ACHIEVERS-2023-24 MENTORSHIP

LIST OF ENVIRONMENTAL ORGANIZATIONS & IMPORTANT REPORTS OF INDIA

FOR :

- **CIVILS PRELIMS AND MAINS 2023-24**

INDEX

42) CENTRE FOR SCIENCE AND ENVIRONMENT (CSE)
43) NATIONAL ENVIRONMENT ORGANISATION
44) Compensatory Afforestation Fund Act 2016
45) Clean Development Mechanism (CDM)
46) ENVIS Program
47) National Afforestation Programme
48) ICFRE-ICIMOD's REDD+ Himalayan programme extended till 2020
49) UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED),
50) COMMISSION ON SUSTAINABLE DEVELOPMENT (CSD)
51) GLOBAL ENVIRONMENT FACILITY (GEF)
52) NATIONAL ENVIRONMENT POLICY (2006) OF INDIA
53) REDD and REDD+
54) WORLD NATURE ORGANISATION
55) WORLD FOOD PROGRAMME:
56) FOREST CARBON PARTNERSHIP FACILITY
57) NATIONAL BIODIVERSITY AUTHORITY:
58) BIOLOGICAL DIVERSITY (AMENDMENT) BILL, 2021
59) WILDLIFE CRIME CONTROL BUREAU:
60) CENTRAL ZOO AUTHORITY:
61) WILDLIFE TRUST OF INDIA:
62) NATIONAL GANGA RIVER BASIN AUTHORITY:
63) CENTRAL POLLUTION CONTROL BOARD:
64) NATIONAL TIGER CONSERVATION AUTHORITY:
65) FOREST SURVEY OF INDIA:
66) NATIONAL BOARD OF WILDLIFE:
67) NATIONAL GREEN TRIBUNALS:
68) GENETIC ENGINEERING ADVISORY COMMITTEE:
69) TIGER CENSUS REPORT
70) INTERNATIONAL ORGANIZATIONS REGARDING ENVIRONMENT AND CONSERVATION
71) GLOBAL ENVIRONMENT FACILITY (GEF)
72) GLOBAL GREEN GROWTH INSTITUTE
73) KIMO (LOCAL AUTHORITIES INTERNATIONAL ENVIRONMENTAL ORGANISATION)
74) INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)
75) INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
76) IPCC 6TH ASSESSMENT REPORT
77) CLIMATE CHANGE 2021 REPORT: IPCC
78) INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)
79) UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)
80) UNITED NATIONS ENVIRONMENT ASSEMBLY (UNEA)
81) WORLD NATURE ORGANIZATION (WNO)
82) WORLD FOOD PROGRAMME
83) INTERNATIONAL WHALING ORGANIZATION
84) BIO-CARBON FUND INITIATIVE
85) ARCTIC COUNCIL
86) NATIONAL GANGA RIVER BASIN AUTHORITY,
87) LIVING PLANET REPORT: WWF
88) FOREST SURVEY REPORT 2021
89) CARBON CAPTURE AND UTILISATION TECHNOLOGIES
90) DRAFT POLICY FRAMEWORK FOR DISTRIBUTED RENEWABLE ENERGY
91) ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
92) DRAFT EIA NOTIFICATION, 2020
93) ENVIRONMENTAL CONVENTIONS

94) **UNFCCC**
95) **RIO SUMMIT 1992 – IMPORTANT OUTCOMES**
96) **WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2022**
97) **GAPS IN ENFORCEMENT OF GREEN LEGISLATIONS**

MINISTRY OF ENVIRONMENT FOREST AND CLIMATE CHANGE

❖

Mission LiFE- Lifestyle for Environment launched by Prime Minister Shri Narendra Modi

India launched its Long-term low carbon development strategy at the COP-27

The cover decision of UNFCCC COP27, titled the 'Sharm El Sheikh Implementation Plan', notes the 'importance of transition to sustainable lifestyles and sustainable patterns of consumption and production for efforts to address climate change'

Cheetah Re-introduction in India, a historic first wild to wild intercontinental translocation of eight cheetahs from Namibia to India successfully done

India establishes Asia's largest Ramsar Sites network in the 75th Year of Independence

- The year 2022 saw the launch of Mission LiFE by Prime Minister Shri Narendra Modi, a flagship programme to promote sustainable lifestyle across the globe.
- The central elements of Mission LiFE i.e., sustainable lifestyle and sustainable patterns of consumption to address climate change were mentioned in the cover decision of Sharm El Sheikh Implementation Plan of COP 27.
- Cheetah reintroduction in India by the Prime Minister was another important milestone in the global conservation efforts of the species. The major achievements during the year 2022 are as follows: -

