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**PT 2019 EXCLUSIVE**



**ENVIRONMENT**

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## Government Programmes / Initiatives

Notes

### 1. Green – Ag: Transforming Indian Agriculture

- The Government has launched the **“Green – Ag: Transforming Indian Agriculture for global environmental benefits and the conservation of critical biodiversity and forest landscapes”** in association with **Global Environment Facility (GEF)**.
- **Green-Ag Project:**
  - The project would be implemented **in collaboration with the Food and Agriculture Organisation (FAO)** in high-conservation-value landscapes of five States namely, (i) Madhya Pradesh: Chambal Landscape, (ii) Mizoram: Dampa Landscape, (iii) Odisha: Similipal Landscape, (iv) Rajasthan: Desert National Park Landscape and v) Uttarakhand: Corbett-Rajaji Landscape.
  - The Green-Ag project seeks **to integrate biodiversity, climate change and sustainable land management objectives and practices into Indian agriculture**.
  - The project **aims to catalyze a transformative change of India’s agricultural sector to support the achievement of national and global environmental benefits and conservation of critical biodiversity and forest landscapes**.
- **About GEF:**
  - GEF is a multilateral financial mechanism that provides grants to developing countries for projects that benefit the global environment and promote sustainable livelihoods in local communities.
  - The Global Environment Facility was established on the eve of the **1992 Rio Earth Summit** to help tackle our planet’s most pressing environmental problems.
  - It is an international partnership of 183 countries, international institutions, civil society organizations and the private sector that addresses global environmental issues.
  - GEF funds are available to developing countries and countries with economies in transition to meet the objectives of the international environmental conventions and agreements.
  - The **World Bank serves as the GEF Trustee**, administering the GEF Trust Fund.
  - **It is a FINANCIAL MECHANISM for five major international environmental conventions:** the Minamata Convention on Mercury, the Stockholm Convention on Persistent Organic Pollutants (POPs), the United Nations Convention on Biological Diversity (UNCBD), the United Nations Convention to Combat Desertification (UNCCD) and the United Nations Framework Convention on Climate Change (UNFCCC).

### 2. National Bamboo Mission (NBM)

- The Cabinet Committee on Economic Affairs has approved

**Restructured National Bamboo Mission (NBM)**, a Centrally Sponsored Scheme under **National Mission for Sustainable Agriculture (NMSA)** during remaining period of Fourteenth Finance Commission (2018-19 & 2019-20).

- **Aim of the Mission:**
  - It aims to inter-alia supplement farm income of farmers with focus on the development of complete value chain of bamboo sector linking growers with industry.
- **The restructured NBM strives to -**
  - To **increase the area under bamboo plantation** in non-forest Government and private lands to supplement farm income and contribute towards resilience to climate change.
  - To **improve post-harvest management** through establishment of innovative primary processing units, treatment and seasoning plants, preservation technologies and market infrastructure.
  - To promote product development at micro, small and medium levels and feed bigger industry.
  - To rejuvenate the under developed bamboo industry in India.
  - To promote **skill development**, capacity building, awareness generation for development of bamboo sector.
- **Implementation:**
  - The Mission will focus on development of bamboo in limited States where it has social, commercial and economical advantage, particularly in the North Eastern region and States including Madhya Pradesh, Maharashtra, Chhattisgarh, Odisha, Karnataka, Uttarakhand, Bihar, Jharkhand, Andhra Pradesh, Telangana, Gujarat, Tamil Nadu and Kerala.
- **National Bamboo Mission (NBM):**
  - **Department of Agriculture & Cooperation (DAC)**, Ministry of Agriculture & Farmers Welfare is implementing a 100% Centrally Sponsored Scheme called Mission for Integrated Development of Horticulture (MIDH) in which National Bamboo Mission (NBM) is being implemented as a sub scheme.
  - The Mission envisages promoting **holistic growth of bamboo sector** by adopting **area-based, regionally differentiated strategy** and to increase the area under bamboo cultivation and marketing.
- **Objectives:**
  - To increase the coverage of area under bamboo in potential areas, with improved varieties to enhance yields;
  - To promote marketing of bamboo and bamboo-based handicrafts;
  - To establish convergence and synergy among stake-holders for the development of bamboo;
  - To promote, develop and disseminate technologies through a seamless blend of traditional wisdom and modern scientific

knowledge.

- To generate employment opportunities for skilled and unskilled persons, especially unemployed youths.

Notes

### 3. National Clean Air Programme (NCAP)

- The government has announced the National Clean Air Programme (NCAP). This is the first ever effort in the country to frame a **national framework for air quality management** with a time-bound reduction target.
- **The programme will not be notified under the Environment Protection Act or any other Act** to create a firm mandate with a strong legal back up for cities and regions to implement NCAP in a time bound manner for effective reduction.
- **Key features of the National Clean Air Programme (NCAP):**
  - **Achieve a national-level target** of 20-30% reduction of PM2.5 and PM10 concentration by between 2017 and 2024.
  - **Central Pollution Control Board (CPCB) will execute this nation-wide programme** in consonance with the section 162 (b) of the Air (Prevention and Control of Pollution) Act, 1986.
  - The plan includes 102 non-attainment cities, across 23 states and Union territories, which were identified by Central Pollution Control Board (CPCB) on the basis of their ambient air quality data between 2011 and 2015.
  - Non-attainment cities are those which have been consistently showing poorer air quality than the National Ambient Air Quality Standards. These include Delhi, Varanasi, Bhopal, Kolkata, Noida, Muzaffarpur, and Mumbai.
  - As part of the programme, **the Centre also plans to scale up the air quality monitoring network across India.**
  - **The plan proposes a three-tier system**, including real-time physical data collection, data archiving, and an action trigger system in all 102 cities, besides extensive plantation plans, research on clean-technologies, landscaping of major arterial roads, and stringent industrial standards.
  - **Various committees:** The national plan has proposed setting up an apex committee under environment minister, a steering committee under-secretary (environment) and a monitoring committee under a joint secretary. There would be project monitoring committees at the state-level with scientists and trained personnel.

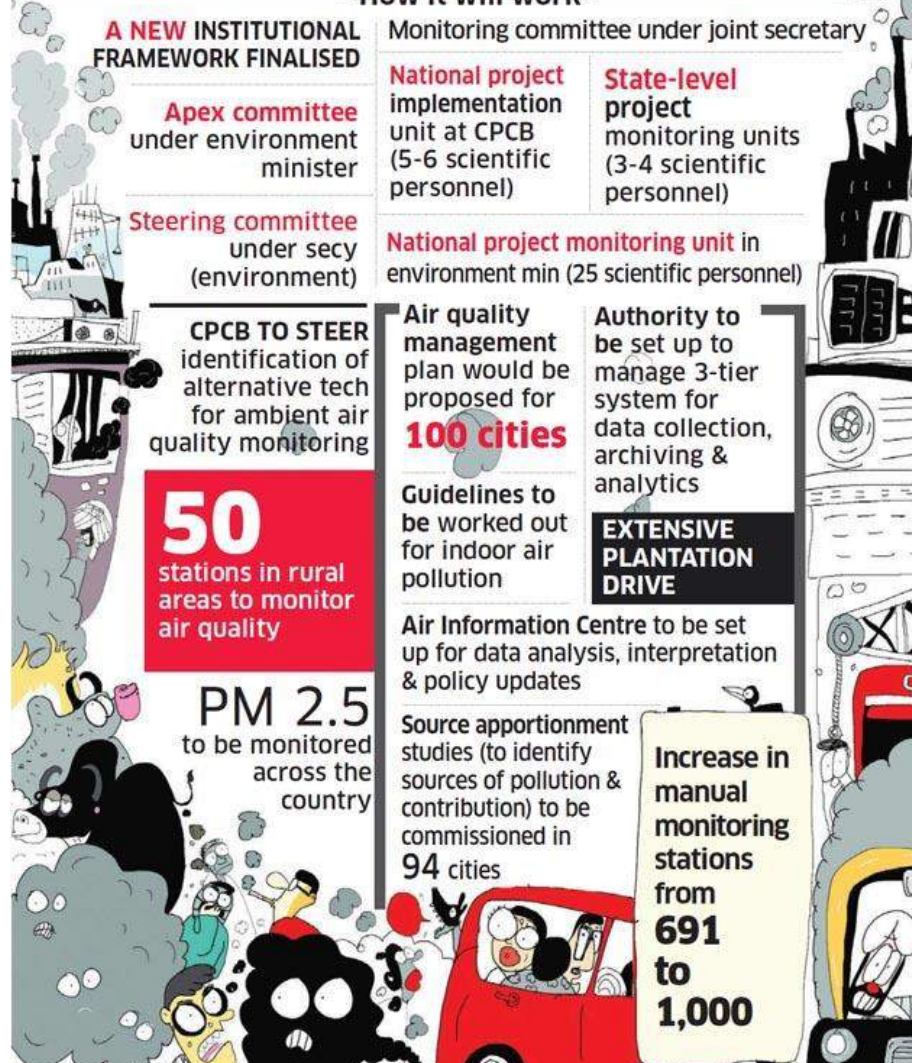


# CLEARING THE AIR

## AIM OF NATIONAL CLEAN AIR PROGRAMME

To meet prescribed annual average ambient air quality standards at all locations in the country

### How it will work



Notes

## 4. Namami Gange Programme

- ‘**Namami Gange Programme**’, is an Integrated Conservation Mission, approved as ‘Flagship Programme’ by the Union Government in June 2014 with budget outlay of Rs.20,000 Crore to accomplish the twin objectives of **effective abatement of pollution, conservation and rejuvenation of National River Ganga**.
- Its implementation has been divided into **Entry-Level Activities** (for immediate visible impact), **Medium-Term Activities** (to be implemented within 5 years of time frame) and **Long-Term Activities** (to be implemented within 10 years).
- **Main Pillars of the Namami Gange Programme** are:
  - Sewerage Treatment Infrastructure
  - River-Surface Cleaning
  - Afforestation
  - Industrial Effluent Monitoring
  - River-Front Development

- Bio-Diversity
- Public Awareness
- Ganga Gram
- The key achievements under Namami Gange programme are:-
  - **Creating Sewerage Treatment Capacity:** - Hybrid Annuity PPP Model based projects has been initiated.
  - **Creating River-Front Development:** - River-Front Development projects and Entry level Projects for construction, modernization and renovation of Ghats and crematoria has been initiated.
  - **River Surface Cleaning:** -River Surface cleaning for collection of floating solid waste from the surface of the Ghats and River and its disposal.
  - **Bio-Diversity Conservation:** - Several Bio-Diversity conservation projects are namely: Biodiversity Conservation and Ganga Rejuvenation, Fish and Fishery Conservation in Ganga River, Ganges River Dolphin Conservation Education Programme has been initiated.
  - **Afforestation:** - Forestry interventions for Ganga through Wildlife Institute of India; Central Inland Fisheries Research Institute and Centre for Environment Education has been initiated.
  - **Public Awareness:** - A series of activities such as events, workshops, seminars and conferences and numerous IEC activities were organized to make a strong pitch for public outreach and community participation in the programme.
  - **Industrial Effluent Monitoring:** - Real Time Effluent Monitoring Stations (EMS) has been installed.
  - **Ganga Gram:** - Ministry of Drinking Water and Sanitation (MoDWS) identified 1674 Gram Panchayats situated on the bank of River Ganga in 5 States (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal). **UNDP** has been engaged as the executing agency for rural sanitation programme and to develop Jharkhand as a model State.
- **National Mission for Clean Ganga**, endeavors to deploy best available knowledge and resources across the world for Ganga rejuvenation. Clean Ganga has been a perennial attraction for many international countries that have expertise in river rejuvenation.
  - Countries such as Australia, United Kingdom, Germany, Finland, Israel etc. have shown interest in collaborating with India for Ganga rejuvenation.
- **National Mission for Clean Ganga has brought on board Survey of India to facilitate the Ganga rejuvenation task by using Geographic Information System (GIS) technology.**
  - Through the project, NMCG aims to strengthen planning and implementation at national/state/local levels.
- **Implementation:**
  - The program would be implemented by the National Mission for Clean Ganga (NMCG), and its state counterpart

organizations i.e., State Program Management Groups (SPMGs).

- In order to improve implementation, a **three-tier mechanism** has been proposed for project monitoring comprising of a) High level task force chaired by Cabinet Secretary assisted by NMCG at national level, b) State level committee chaired by Chief Secretary assisted by SPMG at state level and c) District level committee chaired by the District Magistrate.

**DEM technology:**

The project includes use of Digital Elevation Model (DEM) technology which ensures accurate data collection, an important aspect for river basin management planning.

DEM technology enables identification of entire topography of an area making it easy for policy makers to analyse the available data thereby supporting the decision-making process.

Critical hotspots are also easily identified through this technology.

- The program emphasizes on improved coordination mechanisms between various Ministries/Agencies of Central and State governments.

- **About Survey of India:**

- It is the oldest scientific department in the country set up in 1767. It works under the administrative control of **Department of Science & Technology.**
- Functions: It is the **nation's Principal Mapping Agency**, provide base maps for expeditious and integrated development and ensure that all resources contribute with their full measure to the progress, prosperity and security of our country now and for generations to come.

## 5. CRZ Regulations

- The Union Ministry of Environment, Forest and Climate Change has notified the 2019 **Coastal Regulation Zone (CRZ) norms**, replacing the existing CRZ norms of 2011.
- The new CRZ norms have been issued under **Section 3 of the Environment Protection Act, 1986.**
- **Salient Features of CRZ Regulations 2019:**
  - Two separate categories for CRZ-III (Rural) areas:
    1. CRZ-III A: The A category of CRZ-III areas are **densely populated rural areas** with a population density of 2161 per square kilometre as per 2011 Census. Such areas have a No Development Zone (NDZ) of 50 meters from the High Tide Line (HTL) as against 200 meters from the High Tide Line stipulated in the CRZ Notification, 2011.
    2. CRZ-III B – The B category of CRZ-III rural areas have population density of below 2161 per square kilometre as per 2011 Census. Such areas have a No Development Zone

of 200 meters from the HTL.

- **Floor Space Index Norms eased:** As per CRZ, 2011 Notification, the Floor Space Index (FSI) or the Floor Area Ratio (FAR) had been frozen. As per the latest notification, the government has decided to **de-freeze the Floor Space Index** and permit FSI for construction projects.
- **Tourism infrastructure permitted in coastal areas:** The new norms permit temporary tourism facilities such as shacks, toilet blocks, change rooms, drinking water facilities, etc. in Beaches.
- **Streamlining of CRZ Clearances:** The procedure for CRZ clearances has been streamlined. Now, the only such projects which are located in the CRZ-I (Ecologically Sensitive Areas) and CRZ IV (area covered between Low Tide Line and 12 Nautical Miles seaward) will be dealt with for CRZ clearance by the Ministry. The powers for clearances with respect to CRZ-II and III have been delegated at the State level.
- **No Development Zone of 20 meters for all Islands:** For islands close to the main land coast and for all Backwater Islands in the main land, No Development Zone of 20 meters has been stipulated in wake of space limitations and unique geography of such regions.
- **Pollution abatement:** To address pollution in Coastal areas, the treatment facilities have been made permissible in CRZ-I B area subject to necessary safeguards.
- **Critically Vulnerable Coastal Areas (CVCA):** Sundarban region of West Bengal and other ecologically sensitive areas identified as under Environment (Protection) Act, 1986 such as Gulf of Khambat and Gulf of Kutchh in Gujarat, Achra-Ratnagiri in Maharashtra, Karwar and Coondapur in Karnataka, Vembanad in Kerala, Gulf of Mannar in Tamil Nadu, Bhitarkanika in Odisha and Krishna in Andhra Pradesh are treated as Critical Vulnerable Coastal Areas. **These Critical Vulnerable Coastal Areas will be managed with the involvement of coastal communities including fisher folk.**

## 6. Sustainable Catchment Forest Management (SCATFORM)

- Tripura has launched the **Sustainable Catchment Forest Management (SCATFORM) project** which is **undertaken with the assistance of JICA (Japan International Cooperation Agency)**.
- **Sustainable Catchment Forest Management (SCATFORM) project:**
  - The SCATFORM project aims **to address issues such as forest cover loss. Forest degradation have been mainly caused by shifting cultivation**, which increases soil erosion risks on hill slopes especially in upper catchment areas.
  - **Implementation:** It would be implemented mainly in upper catchments where forest degradation and soil erosion are severe and livelihood improvement needs are high.
  - **The activities undertaken** under the project involves

promotion of bamboo plantation, agroforestry based livelihood, eco-tourism development, development of value addition for bamboo and other Non-Timber Forest Product (NTFP) in order to create alternate livelihood opportunities for local communities.

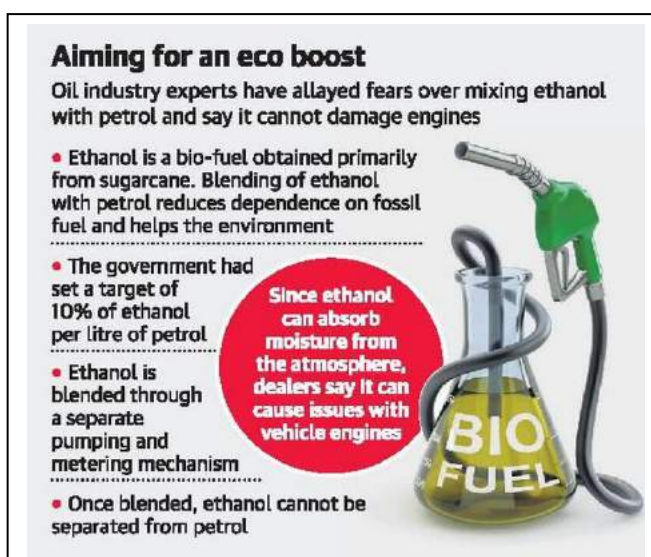
- **Cost sharing:** The 80 per cent of the cost is contributed by JICA and the rest would be funded by the state and central governments.

## 7. Methanol Blending in Petrol

- A study, in which methanol (M-15) was blended with petrol and used in the existing BS-IV standard cars, found that the carbon dioxide emission had reduced substantially.
- The study, conducted by Pune-based **Automotive Research Association of India (ARAI)**, also found that hydrocarbon emission reduced marginally, with a slight increase in nitrogen oxides.
- **Methanol as an alternative fuel:**
  - Methanol is a promising fuel as it is clean, cheaper than fossil fuels and a good substitute for heavy fuels. India imports methanol from Saudi Arabia and Iran at present.
  - Across the world, methanol is emerging as a clean, sustainable transportation fuel of the future.
- **Why Methanol?**
  - Methanol can be used as **an energy producing fuel, transportation fuel and cooking fuel**, cutting down India's oil import bill by an estimated 20% over the next few years. Unlike CNG, using methanol as a transportation fuel would **require minimal alteration in the vehicles.**
  - Methanol is **a clean-burning fuel** that produces fewer smog-causing emissions — such as sulphur oxides (SOx), nitrogen oxides (NOx) and particulate matter — and can improve air quality and related human health issues.
  - Methanol is **most commonly produced on a commercial scale from natural gas**. It can also be produced from renewable sources such as biomass and recycled carbon dioxide.
  - As a high-octane vehicle fuel, **methanol offers excellent acceleration and power**. It also improves vehicle efficiency.
- **Methanol as an enduring solution to human energy needs?**
  - Methanol has the potential to be an enduring solution to human energy needs is because the belched out CO<sub>2</sub> (greenhouse gas emission) both from using Methanol and while producing Methanol can be tapped back to produce Methanol.
  - Thereby a seamless loop of **CO<sub>2</sub> sequestration cycle is created** to perpetually burn fuels without polluting the environment at all. CO<sub>2</sub> from steel plants, Thermal Power plants, Cement Plants etc. can be tapped in large quantities to produce Methanol.

## 8. Ethanol Blended Petrol (EBP) Programme

- In India, ethanol is mainly produced from **sugarcane molasses** by fermentation process. Ethanol can be mixed with gasoline to form different blends.
- As the ethanol molecule contains oxygen, it allows the engine to more **completely combust the fuel**, resulting in fewer emissions and thereby reducing the occurrence of environmental pollution.
- Since ethanol is produced from plants that harness the power of the sun, **ethanol is also considered as renewable fuel**.
- Ethanol Blended Petrol (EBP) programme** was launched in January, 2003. The programme sought to promote the use of alternative and environment friendly fuels and to reduce import dependency for energy requirements.
- It aims at blending ethanol with petrol, thereby bringing it under the category of **biofuels** and saving millions of dollars by cutting fuel imports.
- Ethanol Blended Petrol Programme is being implemented by the Ministry or Oil Marketing Companies (OMCs).
- The **National Policy on Bio-fuels has set a target of 20% blending of biofuels**, both for bio-diesel and bio-ethanol.



## 9. National Policy on Biofuels – 2018

- The Union Cabinet has approved National Policy on Biofuels – 2018.
- Categorization:**
  - The Policy categorises biofuels as
    - “Basic Biofuels”** viz. First Generation (1G) bioethanol & biodiesel.
    - “Advanced Biofuels”** – Second Generation (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels, Third Generation (3G) biofuels, bio-CNG etc.
- Scope of raw materials:**
  - The Policy expands the scope of raw material for ethanol production by allowing use of **Sugarcane Juice, Sugar containing materials** like Sugar Beet, Sweet Sorghum, **Starch containing materials** like Corn, Cassava, **Damaged food grains** like wheat, broken rice, Rotten Potatoes, unfit for human consumption for ethanol production.

- **Viability gap funding:**
  - With a thrust on Advanced Biofuels, the Policy indicates a viability gap funding scheme for 2G ethanol Bio refineries of Rs.5000 crore in 6 years in addition to additional tax incentives, higher purchase price as compared to 1G biofuels.
- **Boost to biodiesel production:**
  - The Policy encourages setting up of **supply chain mechanisms for biodiesel production** from non-edible oilseeds, Used Cooking Oil, short gestation crops.
- **Classification of Biofuels:**
  - **1st generation biofuels** are also called **conventional biofuels**. They are made from things like sugar, starch, or vegetable oil. Note that these are all **food products**. Any biofuel made from a feedstock that can also be consumed as a human food is considered a first-generation biofuel.
  - **2<sup>ND</sup> generation biofuels** are produced from **sustainable feedstock**. The sustainability of a feedstock is defined by its availability, its impact on greenhouse gas emissions, its impact on land use, and by its potential to threaten the food supply. No second-generation biofuel is also a food crop, though certain food products can become second generation fuels when they are no longer useful for consumption. Second generation biofuels are often called "**advanced biofuels.**"
  - **3rd generation biofuels** are biofuel **derived from algae**. These biofuels are given their own separate class because of their **unique production mechanism** and their potential to mitigate most of the drawbacks of 1st and 2nd generation biofuels.

## **10.ECO Niwas Samhita 2018**

- **Ministry of Power** has launched the ECO Niwas Samhita 2018, an **Energy Conservation Building Code for Residential Buildings (ECBC-R)**.
- The code was launched on **National Energy Conservation Day 2018**.
- **Aim of ECO Niwas Samhita 2018:**
  - To benefit the occupants and the environment by **promoting energy efficiency in design and construction** of homes, apartments and townships.
- **About the Energy Conservation Building Code:**
  - It is prepared after extensive consultations with all stakeholders, consisting of architects & experts including building material suppliers and developers.
  - Developed based on large number of parameters using climate and energy related data.
  - The code is expected to assist large number of architects and builders who are involved in design and construction of new residential complexes.
  - It has potential for energy savings to the tune of 125 Billion Units of electricity per year by 2030, equivalent to about 100 million ton of Co2 emission.

