assessment of Tigers: Invasive plants monitoring, made an integral part of the co-predators, prey and their habitat, is done every fourth year, since 2006.
- Plants, Fruits & Seeds (Regulation of Import in India) Order 1989 (PFS Order 1989): Regulates the import of plants, fruits or seeds in India.
- Forest (Conservation) Act, 1980 provides for the conservation of forests and for matters connected therewith.
- Wildlife Protection Act, 1972 provides a legal framework for protection and conservation of various species of animals, plants and birds.

### Policies and Measures that support main measures:

- National Forest Policy 1988 as amended in 2018: To improve the state and quality of existing forests and protect them against various threats and drivers of degradation
- Biological Diversity Act, 2002 mandates the Central and State governments take steps for conservation and sustainable use of biodiversity.
- Livestock Importation Act, 1898 enables Central government to make provisions for the regulation of the importation of livestock.
- Environment (Protection) Act, 1986 provides for provide for the protection and improvement of environment and the prevention of hazards to plants, human beings, other living creatures and property.
- The Indian Forest Act, 1927 as amended from time to time stipulates measures for protection of forests by the government.

### B. Other Measures

Intensification of Forest Management Scheme (IFMS) started in 2009 includes control and eradication of forest invasive species as a component.

## NBT-5

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### A. Main Policy and Legislative Measures for Sustainable Agriculture Management include:

- National Farmers Policy, 2007 aims at increasing productivity, profitability and stability of agriculture through creating economic stake in conservation of water, biodiversity and genetic resources.
- Plant Quarantine (Regulation of Import into India) Order, 2003 prohibits and regulates the import of agricultural articles specified in the Order.

- National Agroforestry Policy, 2002 aims at supplementing farmers' income, securing convergence and synergy among elements of agroforestry.
- Protection of Plant Varieties and Farmers' Rights Act, 2001 establishes a system for protection of plant varieties, farmers' and plant breeders' rights including rights in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.
- Fertilizer Control Order, 1985 regulates trade, price, quality and distribution of fertilizers and matters connected therewith.
- Seeds Act, 1966 regulates the quality of seeds for sale and for matters connected thereto.
- Seed (Control) Order, 1983 obligates all dealers to obtain license to carry on the business of selling, exporting or importing seeds at any place.
- Insecticides Act, 1968 with Insecticides Rules, 1971, (as amended from time to time) regulates the import, manufacture, sale, transportation, distribution and use of insecticides.
- Destructive Insects and Pests Act, 1914 (as amended) prevents introduction of any insect, fungus or pest, destructive to crops.

#### **Other measures include**

- Four National Missions supported by R&D through the Indian Council of Agricultural Research (ICAR) and National Innovations on Climate Resilient Agriculture (NICRA) implement various aspects of agriculture for sustained and sustainable development of a doggedly pursued mission mode in this vastly diverse sector.
- Rashtriya Krishi Vikas Yojna (RKVY) for holistic development of agriculture and allied sectors includes IPM, water and soil conservation, minor/micro irrigation, setting up of labs among its components.

#### **Measures for gender mainstreaming include**

- Article 243 D and 243 T of the Constitution which mandate that not less than one-third seats in Panchayats in rural areas and municipal bodies in urban areas respectively "shall be" reserved for women. Most states have raised this reservation to 50 %. This ensures large-scale participation of women in planning decision making, implementation and governance.
- Gender Budgeting as part of the Annual Central Government budget: Specific provisions for participation and representation of women in government programmes and schemes.