Lifestyle for Environment - LiFE

1. A Global call for Mission LiFE (Lifestyle for Environment) was given by Prime Minister of India, Shri Narendra Modi, while delivering India's National Statement, at CoP26, held at Glasgow in October-November, 2021.
2. Subsequently, Mission LiFE was launched at Ekta Nagar by Prime Minister of India, on 20 October 2022, in the presence of United Nations Secretary General, Mr Antonio Guterres.
3. India participated in COP 27, with focus on mainstreaming the theme of LiFE - Lifestyle for Environment.
4. The Indian Pavilion at COP 27 highlighted the theme of LiFE in various ways – models, audio visual displays, activities and 49 side events with participation of various central government ministries, state governments, UN and multilateral organizations, public sector undertakings, think tanks, private sector, international organizations and civil society organizations.
5. India invited all countries to join the LiFE movement which is a pro-people and pro-planet effort, seeking to shift the world from mindless and wasteful consumption to mindful and deliberate utilization of natural resources.
6. The cover decision of UNFCCC COP27, titled the 'Sharm Al Sheikh Implementation Plan', notes the 'importance of transition to sustainable lifestyles and sustainable patterns of consumption and production for efforts to address climate change'.
7. It also notes the 'importance of pursuing an approach to education that promotes a shift in lifestyles while fostering patterns of development and sustainability based on care, community and cooperation'.

INDIA @ COP27 ON LIFE

❖ At COP 27, India set up a Pavilion on the theme of LiFE – Lifestyle for Environment. A number of events, based on LiFE, were organised with the objective of spreading the message of LiFE.

- 14th November 2022 was dedicated to LiFE events. One such event was: “Understanding the Concept of LiFE” hosted by MoEFCC and United Nations (UN in India).
- MoEFCC-UNDP Compendium ‘Prayas Se Prabhaav Tak’ was launched.
- On the same day, HMEFCC launched India’s Long-Term Low-Carbon Development Strategy. With the submission of this document to UNFCCC, India joined the select group of fewer than 60 countries in the world to do so.
- The National Museum of Natural History (NMNH), under the MoEFCC and UNDP, jointly launched “In Our LiFEtime” campaign to encourage youth between the ages of 18 to 23 years to become message bearers of sustainable lifestyles. This campaign envisioned recognizing youth from around the world taking climate action initiatives that resonate with the concept of LiFE.
- The Union Minister also participated in the event “Transformative Green Education: Experiences from India” at India Pavilion.
- The side event involved deliberations by officials and experts from NMNH, MoEFCC and GIZ, GmbH highlighting the need to encourage sustainable lifestyle for environment among children through innovative techniques, tools and methods.
- HMEFCC released book, calendar, postcards, bookmarks and posters based on paintings by Indian school children on sustainable lifestyles, collected by NMNH.
- On this occasion, Hon’ble Minister also released a short video on green transformative education.
- Ministry of New & Renewable Energy (MNRE) in conjunction with Ministry of Power; IREDA; Solar Energy Corporation of India (SECI); and Council on Energy, Environment and Water (CEEW) organized a side event on November 8, 2022, during which discussions were held on linking India’s numerous initiatives on energy access, transition, and efficiency with the principles of LiFE in the run-up to India’s G20 Presidency.
- On November 8, 2022, a joint event on energy transition anchored to the theme of LiFE was co-hosted by three organisations including Himadri Energy International, Shakti Sustainable Energy Foundation & ReNew Power. It stressed upon transition towards a low-carbon system that needs to be cautious and ambitious, accompanied by a closer look at the environmental advantages, policy interventions for minimal loss of livelihood, and preparing a skilled workforce.
- One of the outcomes was on integrating low-carbon targets into developmental goals which is essential for long-term sustained implementation of climate goals.
- CEEW organised an interesting event on November 09, 2022 on “Financing of Technologies to Enable the LiFE Movement in Developing Countries.” The event proposed specific financial instruments including those that provide standardised solutions across several markets and bespoke solutions to address particular risks in specific developing countries.
- A panel discussion at India Pavilion presented by Government of Himachal Pradesh on November 10, 2022 shed light on the process and methodology adopted for scaling up villages and developmental plans towards Climate Resilient Lifestyles for Environment (LiFE).
- ASSOCHAM’s event on November 11, 2022 made LiFE principles the basis for inclusive growth pathways and solutions in net-zero urban development.
- The state Government of Haryana took to the dais on November 15, 2022, showcasing the state’s initiatives to support climate goals through actions for LiFE.
- TERRE Policy Centre’s exchange at the side event on November 16, 2022 brought out the importance of traditional knowledge interlinked with eco-restoration and making choices for changing lifestyles.
- ICLEI’s side event on the same day established fostering of sustainable lifestyles through climate-smart development and urban partnerships in India.