- **National Energy Conservation Awards:**
  - **Ministry of Power** in association with **Bureau of Energy Efficiency** celebrates the National Energy Conservation Day on every 14<sup>th</sup> December.
- **About Bureau of Energy Efficiency (BEE):**
  - **A statutory body under Ministry of Power** created in March 2002 under the provisions of the nation's 2001 Energy Conservation Act.
  - To implement policy and programmes in energy efficiency and conservation.
- **Objective of BEE –**
  - To **reduce energy intensity** in our country by optimizing energy demand and
  - To **reduce emissions of greenhouse gases (GHG)**, responsible for global warming and climate change.
  - It **coordinates with State level agencies** and energy consumers to perform functions and exercise powers that may be necessary for efficient use of energy and its conservation in India.
  - India has committed to reduction of 33-35% GHG emission by 2030 as part of the document submitted to UNFCCC.

### 11. Indian Forest Act 1927

- The Ministry of Environment, Forest and Climate Change (MoEF&CC) has started the process of “comprehensively amending” the backbone of forest governance in India—the Indian Forest Act, 1927 (IFA).
- **Expected outcomes:**
  - **Currently there is no definition of forest** in any Indian law pertaining to forest or its governance. Therefore, the amendments will also include definitions of terms like forests, pollution, ecological services etc.
  - The legal definition of forests will have huge ramifications on the conservation of forests as well as the implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.
  - The amendments will include changes to punishments and fines prescribed in the IFA, incorporate provisions related to carbon sequestering, ecological services etc.
- **The current practice:**
  - According to the 1996 Supreme Court order, **the dictionary definition of the word forest is taken to be the legal definition too**. It covers all statutorily recognised forests, whether designated as reserved, protected or otherwise for the purpose of Section 2(i) of the Forest Conservation Act (1980).
  - As per the Court order, the term forest land, occurring in Section 2, will not only include forest as understood in the dictionary sense, but also any area recorded as forest in the



government record irrespective of the ownership.

- **Indian Forest Act, 1927:**

- The Indian Forest Act, 1927 was largely based on previous Indian Forest Acts implemented under the British. The most famous one was the Indian Forest Act of 1878.
- Both the 1878 act and the 1927 one sought to consolidate and reserve the areas having forest cover, or significant wildlife, to regulate movement and transit of forest produce, and duty leviable on timber and other forest produce.
- It also defines the procedure to be followed for declaring an area to be a Reserved Forest, a Protected Forest or a Village Forest.
- It defines what a forest offence is, what are the acts prohibited inside a Reserved Forest, and penalties leviable on violation of the provisions of the Act.

## 12. Integrated Development of Wildlife Habitats

- The Cabinet Committee on Economic Affairs has approved continuation of the **Centrally Sponsored Umbrella Scheme of Integrated Development of Wildlife Habitats (CSS-IDWH)** beyond the 12<sup>th</sup> Plan period from 2017-18 to 2019-20.
- **About Integrated Development of Wildlife Habitats:**
  - **The Scheme consists of Centrally Sponsored Scheme of Project Tiger (CSS-PT), Development of Wildlife Habitats (CSS-DWH) and Project Elephant (CSS-PE).**
  - The **implementation of the schemes** would be done through the respective States in designated Tiger Reserves, Protected Areas and Elephant Reserves.
  - The **activities covered** under the scheme include the staff development and capacity building, wildlife research and evaluation, anti-poaching activities, wildlife veterinary care, addressing man-animal conflicts and promoting eco-tourism.
  - **Financial assistance is also provided** to States for relocation of communities from within protected areas to other areas.
- **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.

## 13. Chiller Star Labelling Program

- **Ministry of Power**, Government of India launched **Chiller Star Labelling Program**, an ambitious program to encourage the **deployment of Energy Efficient chiller systems** in the country.
- The Chiller Star Labelling Program has been formulated by **Bureau of Energy Efficiency (BEE)**.
- The program envisages **providing star rating in terms of its energy performance**. Initially, the program is launched on voluntary basis

and will be valid upto 31st December 2020.

- This initiative will promote advancement technology for central HVAC (Heating, ventilation, and air conditioning) systems and will also facilitate energy efficient solutions for the large commercial and industrial applications.
- **What are Chillers?**
  - Chillers are used extensively for space conditioning of buildings and for industrial process cooling applications.
  - Chillers, being energy intensive system, contribute more than 40% of the total energy consumption in commercial buildings.

#### **14.Ganga Vriksharopan Abhiyan**

- The **National Mission for Clean Ganga (NMCG)** recently organised the 'Ganga Vriksharopan Abhiyan' in five main Ganga basin states – Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal. The **State Forest Departments** of these five states acted as the **Nodal Agencies** for the smooth and effective execution of the campaign.
- **Ganga Vriksharopan Abhiyan:**
  - The campaign was initiated as part of the **Forest Interventions in Ganga (FIG) component of Namami Gange Programme.**
  - It was aimed at bringing greater **awareness among people** and other stakeholders regarding the importance of afforestation for the task of Ganga Rejuvenation.
  - As part of the campaign, schools, colleges and departments were requested to **"Adopt a Plant"** for turning this campaign into a people's movement.
- **Forest Interventions in Ganga (FIG):**
  - The **afforestation** is part of the Forest Interventions in Ganga (FIG) which is significant as it aims to bring greater awareness among people and other stakeholders regarding the importance of afforestation for the task of Ganga Rejuvenation.
- **NMCG:**
  - The **National Mission for Clean Ganga (NMCG) is the implementation wing of National Ganga Council** which was set up in October 2016 under the **River Ganga (Rejuvenation, Protection and Management) Authorities order 2016.** The order dissolved National Ganga River Basin Authority.
  - It works under the control of Ministry of Water Resources, River Development and Ganga Rejuvenation.
  - The aim is to clean Ganga and its tributaries in a comprehensive manner.
  - **NMCG has a two tier management structure** and comprises of Governing Council and Executive Committee. Both of them are headed by Director General, NMCG. Executive Committee has been authorized to accord approval for all projects up to Rs.1000 crore.
  - **The order envisages five tier structure** at national, state and district level to take measures for prevention, control and

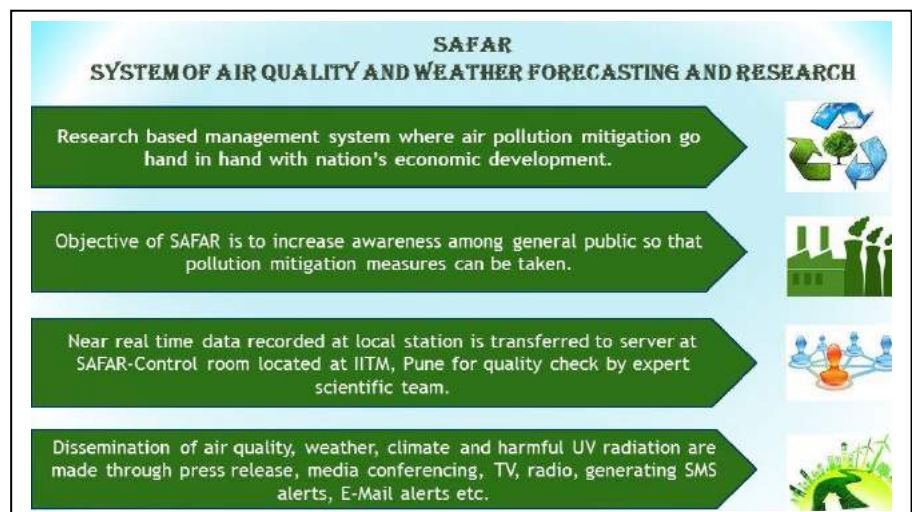
**Notes**

abatement of environmental pollution in river Ganga and to ensure continuous adequate flow of water so as to rejuvenate the river Ganga as below:

- **National Ganga Council** under chairmanship of Hon'ble Prime Minister of India.
- **Empowered Task Force (ETF) on river Ganga** under chairmanship of Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation.
- **National Mission for Clean Ganga (NMCG).**
- **State Ganga Committees.**
- **District Ganga Committees** in every specified district abutting river Ganga and its tributaries in the states.

### 15. SAFAR (System of Air Quality and Weather Forecasting)

- **Ministry of Earth Sciences** has unveiled state-of-the-art Air Quality and Weather Forecast System—SAFAR (System of Air Quality and Weather Forecasting) at Chandni Chowk in Delhi. It is first of its kind and most advanced system in India.
- SAFAR was **developed indigenously by Indian Institute of Tropical Meteorology (IITM)**, Pune and operationalized by India Meteorological Department (IMD).
- It has been introduced for greater metropolitan cities of India to provide **location-specific information on air quality** in near real time and its forecast 1-3 days in advance for the first time in India.
- It is integral part of India's first Air Quality Early Warning System operational in Delhi. It will monitor all weather parameters like temperature, rainfall, humidity, wind speed and wind direction.
- **Pollutants monitored:** PM1, PM2.5, PM10, Ozone, CO, NOx (NO, NO2), SO2, BC, Methane (CH4), Non-methane hydrocarbons (NMHC), VOC's, Benzene, Mercury.
- **Monitored Meteorological Parameters:** UV Radiation, Rainfall, Temperature, Humidity, Wind speed, Wind direction, solar radiation.
- **Facts for Prelims:**
  - **Air Quality Index** is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.
  - **There are six AQI categories**, namely Good, Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints).
  - **AQ sub-index and health breakpoints are evolved for eight pollutants** (PM10, PM2.5, NO2, SO2, CO, O3, NH3, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.



## 16. Green Mahanadi Mission

- **Odisha government** has launched **Green Mahanadi Mission**. Under the mission, a total of two crore saplings will be planted on the banks of the Mahanadi.
- The Green Mahanadi Mission envisages **rejuvenating Mahanadi river** and its **tributaries Tel and Ib** by increasing recharging capacity through massive plantation.
- Under the mission, **a green belt with width of 1 km will be created on both sides of the river** beginning from the place, where the river enters Odisha to Paradip, where it merges with the Bay of Bengal.
- **About Mahanadi River:**
  - The Mahanadi is one of the largest Indian peninsular rivers that drains into the Bay of Bengal. The 857 km long river **originates in Raipur district of the central Indian state of Madhya Pradesh** and flows through the eastern state of Orissa before meeting the sea.
  - The Mahanadi River is a river of eastern India. The Mahanadi rises in the **Satpura Range of central India**, and flows east to the Bay of Bengal.
  - The **major tributaries** of Mahanadi are Seonath, Jonk, Hasdo, Mand, Ib, Ong, Tel etc.

## 17. Green Skill Development Programme (GSDP)

- In its bid to **create over five lakh job opportunities by 2021** through green skills, the government has launched GSDP- ENVIS mobile app to begin enrolments in 30 expert course under its Green Skill Development Programme (GSDP).
- GSDP is a recent initiative under the ENVIS scheme for skilling the youth in the country. It is an initiative for skill development in the environment and forest region by the Ministry of Environment, Forests & Climate Change (MoEF&CC) to develop India's youth into employable and/or self-employment.
  - The Green Skill Development programme will help in the attainment of the Intended Nationally Determined Contributions (INDCs), Sustainable Development Goals (SDGs) and National Biodiversity Targets (NBT).
- **What are Green Skills?**
  - Green skills are those skills required to adapt processes, services and products to climate change and the environmental rules and necessities related to it.
  - These skills are needed in areas like sewer water treatment, Climate resilient cities, green construction, Solid waste management etc.

## 18. 'Green Good Deeds'

- The BRICS Ministerial on Environment has agreed to include "Green Good Deeds" in its official agenda in the next Ministerial.

- The campaign has been launched by the Environment Ministry to **sensitise the people and students**, in particular, **about climate change and global warming**. The objective of the campaign is to restore and return the clean and green environment to the next generation.
- The Ministry of Environment, Forest & Climate Change had drawn up a list of over 500 Green Good Deeds and asked people to alter their behaviour to **Green Good Behaviour** to fulfil their **Green Social Responsibility**.
- These small positive actions to be performed by individuals or organisations to strengthen the cause of environmental protection, were put on a mobile application named “Dr Harsh Vardhan App”.

### 19. Andhra Pradesh gets new state bird, state flower

- Four years after the bifurcation of **Andhra Pradesh**, the government of the residual state has announced its state symbols.
- **State bird**: Rama Chiluka (psittacula krameri) or rose ringed parakeet.
- **State animal**: Blackbuck (antelope cervicapra) or Krishna Jinka.
- **State tree**: Neem (azadirachta indica) or Vepa Chettu.
- **State flower**: Jasmine (Jasminum)
- **State symbols of Telangana**:
  - **State bird**: Palapitta.
  - **State animal**: Jinka or spotted deer.
  - **State tree**: Jammi Chettu (prosopis cineraria).
  - **State flower**: Tangidi Puvvu (senna auriculata).



### 20. Resource Efficiency Cell

- **MoEFCC and TERI** (The Energy and Resources Institute) have entered a Memorandum of Understanding (MoU) to set up a resource efficiency cell in the Ministry.
- The main objectives of the Cell are to provide a platform to **mainstream resource efficiency in public policy**.
- It aims to achieve this through coordinated thinking among the various relevant Ministries and agencies for promoting resource efficiency in the use of materials in the country.
- **Strategy on Resource Efficiency**:
  - **NITI Aayog in collaboration with the European Union delegation to India** have released the Strategy on Resource Efficiency. The strategy aims to promote resource efficiency in India.
  - This strategy is the first policy document to emphasize resource productivity in the country. The Strategy emphasizes on **Sustainable Public Procurement (SSP)** as an action agenda which will be the market transformation tool to transform to a resource efficient economy.

- It is developed with the recommendations from the Indian Resource Efficiency Programme (IREP), launched by the Indian Ministry of Environment, Forests and Climate Change (MoEFCC) and Indian Resource Panel (InRP) in April 2017.

## 21. Compensatory Afforestation Fund Act

- The Centre has notified rules for operationalising a Rs 66,000 crore fund collected as compensations under **Compensatory Afforestation Fund Act passed in 2016 to promote the green cover in the country.**
- **As per the new rules:**
  - **13 activities are permitted for funding.** They include plantation, assisted natural regeneration of forests, forest fire prevention, pest and disease control in forests, soil and moisture conservation works and improvement of wildlife habitat.
  - **Usage of funds:** 80% of the compensatory afforestation amount will be utilised by states for plantations, assisted natural regeneration of forests, forest fire prevention, pest and disease control in forest, soil and moisture conservation works and improvement of wildlife habitat, among others, in the list of 13 permissible activities.
  - The remaining 20% will be used for 11 listed works to strengthen forest and wildlife protection related infrastructure.
  - **Role of gram sabhas:** Besides enlisting the 24 activities which are to be taken up using the fund, the rules also specify that the **working plan will be taken up “in consultation with the gram sabha or village forest management committee”.**
- **Background:**
  - Over the last ten years, the fund had accumulated the amount as compensations by user agencies for **diverting forest land for industries and infrastructure projects.** The CAMPA was created as per a Supreme Court ruling in 2009.
  - Much of the funds collected under the legislation had been left unspent with an ad hoc Compensatory Afforestation Fund Management and Planning Authority (CAMPA) in absence of enabling rules.
  - Until now, the funds were disbursed to states under a temporary and time consuming mechanism. With the relevant rules now in place, the implementation of the act is expected to gather pace.
- **Compensatory Afforestation Fund Act 2016:**
  - This act provides for setting up **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** at both central and state level to ensure expeditious and transparent utilization of amounts realized in lieu of forest land diverted for non-forest purpose.
  - The act also seeks to establish the **National Compensatory Afforestation Fund** under the Public Account of India, and a

**State Compensatory Afforestation Fund** under the Public Account of each state.

- The payments into the funds include compensatory afforestation, NPV, and any project-specific payments.
- The National Fund will get 10% of funds collected and the remaining 90% will go to respective State Fund.

**Notes**

## Organisations

### Notes

### 1. Animal Welfare Board of India (AWBI)

- The Animal Welfare Board of India is a **statutory advisory body** to the Government established in 1962 under Section 4 of The **Prevention of Cruelty to Animals Act, 1960**.
- Well-known humanitarian **Smt. Rukmini Devi Arundale** was instrumental in setting up the board and was its first chair.
- Initially it was within the jurisdiction of the Ministry of Food and Agriculture.
- Later in 1990, the subject of Prevention of Cruelty to Animals was transferred to the MoEFCC.
- Its headquarters is located at Chennai, Tamil Nadu.
- Several government organisations, along with animal rights activists and parliamentarians, are represented on the Board.
- **Functions:**
  - It **oversees Animal Welfare Organisations (AWOs)** by granting them recognition if they meet its guidelines.
  - It **appoints** key people to the positions of (Hon) Animal Welfare Officers, who serve as the key point of contact between the people, the government and law enforcement agencies.
  - It provides **financial assistance** to recognised AWOs, who submit applications to the Board.
  - It **suggests changes to laws and rules** about animal welfare issues.
  - It **issues publications** to raise awareness of various animal welfare issues.

### 2. National Green Tribunal

- The National Green Tribunal has been established under the **National Green Tribunal Act 2010**.
- It provides effective and expeditious disposal of **cases relating to environmental protection and conservation of forests and other natural resources**.
- Enforcement of any **legal right** relating to environment and giving **relief and compensation for damages** to persons and property.
- The Tribunal shall not be bound by the procedure laid down under the Code of Civil Procedure, 1908, but shall be guided by principles of **natural justice**.
- The Tribunal is mandated to make and endeavour for **disposal of applications** or appeals finally **within 6 months of filing of the same**.
- Any person aggrieved by an award, decision, or order of the Tribunal may **appeal to the Supreme Court within 90 days** of commencement of award but Supreme Court can entertain appeal even after 90 days if appellant satisfied SC by giving sufficient reasons.
- **Members:**



- The sanctioned strength of the tribunal is currently **10 expert members and 10 judicial members** although the act allows for up to 20 of each.
- The **Chairman of the tribunal is a judicial member.**
- The **Chairman** of the tribunal is required to be a **serving or retired Chief Justice of a High Court or a judge of the Supreme Court of India.**
- **Jurisdiction:**
  - The Tribunal has **Original Jurisdiction on matters of “substantial question relating to environment”.**
  - The powers of tribunal related to an award are **equivalent to civil court.**
  - **New Delhi is the Principal Place of Sitting** of the Tribunal and Bhopal, Pune, Kolkata and Chennai shall be the other 4 places of sitting of the Tribunal.

### 3. National Water Informatics Centre (NWIC)

- National Water Informatics Centre (NWIC) has recently been created by Ministry of Water Resources, River Development and Ganga Rejuvenation.
- NWIC would be a **repository of nation-wide water resources data** and would work as a Subordinate Office under the Ministry of Water Resources, River Development and Ganga Rejuvenation.
- NWIC is expected to provide a ‘Single Window’ source of updated data on water resources & allied themes; and provides value added products and services to all stake holders for its management and sustainable development.
- The centre will also collaborate with leading research institutes nationally as well as internationally to provide technical support to other central and state organizations dealing with water, emergency response for hydrological extremes.
- The centre would be headed by a Joint Secretary level officer.

### 4. Zoological Survey of India (ZSI)

- The Zoological Survey of India (ZSI) was established on 1st July, **1916** to promote **survey, exploration and research on various aspects of animal taxonomy** in the Indian subcontinent.
- Its genesis began as Museum of the **Asiatic Society of Bengal (1814-1875)** and **Zoological Section of the Indian Museum (1875-1916)** in Kolkata.
- ZSI is a **premier Indian organisation in zoological research and studies.**
- The activities of the ZSI are coordinated by **the Ministry of Environment, Forest and Climate Change**, Government of India.
- It has been declared as the **designated repository for the National Zoological Collection** as per section 39 of the National Biodiversity Act, 2002.
- **Primary objectives:**
  - Exploring, Surveying, Inventorying and Monitoring of faunal

diversity.

- **Preparation of Red Data Book, Fauna of India and Fauna of States.**
- Maintenance and Development of **National Zoological Collections.**
- Training, Capacity Building and Human Resource Development.
- **Secondary objectives:**
  - **GIS and Remote Sensing studies** on recorded animal diversity as well as on threatened species.
  - **Environmental Impact Studies.**
  - Maintenance of Museum at Headquarters and Regional Centres.
  - Development of Environmental Information System (**ENVIS**) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (**CITES**) Centres.
  - Collaborative research programmes on Biodiversity with other Organizations in India and abroad.

## 5. Botanical Survey of India (BSI)

- The Botanical Survey of India (BSI) is an institution set up by the Government of India in 1890 to survey the plant resources of the Indian empire.
- The British East India Company had already established botanical gardens at Sibpur, Poona, Saharanpur and Madras as centres for improving botanical knowledge and experimentation under the local Governments.
- The Botanical Survey was formally instituted on 13 February 1890 under the direction of Sir George King, who had been superintendent of Royal Botanic Garden, Calcutta.
- **In 1954, the Government reorganised the BSI** with the objectives of:
  - Undertaking intensive floristic surveys.
  - Collecting, identifying and distributing materials that may be of use to educational and research institutions.
  - Acting as the custodian of authentic collections in well planned herbaria and documenting plant resources in the form of local, district, state and national flora.

## 6. Birdlife International

- BirdLife International (formerly the International Council for Bird Preservation) is a **UK based global partnership of conservation organisations** that strives to conserve birds, their habitats and global biodiversity.
- BirdLife International is widely recognised as the **world leader in bird conservation.**
- It is **the world's largest partnership of conservation organisations, with 121 partner organisations.**
- BirdLife International publishes a **quarterly magazine, World Birdwatch**, which contains recent news and articles about birds, their

habitats, and their conservation around the world.

- BirdLife International is **the official Red List authority for birds**, for the International Union for Conservation of Nature.
- Each BirdLife Partner is an independent environmental or wildlife not-for-profit, non-governmental organisation (NGO). Most Partners are best known outside of the Partnership by their organisation's name. This allows each Partner to maintain its individual national identity within the Global Partnership.
- BirdLife Partners work together in a collaborative, coordinated fashion across national boundaries to build a **global Partnership of national conservation organisations**.
- **Important Bird and Biodiversity Areas (IBAs):**
  - The IBAs are “places of international significance for the conservation of birds and other biodiversity” and are “distinct areas amenable to practical conservation action,” according to BirdLife International.
  - Declaring a site as an Important Bird and Biodiversity Area does not ensure that the site gets legal protection or becomes inaccessible to people.
  - Instead BirdLife International encourages national and State governments to recognise the areas as sites of vital importance for conservation of wildlife and to empower local community-based conservation initiatives.

## 7. The Energy Resources Institute (TERI)

- **International Centre for Climate Governance (ICCG)**, an international body which focuses on climate policies, has ranked The Energy Resources Institute (TERI) second among the top think tanks in the world.
- ICCG is an internationally-renowned body whose activities focus on the **design of climate policy and related governance issues**.
- TERI is a **non-profit policy research organisation** that conducts research work in the fields of energy, environment and sustainable development.
- The mission is to usher transitions to a cleaner and sustainable future through the conservation and efficient use of Earth's resources and innovative ways of minimizing and reusing waste.
- TERI was established in 1974 as an information centre on energy issues.
- In 2013, it was ranked as the topmost global think-tank by the ICCG.