#### **National Missions to Ensure Sustainable Agriculture (NMSA)**

1. National Mission for Sustainable Agriculture(NMSA), 2014
2. National Mission of Agriculture Extension and Technology (NMAET), 2014
3. National Mission on OilSeeds and Oil Palm (NMOOP), 2014

4. Mission for Integrated Development of Horticulture (MIDH), 2014

#### **Support and Incentives for Organic Agriculture through:**

- **Paramparagat Krishi Vikas Yojana (PKMY) 2015:** seeks to promote certified organic cultivation covering 10,000 clusters.
- **Participatory Guarantee System (PGS):** It is a voluntary organic guarantee programme. It involves farmers living in similar geographical area in the same or close-by villages to inspect and verify each other's process and standards to ensure adherence to established standards laid down for organic products.
- **Third Party Certification** of organic farming for exports by accredited certification bodies, under the National Programme for Organic Production (NPOP) under the Ministry of Commerce.
- **Mission Organic Value Chain Development for North Eastern Region (MOVCDNER), 2014-15** to develop certified organic production in value chain mode by linking growers with consumers

#### **Scientific management of water utilisation and energy efficiency:**

- **Pradhan Mantri Krishi Sinchai Yojana (PMKSY), 2015** seeks to achieve convergence of investments in irrigation at the field level to ensure water use efficiency at farm level through precision /micro irrigation.
- **Ministry of New and Renewable Energy (MNRE) Capital Subsidy Scheme for promoting Solar Photovoltaic Water Pumping**
- **Kisan Urja Suraksha evam Utthan Mahabhiyan (KUSUM)** for solar power pumps

## **NBT-6**

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### **A. Main Measures:**

- **National Forest Policy 1988** emphasises maintenance of environmental stability through protection and conservation of pristine forest and restoration of disturbed and depleted forest to main ecological integrity of the forest areas by enlisting the participation and cooperation of local communities and forest dwellers.
- **National Environment Policy, 2006** emphasizes landscape and seascape approach for conservation.
- **Wetlands (Conservation and Management) Rules, 2017** makes states responsible for conservation and management of wetlands in their respective jurisdictions.
- **Forest Conservation Act, 1980** provides for the conservation of forests and for matters connected therewith.
- **Wildlife Protection Act, 1972** provides for designating four categories of Protected Areas i.e., National Parks, Wildlife Sanctuaries, Community Reserves and Conservation Reserves.



- **Indian Forest Act, 1927** empowers States/UTs governments to notify any forest or waste land as reserved/protected forest.

#### **B. Other Measures:**

- **National Afforestation Plan (NAP)** is aimed at ecological restoration of degraded forest areas with people's participation.
- **Green India Mission (GIM)**, a mission under NAPCC is mandated to increase forest/tree cover.
- **Eco-Sensitive Zones (ESZs)** notified around National Parks and Wildlife Sanctuaries to help conservation-friendly environment around the notified areas, contribute to landscapes/seascapes improvement and conservation.
- **India's National Action Plan for Conservation of Migratory Birds (INAPCMB)**, to meet national commitments related to protection and conservation of migratory birds and their habitats under the Convention on CMS, CBD, and CITES.
- **National Marine Fisheries Policy, 2017** is aimed to ensure health and ecological integrity of marine living resources through sustainable harvests for the benefit of present and future generations.
- **Maritime Zones of India (Regulation and Fishing by Foreign vessels) Act, 1981:** provides for regulation of fishing by foreign vessels and matters connected therewith.

### **NBT-7**

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#### **A. Main Measures (policy and legislative):**

1. **Biological Diversity Act 2002:** to provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.
2. **Protection of Plant Varieties and Farmers' Rights Act, 2001:** for protection of plant varieties, farmers' and plant breeders' rights including rights in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.

#### **B. Other Measures:**

1. **National level Bureaux/ Organisations** created under ICAR system for conservation of agriculturally important genetic diversity.
2. **National Innovations on Climate Resilient Agriculture (NICRA)** enhances resilience of agriculture to climate change.
3. **National Herbarium of Cultivated Plants (NHCP)**, New Delhi holds collections mainly of cultivated taxa and wild/ weedy relatives of crop taxa of both native and exotic origin.