PROMOTING CIRCULAR ECONOMY - WASTE-TO-WEALTH

1. Prime Minister, Shri Narendra Modi, in his address to the nation on the occasion of 75th Independence Day on 15.08.2021, highlighted India's action on 'Mission Circular Economy'. NITI Aayog constituted 11 Committees for development of circular economy (CE) action plans for different categories of wastes.
2. Circular Economy Action Plans for 10 waste categories (Lithium-ion batteries; E-waste; Toxic and hazardous industrial waste; Scrap metal (ferrous and non-ferrous); Tyre and Rubber; End of Life Vehicles; Gypsum, Used Oil, Solar Panels and Municipal Solid Waste have been finalized, and are under implementation.
3. Respective Nodal Ministries are coordinating on progress of implementation of these action plans.
4. Ministry of Environment, Forest and Climate Change is the Nodal Ministry for Circular Economy Action Plan for Tyre and Rubber and stakeholder ministry in other CE Action Plans.
5. Regulations on market based Extended Producer Responsibility (EPR) principle have been notified for four categories of wastes i.e. plastic packaging waste, battery waste, e-waste and waste tyre.

- ''Extended Producer Responsibility (EPR) for Waste Tyre, 2022'' on 21.07.2022.
- "Guidelines on EPR for Plastic Packaging on 16.02.2022.
- ''Battery Waste Management Rules, 2022'' on 22.08.2022.
- ''E-Waste (Management) Rules, 2022'' on 02.11.2022.

1) In EPR for Plastic Packaging, targets for minimum recycling, minimum use of recycled content and use of rigid plastic packaging in identified sizes have been mandated.
2) In rules incorporating EPR principle that have been notified/amended this year, different targets of minimum recycling, minimum recovery percentage and minimum use of recycled content have been given lead times to start with. The optimum level will be reached over a period of time.
3) This has been done to provide time to the industry as well as recyclers for the development of systems and recycling infrastructure. Regulations to bring in EPR for end-of-life vehicles is under development.
4) The Waste-to-Wealth Mission/ Mission Circular Economy is bound to create new business models as well as new employment opportunities.
5) This will also result in integration of informal sector. Participation of industry is of critical importance to make the Waste-to-Wealth Mission a success.
6) This will result in moving away from mindless consumption to mindful utilisation and will help achieve the vision of Mission LiFE - Lifestyle for Environment given by Prime Minister Shri Narendra Modi.

NATIONAL CLEAN AIR PROGRAMME (NCAP)

1) The Ministry of Environment, Forest and Climate Change (MoEF&CC) has been implementing since 10th January, 2019, a National Clean Air Programme (NCAP) as a national-level strategy outlining the actions for reducing the levels of air pollution at city and regional scales in India. Rs 7100 crore have been released to 131 cities till date under NCAP & XVFC for implementing actions stipulated under city action plan.
2) Fixed city wise year wise targets for improvement in air quality for FY 2021-22 to 2025-26 for this MoUs have been signed with NCAP cities between CPCB, SPCB and ULB and 42 MPCs between the MoEF&CC, State government and Urban local bodies under XVFC.
3) The national level plan: a comprehensive action plan has been prepared from 7 line ministries under NCAP which includes the action plans of different Ministries/ Departments

of Government of India. This includes convergence of schemes/ programmes of different Ministries/ Departments.

4) State Action Plans are under process and received from 10 States/ UTs so far. City Action Plans are prepared by cities for implementation of activities which assists in air quality improvement. 88 Institute of Reputes (IoRs) are assigned to 131 NACs for capacity building and for effective implementation of City action plans.
5) MoEF&CC conducted regional workshops for sensitization, knowledge sharing and capacity building of the stakeholders in the State (3 regional workshops have been conducted so far and a National Conference on VAYU in Odisha).
6) MoEF&CC has also launched "PRANA" a portal for monitoring implementation of NCAP on the occasion of International day of clean air for blue skies on 7th September 2021 and in 2022 released brochures/ booklets on Guidelines for Capacity Building & Public Outreach.
7) Guidelines for release of funds under NCAP, Operational Guidelines for release of grants under Fifteenth Finance Commission along with that released booklets on best practices undertaken by various cities in sectors for abatement of emissions from waste and biomass dumping and burning, for abatement of vehicular emissions, Road dust and construction & demolition waste management, capacity building & monitoring network etc.
8) The Swachh Vayu Survekshan guidelines for Ranking of cities under NCAP has been issued to cities- 9 cities are awarded with a cash prize of 5 crores under 3 categories on 3rd December 2022 during VAYU conference in Bhubaneswar, Odisha.
9) An overall improvement in ambient air quality has been observed in 95 cities during 2021-22 as compared to 2017. 18 cities were found to be within the prescribed National Ambient Air Quality Standard (PM10 less than 60^g/m3) in 2019-20 which has increased to 20 in year 2021-22.