## 8. Geological Survey of India (GSI)

- The GSI is a government organisation attached to the **Ministry of Mines** for conducting geological surveys and studies.
- It is one of the premier organisations of **earth science survey and research** in the world.
- The GSI was established in **1851** primarily with the objective of locating mineral resources including coal. It is one of the oldest of

such organisations in the world and the **second oldest survey institution in the country**.

- It provides **basic earth science information** to the government, industry and the general public.
- Its main functions are related to creation and updation of **national geoscientific information and mineral resource assessment**.

### 9. Genetic Engineering Appraisal Committee (GEAC)

- The Genetic Engineering Appraisal Committee (GEAC) is the apex body constituted in the **Ministry of Environment and Forests** under 'Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms, under the **Environment Protection Act, 1986**.
- The GEAC is also responsible for **approval of proposals relating to release of genetically engineered organisms** and products into the environment including experimental field trials.
- The committee or any persons authorized by it has powers to take punitive action under the Environment Protection Act.

### 10. UN Environment Management Group

- The EMG is a UN system-wide coordination body on environment and human settlements.
- It was established in 2001 pursuant to a **UN General Assembly resolution**.
- Its members include the secretariats of the multilateral environmental agreements (MEAs) and other specialized agencies, programmes and organs of the UN.
- Representatives of intergovernmental bodies, civil society and international non-governmental organizations can be invited to contribute.
- The group is **chaired by the Executive Director of the UN Environment Programme** and supported by a secretariat provided by UNEP, located in Geneva, Switzerland.

### 11. Wildlife Institute of India (WII)

- The Wildlife Institute of India (WII) is an **autonomous institution under the Ministry of Environment Forest and Climate change**, Government of India.
- WII carries out **wildlife research** in areas of study like Biodiversity, Endangered Species, Wildlife Policy, Wildlife Management, Wildlife Forensics, Spatial Modeling, Eco-development, Habitat Ecology and Climate Change.
- It has contributed in **studying and protecting wildlife in India** and also has popularized wildlife studies and careers.
- The institute is based in **Dehradun, India**.

### 12. Bombay Natural History Society (BHNS)

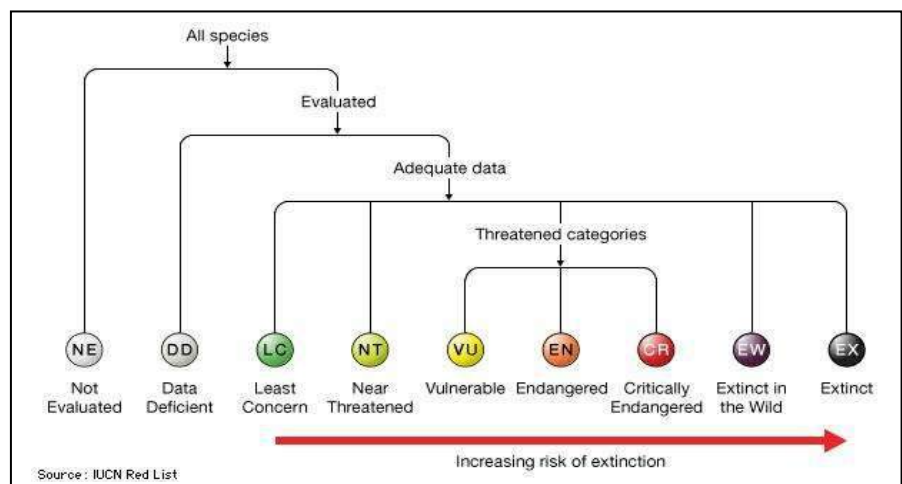
- The **Bombay Natural History Society**, founded on 15 September 1883, is **one of the largest non-governmental organisations in India**

engaged in conservation and biodiversity research.

- It **supports many research efforts** through grants and **publishes the Journal of the Bombay Natural History Society**.
- Many prominent naturalists, including the **ornithologists Sálím Ali** and S. Dillon Ripley, have been associated with it.
- **BNHS is the partner of BirdLife International in India.**
- It has been designated as a '**Scientific and Industrial Research Organisation**' by the Department of Science and Technology.

### 13. International Union for Conservation of Nature (IUCN)

- IUCN was founded in October 1948 as the **International Union for the Protection of Nature (or IUPN)** following an international conference in Fontainebleau, France.
- It was renamed as International Union for Conservation of Nature and Natural Resources in 1956 with the acronym IUCN.
- IUCN is the **world's first global environmental union**. Today it is the largest professional global conservation network
- The Union's HQ is located in Gland, near Geneva, in Switzerland.
- It is a membership Union uniquely composed of both **government and civil society organisations**.
- It **provides public, private and non-governmental organisations with the knowledge** and tools that enable human progress, economic development and nature conservation to take place together.
- It demonstrates how **biodiversity is fundamental to addressing some of the world's greatest challenges** such as climate change, sustainable development and food security.
- **The IUCN Red List** is set upon precise criteria to **evaluate the extinction risk** of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world.
- **Species are classified by the IUCN Red List into nine groups**, set through criteria such as rate of decline, population size, area of geographic distribution, and degree of population and distribution fragmentation.



### 14. National Dolphin Research Centre (NDRC)

- **India's and Asia's first Dolphin Research Centre** will be set up on the banks of the Ganga river in **Patna University campus** in Patna, Bihar. It will be named- **National Dolphin Research Centre (NDRC)**.
- The announcement for the centre was made on the occasion of Dolphin day (October 5), observed in Bihar.
- **Role:**
  - NDRC will play important role in **strengthening conservation efforts** and research to save endangered mammal whose population is decreasing.

- Bihar is home to around half of the country's estimated 3,000 dolphin population.
- **About Gangetic Dolphins:**
  - The Ganges River dolphin, or **susu**, inhabits the Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh.
  - It is classified as **endangered by the IUCN**.
  - Gangetic river dolphins fall under Schedule I of the Indian Wildlife (Protection) Act.
  - This dolphin is among the **four "obligate" freshwater dolphins** – the other three are the **baiji** now likely extinct from the Yangtze river in China, the **bhulan** of the Indus in Pakistan and the **boto** of the Amazon River in Latin America. Although there are several species of marine dolphins whose ranges include some freshwater habitats, these four species live only in rivers and lakes.
  - Being a mammal, the Ganges River dolphin cannot breathe in the water and must surface every 30-120 seconds. Because of the sound it produces when breathing, the animal is popularly referred to as the '**Susu**'.
- **Threats:**
  - The survival of the Ganges River dolphin is threatened by unintentional killing through **entanglement in fishing gear**; directed harvest for **dolphin oil**, which is used as a fish attractant and for medicinal purposes; **water development projects** (e.g. water extraction and the construction of barrages, high dams, and embankments); **industrial waste and pesticides**; **municipal sewage discharge and noise from vessel traffic**; and **overexploitation of prey**, mainly due to the widespread use of non-selective fishing gear.

### 15. National Board for Wildlife (NBWL)

- It is a "**Statutory Organization**" constituted under the **Wildlife Protection Act, 1972**.
- Its role is "**advisory**" in nature and advises the Central Government on framing policies and measures for conservation of wildlife in the country.
- Primary function of the Board is to **promote the conservation and development of wildlife** and forests.
- It has power to **review all wildlife-related matters** and approve projects in and around national parks and sanctuaries.
- No alternation of boundaries in national parks and wildlife sanctuaries can be done without approval of the NBWL.
- **Composition:** The NBWL is **chaired by the Prime Minister**. It has 47 members including the Prime Minister. Among these, 19 members are ex-officio members. Other members include three Members of Parliament (two from Lok Sabha and one from Rajya Sabha), five NGOs and 10 eminent ecologists, conservationists and environmentalists.

## Animal / Wildlife Protection

### Notes

### 1. International Stock Taking Conference on Tiger Conservation

- With shrinking habitats, experts opine that India has almost neared its capacity to manage tigers. Therefore, **India must also prepare for a new challenge — of reaching the limits of its management capacity.**
- **Notable points:**
  1. India's current capacity to host tigers ranges from 2,500-3,000 tigers. Officially, India had 2,226 tigers as of 2014. An ongoing census is expected to reveal an update to these numbers.
  2. 25-35% of India's tigers now lived outside protected reserves.
  3. Recent attempts at translocating tigers to unpopulated reserves, such as Satkosia in Orissa, have ended badly, with one of the tigers dying.
- **International Stock Taking Conference on Tiger Conservation:**
  - The **3rd Stock Taking Conference on Tiger Conservation** was recently inaugurated in New Delhi. Third in a series of Stock Taking Conferences, this is the **second to be held in India** after 2012 and is expected to have wide-ranging discussions on the status of the **Global Tiger Recovery Program (GTRP)** by the 13 tiger range countries besides deliberations on combating wildlife trafficking.
  - **13 Tiger range States**—Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Russia, Thailand, and Vietnam.
  - **The conference is being hosted by the National Tiger Conservation Authority**, Ministry of Environment, Forest and Climate Change in close collaboration with the Global Tiger Forum which is an International, Intergovernmental Organization for conserving tigers in the world.
- **Global Tiger Recovery Program (GTRP):**
  - The Global Tiger Recovery Program (GTRP) seeks to empower **Tiger Range Countries (TRCs)** to address the entire spectrum of threats, domestic as well as those that are transboundary in nature, and work toward increased financial sustainability through the integration of conservation objectives into development.
  - The GTRP was developed, with the goal of **doubling the number of wild tigers globally by 2022** through actions to:
    - effectively manage, preserve, protect, and enhance tiger habitats;
    - eradicate poaching, smuggling, and illegal trade of tigers, their parts, and derivatives;
    - cooperate in transboundary landscape management and in combating illegal trade;
    - engage with indigenous and local communities;

- increase the effectiveness of tiger and habitat management; and
- restore tigers to their former range.
- **Additional facts: During the St. Petersburg declaration on Tiger Conservation in 2010**, tiger range countries had resolved to double tiger numbers across their range by 2022.

## 2. Trishna Gas project

- The **National Wildlife Board has given its approval for the Trishna Gas project of ONGC** which falls in the **Trishna Wildlife Sanctuary** in the Gomati district of Tripura.
- **National Wildlife Board:**
  - National Board for Wild Life is a **statutory organization** constituted under the **Wildlife Protection Act, 1972**.
  - It is an apex body to **review all wildlife-related matters** and approves projects in and around national parks and sanctuaries.
  - **Composition: The National Board for Wild Life is chaired by the Prime Minister.** Union Minister of Environment, Forest and Climate Change is the vice-chairman of the Board and the members include 15 non-government members, 19 ex-officio members and 10 government officials such as secretaries.
- **Trishna Wildlife Sanctuary:**
  - The Trishna Wildlife Sanctuary, in Tripura was established in 1988. The **vegetation covers four broad categories** of tropical semi-evergreen forest, the east Himalayan lower Bhanar sal, Moist mixed deciduous forest and the Savanah woodland.

## 3. Great Indian Bustard

- Wildlife activists have called for enforcement of recovery plan for the country's **most critically endangered bird- Great Indian Bustard**.
- Once the contender for becoming India's national bird, the Great Indian Bustard is now facing extinction.
- Great Indian Bustard is listed in Schedule I of the Indian Wildlife (Protection) Act, 1972, in the CMS Convention and in Appendix I of CITES, as **Critically Endangered on the IUCN Red List**.
- It has also been identified as one of the species for the recovery programme under **the Integrated Development of Wildlife Habitats of the Ministry of Environment and Forests**, Government of India.
- **Project Great Indian Bustard — state of Rajasthan** — identifying and fencing off bustard breeding grounds in existing protected areas as well as provide secure breeding enclosures in areas outside protected areas
- **Protected areas:**
  1. Desert National Park Sanctuary — Rajasthan.
  2. Rollapadu Wildlife Sanctuary — Andhra Pradesh.





3. Karera Wildlife Sanctuary– Madhya Pradesh.

#### 4. Mugger Crocodile

- The mugger crocodile, also called **marsh crocodile** or **broad-snouted crocodile**, has come to the centre of renewed attention in Gujarat, where the Forest Department has started evacuating muggers from two ponds on the Sardar Sarovar Dam premises on the Narmada, to facilitate a seaplane service at the Statue of Unity.
- *Key facts:*
  - Already extinct in Bhutan and Myanmar.
  - Listed as **vulnerable on the IUCN Red List** since 1982.
  - In India, it is protected under Schedule I of the Wildlife Protection Act, 1972.



Notes

#### 5. Golden Langur Conservation Breeding Programme

- **Assam** has announced the success of the Golden Langur Conservation Breeding Programme in the State. The golden langur conservation project was undertaken at the Assam State Zoo in Guwahati during the 2011-12 fiscal.
- The golden langur (*Trachypithecus geei*) is currently **endangered**.
- Apart from a 60 square mile area in north-western Assam, small populations are found in Bhutan and Tripura.



#### 6. Sarus Crane

- Sarus crane, whose numbers pushed to the edge by habitat degradation and human callousness, now seems to be getting a new lease of life in **Uttar Pradesh, where it enjoys the status of official State bird**.
- The population of the Sarus crane, a bird distinguishable by its red upper neck and white collar, has climbed to 15,938 as per the 2018 census (summer).
- The Sarus (*Grus antigone*) is the **tallest flying bird** in the world.
- It is also India's only resident breeding crane.
- **IUCN status-** 'vulnerable'.
- It has three disjunct populations in the Indian sub-continent, south-east Asia and northern Australia.



#### 7. Bandipur Tiger Reserve

- Located in Karnataka.
- Together with the adjoining Nagarhole National Park, Mudumalai National Park and Wayanad Wildlife Sanctuary, it is part of the **Nilgiri**

**Biosphere Reserve** making it the largest protected area in southern India and largest habitat of wild elephants in south Asia.

- The park is flanked by the Kabini river in the north and the Moyar river in the south. The Nugu river runs through the park.
- The highest point in the park is on a hill called Himavad Gopalswamy Betta.

## 8. Satkosia Tiger Reserve

- Two trained elephants will be used to patrol Odisha's Satkosia Tiger Reserve. The two elephants are being brought from the **Similipal Tiger Reserve**. This step has been undertaken for resuming the ambitious tiger reintroduction programme in Satkosia.
- **About Satkosia Tiger Reserve:**
  - It was established in 1976 as a wildlife sanctuary. The area was declared as Satkosia Tiger Reserve in 2007. Satkosia is the meeting point of two bio-geographic regions of India; the Deccan Peninsula and the Eastern Ghats, contributing immense biodiversity.
  - The area is also a part of the Mahanadi elephant reserve.

## 9. National Tiger Conservation Authority (NTCA)

- The National Tiger Conservation Authority's (NTCA) has released a report tiger mortality in the country.
- The NTCA **maintains the official database of tiger mortality** in the country, and compiles figures from reports sent by different States on the basis of recovery of bodies or seizure of body parts.
- **NTCA:**
  - The National Tiger Conservation Authority is **a statutory body under the Ministry of Environment, Forests and Climate Change** constituted under enabling provisions of the **Wildlife (Protection) Act, 1972**, as amended in 2006, for strengthening tiger conservation, as per powers and functions assigned to it under the said Act.
- **The functions of NTCA are as follows:**
  - Ensuring normative standards in tiger reserve management
  - Preparation of reserve specific tiger conservation plan
  - Laying down annual/ audit report before Parliament
  - Instituting State level Steering Committees under the Chairmanship of Chief Minister and establishment of Tiger Conservation Foundation.
  - According approval for declaring new Tiger Reserves.

## 10. Nahargarh Biological Park

- **Rajasthan's first lion safari** has been inaugurated at Nahargarh Biological Park.
- The park is located on Delhi-Jaipur National Highway in the Aravalli foothills, nearly 12 kilometers from state capital Jaipur.
- Lions in this park were brought from Junagarh, Gujarat under an exchange programme.

- The park will serve for breeding lions and also centre of attraction for tourists. It will provide new habitat to lions and also add tourism venue to the Pink City.

## 11. Species Recovery Programme

- **National Board for Wildlife (NBWL)** recently added four species into the center's recovery Programme for critically endangered species. This decision will lead to **targeted conservation** of these species whose population is on the decline.



- **The species are** Northern River Terrapin, Clouded Leopard, Arabian Sea Humpback Whale and Red Panda.
- **Background:**
  - Terrapins have been exploited for illegal trade across borders, especially for its meat and carapace. Clouded leopard and Red Panda are facing habitat loss and poaching threat for their meat, medicine and pelts.
  - While the Northern River Terrapin is largely found in West Bengal, the clouded leopard is found in Meghalaya, Mizoram, Sikkim and Assam while the Red Panda is largely found in Sikkim, western Arunachal Pradesh, North Bengal and parts of Meghalaya.
  - Arabian Sea Humpback Whale is facing threats from accidental entanglement in fishing gears, ship strikes and seismic explorations. Humpback whales migrate towards India's west coast from Oman and there have been several instances of these gargantuan species getting beached on Maharashtra's long coastline.
- **Species recovery programme:**
  - The species recovery programme of the Union Environment Ministry is implemented under **Integrated Development of Wildlife Habitats** — a centrally sponsored umbrella scheme for management and conservation of parks, wildlife habitats and conservation.
  - Started in 2008-09, IDWH is meant for providing support to protected areas (national parks, wildlife sanctuaries, conservation reserves and community reserves except tiger reserves), protection of wildlife outside protected areas and recovery programmes for saving critically endangered species and habitats.
- **Facts for Prelims:**
  - **Species already included in the recovery programme:** Snow Leopard, Bustard (including Floricans), Dolphin, Hangul, Nilgiri Tahr, Marine Turtles, Dugongs, Edible Nest Swiftlet, Asian Wild Buffalo, Nicobar Megapode, Manipur Brow-antlered Deer, Vultures, Malabar Civet, Indian Rhinoceros, Asiatic Lion, Swamp Deer and Jerdon's Courser.

Notes

- **India is a party to the International Whaling commission** that is committed to the protection of whales and its habitats in Indian waters.

## Notes

## 12. Nilgiri Tahr

- As per the latest studies, **climate change is threatening the Nilgiri tahr**. It is estimated that the endangered wild goat could lose approximately 60% of its habitat, starting from the 2030s.
- There are only around 2,500 tahrs left in the wild and their population — “small and isolated, making them vulnerable to local extinction” — shows a “decreasing” trend, as per the International Union for Conservation of Nature.
- Nilgiri Tahr- Key facts:
  - IUCN status- **Endangered**
  - It is listed in **Schedule I of the Indian Wildlife (Protection) Act 1972**.
  - Endemic to the Nilgiri Hills and the southern portion of the Western Ghats in the states of Tamil Nadu and Kerala in Southern India.
  - It is the **State animal of Tamil Nadu**.
  - Currently, the only populations with more than 300 individuals are in Eravikulam National Park and in the Grass Hills in Anamalai.



## 13. Pangolins

- A special unit of the Odisha Police has launched a drive to bust an international syndicate that peddles “endangered” pangolin, one of the world’s most illegally traded mammals.
- **MLAT**: A process has been initiated to crack the international pangolin smuggling racket, possibly with the help of the **Mutual Legal Assistance Treaty (MLAT)**.
  - *MLAT is an agreement between nations to exchange information or provide legal assistance for enforcing laws.*
- Pangolins is smuggled for its scales as it believed that they possess magic or charms and have medicinal properties. The scales serve as base component for indigenous (traditional) psychotropic substances.
- **Pangolin**:
  - **Pangolin is only scaly mammal on the planet**. According to Convention on International Trade in Endangered Species (CITES), it is also the most illegally traded vertebrate within its class (Mammalia).
  - Of the eight species of pangolin worldwide, two are found in India. They are Chinese pangolin, mostly found in northeast India and Indian pangolin.



- **Protection Status:** Chinese pangolin has been listed as “critically endangered” by UN affiliated International Union for Conservation of Nature’s (IUCN) Red List. Indian pangolin (*Manis crassicaudata*) has been listed as “endangered” in IUCN Red List. It is also a Schedule I category protected animal, under the Wildlife Protection Act (1972).

#### 14. Naturalised Species

- An intentionally or unintentionally introduced species that has adapted to and reproduces successfully in its new environment.
- Naturalised species reproduce naturally in the environments they colonise. **Invasive species** do this so prolifically that they alter the workings of the natural ecosystems they colonise or invade.
- An international team found that as many as 471 plant species that are alien or exotic — not native to India — **are ‘naturalised,’ for they can thrive in the country’s wildernesses by forming stable populations.**
- At 332, **Tamil Nadu has the highest number of naturalised exotics,** followed by Kerala (290), while Lakshadweep has the least (17).

#### 15. Golden Jackal

- Destruction of mangrove cover in the **Bandar Reserve Forest** is forcing the golden jackal (*Canis aureus*) out of its habitat, triggering a conflict with the local communities.
- The Golden Jackal is a wolf-like canid that is native to Southeast Europe, Southwest Asia, South Asia, and regions of Southeast Asia.
- The conservation status of the animal is the ‘**least concern**’ and it preys on wild crab and fish.



#### 16. First Organised Census for Indus Dolphins

- For the conservation of Indus dolphins – one of the world’s rarest mammals – the **Punjab government along with WWF-India** are conducting the first organised census on their population.
- **About Indus Dolphins:**
  - A **blind species** that communicates through echo like bats do.
  - Indus river dolphins are one of only four river dolphin species and subspecies in the world that spend all of their lives in **freshwater.**
  - They are believed to have originated in the ancient Tethys Sea.
  - They rely on **echolocation** to navigate, communicate and hunt prey including prawns, catfish and carp.
  - They are **found only in India and Pakistan.** In Punjab, they are confined to only a 185 km stretch between Talwara and Harike Barrage in India’s Beas river in Punjab.



- The most flourishing population of the Indus dolphin, *Platanista gangetica minor*, is found across Pakistan where their numbers are estimated to be around 1,800 over a stretch of 1,500 km of the Indus river.
- It is listed by the IUCN as **endangered** on its red list of threatened species. IUCN suspects the population size of the Indus river dolphins has reduced by more than 50% since 1944.

### 17. Brown Peach Aphid

- It is an **insect that attacks temperate fruit trees**.
- It has been recorded for the **first time in Kashmir Valley**, the fruit bowl of India.
- **About Brown peach aphid:**
  - Aphids feed on the saps of plants, attacking plant tissues that transport food to all different plant parts.
  - In India, the aphid was recorded for the first time in the 1970s from Himachal Pradesh and Punjab.
  - The tiny (nearly 3 mm long) aphids thrived best during the months of April, May, September and October.



### 18. Ivory is 'Government Property'

- The Supreme Court, in *Wild Life Warden v Komarrikkal Elias case*, has held that **elephant tusk is a property of the Government**.
- The Supreme Court observed that there is a clear "declaration" in the Wildlife (Protection) Act of 1972 on elephant tusks being government property.
- Section 39(1) (c) of the Wildlife Protection Act 1972 says that an ivory imported into India and an article made from such ivory in respect of which any offence against this Act or any rule or order made thereunder has been committed, shall be deemed to be the property of the state government, and where such animal is hunted in a sanctuary or national park declared by the Central Government, such animal or any animal article, trophy, uncured trophy or meat derived from such animal shall be the property of the Central Government.



### 19. Orang Tiger Reserve

- Orang Tiger Reserve is the **49th in the country**. It has the smallest core of 78.28 sq. km. **Kamlang Tiger Reserve** in Arunachal is the 50th.
- It is located on the **north bank of the Brahmaputra River**.
- It is also known as the **mini Kaziranga National Park (IUCN site)** since the two parks have a similar landscape made up of marshes, streams and grasslands.
- The park has a **rich flora and fauna**, including **great Indian one horned rhinoceros, pigmy hog, elephants, wild buffalo and tigers**.
- It is the only stronghold of rhinoceros on the north bank of the

Brahmaputra River.