4. **All India Coordinated Research Network on Potential Crops (AICRNPC)** to explore and domesticate new plant sources of food, fodder, fuel, fibre, energy and industrial uses.
5. **My Village My Pride (Mera Gaon Mera Gaurav)** is an initiative to provide doorstep technical services by making scientists/officers adopt villages and provide information to farmers on technical and other related aspects in regulated time-frame through personal visits.
6. **Rashtriya Gokul Mission** launched in 2014 for development and conservation of indigenous breeds, selective breeding in the breeding tract and genetic upgradation of non -descript bovine population. The mission has two components:
  - o **National Mission on Bovine Productivity** for enhancing milk production and productivity to make dairying more remunerative to farmers.
  - o **National Programme for Bovine Breeding** by establishing mechanism to conserve and develop indigenous breeds in scientific and holistic manner

## **Case Studies in Animal Breed Conservation**

### **Conservation of Bargur cattle**

Bargur Cattle is native to the Bargur forest hills in Anthiyur Taluk of Erode District in Western Tamil Nadu . They are best known for their endurance, speed and trotting ability. Their numbers were declining rapidly and no measures to save them could be taken in the past owing to non-accessibility of the tract. Twenty male calves of the breed were procured in 2013 and raised in an organized herd and semen has been collected from 15 bulls. Now Artificial Insemination (AI) services are provided in the tract and on an average 40 to 50 AIs are performed per month. 10,000 semen doses have been added to gene bank at NBAGR.

### **Conservation of Vechur Breed Cow**

The Vechur breed of cow is a native breed of Kerala important for medicinal value of its milk and ghee was a popular cow about 60 years ago. However, the Government. policy to promote high yielding cattle through breeding programs led to decline of this breed in the state. Ms. Sosamma Iype, a faculty member of Kerala Agriculture University along with her students, undertook voluntary work to halt the loss and initiated conservation efforts in year 1998. Farmers raising Vechur cattle were identified and a breeding program was initiated by selecting good purebred bulls. CEPA about the species was carried out along with research and farmers were motivated to rear the cattle. The cattle is easy to rear with low incidence of disease. It can withstand hot sun and rain and the dung and urine is used as natural fertilizer. As a result of the work of the group the population of the breed has increased from 41 to around 3,000 in 26 years. This has also resulted in conservation of breeds like Kasargod and Cherubally cattle and Attappady goat.

## **NBT-8**

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## A. Measures:

Basic elements of Human Development Index such as education, health, water and energy, connectivity and urban green environment play an important role in making populations, local communities and traditional practitioners understand and discharge their role in conservation and sustainable use.

### 1. Major Livelihoods Programmes:

- **MNREGA** provides livelihood resource base for the poor, vulnerable, local communities and women. The MNREGA mandates that women from Scheduled Castes/Scheduled Tribes and Other Backward Classes (OBC) category must constitute at least one third of the beneficiaries under the scheme.
- **Deendayal Antyodaya Yojana -National Rural Livelihoods Mission (DAY-NRLM)** promotes diversified and gainful self-employment and skilled wage employment, social mobilization and sustainable community institutions to improve livelihoods and quality of life.

### 2. Urban Greenspaces

- **Nagar Van Udyan Yojana** to develop at least one city forest in 200 cities having Municipal Corporation / Class I status.
- **Smart City Initiative** includes objectives of preserving and developing open spaces- parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens, reduce the urban heat effects and generally promote eco-balance.
- **AMRUT** protects and enhances basic civic amenities for ensuring a better and healthier quality of life by developing greenery and well-maintained open spaces such as parks.

### 3. Promotion of Green Energy

- **National Solar Mission** to promote the development and use of solar energy for power generation with the ultimate objective of making solar energy competitive with fossil-based energy options.
- **Deendayal Upadhyaya Gram Jyoti Yojana**, for rural electrification and continuous power supply to villages
- **SAUBHAGYA – Pradhan Mantri Sahaj Bijli Har Ghar Yojana** to achieve universal household electrification by March 2019
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)** includes energy (street light) audit as one of the parameters of cities.
- **The Energy Conservation Act (EC Act) 2001** provides for efficient use of energy and its conservation and for matters connected therewith or incidental thereto.
- **National Mission for Enhanced Energy Efficiency (NMEEE)**, promotes market for energy efficiency.