Notes

## 20. Bahuda Rookery

- The Odisha forest department added another **olive ridley mass nesting site** to its wildlife map- at **Bahuda rookery**. Around 3-km stretch of the beach from Sunapur to Anantpur at Bahuda rookery is being developed as a possible olive ridley mass nesting site.
- **Location:** The Bahuda rookery is located around 20 km to the south of Rushikulya rookery coast, a major mass nesting site of olive ridleys on the Indian coastline.
- **Gahirmatha marine sanctuary and Rushikulya rookery coast** in Ganjam district are main Olive Ridley Nesting sites in Odisha. Of these sites, Gahirmatha marine sanctuary is largest rookery (mass nesting site) of Olive Ridley turtles.
- **Key facts:**
  - Also known as **the Pacific ridley sea turtle**, Olive turtles are a medium-sized species of sea turtle found in warm and tropical waters, primarily in the Pacific and Indian Oceans.
  - They are best known for their behaviour of synchronized nesting in **mass numbers**.
  - The **Convention on Migratory Species and the Inter-American Convention for the Protection and Conservation of Sea Turtles** have also provided olive ridleys with protection, leading to increased conservation and management for this marine turtle.
  - It is included in **Vulnerable category by the IUCN Red list**.



## 21. Canine Distemper Virus (CDV)

- **Gujarat Forest Department** has started vaccination of lions in Gir sanctuary to protect them from a deadly canine distemper virus (CDV). The virus is blamed for the death lions in Gujarat's Gir sanctuary in last one month.
- **What is Canine Distemper Virus?**
  - Canine Distemper Virus (CDV) is a **viral disease that infects the gastrointestinal, respiratory, and central nervous systems**.
  - **Dogs who have not been vaccinated for Canine Distemper are the most at-risk**. While the disease can also be contracted when improperly vaccinated or when a dog has high susceptibility to bacterial infection, these cases are rare.
  - CDV can be spread through **direct contact** (licking, breathing air, etc.) or **indirect contact** (bedding, toys, food bowls, etc.), though it cannot live on surfaces for very long. Inhaling the virus is the primary method of exposure. **There is no known cure for CDV**.
- **What's the issue?**

- The magnificent Asiatic lion is under threat. Twenty-three lions have died in as many days in the eastern part of Gujarat's Gir sanctuary.
- This case is more worrisome as the big cat population in Gujarat is the last of the Asiatic lions in the wild.
- **Facts for Prelims:**
  - Gir sanctuary is the only wild population of Asiatic lions in the world.
  - Asiatic lion is listed in Schedule I of Wildlife (Protection) Act 1972, has been categories as Endangered on IUCN Red List and is listed Appendix I of CITES.

## 22. Mammals of India (MaOI)

- Scientists and researchers from the **National Centre for Biological Sciences (NCBS)** in Bangalore have come up with a new **citizen-science repository on Indian mammals**, called Mammals of India (MaOI). MaOI is a part of the Biodiversity Atlas (India project).
- The initiative aims to develop **individual species pages for all Indian mammals** with information on identification, variation, distribution, breeding and non-breeding ecology and species conservation.
- Now one can contribute to the cause of science by **sharing the picture of the animal** on a specific website, providing the location of spotting. This will make more information available about lesser known mammals of the country.

## 23. Dudhwa Tiger Reserve (DTR)

- **Dudhwa Tiger Reserve and Sashastra Seema Bal (SSB) have joined hands to provide security to Dudhwa forests and its rich wildlife.**
- It has been agreed that joint long route patrolling comprising SSB, Special Tiger Protection Force (STPF) and Dudhwa Tiger Reserve (DTR) field staff would be held at regular intervals.
- Stress will be laid on **intelligence and information sharing** among various security agencies about activities of wildlife and forest criminals.
- **Dudhwa Tiger Reserve:**
  - It is protected area in **Uttar Pradesh** that stretches mainly across the Lakhimpur Kheri and Bahraich districts.
  - **It comprises** Dudhwa National Park, Kishanpur Wildlife Sanctuary and Katarniaghat Wildlife Sanctuary.
  - It shares north-eastern boundary with Nepal, which is defined to large extent by **Mohana River**.
  - The area is vast **Terai alluvial floodplain** traversed by numerous rivers and streams flowing in south- easterly direction.
  - **Faunal diversity:** Apart from tigers, it is also home to swamp deer, sambar deer, barking deer, spotted deer, hog deer, Indian rhinoceros, sloth bear, ratel, jackal, civets, jungle cat, fishing cat, etc.
- **Sashastra Seema Bal (SSB):**



- It is **Central Armed Police Force (CAPF)** entrusted with guarding country's border with Nepal and Bhutan.
- It was established in 1963 and functions under administrative control of **Ministry of Home Affairs (MHA)**. Its headquarters are in New Delhi.
- It has specialist jurisdictions for national border patrol, security, and integrity.

## Notes

## Environment Protection

Notes

### 1. Gadgil Committee and Kasturirangan Report on Western Ghats

- **Gadgil Committee:**

- It defined the **boundaries of the Western Ghats** for the purposes of ecological management. It proposed that this entire area be designated as **ecologically sensitive area (ESA)**.
- Within this area, smaller regions were to be identified as ecologically sensitive zones (ESZ) I, II or III based on their existing condition and nature of threat.
- It proposed to divide the area into about 2,200 grids, of which 75 per cent would fall under ESZ I or II or under already existing protected areas such as wildlife sanctuaries or natural parks.
- The committee proposed a **Western Ghats Ecology Authority** to regulate these activities in the area.

- **What was the need for the subsequent Kasturirangan Committee?**

- None of the six concerned states agreed with the recommendations of the Gadgil Committee, which submitted its report in August 2011.
- In August 2012, then Environment Minister constituted a **High-Level Working Group on Western Ghats under Kasturirangan** to “examine” the Gadgil Committee report.

- **Recommendations of Kasturirangan Committee:**

- A ban on mining, quarrying and sand mining.
- No new thermal power projects, but hydro power projects allowed with restrictions.
- A ban on new polluting industries.
- Building and construction projects up to 20,000 sq m was to be allowed but townships were to be banned.
- Forest diversion could be allowed with extra safeguards.

- **Eco-Sensitive Areas (ESAs):**

**DEFINITION:**

Eco sensitive areas are **ecologically and economically important**, but vulnerable even to mild disturbances, and hence demand careful management. These areas are critical to the maintenance of productive and diverse plant and wildlife populations.

**FEATURES OF ECO SENSITIVE AREAS:****CONTENTS OF ESA:**

- **Sacred forests protecting origins of rivers** (e.g. Bhimashankar in Pune District)
- **Important breeding habitats** (e.g. Kokkre – Bellur Pelicanry in Mandya District, Karnataka)

**2. Eco Sensitive Zones**

- The Supreme Court has directed the Union Environment Ministry to declare 10 km area around 21 national parks and wildlife sanctuaries across the country as 'eco-sensitive zones'.
- The court took the initiative after its amicus curiae informed the court that the State governments have taken no effort to protect the area around these sanctuaries and parks.
- **What are Eco-sensitive zones?**
  - The **Environment Protection Act, 1986** does not mention the word "Eco-sensitive Zones".
  - **The section 3(2)(v) of the Act**, says that Central Government can restrict areas in which any industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards
  - **Besides the section 5 (1)** of this act says that central government can prohibit or restrict the location of industries and carrying on certain operations or processes on the basis of considerations like the biological diversity of an area, maximum allowable limits of concentration of pollutants for an area, environmentally compatible land use, and proximity to protected areas.
  - The above two clauses have been effectively used by the government to declare Eco-Sensitive Zones or Ecologically Fragile Areas (EFA). The same criteria have been used by the government to declare **No Development Zones**.
- **Criteria:**
  - The MoEF (Ministry of Environment & Forests) has approved a comprehensive set of guidelines laying down parameters and criteria for declaring ESAs.
  - These include **Species Based** (Endemism, Rarity etc), **Ecosystem Based** (sacred groves, frontier forests etc) and **Geomorphologic feature based** (uninhabited islands, origins of rivers etc).

**3. Himalayan Springs**

- A NITI Aayog constituted group of experts has urged the government to set up a dedicated mission to salvage and revive spring water systems in the country's Himalayan States.

- In this context, it has released a report titled **'Inventory and Revival of Springs in the Himalayas for Water Security.'**
- **Significance of spring water systems for the region:**
  - Himalayan spring water systems are important as a source of water for both **drinking and irrigation** for the region's inhabitants. The Indian Himalayan Region (IHR) has been heavily reliant on these natural groundwater sources.
  - Also, with almost 64% of the cultivable area in the Himalayas fed by natural springs, they are often the only source of irrigation in the region.
- **Distribution of springs:**
  - Meghalaya with 3,810 villages with springs has the highest number of these water sources in the Eastern Himalayan States.
    - **Sikkim has the greatest density** with 94% of its villages having a spring.
    - In the Western Himalayas, Jammu & Kashmir had both the highest number of villages with springs at 3,313 and the greatest density of 50.6%.

#### 4. Neelakurinji Plants

- **Tamil Nadu government has announced a novel scheme for the protection of the exotic Neela kurinji** (*Strobilanthes kunthianus*) plants that **flower only once in 12 years**.
- Kurinji or Neelakurinji (*Strobilanthes kunthianus*) is a shrub that is found in the **shola forests of the Western Ghats** in South India.
- Nilgiri Hills, which literally means the blue mountains, got their name from the purplish blue flowers of Neelakurinji that blossoms only once in 12 years.
- Some Kurinji flowers bloom once every seven years, and then die. Their seeds subsequently sprout and continue the cycle of life and death.
- The **Paliyan tribal people** living in Tamil Nadu used it as a reference to calculate their age.



#### 5. Biodiversity Award for Arunachal Reserve

- **Singchung Bugun Village Community Reserve** in Arunachal Pradesh has been awarded the **India Biodiversity Award** for its effort to **conserve the critically endangered bird – Bugun liocichla**.
- Bugun Liocichla (*Liocichla bugunorum*) was discovered in 2006 in West Kameng district of Arunachal Pradesh. The bird has been named in honour of the efforts of the Bugun community of Singchung village in West Kameng district in conserving the wildlife and forest of the area.
- The known population of this species is between 14 and 20 individual



birds and occupies an extremely small (3 to 4 square kilometre) area in the temperate forest around 2,200m which is entirely within the traditional lands of Singchung village.

- The International Union for the Conservation of Nature has classified this species as **critically endangered**.
- About SBVCR:
  - The Singchung Bugun village community reserve was created following intensive conservation efforts by the Arunachal forest department. The SBVCR, 17 square kilometre in size, is the core area of a larger conservation area on traditional Bugun lands.
  - It was instituted under **Wildlife (Protection) Act, 1972**.
  - It lies right next to Eaglesnest Wildlife sanctuary, a biodiversity hotspot, which is also home to the bird species.
- **What are community reserves?**
  - Conservation reserves and community reserves in India are terms denoting **protected areas** of India which typically act as **buffer zones** to or connectors and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests of India.
  - Such areas are designated as **conservation areas** if they are uninhabited and completely owned by the Government of India but used for subsistence by communities, and **community areas** if part of the lands are privately owned.
  - Administration of such reserves would be through local people and local agencies like the gram panchayat, as in the case of communal forests.
  - The 2002 Amendment to the Indian Wildlife Protection Act (1972) calls for a new category of protected areas, a 'Community Reserve' (CR).
- **Facts for Prelims:**
  - **India Biodiversity award is conferred annually by the National Biodiversity Authority.**

## 6. Green Cricket in India

- The main aim of the partnership is to spread greater awareness about key environmental challenges that are facing the country and highlight alternate and more sustainable solutions.
- Through the agreement, the BCCI will endeavor to reduce its environmental impact by greening its operations and engaging cricketers and fans in green initiatives.
- The partnership will help make cricket green and sensitise spectators towards minimising waste generation during matches.
- The partnership will also focus on phasing out single-use plastic across stadiums and cricket events in the country.
- Background:
  - As global host of World Environment Day in 2018, India is leading the global charge to **#BeatPlasticPollution** in the country, and around the world.
- **World Environment Day:**
  - World Environment Day, celebrated on the **5th of June every year** is the **United Nations day** for encouraging worldwide awareness and action to protect our environment.

### **About UN Environment:**

UN Environment is the leading global voice on the environment. It provides leadership and encourages partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

UN Environment works with governments, the private sector, civil society and with other UN entities and international organizations across the world.

Headquartered in Nairobi, Kenya

- Since it began in 1974, the event has grown to become a global platform for public outreach that is widely celebrated in over 100 countries.
- World Environment Day is the "**people's day**" for doing something to take care of the Earth.
- Every World Environment Day has a different host country, where the official celebrations take place.

## 7. Corbett Tiger Reserve

- Corbett National Park is situated in the foothills of the Sub- Himalayan belt in Nainital districts of **Uttarakhand** state in India.
- Established in the year 1936 as Hailey National Park, Corbett has the glory of being **India's oldest and most prestigious National Park**.
- It is also being honored as the place where **Project Tiger was first launched in 1973**. This unique tiger territory is best known as the father who gave birth of the Project Tiger in India to protect the most endangered species and the Royal of India called Tigers.
- Corbett National Park covers an area of 521 sq. km and together with the neighboring Sonanadi Wildlife Sanctuary and Reserve Forest areas, forms the Corbett Tiger Reserve.
- Corbett National Park is one of the richest bird regions of the Country and has been declared as an '**Important Bird Area**' (**IBA**) by Birdlife International.

## 8. Blue Flag Certification

- The **Chandrabhaga beach on the Konark coast of Odisha** will be the first in Asia to get the Blue Flag certification.
- Twelve more beaches in the country are being developed by the **Society for Integrated Coastal Management (SICOM)**, an Environment Ministry's body working for the management of coastal areas, in accordance with the Blue Flag standards.
- **Blue flag project:**
  - Launched in December 2017 by the Environment Ministry, the prime objective of the project is to enhance standards of cleanliness, upkeep and basic amenities at beaches. Under the project, each state or union territory has been asked to nominate a beach which will be funded through the ongoing **Integrated Coastal Management Programme**.
  - To achieve the Blue Flag standards, a beach has to strictly comply with 33 environment and tourism-related conditions.
  - The standards were established by the **Copenhagen-based Foundation for Environmental Education (FEE)** in 1985.
  - For example- a beach must be plastic-free and equipped with a waste management system. Clean water should be available for tourists, apart from international amenities. The beach should have facilities for studying the environmental impact around the area.
- **Facts for Prelims:**

- Society of Integrated Coastal Management (**SICOM**) has been established under the aegis of Ministry of Environment, Forests and Climate change.
- The main objective of the Centre is to **promote research and development in the area of coastal management** including addressing issues of coastal communities.
- It also supports **implementation of Integrated Coastal Zone Management (ICZM) activities** in India and implements the World Bank assisted India ICZM Project.

## 9. Ganga Praharis

- A group of **trained volunteers**, called Ganga Praharis, are reaching to each and every house in areas along river Ganga to educate them about the **importance of protecting river's bio-diversity**.
- They are spread over Ganga basin states of Uttarakhand, Uttar Pradesh, Jharkhand, Bihar and West Bengal.
- **Who are Ganga Praharis?**
  - They are new grassroot-level **volunteers** to protect the bio-diversity of river Ganga.
  - They are roped-in by **Wildlife Institute of India (WII)**, Dehradun as part of the "**Biodiversity Conservation and Ganga Rejuvenation**" project being sponsored by National Mission for Clean Ganga (NMCG) under the aegis of the Namami Gange programme.
  - Ganga Praharis are well trained in ecological monitoring of Ganga aqua life, plantation techniques, awareness creation and community mobilization.
  - They are trained through a series of national, state and site level workshops in diverse skills such as ecological surveys, rescue and rehabilitation of aquatic species, awareness meetings, social interactions and green livelihood skills.
- **Roles and Functions:**
  - The Ganga Praharis will be linked to various local environmental authorities, non-governmental stakeholders in their respective states and various other national, academic and research institutions for their capacity development.
  - The Ganga Praharis will be the **role models in inspiring other members** of the community to join hands in the efforts for conservation of the biodiversity of river Ganga. Thus, each Prahari shall work on the model of 'Each One Make Ten'.

## 10. Chilika Lake

- It is the **largest coastal lagoon in India** and the second largest lagoon in the world after the New Caledonian barrier reef in New Caledonia.
- It is the **largest wintering ground** for migratory **waterfowl** found anywhere on the Indian sub-continent.
- It is one of the **hotspot of biodiversity** in the country, and some rare, vulnerable and endangered species listed in the IUCN Red List of

threatened Animals inhabit in the lagoon for atleast part of their life cycle.

- On account of its rich bio-diversity and ecological significance, Chilika was designated as the **1st “Ramsar Site”** of India.
- The Nalaban Island within the lagoon is notified as a Bird Sanctuary under Wildlife (Protection) Act.
- The National Wetlands, mangroves and coral reefs Committee of Ministry of Environment & Forests, Government of India, have also identified the lagoon as a **priority site for conservation and management.**

## Notes



## Species Discovery / Species Sighted / Species Extinct

### 1. Cinereous vulture

- Bird watchers and researchers recently sighted Cinereous vulture in Hazaribagh in Jharkhand.
- During the winter, the Cinereous vulture migrates from the mountainous regions of Europe and Asia to warmer places, including India.
- Cinereous vulture (*Aegypius monachus*) draws its name from “monachus”, which means hooded (like a monk) in Latin.
- It is also known as the **black vulture**, monk vulture, or Eurasian black vulture.
- It is classified as **Near Threatened** under the IUCN Red List.



### 2. Small Woodbrown Butterfly

- After a span of 120 long years, researchers in Sikkim have rediscovered the **Small Woodbrown butterfly** species from Bakhim in Khanchendzonga National Park.
- The Small Woodbrown butterfly, scientifically known as ***Lethe nicetella*** is named after its brown-coloured wings patched with white round spots.
- The species **is endemic to the eastern Himalayas** and occurs in forests lying between elevations of 1,800-2,800 metres.
- **Distribution:** Across the world, species of *Lethe* are found in Sunda Islands, Japan, Siberia, Himalayas and peninsular India. Of the 41 species of *Lethe* that are found in India, 32 species are reported from Sikkim alone.

### 3. Eight Species of Birds to be Extinct

- **Scientists have declared eight species of birds to be extinct** in what are being seen as the first avian extinctions of the 21st century.
- **The study was conducted by non-profit “BirdLife International”.**
- Key facts:
  - The species gone extinct include Spix’s macaw, the Alagoas foliage-gleaner, the cryptic treehunter, the Pernambuco pygmy-owl, the poo-uli, or black-faced honeycreeper and the glaucous macaw.
  - Five of these new extinctions have occurred in South America and have been attributed by scientists to **deforestation**. Four out of the eight species declared extinct belong to Brazil.



### 4. Bonnethead Shark

- It is the **first known omnivorous shark species identified by scientists recently**.
- 60% of its diet consists of seagrass. The species graze upon seagrass, in addition to eating bony fish, crabs, snails and shrimp.
- The bonnethead shark is abundant in the shallow waters of the Western Atlantic, and the Gulf of Mexico.
- Though small by shark standards, adult females — the larger of the sexes — can still reach an impressive five feet long.



## 5. Snow Leopard

- Officials from Himachal State Wildlife Department have spotted **snow leopard in Lippa-Asra wildlife sanctuary in Kinnaur district of Himachal Pradesh**. This finding indicates that snow leopards are inhabiting new areas.
- They are listed as **Vulnerable** on the IUCN Red List of Threatened Species.
- They inhabit alpine and subalpine zones at elevations from 3,000 to 4,500 m (9,800 to 14,800 ft). In the northern range countries, they also occur at lower elevations.
- Their habitat extends through twelve countries: Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan. China contains as much as 60% of all snow leopard habitat areas.
- In India, their geographical range encompasses a large part of the **western Himalayas** including the states of **Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim and Arunachal Pradesh in the eastern Himalayas**.
- The snow leopard, like all big cats, is listed on **Appendix I of the Convention on International Trade of Endangered Species (CITES)**, which makes trading of animal body parts (i.e., fur, bones and meat) illegal in signatory countries. It is also protected by several national laws in its range countries.
- **Global Snow Leopard Forum, 2013**: 12 countries encompassing the snow leopard's range (Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyz Republic, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan).
- **Bishkek Declaration**: To protect the species and its environment.
- **Global Snow Leopard and Eco-System Protection Program**: It is a joint initiative of range country governments, international agencies, civil society, and the private sector. Goal — secure the long-term survival of the snow leopard in its natural ecosystem.



## 6. Pondicherry Shark

- Researchers recently spotted 'Pondicherry shark', an **endangered species** protected under the provisions of the **Wildlife (Protection)**

**Act**, in the **East Godavari River Estuarine Ecosystem** region.

- Scientifically known as *Carcharhinus hemiodon*, it belongs to the *Carcharhinidae* family with a growth of 3.3 feet.
- Known as 'Pala Sora' in the local parlance, the Pondicherry Shark is on the **verge of extinction** even according to the conventional fishermen.
- The International Union for Conservation of Nature (IUCN) has listed the Pondicherry shark as Critically Endangered.
- The shark is among the 25 "most wanted lost" species that are the focus of Global Wildlife Conservation's "**Search for Lost Species**" initiative.



### 7. Bhupathy's shieldtail

- It is a **new species of shieldtail snake found recently from the Western Ghats** in Tamil Nadu.
- The snake, currently found only in the forests of the Anaikatty hills in Tamil Nadu's Coimbatore district, has been named *Uropeltis bhupathyi*, after the late herpetologist S. Bhupathy, for his contributions to the field.
- The reptile belongs to a family of snakes found only in peninsular India and Sri Lanka. They are non-venomous, mostly burrowing and earthworm-eating, and are called shieldtails after the large, flat tips of their tails, which make them appear almost sliced off.



### 8. Mangaluru Narrow-Mouthed Frog

- It is the newest frog discovered from Karnataka.
- It is christened *Microhyla kodial* after the city of Mangaluru (called kodial in the Konkani language).
- The Mangaluru narrow-mouthed frog is found only in a small industrial space in Mangaluru.



### 9. Aldabra Giant Tortoise

- In a goodwill gesture, Seychelles has gifted a pair of giant Aldabra tortoise to India. The pair will be kept at Hyderabad Zoo.
- The Aldabra Giant Tortoise (*Aldabrachelys gigantea*) from the Aldabra Atoll in the Seychelles is said to be one of the **largest species of tortoises** on the planet.
- It is also one of the **world's longest living animals**, with one Aldabra Giant Tortoise reaching the age of **255 years**.
- The Aldabra giant tortoise's current IUCN conservation status is '**vulnerable**'.



- The atoll has been protected from human influence and is home to around 100,000 giant tortoises, the world's largest population of the animal.

### 10. Eurasian Otter

- Researchers have confirmed the presence of the elusive Eurasian Otter one of the least-known of India's three Otter species in the Western Ghats after more than 70 years.
- While the species is widespread across Europe, northern Africa and several south Asian countries, it is not as frequently seen as smooth-coated or small-clawed otters in India.
- Otters are members of the mammalian family called Mustelidae. They are shy and have elusive habits, adapting to a variety of habitats ranging from marine to freshwater environments.
- **IUCN Status:** Near Threatened.
- It is protected under the **Wildlife Protection Act (1972)**.
- **Major threats** to Asian otter population are loss of wetland habitats due to construction of largescale hydroelectric projects, conversion of wetlands for settlements and agriculture, reduction in prey biomass, poaching and contamination of waterways by pesticides.
- Few nomadic hunting tribes eat otter flesh. Reductions in prey biomass (fish stocks) and infrastructural developments have led to disappearance of otters from the many streams and rivers which were once major otter habitats.



Notes

## Pollution

### 1. Plastic Pollution

- So far, 22 States and Union Territories have joined the fight ***to beat the plastic pollution, announcing a ban on single-use plastics*** such as carry bags, cups, plates, cutlery, straws and thermocol products.
- India has also won global acclaim for its “Beat Plastic Pollution” resolve declared on World Environment Day 2018, under which it pledged to eliminate single-use plastic by 2022.
- ***Plastic Waste Management Rules, 2016 aim to:***
  - ***Increase minimum thickness of plastic carry bags from 40 to 50 microns*** and stipulate minimum thickness of 50 microns for plastic sheets, also to facilitate collection and recycle of plastic waste.
  - ***Expand the jurisdiction of applicability*** from the municipal area to rural areas, because plastic has reached rural areas also:
    - To bring in the responsibilities of producers and generators, to introduce collect back system of plastic waste by the producers/brand owners;
    - To introduce collection of plastic waste management fee;
    - To promote use of plastic waste for road construction for gainful utilization of waste and also address the waste disposal issue;

### 2. Nitrogen Pollution

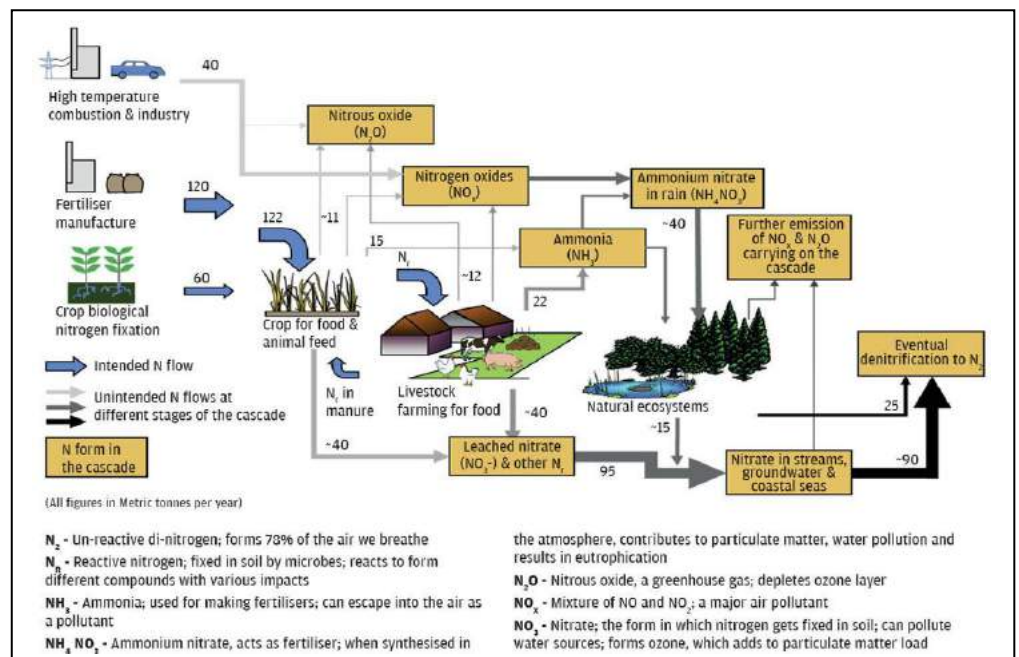
- A major ***international research programme is being carried out to tackle the challenge that nitrogen pollution*** poses for environment, food security, human health and the economy in South Asia.
- The research programme will be carried out by South Asian Nitrogen Hub.
- ***Nitrogen as an essential nutrient:***
  - Nitrogen, which is ***a vital macronutrient for most plants***, is the most abundant element in the atmosphere.
  - A little ***over 78% of dry air on Earth is nitrogen***. But atmospheric nitrogen, or dinitrogen, is unreactive and cannot be utilised by plants directly.
  - Until the beginning of the 20th century, farmers depended on a natural process called ***nitrogen fixation*** for the conversion of atmospheric nitrogen into reactive nitrogen in the soil: ***nitrogen-fixing bacteria*** like rhizobia live symbiotically with leguminous plants, providing nitrogen to the plant and soil in the form of reactive compounds like ***ammonia and nitrate***.
  - But the natural nitrogen cycle was inadequate to feed the growing population. Scientists Fritz Haber and Carl Bosch solved this problem by

#### **South Asian Nitrogen Hub:**

- The South Asian Nitrogen Hub, a partnership led by the ***UK’s Centre for Ecology & Hydrology*** and comprising around 50 organisations from across the UK and South Asia, will be established with funding from UK Research and Innovation (UKRI) under its Global Challenges Research Fund (GCRF).
- The Hub is one of 12 GCRF hubs announced by the UKRI to address intractable challenges in sustainable development. The interdisciplinary hubs will work across 85 countries with governments, international agencies, partners and NGOs.
- India is a major partner with 18 Indian institutions in this project. ***India is the only country in South Asia that has completed its nitrogen assessment over a year ago and is already co-leading the South Asian nitrogen assessment with CEH, UK, for the UN Environment.***

producing ammonia by combining atmospheric nitrogen with hydrogen gas at high temperature and pressure—known as the **Haber-Bosch process**.

- The **Green Revolution**, which was instrumental in establishing food security in the developing countries in the 1960s, was driven by **artificial nitrogen-fixation**. Today, about half of the world's population depends on this process for its nutrition.
- **How Nitrogen turned into pollutant from nutrient how it is affecting health and environment?**
  - Nitrogen is an **inert gas** that's necessary for life. But we're changing it into forms that are harmful, overloading the environment with it, and throwing the natural nitrogen cycle out of whack.
  - **Nitrogen compounds running off farmland** have led to water pollution problems around the world, while **nitrogen emissions** from industry, agriculture and vehicles make a big contribution to air pollution.
  - **Over 80% of the nitrogen in soil is not utilised by humans**. While over four-fifths of the nitrogen is used to feed livestock, only about six per cent reaches humans in case of non-vegetarian diet, as compared to the 20% that reaches the plate of a vegetarian.
  - **Nitrogen becomes a pollutant when it escapes into the environment and reacts with other organic compounds**. It is either released into the atmosphere, gets dissolved in water sources such as rivers, lakes or groundwater, or remains in the soil. While it might lead to favourable growth of species that can utilise this nutrient, nitrogen as a pollutant is often detrimental to the environment and health.
  - According to the World Health Organization, **nitrate-contaminated drinking water can cause reduced blood function, cancer and endemic goiters**. Surplus inputs of nitrogen compounds have been found to cause **soil acidification**. The lowering pH, as a result of the acidification, can lead to **nutrient disorders and increased toxicity in plants**. It may also affect natural soil decomposition.
- **Nitrogen pollution has a significant impact on the environment:**
  - **It creates of harmful algal blooms and dead zones** in our waterways and oceans; the algae produce toxins which are harmful to human and aquatic organisms (and indirectly affects fisheries and biodiversity in coastal areas).
  - **Contamination of drinking water.**
  - **Food Security:** Excessive nitrogen fertiliser application contributes to **soil nutrient depletion**.
  - The release of **Nitrous Oxide** is essentially a **greenhouse gas** which is harmful to the environment.



### 3. Beach Pollution in India

- The **National Centre of Coastal Research (NCCR)** has released a report on beach pollution in India.
- The study notes that beach pollution is on rise in the country.
- **Tourism and fishing are the biggest culprits**, contributing most of the plastic litter on beaches.

### 4. Bioplastics

- A study was conducted by the University of Bonn in Germany on the use of bioplastics and its effects on the environment.
- **Main findings of the study?**
  - Bioplastics — often promoted as a climate-friendly alternative to petroleum-based plastics — **may lead to an increase in greenhouse gas emissions.**
- **Bioplastics**
  - Bioplastics are plastics **derived from renewable biomass sources**, such as vegetable fats and oils, corn starch, straw, woodchips, food waste, etc.
  - Bioplastic can be **made from agricultural by-products** and also from used plastic bottles and other containers using microorganisms.
  - **Not all bioplastics are biodegradable** nor biodegrade more readily than commodity fossil-fuel derived plastics.
- **Main advantages of bioplastics:**
  - They can reduce our carbon footprint.
  - Less consumption of non-renewable raw materials.
  - A reduction of non-biodegradable waste, which contaminates the environment.
  - Increased energy savings in terms of production.
  - Fewer harmful additives such as phthalates or bisphenol A.
  - No adverse change to flavour or scent in food stored in bioplastic containers.

### 5. CPCB Report on River Pollution

- The Central Pollution Control Board (CPCB) has released a report on the extent of pollution in rivers in India.
- Several of the river's stretches — in Bihar and Uttar Pradesh — are actually far less polluted than many rivers in Maharashtra, Assam and Gujarat. **These three States account for 117 of the 351 polluted river stretches.**
- **The most significant stretches of pollution** highlighted by the CPCB assessment include the **Mithi river** — from Powai to Dharavi; the **Godavari** — from Someshwar to Rahed; the **Sabarmati** — Kheroj to Vautha; and the **Hindon** — Saharanpur to Ghaziabad.
- **Background:**
  - The CPCB, since the 1990s, has a programme to monitor the quality of rivers primarily by **measuring BOD**, which is a proxy for organic pollution — the **higher it is, the worse the river.**

- The health of a river and the efficacy of water treatment measures by the States and municipal bodies are classified depending on BOD, with a BOD greater than or equal to 30 mg/l termed 'priority 1,' while that between 3.1-6 mg/l is 'priority 5.'
- **The CPCB considers a BOD less than 3 mg/l an indicator of a healthy river.**
- **Central Pollution Control Board (CPCB):**
  - Central Pollution Control Board (CPCB), statutory organisation, was constituted in September, 1974 under the **Water (Prevention and Control of Pollution) Act, 1974.**
  - Further, CPCB was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981.**
- **Functions:**
  - To **promote cleanliness** of streams and wells in different areas of the States by prevention, control and abatement of water pollution.
  - To **improve the quality of air** and to prevent, control or abate air pollution in the country.
- **Biochemical oxygen demand (BOD):**
  - Biochemical oxygen demand is the **amount of oxygen required for microbial metabolism of organic compounds in water.**
  - BOD value is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C.
  - BOD can be used as a gauge of the effectiveness of wastewater treatment plants.

## 6. Petroleum Coke

- Petroleum coke, the bottom-of-the-barrel leftover from refining Canadian tar sands crude and other heavy oils, is cheaper and burns hotter than coal.
- But it also contains more planet-warming **carbon** and far more heart- and lung-damaging **sulphur**.
- The petcoke burned in factories and plants is contributing to dangerously filthy air in India, which already has many of the world's most polluted cities. It contains 17 times more sulphur than the limit set for coal, and a staggering 1,380 times more than for diesel.
- Petcoke is over **90% carbon and emits 5% to 10% more carbon dioxide (CO<sub>2</sub>) than coal** on a per-unit-of-energy basis when it is burned.

## 7. Arsenic Contamination

- A recent publication by researchers at the **School of Environmental Studies (SOES)**, Jadavpur University, reveals not only **rise in arsenic contamination** of paddy plants from ground water in West Bengal, but also that concentration of **'arsenic accumulation'** depends on the variety of paddy and its stage in the crop cycle.



- The study highlights the processes and dependencies of arsenic translocation in rice from contaminated irrigation water.
- The study shows that **arsenic uptake in the paddy plant reduces from root to grain**, and that its concentration is related to the variety of the rice cultivated.
- The **uptake of arsenic is faster in young roots** in a vegetative state than in older tissues with a higher concentrations of iron in root soil in the reproductive phase.
- **Arsenic in groundwater:**
  - Arsenic in ground water is a **geogenic contaminant** i.e. caused by natural geologic processes. Incidence of high arsenic in groundwater reported from various parts of the country, particularly in the **Ganga- plains**.
  - Technological options to combat arsenic menace, in groundwater, to ensure supply of arsenic free water, in the affected areas can be **in-situ remediation of arsenic** from aquifer system, **ex-situ remediation** of arsenic from tapped groundwater by arsenic removal technologies.
  - According to the WHO's guidelines for drinking water quality (2011), the permissible limit of Arsenic in groundwater is **.01 mg per litre**. However, in India the permissible limit in drinking water has recently been revised from .05 mg per litre to .01 mg per litre.

## 8. Uranium Contamination

- Scientists have found widespread uranium contamination in groundwater from aquifers across 16 states in India, much above the WHO provisional standard for the country.  
The main source of uranium contamination was **"natural,"** but human factors such as groundwater table decline and nitrate pollution could be worsening the problem.
- The WHO has set a provisional **safe drinking water standard of 30 micrograms of uranium per litre**, a level that is consistent with the U.S. EPA standards.
- However, uranium is not yet included in the list of contaminants monitored under the Bureau of Indian Standards' Drinking Water Specifications.
- **Main factors responsible for uranium contamination:**
  - When **over-pumping of aquifers' groundwater** occurs and their water levels decline, it induces oxidation conditions that, in turn, enhance uranium enrichment in the shallow groundwater that remains.
  - Factors such as **groundwater table decline and nitrate pollution** may further enhance uranium mobilisation.
  - Other factors include the amount of **uranium contained in an aquifer's rocks**; water-rock interactions that cause the uranium to be extracted from those rocks; oxidation conditions that enhance the extracted uranium's solubility in

water; and the interaction of the extracted uranium with other chemicals in the groundwater, such as bicarbonate, which can further enhance its solubility.

## Notes

### 9. Algae Noctiluca Scintillans

- It is **green algae** which is behind the **scintillating phenomenon** observed in oceans when they glow fluorescent blue at night.
- The Noctiluca algae is often reported to occur in patches or blooms in the **Northern Arabian Sea**. These striking green blooms often appear to glow at night due to a special phenomenon called **bioluminescence**, earning them the nickname 'sea sparkle'.
- Why in news?
  - An Indo-US study has found that global warming is leading to large-scale fish kills in the Arabian Sea by fuelling the growth of this **harmful bioluminescent algae**.
- Concerns:
  - It is believed to be dangerous to ocean life because it **produces ammonia**.
  - Their growing abundance is a **cause of concern**, because they adversely affect fish, which do not thrive in such waters.



### 10. Clean Air India Initiative

- The Clean Air India Initiative is a collaborative project between Get In The Ring, a platform for start-ups, the government of the Netherlands, Start-up India, and INDUS Forum, an online matchmaking platform of Indian and Dutch businesses.
- The campaign aims to **curb air pollution in Indian cities** by promoting partnerships between Indian start-ups and Dutch companies and build a network of entrepreneurs working on business solutions for cleaner air.

### 11. Malnutrition in Trees

- Besides affecting human health, air pollution is also causing malnutrition in trees by **harming Mycorrhizal fungi**.
- **Importance of Mycorrhizal fungi:**
  - Mycorrhizal fungi are hosted by the trees in their roots to receive nutrients from the soil.
  - These fungi provide essential nutrients like nitrogen, phosphorus and potassium from soil in exchange for carbon from the tree.
  - This plant-fungal symbiotic relationship is crucial for the health of the tree.
- How air pollution affects this symbiotic relationship?
  - High levels of the nutrition elements like nitrogen and phosphorus in the mycorrhizae changes them to act as pollutants rather than nutrients.

- Concerns:
  - The characteristics of the tree — species and nutrient status — and the local environmental conditions like the atmospheric pollution and soil variables were the most important predictors of which species of mycorrhizae fungi would be present and their numbers. These also proved to have a large impact on the fungi.
  - The signs of malnutrition can be seen in the form of **discoloured leaves and excessive falling of leaves**. Ecosystem changes can also negatively affect tree health.

## 12. BS Norms

- The Supreme Court has banned the sale and registration of motor vehicles conforming to the emission standard Bharat Stage-IV in the entire country from April 1, 2020.
- **What are BS norms?**
  - Introduced in the year 2000, the Bharat norms are **emission control standards** put in place by the government to keep a **check on air pollution**. The standards and the timeline for implementation are set by **Central Pollution Control Board (CPCB)** under Ministry of Environment & Forests and climate change.
  - Based on the **European regulations (Euro norms)**, these standards set specifications/limits for the release of air pollutants from equipment using internal combustion engines, including vehicles.
  - Typically, the higher the stage, the more stringent the norms.
- **BS-VI Norms:**
  - The Union Government in October 2016 had decided to skip one stage and **migrate to BS-VI directly from BS-IV** from April 2020.
  - By switching to BS-VI, **India will join league of US, Japan and European Union**, which follow Euro Stage VI emission norms.
  - BS-IV fuels contain 50 parts per million (ppm) sulphur, while **BS-VI grade fuel will have 10 ppm sulphur**.
  - It will also **bring down NOx emissions** from diesel cars by 68% and 25% from petrol engine cars.
  - **Particulate matter emissions** from diesel engine cars will also come down by 80%.

## 13. Fly Ash

- The **National Green Tribunal (NGT)** has imposed penalties of up to ₹5 crore on thermal power plants that have not fully disposed of the fly ash they generated.
- Significance and concerns associated with fly ash:
  - The order is significant because of the **high contribution of fly ash to air and water pollution** and its **impact on crops** being grown in villages around these plants.
- **Fly ash is a major source of PM 2.5** (fine, respirable pollution particles)

in summer.

- It becomes ***air borne***, and gets transported to a radius of 10 to 20 kms. It ***can settle on water and other surfaces***.
- Fly ash ***contains heavy metals*** from coal, a large amount of PM 2.5 and black carbon (BC). Proper disposal of fly ash is still not happening in many places.
- What can be done?
  - Fly ash, ***the end product of combustion during the process of power generation in the coal based thermal power plants***, is a proven resource material for many applications of **construction industries** and currently is being utilized in **manufacturing of Portland Cement**, bricks/blocks/tiles manufacturing, road embankment construction and low-lying area development, etc.
- At present, 63% of the fly ash is being utilised and target is for 100% utilisation of the fly ash.

Notes

## Events / Celebrations

Notes

### 1. Turtle festival

- **First Odisha Turtle Festival was held recently in Puri** to create awareness and promote ideas on conservation of olive ridley turtles.
- **Organised by:** Cox & Kings Foundation in association with Humane Society International/India and Action for Protection of Wild Animals (APOWA).
- **Odisha has half of the world's Olive Ridley turtle population and 90% of India's turtle population lives in the state.**
- **There are five species in Indian waters** — Leatherback (Vulnerable), Loggerhead (Endangered), Hawksbill (Critically Endangered), Green (Endangered) and Olive Ridley.
- In India, sea turtles are protected under **the Indian Wildlife Protection Act of 1972.**
- **The Olive ridley turtles are the smallest and most abundant** of all sea turtles found in the world, inhabiting warm waters of the Pacific, Atlantic and Indian oceans.
- The Olive ridley is the most numerous among the sea turtles found in India and is well **known for its arribadas, or annual mass nestings** when thousands of turtles migrate to the breeding ground to nest simultaneously.
- Recognized as Vulnerable by the IUCN Red list.
- International trade in these turtles and their products is banned **under CITES Appendix I.**
- **'Operation Kachhapa':** Conservation of the Olive Ridley Sea Turtle was launched by the Wildlife Protection Society of India in collaboration with the Odisha State Forest Department and the Wildlife Society of Odisha and other local NGOs.
  - To reduce accidental killing in India, the Odisha government has made it mandatory for trawls to use Turtle Excluder Devices (TEDs), a net specially designed with an exit cover which allows the turtles to escape while retaining the catch.

### 2. Pakke Paga Hornbill Festival (PPHF)

- The government of **Arunachal Pradesh** has declared the Pakke Paga Hornbill Festival (PPHF)— the state's only conservation festival, as a **"state festival"**.
- About Great Indian Hornbill:
  - The great hornbill is long-lived, living for nearly 50 years in captivity. It is predominantly fruit eating, but is an opportunist and preys on small mammals, reptiles and birds.
  - **IUCN status:** Vulnerable (uplisted from Near Threatened in 2018).
  - It is also listed in **Appendix I of CITES.**



### 3. Flamingo Festival

- Flamingo Festival is held every year to promote tourism in **Pulicat and Nellapattu**. Flamingo Festival is being organised for the past 12 years.
- **About Nelapattu Bird Sanctuary:**
  - It is considered one of the biggest habitat for some hundreds of pelicans and other birds. Located about 20 km north of the Pulicat Lake on the Andhra Pradesh-Tamil Nadu border, the sanctuary is spread in about 459 hectares.
- **About Pulicat lake:**
  - It is the **second largest brackish water lake or lagoon in India**, after Chilika Lake.
  - It straddles the border of Andhra Pradesh and Tamil Nadu states with over 96% of it in Andhra Pradesh.
  - **The lake encompasses the Pulicat Lake Bird Sanctuary. The barrier island of Sriharikota separates the lake from the Bay of Bengal and is home to the Satish Dhawan Space Centre.**
  - Two rivers which feed the lagoon are the **Arani river at the southern tip and the Kalangi River from the northwest**, in addition to some smaller streams.
  - The **Buckingham Canal, a navigation channel, is part of the lagoon on its western side.**

### 4. World Soil Day

- World Soil Day is **celebrated every year on 5th of December by Food and Agriculture Organization (FAO)** of United Nations.
- **Aim:** To communicate messages on importance of soil quality for food security, healthy ecosystems and human well-being.
- **Theme for year 2018:** 'Be the Solution to Soil Pollution'.
- **Historical background of World Soil Day:**
  - An international day to celebrate Soil was recommended by the **International Union of Soil Sciences (IUSS)** in 2002. Under the leadership of the Kingdom of Thailand and within the framework of the Global Soil Partnership, **FAO has supported the formal establishment of WSD** as a global awareness raising platform.
  - The FAO Conference unanimously endorsed World Soil Day in June 2013 and requested its official adoption at the 68th UN General Assembly. In December 2013 the UN General Assembly responded by designating 5 December 2014 as the first official World Soil Day.
- **Why December 5 was chosen?**
  - The date of 5 December for WSD was chosen because it corresponds with the official birthday of H.M. King Bhumibol Adulyadej, the King of Thailand, who officially sanctioned the event.

### 5. India Water Impact Summit 2018

- India Water Impact Summit 2018 was jointly organized by the **National Mission for Clean Ganga (NMCG) and the Centre for Ganga River Basin Management and Studies** recently in New Delhi.
- **India Water Impact Summit:**
  - It is an annual event where stakeholders get together to discuss, debate and develop model solutions for some of the biggest water-related problems in the country.
  - The discussions: on the **rejuvenation of the Ganga River Basin**.
  - There will be multi-country dialogue on the subject, with showcasing of technological innovations, research, policy frameworks and funding models from India and abroad.
  - The efforts may take various forms including (but not limited to): data collection (sensors, LIDAR, modelling etc), hydrology, e-flows, agriculture, wastewater and more.
- **Ganga Financing Forum:**
  - The Summit introduced the inaugural **Ganga Financing Forum** that will bring a number of institutions to a common knowledge, information and partnership platform.
  - The Financing Forum will bring together financial institutions and investors interested in Namami Gange programmes.