- **Energy Conservation Building Code (ECBC) 2017** prescribes norms and standards for building design.

#### 4. Road Connectivity

Pradhan Mantri Gram Sadak Yojana, to provide all-weather access to unconnected habitations. Women are engaged from PRIs and SHGs to prepare detailed project reports for these roads.

#### 5. Education

- **The Right of Children to Free and Compulsory Education Act, 2009** provides for free and compulsory elementary education to all children of the age of six to fourteen years.
- **National Policy on Education 1986**, recognizes education to be the basic change agent in women's status and seeks to promote women related studies as part of curricula at different levels of education.

#### 6. Health Services

- **National Health Mission (NHM)** – It encompasses: National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM)
- **National Disease Control Programmes** for communicable and non-communicable diseases.
- **Special focus on women** through special programmes catering to reproductive-maternal, new born, child and adolescent health, health issues due to gender-based violence through **Janani Shishu Suraksha Karyakaram (JSSK), Rashtriya Kishor Swasthya Karyakram, Rashtriya Bal Swasthya Karyakram.**
- Health programmes and advisories e.g., National Tobacco Control Programme (NTCP), National Programme for Health Care of Elderly and National Programme for Prevention and Control of Fluorosis.
- Health insurance provided under Ayushman Bharat Yojana

#### 7. Drinking Water:

- **National Rural Drinking Water Programme** to provide adequate and safe drinking water to rural population
- **Namami Gange (NG): Ganga Conservation Mission**
- **National River Conservation Plan**, in operation since 1995, aims to reduce pollution load of rivers, improve water quality through pollution abatement works.

### NBT-9

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**Main Policy and Legislative Measures include:**

- **Guidelines on Access to Biological Resources and Associated Knowledge and Benefit Sharing Regulations, 2014**
- Biological Diversity Act, 2002 and Biological Diversity Rules, 2004
- **Protection of Plant Variety and Farmers' Rights Act, 2001** establishes a system for protection of plant varieties, farmers' and plant breeders' rights including rights in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.
- **The Patents Act, 1970** as amended from time disallows grant of patent on "an invention which in effect, is traditional knowledge or which is an aggregation or duplication of known properties of traditionally known component or components."

## **B. Institutional Mechanism**

- **NBA, National Level:** for facilitative, regulatory and advisory functions on conservation, sustainable use and fair and equitable sharing of benefits.
- **SBB, State Level:** for facilitative, regulatory and advisory functions on conservation sustainable use and fair and equitable sharing of benefits in all States. Established in all States.
- **BMC's, Local Body Level:** Documentation of genetic resources and associated 1K, participation in securing PIC and MAT, implementation for conservation, sustainable use and fair and equitable sharing of benefits at local level

## **NBT-10**

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### **A. Main Policy and Legislative measures include:**

- **National Policy on Marine Fisheries, 2017** ensures health and ecological integrity of marine living resources through sustainable harvests for the benefit of present and future generations.
- **Green Highways (Plantation, Transplantation, Beautification & Maintenance) Policy, 2015** to promote greening of Highway corridors. It promotes strong monitoring mechanism through the use of ISRO's Bhuvan and GPS Aided GEO Augmented Navigation (GAGAN) satellite systems.
- **National Biotechnology Development Strategy, 2015-2020** calls for promotion of mass use technologies for sustainable utilization of bio-resources.
- **National Environment Policy, 2006**
- **Comprehensive Marine Fishing Policy, 2004**, aims to maximize yield from marine fishery resources while balancing the development needs of the various categories of fishing communities
- **Biological Diversity Act, 2002 and Biological Diversity Rules, 2004**
- **National Agriculture Policy, 2000**
- **National Conservation Strategy and Policy Statement for Environment and Sustainable Development, 1992**

- **National Forest Policy, 1988** stipulates that projects involving diversion of forest land for non-forest purpose should provide in their investment funds for regeneration/compensatory afforestation

## **B. Other Measures:**

- **Implementation of Access and Benefit Sharing (ABS)** through streamlined process of NBA/SBBs provides positive incentives for biodiversity conservation.
- **Biodiversity friendly incentives** promoted in farming through:
  - Organic farming
  - Use of quality bio-fertilizers
  - Promotion of sustainable agriculture through NMSA, NMOOP, NMAET, MIDH.
- **Forest communities incentivised** for conservation and sustainable use of biodiversity through NAP, Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.
- Promotion of **use of clean fuels** and reduction in dependence on kerosene and environment unfriendly fuels
- Employment Generation to promote restoration, rehabilitation and conservation of natural resources through **Mahatma Gandhi National Rural Employment Guarantee Act, 2005**.
- **Direct Benefit Transfer** under welfare schemes including cooking gas directly to farmers with the aim of poverty elimination, inclusive growth and delivering better welfare measures.
- **Awards to incentivise** and encourage communities for conservation and sustainable utilization

## **C. Measures that encourage stakeholders for sustainable production:**

### **1. Industry:**

- **India Biodiversity and Business Initiative** promotes awareness and green action to minimize environmental harm within the industry and business.
- Federation of Indian Chambers of Commerce and Industry (FICCI) and Earthwatch Institute India promote the concept of '**Citizen Science**' for conservation and protection of urban water bodies.
- Funding support to NGOs from Government, Industry.
- **CSR:** Two % of the average net profits made by the company during every block of three years are to be used for CSR activities.

### **2. Agricultural sector:**

- **Water resources:**
  - Namami Gange- Ganga Conservation, National Plan for conservation of Aquatic Ecosystem
  - Sustainable marine resources: NETFISH 2007, Integrated Coastal Zone Management Program (ICZMP).
- **Releasing stress on Forests:**

Grant-in-aid scheme, Development and Promotion of Clean Technologies, 1994 to optimize consumption of raw materials and minimize waste generation through adopting suitable production techniques.
- **Monitoring of quality water and soil:**
  - National Water Quality Monitoring Programme, Development of Desertification and Land Degradation Atlas of India 2016.
  - Soil quality monitoring through Soil Health Management and Soil Health Card Scheme.
  - EIA and EMP management tool to foresee and address potential environmental problems/concerns at an early stage of project planning and design.

## **NBT-11**

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### **Main Measures**

#### **1. Laws and Rules**

- Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
- Biological Diversity Act, 2002
- Geographical Indications of Goods (Registration and Protection) Act, 1999

#### **2. Policies**

- National Intellectual Property Right Policy, 2016
- National Environment Policy, 2006

#### **A. Other Measures**

##### **1. Agencies and institutional measures:**

- NBA and SBBs
- Guidelines for processing Patent Applications relating to Traditional Knowledge and Biological Material (2012)
- Traditional Knowledge Digital Library (TKDL)
- The National Innovation Foundation (NIF), India (2010)
- SRISTI

## 2. Institutional Mechanism and programmes under Ministry of AYUSH directly concerned with the use of medicinal plants

- National AYUSH mission 2015-16
- National Medicinal Plant Board

### Schemes under Ministry of AYUSH

1. Conservation, Development and Sustainable Management of Medicinal Plants Scheme
2. Medicinal Plant Conservation Areas
3. National Raw Drug Repository (NRDR)

## NBT-12

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The **Biological Diversity Act, 2002**, **National Environment Policy, 2006** and respective sectoral policies together emphasise mainstreaming of biodiversity in all development planning and programmes including poverty alleviation programmes.

- Policies' and programmes' reviews from time to time make analytical assessment of the funding and actions relating to biodiversity make out cases for needed additional budgetary allocations.
- Implementation of **Biodiversity Finance Initiative (BIOFIN)** involves regular consultations with all the central line ministries and departments, analysing their biodiversity relevant activities and allocations, thereon, examinations of the scope of, deepening and widening the integration of biodiversity in sectoral planning, analysis of the current and potential avenues of raising resources with the help of national, financial and technical institutions and creating a wider constituency for raising resources.
- **National Biodiversity Action Plan, 2008** and its Addendum, 2014.