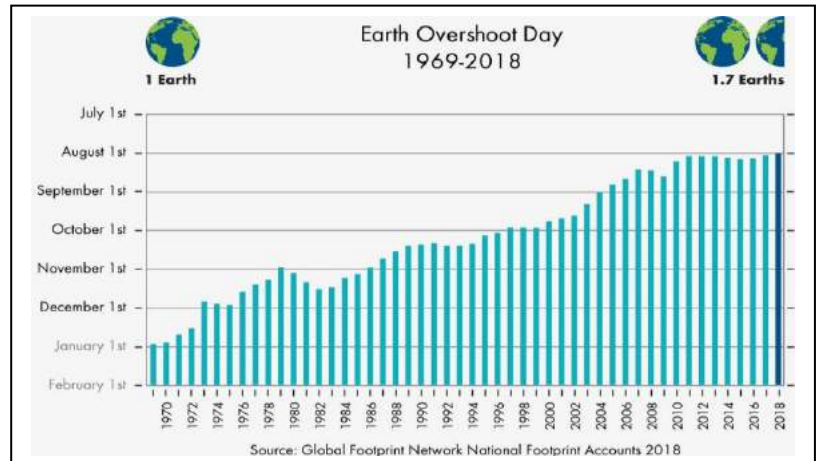
## 6. First International Conference on Sustainable Water Management

- The first International Conference under the aegis of **National Hydrology Project**, Union Ministry of Water Resources, River Development and Ganga Rejuvenation is being organized by **Bhakra Beas Management Board (BBMB)** at **Indian School of Business (ISB)**, Mohali on the **theme 'Sustainable Water Management'**.
- **Aims of the Conference:**
  - To foster the participation of and dialogue between various stakeholders, including governments, the scientific and academic communities, so as to **promote sustainable policies for water management**,
  - To create awareness of water-related problems, motivate commitment at the highest level for their solution and thus promote better management of water resources at local, regional, national and international levels.
  - The main aim is to bring **advancement in water management system** to further reduce flood and draughts all over the Globe.

## 7. Earth Overshoot Day

- **2018 Earth Overshoot Day will fall on August 1**, the earliest date since ecological overshoot began in early 1970s. This year the overshoot day falls two days earlier than the last year's.
- **What is the Earth Overshoot Day?**

- It is date when humanity annual demand on nature exceeds what Earth can regenerate over the entire year.
- It is calculated by **Global Footprint Network and World Wide Fund for Nature (WWF)**.
- The increasing burden on natural resources:



- Currently, **humankind is using 170% of the world's natural output**. That means we are using up the equivalent of 1.7 Earths. And, according to the Global Footprint Network, we're on track to be using two Earths by the end of the 21st Century.
- **Reasons for this and what can be done?**
  - The two greatest contributing factors to humanity's Ecological Footprint are **carbon emissions**, which accounts for 60%, and **food**, 26%.
  - If we cut our carbon emissions by half, according to the Global Footprint Network, Earth Overshoot Day would come 89 days later in the year.
  - If we cut food waste in half worldwide, we could move the date back 11 days. By eating less protein-intensive food, we could move it back 31 days.
- **How is it calculated?**
  - Earth Overshoot Day is calculated by dividing the world biocapacity (the amount of natural resources generated by Earth that year), by the world ecological footprint (humanity's consumption of Earth's natural resources for that year), and multiplying by 365, the number of days in one Gregorian common calendar year.
- **Global Footprint Network:**
  - It is an **international nonprofit organization** founded in 2003 to enable a sustainable future where all people have opportunity to thrive within the means of one planet.
  - **Functions:** It develops and promotes tools for advancing sustainability, including ecological footprint and biocapacity, which measure amount of resources we use and how much we have. These tools aim at bringing ecological limits to center of decision-making.
- **World Wide Fund for Nature (WWF)**
  - It is an **international non-governmental organization (NGO)** founded in 1961, working in the field of the **biodiversity conservation**, and the reduction of humanity's footprint on the environment.
  - Its mission is to conserve nature and reduce the most pressing threats to the diversity of life on Earth.
  - Headquarters: Switzerland.
  - The **Living Planet Report** is published every two years by WWF since 1998.

## 8. International Tiger Day

- **Global Tiger Day**, often called International Tiger Day, is an annual celebration to raise awareness for tiger conservation, held annually on 29 July.
- It was created in 2010 at the Saint Petersburg Tiger Summit.
- The goal of the day is to **promote a global system for protecting the natural habitats of tigers** and to raise **public awareness** and support for tiger conservation issues.



- India has one of the **lowest per capita forest areas in the world**. Depletion of forests is responsible for reduction of tiger habitats.
- **Reduced food base:** As forestlands fall to development projects, habitable land for animals that make for the tiger's food base are also reduced.
- **Conservation efforts:**
  - The **National Tiger Conservation Authority (NTCA)** has launched the **M-STripES** (Monitoring System for Tigers – Intensive Protection and Ecological Status), a mobile monitoring system for forest guards.
  - At the St. Petersburg Tiger Summit in 2010, leaders of 13 tiger range countries resolved to do more for the tiger and embarked on efforts to double its number in the wild, with a popular slogan '**T X 2**'.
  - **Global Tiger Initiative (GTI)**
    - The Global Tiger Initiative (GTI) was launched in 2008 as a global alliance of governments, international organizations, civil society, the conservation and scientific communities and the private sector.
    - **In 2013, the scope was broadened to include Snow Leopards.**
    - The GTI's founding partners included the World Bank, the Global Environment Facility (GEF), the Smithsonian Institution, Save the Tiger Fund, and International Tiger Coalition (representing more than 40 non-government organizations).
    - The initiative is led by the 13 tiger range countries (TRCs).
    - In November 2010, leaders of the tiger range countries (TRCs) assembled at an **International Tiger Forum in St. Petersburg, Russia** to adopt the **St. Petersburg Declaration on Tiger Conservation** and endorsed its implementation mechanism, called the **Global Tiger Recovery Program**.
    - Their overarching goal was to double the number of wild tigers across their geographical area from about 3,200 to more than 7,000 by 2022.
    - The **Global Tiger Initiative (GTI) program of the World Bank**, using its presence and convening ability, brought global partners together to strengthen the tiger agenda.
    - Over the years, the initiative has institutionalised itself as a separate entity in the form of the **Global Tiger Initiative Council (GTIC)**, with its two arms – **the Global Tiger Forum and the Global Snow Leopard Ecosystem Protection Program**.
  - **The Project Tiger**, launched way back in 1973, has grown to more than 50 reserves amounting to almost 2.2% of the country's geographical area.

## 9. World Migratory Bird Day 2018

- World Migratory Bird Day 2018 is being celebrated on May 12th this year.
- **World Migratory Bird Day 2018 theme:** “Unifying Our Voices for Bird Conservation”.
- It is celebrated each year to **highlight the need for the conservation of migratory birds and their habitats.**
- **Conservation of migratory species:**
  - Efforts to conserve migratory birds both globally and regionally are internationally coordinated by the **Convention on the Conservation of Migratory Species of Wild Animals** (CMS, also known as the Bonn Convention) and the **Agreement on the Conservation of African-Eurasian Migratory Waterbirds** (AEWA). The two UN Environment-administered treaties have been spearheading World Migratory Bird Day since 2006.
- **About the African-Eurasian Migratory Waterbird Agreement (AEWA):**
  - The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) is an **intergovernmental treaty dedicated to the conservation of migratory waterbirds that migrate along the African- Eurasian Flyway.**
  - The Agreement covers 254 species of birds ecologically dependent on wetlands for at least part of their annual cycle.

## 10. World Bee Day

- On the occasion of World Bee Day celebrated on May 20th, the **United Nation’s Food and Agricultural Organization and the European Union have called for global action to protect pollinators**, and bees in particular, which are crucial for ensuring food security.
- **World Bee Day:**
  - To underline the importance of the issue, and following a Slovenian proposal, the UN has named May 20 as World Bee Day, as it marked the birthday of Anton Jansa (1734- 1773), a Slovenian pioneer in modern beekeeping.
- **Concerns:**
  - Pollinators, such as **bees, birds, bats, butterflies and beetles** are responsible for most of the crops and food that we eat.
  - However, the UN has warned that 40% of invertebrate pollinators—particularly bees and butterflies— risk global extinction.
  - The absence of an appropriate habitat for bees could lead to a continuous decline in pollination.
  - **Mono-cropping, pesticides and higher temperatures associated with climate change all pose problems for bee populations** and, by extension, the quality of food we grow.
  - Declining pollination also poses an immediate **threat to**



**nutrition.** If this trend continues, nutritious crops such as fruits, nuts, and many vegetable crops will be substituted increasingly by staple crops like rice, corn, and potatoes, eventually resulting in an **imbalanced diet**.

- **Importance of Pollinators:**

- Most of our staple food crops such as wheat, rice, sorghum, barley and maize do not require animals for their pollination. However, wild pollinators play a very important role in the production of other crops such as some **pulses, sunflower seeds, cardamom, coffee, cashew nuts, oranges, mangoes and apples.**
- Pollinators also provide a **key ecosystem service** vital to the maintenance of both wild and agricultural plant communities.

### 11. International Day for Biological Diversity 2018

- Every year May 22 is observed as The International Day for Biological Diversity (IDB) to increase **awareness on various biodiversity issues** such as habitat destruction, marine pollution and climate change.
- **The theme for 2018** is “Celebrating 25 Years of Action for Biodiversity.”
- Historical background:
  - It was first observed in 1993 by the Second Committee of the UN General Assembly.
  - In 2000, May 22 was chosen as the International Day for Biological Diversity to commemorate the Adoption of the Agreed Text of the Convention on Biological Diversity.

### 12. World Ocean Day

- World Ocean Day is celebrated every year on June 8th.
- **Action focus for 2018:** preventing plastic pollution and encouraging solutions for a healthy ocean.
- The concept of a ‘World Oceans Day’ was first **proposed in 1992 at the Earth Summit** in Rio de Janeiro.
- The **UN General Assembly** recognized the important contribution of sustainable development and management of the resources and uses of the oceans and seas to the achievement of international development goals, and designated 8 June as World Oceans Day.
- **SDG:** Sustainable Development Goal (SDG) 14 of the 2030 Agenda for Sustainable Development: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

### 13. World Day to Combat Desertification and Drought: 17 June

- The World Day to Combat Desertification and Drought is observed every year to promote public awareness of international efforts to combat desertification.
- The day is a unique moment to remind everyone that land degradation neutrality is achievable through problem-solving, strong community involvement and co-operation at all levels.
- **2018 Theme:** “Land has true value – invest in it.”

- **The Gender Action Plan:**
  - The United Nations Convention to Combat Desertification (UNCCD) recently created a new plan to support and enhance **gender-responsive policy** needs.
  - The Gender Action Plan (GAP) that will increase and strengthen the participation and leadership of women at all levels of decision-making and local implementation of the UNCCD, including drought management as well as sand and dust storms and land degradation neutrality interventions, with the aim to reach gender parity by 2030.
- SDG Goal 15 states our resolve to halt and reverse land degradation.
- **What is Desertification?**
  - Desertification is the **degradation of land in arid, semi-arid and dry sub-humid areas**. It is caused primarily by human activities and climatic variations. Desertification does not refer to the expansion of existing deserts.
  - It occurs because dryland ecosystems, which cover over one third of the world's land area, are extremely vulnerable to overexploitation and inappropriate land use.
  - Poverty, political instability, deforestation, overgrazing and bad irrigation practices can all undermine the productivity of the land.
- Facts for Prelims:
  - **The WDCD 2018 global observance** will be hosted by the Government of Ecuador. The country promotes sustainable land management as one of the pillars of bio-economy.
  - **About UNCCD:** Established in 1994, the United Nations to Combat Desertification (UNCCD) is the sole **legally binding international agreement** linking environment and development to sustainable land management.
  - The Convention is the only convention stemming from a direct recommendation of the Rio Conference's Agenda 21.
  - The Convention addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and peoples can be found.
  - The new **UNCCD 2018-2030 Strategic Framework** is the most comprehensive global commitment to achieve **Land Degradation Neutrality (LDN)** in order to restore the productivity of vast expanses of degraded land.
  - The UNCCD is particularly committed to a **bottom-up approach**, encouraging the participation of local people in combating desertification and land degradation.
  - The **UNCCD secretariat** facilitates cooperation between developed and developing countries, particularly around knowledge and technology transfer for sustainable land management.
  - The UNCCD collaborates closely with the other two Rio Conventions; the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change

(UNFCCC), to meet the complex challenges with an integrated approach and the best possible use of natural resources.

**Notes**

## Reports / Releases

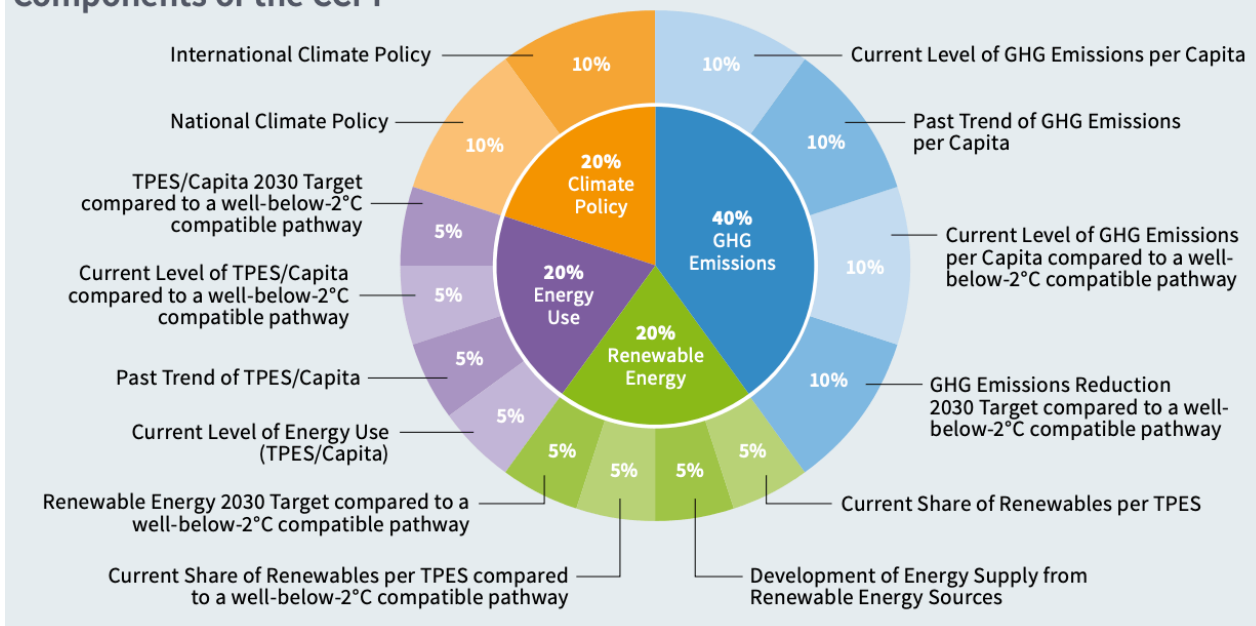
### 1. Global Risks Report 2019

- The **Global Risks Report 2019 has been released by the World Economic Forum (WEF)**.
- **Global Risks Report and its significance:**
  - Based on the work of the Global Risk Network, the report describes changes occurring in the global risks landscape from year to year and identifies global catastrophic risks.
  - The report explores the **interconnectedness of risks**, and is intended to raise awareness about the need for a multi-stakeholder approach to the mitigation of global risk.
- **Top 10 risks by likelihood as per the latest report:**
  1. Extreme weather events.
  2. Failure of climate change mitigation and adaption.
  3. Major natural disasters.
  4. Massive incident of data fraud/theft.
  5. Large scale cyberattacks.
  6. Man-made environmental damage and disasters.
  7. Large-scale involuntary migration.
  8. Major biodiversity loss and ecosystem collapse.
  9. Water crises.
  10. Asset bubbles in a major economy.

### 2. Climate Change Performance Index (CCPI)

- The 2019 edition of the **Climate Change Performance Index (CCPI)** has been released.

#### Components of the CCPI



- **About CCPI:**
  - The Climate Change Performance Index (CCPI) is an instrument covering 58 countries and supposed to enhance transparency in international climate politics.
  - Its aim is to encourage **political and social pressure** on those countries which have, up to now, failed to take ambitious actions on climate protection as well as to highlight countries with best-practice climate policies.

- **Evaluation:** On the basis of standardised criteria, the index evaluates and compares the climate protection performance of 58 countries that are, together, responsible for more than 90% of global energy-related CO2 emissions.
- 80% of the evaluation is based on objective indicators of emissions trend and emissions level. 20% of the index results are built upon national and international climate policy assessments by more than 200 experts from the respective countries.
- **Highlights of the report:**
  - Only few countries have started working towards limiting global warming below 2°C or even at 1.5°C.
  - Globally, Sweden is in top position, followed by Morocco and Lithuania in the CCPI 2019.
  - India ranks 11<sup>th</sup> in this year's CCPI, improving its standing by three places compared to the previous edition.

### 3. Report on 'E-Waste' by UN

- To highlight the rising challenge posed by mountains of discarded electronics worldwide, **seven UN entities have come together to launch the report-** "A New Circular Vision for Electronics – Time for a Global Reboot"- **at the World Economic Forum in Davos, Switzerland.**
- The joint report calls for a new vision for e-waste based on the "**circular economy**" concept, whereby a regenerative system can minimize waste and energy leakage.
- E-waste export is regulated under the **Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal.**
- **E-waste Coalition:**
  - The report supports the work of the E-waste Coalition, which includes International Labour Organization (ILO); International Telecommunication Union (ITU); United Nations Environment Programme (UN Environment); United Nations Industrial Development Organization (UNIDO); United Nations Institute for Training and Research (UNITAR); United Nations University (UNU) and Secretariats of the Basel and Stockholm Conventions.

### 4. Asian Waterbird Census (AWC)

- A waterbird survey conducted in the Upper Kuttanad region of Kerala has recorded 16,767 birds of 47 continental and local species.
- The survey, conducted as part of the annual Asian Waterbird Census, has spotted three new species — Greater flamingo, Grey-headed lapwing, and Blue-cheeked bee-eater.
- **About AWC:**
  - Asian Waterbird Census is an **annual event** in which thousands of volunteers across Asia and Australasia count waterbirds in the wetlands of their country.
  - This event happens every January. This event is coordinated

by **wetlands International** and forms part of **global waterbird monitoring programme** called the **International Waterbird Census (IWC)**.

- Asian Waterbird Census (AWC) was started in the year 1987. Its main focus is to monitor the status of waterbirds and the wetlands.
- AWC also aims to create public awareness on various issues concerning wetlands and waterbird conservation. Each year the census is carried out as a voluntary activity.
- In India, the AWC is annually coordinated by the **Bombay Natural history Society (BNHS) and Wetlands International**.
- **What are waterbirds?**
  - According to Wetlands International (WI), waterbirds are defined as species of birds that are **ecologically dependent on wetlands**.
  - These birds are considered to be an important health indicator of wetlands of a region.

## 5. Crocodile Census

- Recent Crocodile Census by Odisha. **Findings:**
  - **The population of the saltwater or estuarine crocodile (*Crocodylus porosus*) has increased** in the water bodies of Odisha's Bhitarkanika National Park and its nearby areas in Kendrapara district.
  - **1,742 individuals have been recorded** in this year's annual reptile census.
  - The increase in population was primarily due to the far-sighted measures of the government.
- There are three species of crocodilians—saltwater, Mugger and Gharial.
- **Mugger:**
  - The mugger crocodile, also called the **Indian crocodile, or marsh crocodile**, is found throughout the Indian subcontinent.
  - It is listed as **vulnerable by IUCN**.
  - **The mugger is mainly a freshwater species**, and found in lakes, rivers and marshes.
- **Gharial:**
  - The Gharial or fish-eating crocodile is **native to the Indian subcontinent**.
  - It is listed as a **Critically Endangered** by IUCN.
  - Small released populations are present and increasing in the rivers of the National Chambal Sanctuary, Katarniaghat Wildlife Sanctuary, Son River Sanctuary and the rainforest biome of Mahanadi in Satkosia Gorge Sanctuary, Orissa.
- **Saltwater Crocodile:**
  - It is the **largest of all living reptiles**. It listed as least concern by IUCN. It is found throughout the **east coast of India**.
- **Crocodile conservation programmes in India:**
  - **The Gharial and Saltwater crocodile conservation**



*programme* was first implemented in Odisha in early 1975 and subsequently the Mugger conservation programme was initiated, since Odisha is having distinction for existence of all the three species of Indian crocodilians. The funds and technical support for the project came from UNDP/ FAO through the Government of India.

- **'BAULA' PROJECT AT DANGAMAL:** 'Baula' is the Oriya term for Saltwater Crocodile. Dangmal is in Bhitarkanika sanctuary.
- **MUGGER PROJECT AT RAMATIRTHA:** The Ramatirtha center, in Odisha, is meant for Mugger crocodiles.
- GHARIAL PROJECT AT TIKARPADA, Odisha.
- CAPTIVE BREEDING OF CROCODILES AT NANDANKANAN, Odisha.

## 6. Composite Water Management Index (CWMI)

- NITI Aayog has released its report on Composite Water Management Index (CWMI).
- The Composite Water Management Index report is a step in a direction that aims to create awareness among people and governments about the realities of water crisis in the country.
- CWMI aims to enable **effective water management in Indian states** in the face of this growing crisis.
- The index would provide useful information for the states and concerned Central ministries and departments enabling them to formulate and implement suitable strategies for better management of water resources.
- NITI Aayog has ranked all states in the index on the composite water management, comprising 9 broad sectors with 28 different indicators covering various aspects of ground water, restoration of water bodies, irrigation, farm practices, drinking water, policy and governance.
- The report ranks **Gujarat** at the top in managing its water resources in the reference year (2016-17) followed by Madhya Pradesh, Andhra Pradesh, Karnataka and Maharashtra.
- The worst states include **Jharkhand**, Haryana, Uttar Pradesh and Bihar.

## 7. Living Planet Report 2018

- The **bi-annual Living Planet Report 2018** has been released by the **World Wide Fund for Nature**. The Report tracked more than 4,000 species of mammals, birds, fish, reptiles and amphibians.
- **Highlights of the report:**
  - Global wildlife population shrank by 60% between 1970 and 2014.
  - **Declines are worst in the tropics**, according to the data, as South and Central America saw an 89% decrease.
  - Also, freshwater species saw an 83% drop, threatened by factors including overfishing, pollution and climate change.
  - The report estimates that **only a quarter of the world's land is**

- untouched by humans**, who are increasing food production and use of natural resources.
- Since 1960, the global ecological footprint has increased by more than 190%. Globally, the extent of wetlands was estimated to have declined by 87% since 1970.
  - The two key drivers of biodiversity loss were the **over exploitation of natural resources and agriculture**.
  - Threat to soil biodiversity and pollinators:
    - A key aspect of this year's report is the **threat to soil biodiversity and pollinators**.
    - *Soil biodiversity encompasses the presence of micro-organisms, micro-fauna (nematodes and tardigrades for example), and macro-fauna (ants, termites and earthworms).*

## International Efforts

Notes

### 1. Green Climate Fund

- The GCF was **set up in 2010 under the UNFCCC's financial mechanism** to channel funding from developed countries to developing countries to allow them to mitigate climate change and also adapt to disruptions arising from a changing climate.
- The GCF is based in **Incheon, South Korea**.
- **How it helps?**
  - The Green Climate Fund will support projects, programmes, policies and other activities in developing country Parties using thematic funding windows.
  - It is intended to be the centrepiece of efforts to raise Climate Finance of **\$100 billion a year by 2020**.
  - The Fund will promote the paradigm shift towards **low-emission and climate-resilient development pathways** by providing support to developing countries to limit or reduce their greenhouse gas emissions and to adapt to the impacts of climate change, taking into account the needs of those developing countries particularly vulnerable to the adverse effects of climate change.
  - The Fund will strive to maximize the impact of its funding for **adaptation and mitigation**, and seek a balance between the two, while promoting environmental, social, economic and development co-benefits and taking a gender-sensitive approach.
- **Who will govern the Fund?**
  - The Fund is governed and supervised by a Board that will have full responsibility for funding decisions and that receives the guidance of the **Conference of Parties (COP)**.
  - The Fund is accountable to, and functions under the guidance of, the COP.
- **Background:**
  - In **2015**, India listed a series of specific actions it would take to fight climate change in the Paris Agreement.
  - The major ones are:
    - It would **reduce its emissions intensity (or emissions per unit of GDP) by 33 to 35 per cent by the year 2030** compared to the 2005 baseline.
    - It would ensure that at least 40 per cent of its total electricity in the year 2030 would be generated through renewable sources of energy and that would create between 2.5 to three billion tons of additional carbon sinks through extensive afforestation.

### 2. Global Carbon Project

- The Global Carbon Project was formed in 2001 to help the international science community to **establish a common, mutually**

**agreed knowledge base** that supports policy debate and action to **slow the rate of increase of greenhouse gases** in the atmosphere.

- It is a **Global Research Project of Future Earth** and a research partner of the World Climate Research Programme.
- It was formed to work with the international science community to establish a common and mutually agreed knowledge base to support policy debate and action to slow down and ultimately stop the increase of greenhouse gases in the atmosphere.
- The Global Carbon Project was established in 2001 by a **shared partnership** between the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP), the World Climate Research Programme (WCRP) and Diversitas. This partnership constituted the Earth Systems Science Partnership (ESSP) which subsequently evolved into Future Earth.

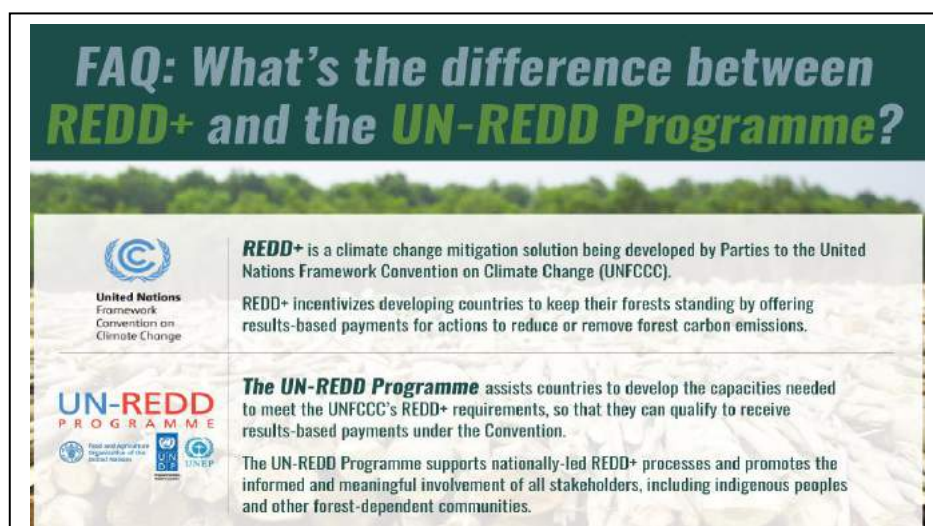
### 3. UN 'Momentum for Change' Climate Action Award

- An Indian private project, **HelpUsGreen** is one of 15 ground-breaking projects from around the world that has won 2018 UN climate action award.
- The other 14 projects which won the UN 'Momentum for Change' climate action award showcase how ideas, big and small, are successful in tackling climate change.
- **About HelpUsGreen:**
  - The project collects flowers from temples and mosques across many cities\towns in Uttar Pradesh and recycles them to produce natural incense, organic fertilizers and biodegradable packaging material.
  - Developed as the world's first profitable solution to the monumental temple waste problem, the HelpUsGreen's products are handcrafted by women who earlier used to be manual scavengers.
- **About 'Momentum for Change' initiative:**
  - Momentum for Change is **an initiative spearheaded by the UN Climate Change secretariat** to shine a light on the enormous groundswell of activities underway across the globe that are moving the world toward a highly resilient, low-carbon future.
  - Momentum for Change recognizes innovative and transformative solutions that address both climate change and wider economic, social and environmental challenges.

### 4. REDD+

- A new study by Delhi-based non-profit Centre for Science and Environment (CSE) has revealed that Reducing Emissions from Deforestation and Forest Degradation (REDD+), the programme initiated by the United Nations in 2005 to mitigate climate change through enhanced forest management in developing countries, has largely failed to achieve its objectives.

- **India's REDD+ strategy:**
  - Complying with the UNFCCC decisions on REDD+, India has prepared its National REDD+ Strategy.
  - The Strategy builds upon existing national circumstances which have been updated in line with India's National Action Plan on Climate Change, Green India Mission and India's Nationally Determined Contribution (NDC) to UNFCCC.
  - The strategy report has been prepared by **Indian Council of Forestry Research & Education (ICFRE), Dehradun.**
- **Background:**
  - Since its formalisation in 2006, REDD+ had emerged as the most prominent global mechanism to integrate the role of forests in climate change.
  - It was touted as a win-win situation for biodiversity conservation, carbon sequestration and local livelihoods.
  - More than 300 REDD+ initiatives have taken off since 2006. The mechanism has been enshrined in the Paris Agreement of 2015, and its implementation is transitioning from smaller, isolated projects to larger, jurisdictional programmes with support from bilateral and multilateral agencies.
- **About REDD+:**
  - In simple terms, REDD+ means "**Reducing Emissions from Deforestation and forest Degradation**", conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.
  - REDD+ is a mechanism developed by Parties to the United Nations Framework Convention on Climate Change (UNFCCC).
  - **It creates a financial value for the carbon stored in forests** by offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development.
  - **Developing countries would receive results-based payments for results-based actions.**
  - REDD+ goes beyond simply deforestation and forest degradation and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.



## 5. World Wildlife Foundation's (WWF) 'Tx2' Programme

- **Nepal is set to become the first country in the world to double its tiger population** as part of the World Wildlife Foundation's (WWF) 'Tx2' programme which aims to double the number of tigers all over the world.
- The government of Nepal recently announced that there are now an estimated 235 wild tigers in the nation, nearly double the number from around 121 in 2009.

- Nepal was the first country to achieve global standards in managing tiger conservation areas, an accreditation scheme governed by the Conservation Assured Tiger Standards (CA|TS).
- **About 'Tx2' programme:**
  - The World Wildlife Foundation had launched its ambitious TX2 programme at the St Petersburg Tiger Summit in 2010.
  - The programme aims to double the world tiger population by 2022, which is the year of the tiger in the Chinese calendar.
- **WWF remains a major driving force behind Tx2.** It aims at:
  - Driving political momentum to ensure tigers remain a top priority for world leaders.
  - Professionalising wildlife protection by training rangers, developing conservation standards (CA|TS) and technology (SMART) to achieve Zero Poaching.
  - Tackling the illegal wildlife trade through our partnership with TRAFFIC.
  - Focusing efforts in key tiger landscapes.
  - Ensuring there is space for both tigers and people in the future.

## 6. Indian Ocean Wave Exercise 2018 (IOWave18)

- Indian Ocean Wave Exercise 2018 (IOWave18) is being held in the Indian Ocean.
- India along with 23 other nations is participating in this major **Indian ocean-wide tsunami mock drill** which involves evacuation of thousands of people from coastal areas in over half a dozen coastal states.
- This tsunami warning exercise is being **organised by the Intergovernmental Oceanographic Commission (IOC) of UNESCO**.
- It was the IOC that coordinated the setting up of the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) in the aftermath of December 2004 tsunami.
- Besides testing the standard operating procedure (SOP) and communication links at all levels of the warning chain, a primary objective of IOWave18 exercise is to **enhance tsunami preparedness at community level**.
- **Intergovernmental Oceanographic Commission (IOC):**
  - UNESCO's Intergovernmental Oceanographic Commission (IOC) promotes international cooperation and coordinates programmes in marine research, services, observation systems, hazard mitigation, and capacity development to understand and manage the resources of the ocean and coastal areas.
  - The Commission aims to improve the governance, management, institutional capacity, and decision-making processes of its Member States with respect to marine resources and climate variability.
  - IOC coordinates ocean observation and monitoring through the **Global Ocean Observing System (GOOS)** which aims to

develop a unified network providing information on the oceans.

- IOC also coordinates and fosters the establishment of **regional intergovernmental tsunami warning and mitigation systems** in the Pacific and Indian Oceans, in the North East Atlantic, Mediterranean and Caribbean seas.

## 7. South Asia Wildlife Enforcement Network (SAWEN)

- SAWEN recently held its first ever meeting in India. Representatives of seven countries participated in the meeting and the members agreed on having an operational framework for strengthening the regional body to combat wildlife crime.
- SAWEN is **regional inter-governmental wildlife law enforcement support body of South Asian Countries**.
- It was launched in January, 2011 in Paro, Bhutan during the second meeting of the South Asia Expert Group on Illegal Wildlife Trade.
- Its secretariat is in Kathmandu, Nepal.
- SAWEN is a regional network comprises **eight countries in South Asia** –Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.
- It aims at working as a strong regional intergovernmental body for **combating wildlife crimes** by attempting common goals and approaches for combating illegal trade in the region.

## 8. Global Fuel Economy Initiative (GFEI)

- The Global Fuel Economy Initiative (**GFEI**) works to secure real improvements in fuel economy, and the maximum deployment of vehicle efficiency technologies across the world.
- This includes light and heavy duty vehicles, and the full range of technologies, including hybrid and fully electric vehicles.
- The Initiative promotes these objectives through shared analysis, advocacy, and through in country policy support, and tools.
- GFEI is a partnership of **the International Energy Agency (IEA), United Nations Environment Programme (UNEP), International Transport Forum of the OECD (ITF), International Council on Clean Transportation (ICCT), Institute for Transportation Studies at UC Davis, and the FIA Foundation** – which hosts the secretariat.
- The GFEI works with countries to develop an appropriate national approach and supporting target for improved car fleet fuel economy, while working toward a global stabilization of emissions from the road transport sector by 2050.
- GFEI also work in **global policy processes** - such as the UNFCCC, G20 and Post 2015 framework – to promote fuel economy as part of energy efficiency, whilst backing-up this advocacy and capacity building with cutting edge research.
- The Initiative also **promotes fuel economy** by engaging in global processes such as the UN Climate Convention and the UN Sustainable Development Goals.

Notes

## 9. UN Champions of the Earth Award 2018

- Prime Minister Narendra Modi has been awarded with the UN's highest environmental honour- Champions of the Earth Award, bestowed upon five other individuals and organisations.
- **French President Emmanuel Macron, President of France and Modi have been jointly recognised in the Policy Leadership category** for their pioneering work in championing the International Solar Alliance and promoting new areas of levels of cooperation on environmental action, including Macron's work on the Global Pact for the Environment and Modi's unprecedented pledge to eliminate all single-use plastic in India by 2022.
- **Cochin International Airport** has also been honoured with the award for Entrepreneurial Vision, for its leadership in the use of sustainable energy.
- **Champions of the Earth Award:**
  - The Champions of the Earth award, the UN's highest environmental recognition, was founded in 2005.
  - The award celebrates exceptional figures from the **public and private sectors and from civil society**, whose actions have had a transformative positive impact on the environment.
  - The award also recognises the efforts for promoting new areas of levels of cooperation on environmental action.

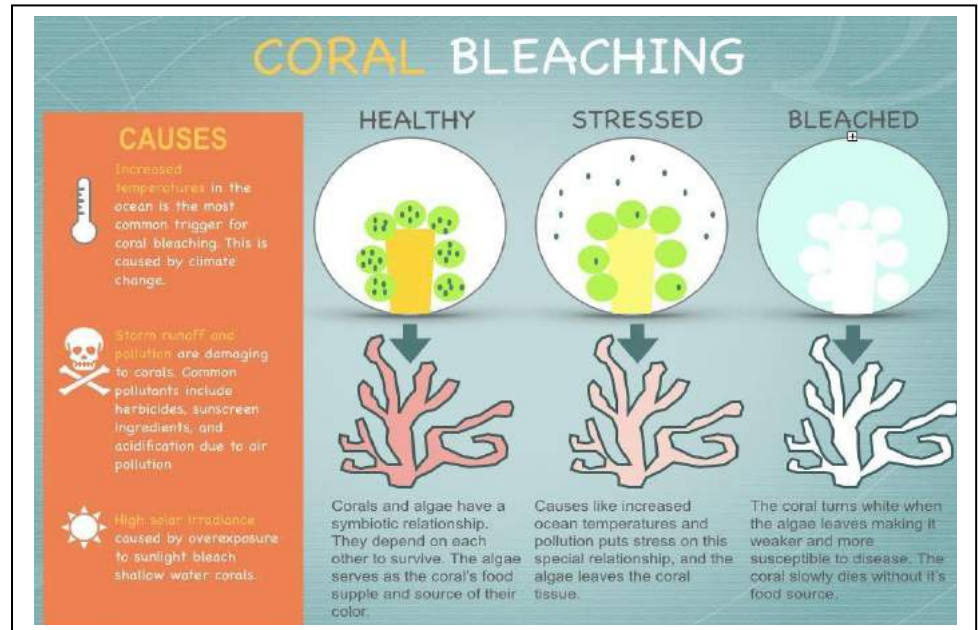
## 10. Coral Reseeding Project

- Scientists have launched the **largest-ever attempt to regenerate coral on the endangered Great Barrier Reef** by harvesting millions of the creatures' eggs and sperm during their annual spawning.
- The plan is to **grow coral larvae from the harvested eggs** and return these to areas of the reef which have been badly damaged by climate-related coral bleaching.
- This is the first time that the entire process of large-scale larval rearing and settlement will be undertaken directly on reefs on the Great Barrier Reef.
- **Concerns:**
  - Coral along large swathes of the 2,300-kilometre (1,400-mile) reef have been killed by **rising sea temperatures** linked to climate change, leaving behind skeletal remains in a process known as **coral bleaching**.
  - The northern reaches of the reef suffered an unprecedented two successive years of severe bleaching in 2016 and 2017, raising fears it may have suffered irreparable damage.
- **What is Coral Bleaching?**





- Bleaching occurs when **abnormal environmental conditions**, such as **warmer sea temperatures**, **cause corals to expel tiny photosynthetic algae**, draining them of their colour.
- Corals can recover if the water temperature drops and the algae are able to recolonise them.



- **Great barrier reef:**

- The Great Barrier Reef is the **world's largest coral reef system** composed of over 2,900 individual reefs and 900 islands stretching for over 2,300 kilometres over an area of approximately 344,400 square kilometres. The reef is located in the **Coral Sea, off the coast of Queensland, Australia.**
- The Great Barrier Reef can be seen from outer space and is the **world's biggest single structure made by living organisms.**
- This reef structure is composed of and built by billions of tiny organisms, known as coral polyps. It was selected as a **World Heritage Site in 1981.**

## 11. UN Environment award

- United Nation Environment (UNEP) has awarded **Wildlife Crime Control Bureau (WCCB), Ministry of Environment, Forest and Climate Change, Government of India with Asia Environment Enforcement Awards, 2018** for excellent work done by the Bureau in combating transboundary environmental crime.
  - WCCB has been conferred this award in **Innovation category**. Why WCCB has been chosen?
    - WCCB has adopted **innovative enforcement techniques** that have dramatically increased enforcement of transboundary environmental crimes in India.
    - Notably it has developed an **online Wildlife Crime Database Management System** to get real time data in order to help analyze trends in crime and devise effective measures to prevent and detect wildlife crimes across India.
    - WCCB has also developed a scheme to enroll willing persons as **WCCB Volunteers**.
  - **About Asia Environmental Enforcement Award:**
    - The awards are given to outstanding **individuals and/or government organizations/teams** that demonstrate excellence and leadership in enforcement of national laws to combat transboundary environmental crime in one of the following eligibility criteria areas: **collaboration; impact; innovation; integrity and gender leadership.**
  - **Wildlife Crime Control Bureau:**
    - Wildlife Crime Control Bureau is a **statutory** multi-disciplinary body established by the Government of India under the MoEFCC, to **combat organized wildlife crime** in the country.
    - Under **Section 38 (Z) of the Wild Life (Protection) Act, 1972**, it is mandated:
      - To collect and collate intelligence related to organized wildlife crime activities.

- To disseminate the same to State and other enforcement agencies for immediate action so as to apprehend the criminals.
- To establish a **centralized wildlife crime data bank**.
- **Co-ordinate actions by various agencies** in connection with the enforcement of the provisions of the Act.
- Assist foreign authorities and international organization concerned to facilitate co-ordination and **universal action for wildlife crime control**.
- It also assists and advises the Customs authorities in inspection of the consignments of flora & fauna as per the provisions of Wild Life Protection Act, CITES and EXIM Policy governing such an item.

## 12. World Network of Biosphere Reserves (WNBR)

- The **Khangchendzonga Biosphere Reserve** has become the **11th Biosphere Reserve from India** to be included in the **UNESCO designated World Network of Biosphere Reserves (WNBR)**.
- This decision was taken at the recently concluded **30th Session of International Coordinating Council (ICC) of Man and Biosphere (MAB) Programme** of UNESCO held at Palembang, Indonesia.
- **Facts:**
  - **India has 18 Biosphere Reserves.** With the inclusion of Khangchendzonga, the number of internationally designated World Network of Biosphere Reserves (WNBR) has become 11, with 7 Biosphere Reserves being domestic Biosphere Reserves.
- **Biosphere reserves:**
  - Launched in 1971, UNESCO's Man and the Biosphere Programme (MAB) is an **Intergovernmental Scientific Programme** that aims to establish a scientific basis for the improvement of relationships between people and their environments.
  - **MAB combines the natural and social sciences, economics and education** to improve human livelihoods and the equitable sharing of benefits, and to safeguard natural and managed ecosystems.
  - Its World Network of Biosphere Reserves currently counts more than 600 sites in 122 countries all over the world, including 20 transboundary sites.
  - **The first of India's reserves to make it to UNESCO's list was Tamil Nadu's Niligiri Biosphere Reserve in 2000.**
  - Protection is granted not only to the flora and fauna of the protected region, but also to the human communities who inhabit these regions, and their ways of life.
- **Key facts on Khangchendzonga Biosphere Reserve:**
  - **Kanchenjunga Biosphere Reserve is a National Park and a Biosphere Reserve located in Sikkim, India.**
  - The park is named after the **mountain Kangchenjunga**, which

with a height of 8,586 metres (28,169 ft), is the third-highest peak in the world.

- The **Biosphere Reserve is one of the highest ecosystems in the world**. It includes a range of ecoregions, varying from subtropical to Arctic, as well as natural forests in different biomes, which support an immensely rich diversity of forest types and habitats.
- The core zone – **Khangchendzonga National Park was designated as a World Heritage Site in 2016 under the 'mixed' category**.
- **BIOSPHERE RESERVES- DEFINITION:**
  - A Biosphere Reserve is a unique and representative ecosystem of terrestrial and coastal areas which are **internationally recognized, within the framework of UNESCO's Man and Biosphere (MAB) programme**.
  - The biosphere reserve should fulfill the following three objectives:
    - **In-situ conservation** of biodiversity of natural and semi-natural ecosystems and landscapes.
    - Contribution to **sustainable economic development of the human population** living within and around the Biosphere Reserve.
    - Provide facilities for **long term ecological studies, environmental education and training and research** and monitoring.
  - In order to fulfill the above objectives, the Biosphere Reserves are classified into zones like the core area, buffer area. The system of functions is prescribed for each zone.

## Protocols / Conventions

Notes

### 1. Convention on Biological Diversity (CBD)

- India recently submitted its **Sixth National Report to the Convention on Biological Diversity (CBD)**.
- India is among the first five countries in the world, the first in Asia and the first among the biodiversity-rich megadiverse countries to have submitted the report.
- The report provides an update of progress in achievement of **12 National Biodiversity Targets (NBT)** developed under the convention process in line with the 20 global Aichi biodiversity targets.
- **Background:**
  - The submission of national reports is a **mandatory obligation on parties to international treaties, including the CBD**.
  - As a responsible nation, India has never reneged on its international commitments and has earlier submitted on time five national reports to the CBD.
- **About CBD:**
  - **At the 1992 Earth Summit in Rio de Janeiro**, world leaders agreed on a comprehensive strategy for “sustainable development” — meeting our needs while ensuring that we leave a healthy and viable world for future generations. One of the key agreements adopted at Rio was the Convention on Biological Diversity.
  - The Convention on Biological Diversity is the international legal instrument with 3 main objectives (that has been ratified by 196 nations):
    - conservation of biological diversity,
    - sustainable use of its components of biological diversity and
    - fair and equitable sharing of the benefits arising out of the utilization of genetic resources.
  - The objectives of halting biodiversity loss and promoting the sustainable use of terrestrial and inland freshwater ecosystems are included in Sustainable Development Goal Number 15.
  - CBD has two supplementary agreements - **Cartagena Protocol and Nagoya Protocol**.
    - The **Cartagena Protocol on Biosafety** to the Convention on Biological Diversity is an international treaty governing the **movements of living modified organisms (LMOs)** resulting from modern biotechnology from one country to another. It was adopted on 29 January 2000 as a supplementary agreement to the Convention on Biological Diversity and entered into force on 11 September 2003.
    - The **Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS)** to the Convention on

Biological Diversity is a supplementary agreement to the Convention on Biological Diversity. It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

- **Aichi Targets:**

- The 'Aichi Targets' were **adopted by the Convention on Biological Diversity (CBD) at its Nagoya conference**. It is a short-term plan provides a set of 20 ambitious yet achievable targets, collectively known as the Aichi Targets. They can be divided into:

- **Strategic Goal A:** Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
- **Strategic Goal B:** Reduce the direct pressures on biodiversity and promote sustainable use.
- **Strategic Goal C:** To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
- **Strategic Goal D:** Enhance the benefits to all from biodiversity and ecosystem services.
- **Strategic Goal E:** Enhance implementation through participatory planning, knowledge management and capacity building.

- **The 12 National Biodiversity targets of India are:**

1. By 2020, a significant proportion of the country's population, especially the youth, is aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
2. By 2020, values of biodiversity are integrated into national and state planning processes, development programmes and poverty alleviation strategies.
3. Strategies for reducing the 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.
4. 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.
5. By 2020, measures are adopted for sustainable management of agriculture, forestry and fisheries.
6. Ecologically representative areas under terrestrial and inland water, and also coastal and marine zones, especially those of particular importance for species, biodiversity and ecosystem services, are conserved effectively and equitably, based on 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.

7. 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.
8. 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 sections.
9. By 2015, Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization as per the Nagoya Protocol are operational, consistent with national legislation.
10. By 2020, an effective, participatory and updated national biodiversity action plan is made operational at different levels of governance.
11. By 2020, national initiatives using communities' traditional knowledge relating to biodiversity are strengthened, with the view to protecting this knowledge in accordance with national legislation and international obligations.
12. 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.

## 2. CITES – Washington Convention

- India has proposed to remove ***rosewood (Dalbergia sissoo)*** from ***Appendix II of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)***, a multilateral treaty to protect endangered plants and animals.
- ***The species is currently part of Appendix II of CITES*** that has species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilisation incompatible with their survival. But, India doesn't want that for rosewood.
- ***Why India wants rosewood removed from the list?***
  - The species grows at a very fast rate and has the capacity to become naturalised outside its native range, even it is invasive in some parts of the world.
  - The regulation of trade in the species is not necessary to avoid it becoming eligible for inclusion in Appendix I in the near future and the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.
- **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):**
  - It is an **International agreement to regulate worldwide commercial trade in wild animal and plant species.**

- It also restricts trade in items made from such plants and animals, such as food, clothing, medicine, and souvenirs
- It was signed on March 3, 1973 (Hence world wildlife day is celebrated on march 3).
- It is administered by the **United Nations Environment Programme (UNEP)**.
- Secretariat — Geneva (Switzerland).
- CITES is **legally binding on state parties to the convention**, which are obliged to adopt their own domestic legislation to implement its goals.
- **Classifications:**
  - It classifies plants and animals according to three categories, or appendices, based on how threatened. They are.
    - **Appendix I:** It lists species that are in danger of extinction. It prohibits commercial trade of these plants and animals except in extraordinary situations for scientific or educational reasons.
    - **Appendix II species:** They are those that are not threatened with extinction but that might suffer a serious decline in number if trade is not restricted. Their trade is regulated by permit.
    - **Appendix III species:** They are protected in at least one country that is a CITES member states and that has petitioned others for help in controlling international trade in that species.

### 3. Convention on the Conservation of Migratory Species of Wild Animals (CMS)

- The 13<sup>th</sup> Conference of Parties (COP) of the Convention on the conservation of migratory species of wild animals (CMS), an environmental treaty under the aegis of United Nations Environment Programme, is going to be hosted by India during 15<sup>th</sup> to 22<sup>nd</sup> February, 2020.
- India has been a Party to the CMS since 1983. The **Conference of Parties (COP) is the decision-making organ of this convention.**
- CMS COP is also known as a **Global Wildlife Conference.**
- CMS is an international treaty concluded under aegis of United Nations Environment Programme (UNEP), concerned with conservation of wildlife and habitats on a global scale.
- It is commonly abbreviated as **Convention on Migratory Species (CMS) or the Bonn Convention.**
- CMS aims to **conserve terrestrial, marine and avian migratory species** throughout their range.
- It was signed in 1979 in Bonn, Germany and entered into force in 1983.
- Its headquarters are in Bonn, Germany.
- CMS is only global and UN-based intergovernmental organization established exclusively for conservation and management of

terrestrial, aquatic and avian migratory species throughout their range.

- Appendix I of the Convention includes Migratory species threatened with extinction.
- Appendix II of the Convention includes Migratory species that need or would significantly benefit from international co-operation.

#### 4. Stockholm Convention on Persistent Organic Pollutants

- Stockholm Convention on Persistent Organic Pollutants is a **United Nations treaty**, signed in 2001 and effective from May 2004, that aims to **eliminate or restrict the production and use of persistent organic pollutants (POPs)**.
- It aims to **protect human health and the environment from chemicals that remain intact in the environment for long periods**, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.
- Exposure to Persistent Organic Pollutants (POPs) can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems.
- The convention listed twelve distinct chemicals in three categories in the beginning.
- These include:
  - 8 pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene).
  - Two industrial chemicals (poly chlorinated biphenyls and hexachlorobenzene)
  - Two unintended by-products (poly chlorinated dibenzo-p-dioxins and dibenzo furans, commonly referred to as dioxins and furans).

Notes



## Geographical Features

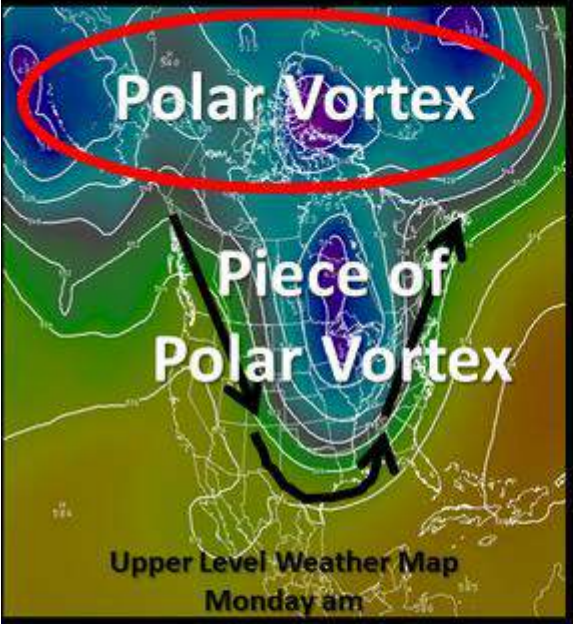
### Notes

### 1. Polar Vortex

- In this decade, the polar vortex has also been blamed on extremely ***cold weather in the United States in 2014 and the infamous 'Beast from the East'***, the blast of cold weather that blew from Siberia towards western Europe and the UK in February and March of 2018.
- ***Polar vortex:***
  - It is described as ***a whirling cone of low pressure over the poles that is strongest in the winter months*** due to the increased temperature contrast between the polar regions and the mid-latitudes, such as the US and Europe.
  - ***The polar vortex spins in the stratosphere***, a layer of the atmosphere 10-48 km above the ground and above the troposphere, where most familiar weather patterns develop.
  - Usually, ***when the vortex is strongest***, cold air is less-likely to plunge deep into North America or Europe. In other words, it forms a wall that protects the mid-latitudes from cold Arctic air.
  - But occasionally, ***the polar vortex is disrupted and weakens, due to wave energy propagating upward from the lower atmosphere***. When this happens, the stratosphere warms sharply in an event known as sudden stratospheric warming, in just a few days, miles above the Earth's surface.
  - ***The warming weakens the polar vortex***, shifting its location somewhat south of the pole or, in some instances, ***'splitting' the vortex up into 'sister vortices'***.
- ***Effects:***
  - ***The split higher up in the atmosphere can give rise to both, sudden and delayed effects***, much of which involves declining temperatures and extreme winter weather in the eastern US along with northern and western Europe.
  - A sudden stratospheric warming also leads to ***a warm Arctic not only in the stratosphere but also in the troposphere as well***. A warmer Arctic, in turn, favours more severe winter weather in the Northern Hemisphere mid-latitudes including the eastern US.

NATIONAL WEATHER SERVICE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

## What is the Polar Vortex?



The image shows an upper level weather map of the Northern Hemisphere. A large red oval highlights the 'Polar Vortex' over the North Pole. Below it, a smaller blue oval labeled 'Piece of Polar Vortex' is shown moving southward from the pole, with arrows indicating its path. The map includes contour lines and color-coded pressure systems.

- A persistent, large-scale upper level cyclone near one or both of earth's poles.
- It **ALWAYS** exists at the poles, but weakens in summer and strengthens in winter.
- Many times in winter, a piece of the vortex breaks off and is sent southward with the jet stream which is what is happening now.

Upper Level Weather Map  
Monday am

### The Polar Vortex is Not.....

- is not something new.
- is not something that exists at the earth's surface, it is in the upper atmosphere.
- is not something that will be visibly observed like tornadoes, funnel clouds, thunderstorms, lightning etc.
- is not something in itself dangerous to humans, but the cold, arctic air associated with them at the surface could be.

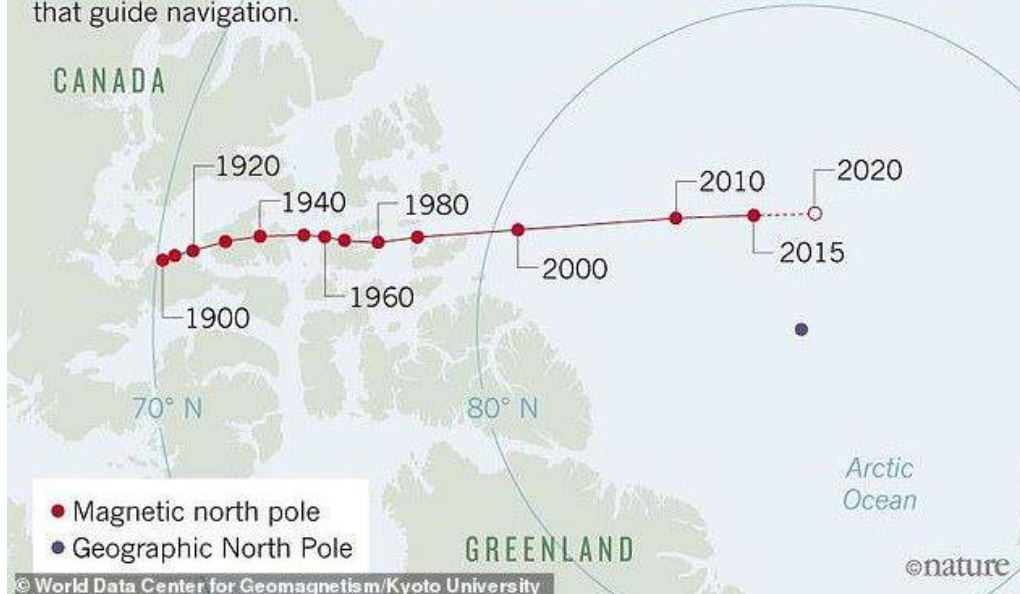
weather.gov/nyc | US National Weather Service New York NY | @NWSNewYorkNY | NWSNewYorkNY

## 2. Earth's Magnetic North Pole is Moving

- Researchers say Earth's *magnetic North Pole* is 'skittering' away from Canada, towards Siberia.
- **Impact on World Magnetic Model:**
  - The problem has got so bad, researchers around the world are scrambling to update a global model of the fields. Called *the World Magnetic Model*, it underlies all modern navigation, from the systems that steer ships at sea to Google Maps on smartphones.
  - **WHY ARE THE EARTH'S MAGNETIC FIELDS MOVING?**
  - The problem lies partly with the *moving pole and partly with other shifts deep within the planet.*
  - *Liquid churning in Earth's core generates most of the magnetic field*, which varies over time as the deep flows change.
  - In 2016, for instance, part of the magnetic field temporarily accelerated deep under northern South America and the eastern Pacific Ocean. Satellites such as the European Space Agency's Swarm mission tracked the shift.

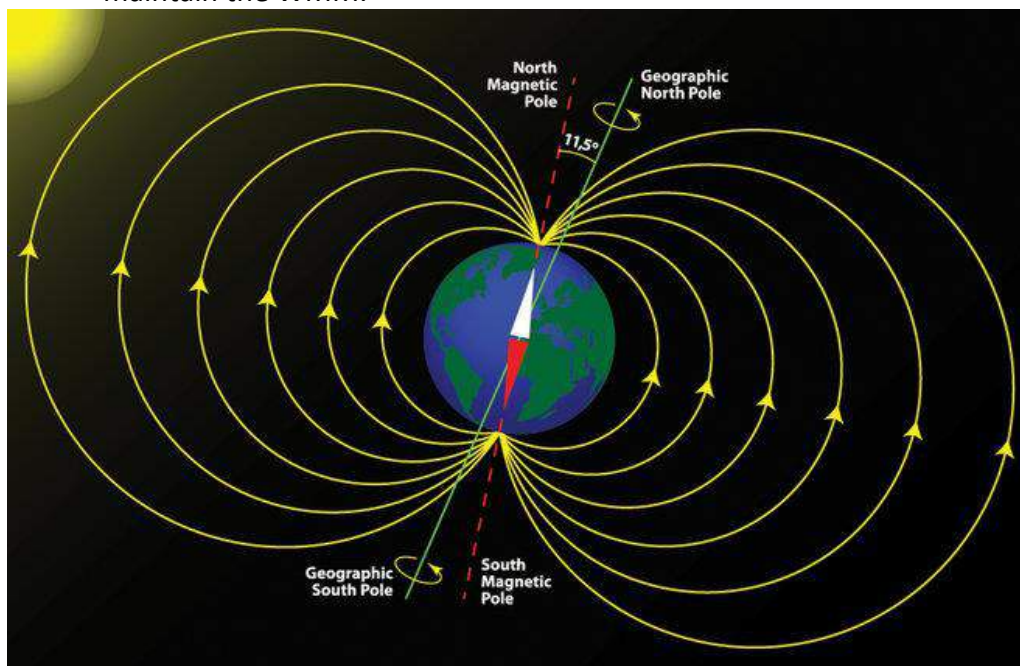
## MAGNETIC MOTION

The north magnetic pole is heading from Canada into Siberia, and recently crossed the International Date Line. Its rapid motion, plus other shifts in Earth's magnetic field, have forced scientists to revise the magnetic models that guide navigation.



- **WHAT IS THE WORLD MAGNETIC MODEL?**

- The charts, known as the **World Magnetic Model (WMM)**, are used to convert between compass measurements of magnetic north and true north and can be found in the navigation systems of ships and airplanes as well as geological applications (such as drilling and mining).
- The WMM is also part of map applications in smartphones, including the Google Maps App.
- Researchers from the U.S.'s National Oceanic and Atmospheric Administration (NOAA) maintain the WMM.



- **WHAT COULD HAPPEN TO EARTH IF ITS POLES FLIPPED?**

- Scientists in recent years have predicted that Earth's magnetic field could be gearing up to 'flip' – a shift in which the magnetic south pole would become magnetic north, and vice

versa. Such an event could have ***catastrophic effects, wreaking havoc on the electric grid and leaving life at the surface exposed to higher amounts of solar radiation.***

- ***Electric grid collapse from severe solar storms is a major risk.***  
As the magnetic field continues to weaken, scientists are highlighting the importance off-the-grid energy systems using renewable energy sources to protect the Earth against a black out.
- Very highly charged particles can have a deleterious effect on the satellites and astronauts.
- ***The Earth's climate could also change.*** A recent Danish study has found that the earth's weather has been significantly affected by the planet's magnetic field.

### 3. Cyclone Pabuk

- The India Meteorological Department (IMD) had sounded ***a yellow alert for the cyclone Pabuk.*** Cyclone Pabuk originated over the Gulf of Thailand and neighbourhood.
- ***Four Stage Warning:*** The cyclone warnings are issued to state government officials in ***four stages.***
  - ***The First Stage warning known as "PRE CYCLONE WATCH"*** issued 72 hours in advance contains early warning about the development of a cyclonic disturbance in the north Indian Ocean, its likely intensification into a tropical cyclone and the coastal belt likely to experience adverse weather.
  - ***The Second Stage warning known as "CYCLONE ALERT"*** is issued at least 48 hrs. in advance of the expected commencement of adverse weather over the coastal areas. It contains information on the location and intensity of the storm likely direction of its movement, intensification, coastal districts likely to experience adverse weather and advice to fishermen, general public, media and disaster managers.
  - ***The Third Stage warning known as "CYCLONE WARNING"*** issued at least 24 hours in advance of the expected commencement of adverse weather over the coastal areas. Landfall point is forecast at this stage. These warnings are issued at 3 hourly interval giving the latest position of cyclone and its intensity, likely point and time of landfall, associated heavy rainfall, strong wind and storm surge along with their impact and advice to general public, media, fishermen and disaster managers.
  - ***The Fourth Stage of warning known as "POST LANDFALL OUTLOOK"*** is issued at least 12 hours in advance of expected time of landfall. It gives likely direction of movement of the cyclone after its landfall and adverse weather likely to be experienced in the interior areas.
- ***Different colour codes as mentioned below are being used since post monsoon season of 2006 the different stages of the cyclone warning bulletins as desired by the National Disaster Management.***

- Cyclone Alert- Yellow.
- Cyclone Warning- Orange.
- Post landfall outlook- Red.

**Notes**

## Miscellaneous

## Notes

### 1. Situation of groundwater in India

- Today, **India is the largest user of the groundwater in the world** with almost 90% being used for drinking water and almost 60-70% for irrigation.
- Current statistics also show that nearly 50% of urban water supply comes from groundwater.

### 2. India's Longest Single-lane Steel Cable Suspension Bridge

- India's longest single-lane steel cable suspension bridge has been inaugurated over Siang River in Upper Siang district of Arunachal Pradesh.
- **Siang River:** The Tsangpo river, which originates in the Angsi Glacier in the Himalayas, enters India through Arunachal Pradesh where it is called by name Siang. The river is also called as Dihang in the plain regions. It is joined by the rivers Dibang and Lohit.

### 3. Atal Setu

- "Atal Setu" on the Mandovi river in Goa has been inaugurated.
- **Mahadayi, also known as the Mandovi river**, is known as a lifeline in the northern parts of Karnataka. The river originates and flows for 28 kilometer in Karnataka and goes through Maharashtra and Goa before meeting the Arabian Sea.

### 4. Diffo Bridge

- **Bridge over Diffo river on Roing-Koron-Paya road** has been inaugurated in Arunachal Pradesh. The construction of the Bridge was undertaken by **the Project Udayak of the Border Roads Organisation**.
- It would provide **uninterrupted access between Dibang valley and Lohit valley region of Eastern Arunachal Pradesh**.
- **Project Udayank of the Border Roads Organisation** was raised on June 1990 at Doomdooma Assam. The name of the project Udayank is synonymous to the land of rising sun which fits appropriately to the area it operates.

### 5. Mandal Dam Project

- Mandal Dam is being built on the North Koel River.
- **Funding:** 60% of the project cost would be financed by the central government as a grant from Long-Term Irrigation Fund (LTIF) under Pradhan Mantri Krishi Sinchai Yojana (PMKSY). Remaining 40% will be borne by the States through loan financed by NABARD.
- **North Koel River:** North Koel River originates on Ranchi plateau in Jharkhand and joins the Sone River, a few miles north-west of Haidarnagar in Jharkhand. The river meanders through the northern part of Betla National Park. The principal tributaries of the North Koel River are Auranga and the Amanat.

## 6. Mt Shindake

- A volcano- **Mt Shindake** had erupted on **Kuchinoerabu Island of Japan**.
- Kuchinoerabu Island belongs to Kagoshima Prefecture, Japan. The entire island lies within the borders of the Kirishima-Yaku National Park.

## 7. Mount Anak Krakatau

- Both sides of Indonesia's Sunda Strait – Java on the east and Sumatra on the west – had been hit by a tsunami.
- The tsunami is believed to have been caused by undersea landslides from volcanic activity.
- Indonesia's climatology agency (BMKG) said undersea landslides triggered by an eruption of the Mount Anak Krakatau volcano, located about 50km offshore in the Sunda Strait between the islands of Java and Sumatra, may have triggered the tsunami.



## 8. Mount Etna

- Italy's Mount Etna volcano has erupted again resulting in more than 130 earthquakes of up to 4.3 in magnitude.
- Mount Etna is **the largest active volcano in Europe and one of the world's most frequently erupting volcanoes**. It is also the volcano with the **longest record of continuous eruption**.
- Located near the east coast of the island of Sicily **in Italy**, Mount Etna is 10,900 feet tall.
- The mountain's largest feature is **the Valle del Bove** (Valley of the Ox), a large horseshoe-shaped caldera on the eastern slope.
- Etna sits on **the active fault between the African plate and the Ionian microplate**, which are both being subducted together beneath the Eurasian plate.
- In June 2013, **it was added to the list of UNESCO World Heritage Sites**.
- Due to its history of recent activity and nearby population, Mount Etna has been designated **a Decade Volcano by the United Nations**.

## 9. Mount Merapi

- It is an active stratovolcano located on the border between Central Java and Yogyakarta provinces, Indonesia. It is the most active volcano in Indonesia and has erupted regularly since 1548.

## 10. Mt. Bhagirathi 2

- Indian Army Women Officers' Mountaineering Expedition to Mt. Bhagirathi-II (6512 metres) consisting of nine women officers, was recently flagged off.
- Mt. Bhagirathi-II is located in the **Garhwal Himalayas in Gangotri National Park**.

- The peak rises right above the Gangotri glacier which sets new challenges for the climbers.
- The summit is challenging owing to its technical requirements, vertical ascents, inclement and unpredictable weather conditions.

### 11.Environment, Social and Governance (ESG) Fund

- Three former Tata Group executives in partnership with Quantum Advisors launched a \$1 billion Environment, Social and Governance (ESG) Fund.
- The Fund will **invest in Indian companies that value the environment, society and corporate governance** to the core.
- The proposed equal joint venture (JV) would mobilise funds from long-term foreign investors such as pension funds, sovereign wealth funds and family offices of high networth individuals (HNIs) who value ESG.
- The fund will aim to drive higher ESG performance in Indian corporates and it will adopt an engaged, private equity approach to public markets investing, with a focus on working with companies willing to recognize the long-term advantages of actively adopting ESG standards of excellence.

### 12.Vermin

- Vermin means wild mammals and birds which are **harmful to crops, farm animals or which carry disease**.
- **In India, wild animals can be declared as vermin** if they are:
  - **Dangerous to human life or property** (including standing crops on any land).
  - Become diseased which is beyond recovery.
- Any animal listed in Schedule I to IV of **Wildlife Protection Act 1972** can be declared vermin by listing it in **Schedule V**.
- States can send a list of wild animals to the Centre requesting it to declare them vermin for selective slaughter.
- Wildlife Protection Act 1972 empowers every **State's Chief Wildlife Warden** for culling.
- The Central Government may by notification, declare any wild animal other than those specified in Schedule I and part 11 of Schedule H of **Wildlife Protection Act 1972** to be vermin by listing it in **Schedule V**.
- Wild boars, Nilgai and rhesus monkeys are protected under Schedule II and III, but can be hunted under specific conditions.
- Animals like the common crow, fruit bats, mice and rats have been listed as vermin in Schedule V of WPA.

### 13.Coal Bed Methane (CBM)

- Coal Bed Methane is a form of natural gas extracted from coal beds.
- It is called '**sweet gas**' because of its **lack of hydrogen sulphide**.
- Its occurrence in underground coal mining, where it presents a serious safety risk.



- It mainly consists of **Methane (CH<sub>4</sub>)** with minor amounts of nitrogen (**N<sub>2</sub>**), carbon dioxide (**CO<sub>2</sub>**) and heavier hydrocarbons like such as propane or butane.
- It is **environmentally safe and clean** fuel which on combustion emits only carbon dioxide and water.
- It is considered as an **efficient fuel** and also reduces emission of greenhouse gas from coal mining.

#### 14. Dal Lake

- The famous dal lake in Srinagar was recently frozen. The city recently witnessed the lowest temperature ever in 11 years at minus 7.6 degree.
- **Also known as the summer capital of Jammu and Kashmir**, dal lake, which is the second largest in the state, is integral to tourism and recreation in Kashmir and is named the “Jewel in the crown of Kashmir” or “Srinagar’s Jewel”.
- The lake is also an important source for commercial operations in fishing and water plant harvesting.
- The lake is part of a natural wetland, including its floating gardens. The floating gardens, known as “Rad” in Kashmiri, blossom with lotus flowers during July and August.
- The lake is located in the **Zabarwan mountain valley**, in the foothills of the Shankracharya hills, which surrounds it on three sides.
- The lake has four **main interconnected basins namely, Hazratbal, Bod dal, Gagribal and Nagin**.