HC OF DELHI APPRECIATES EFFORTS FOR CLIMATE ACTION IN INDIA AND INDIA'S LEADERSHIP ROLE

1) The Union of India has filed a detailed exhaustive report and also brought to the notice of the Court that the Cabinet has approved India's updated Nationally Determined Contribution which is a step towards achieving India's long-term goal of reaching net-zero by 2070.
2) It has also been brought to the notice of the Court that the approval of the Cabinet translates Prime Minister "Panchamrit" announced at COP-26 into enhanced climate targets and India is now committed to reduce emissions intensity of its GDP by 45 percent by 2030. Prime Minister of India Narendra Modi's a one-word movement to the global community proposed at COP-26 -LIFE i.e. Lifestyle for Environment and all efforts are being made in the country for cleaner energy for the period 2021-30 were brought to the notice of the court.
3) The Court appreciated the sincere efforts made on the part of the Ministry of Environment, Forest, and Climate Change for ensuring implementation of the steps in respect of climate change and for providing a better environment for the generations to come.

The Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC)

1) The Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) in Article 4, paragraph 19, states, "All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances."
2) In light of above, India launched its long-term low carbon development strategy at the 27th session of Conference of Parties (COP-27) to the UNFCCC. The strategy was launched by Union Minister for Environment, Forest and Climate Change, Shri Bhupender Yadav, who led

the Indian delegation to the COP 27 from 6-18 November, 2022.With this release, India joins the select list of less than 60 parties that have submitted their LT LEDS to UNFCCC.

3) India's approach is based on the following four key considerations that underpin its long-term low-carbon development strategy: (i)India has contributed little to global warming, (ii)India's historical contribution to cumulative global GHG emissions is therefore minuscule despite having a share of ~17% of the world's population, (iii)India is committed to pursuing low-carbon strategies for development and is actively pursuing them, as per national circumstances, (iv)India needs to build climate resilience.
4) The LT-LEDS aims to go beyond India's climate targets or the nationally determined contributions (NDC) announced in August, of achieving 50 percent of India's cumulative electric power installed capacity from non-fossil sources by 2030, and reducing emission intensity of GDP by 45 percent below 2005 levels by 2030 and builds on India's Panchamrit (five nectar elements) pledges at the 26th Conference of Parties (COP26) of the UNFCCC in Glasgow, including the target of net-zero emissions by 2070.The roadmap is a result of a first of its kind inter-ministerial consultation, and a collaborative effort with experts and think-tanks.
5) In its present form, the LT-LEDS provides roadmap for sectoral transitions needed for India's transition to the 2070 goal. India's LT-LEDS rests on seven key transitions to low-carbon development pathways. These include electricity systems, transport systems, urbanization, industrial systems, CO2 removal, forestry, economic and financial aspects of low carbon development.

ECONOMIC SURVEY : 2022-23

India's Economic Performance in Climate Change and Environment

- The Economic Survey 2022-23 presented a chapter on 'Climate Change and Environment' listing out India's NDCs that include the transition to renewable energy resources, commitment to achieve NET ZERO EMISSIONS BY 2070 and steps taken to become energy independent.

CLIMATE CHANGE AND ENVIRONMENT: PREPARING TO FACE THE FUTURE

1) India is one of the most vulnerable regions despite having contributed only about 4% in the cumulative global emissions (for the period 1850-2019) and maintaining its per capita emission at far less than the world average.
2) India has integrated the development goals with ambitious climate action goals.
3) India now has 75 Ramsar sites for wetlands, in addition to various regulatory and promotional measures to protect and conserve mangroves.
4) Continued river conservation and rejuvenation efforts are underway through Namami Gange and National River Conservation Plan (NRCP).
5) Action to reduce carbon emissions and adapt to the changing climatic conditions are required urgently as the world has already started to experience its consequences.
6) It is estimated that by 2030, about 700 million people worldwide will be at risk of displacement by drought alone (U.N. SDG Portal).
7) The IPCC's Sixth Assessment Report (AR6) notes that high human vulnerability global hotspots are found particularly in West, Central & East Africa, South Asia, Central, and South America, Small Island Developing States, and the Arctic.
8) Asia is most vulnerable to climate change, especially to extreme heat, flooding, sea level rise, and erratic rainfall.

9) Many experts also warn of the availability of rare earth elements (REE) and critical minerals (CM), that are essential for generating renewable energy, to be the next geopolitical battleground as crude oil has been over the last fifty years.
10) Countries have to take action to make their people resilient and adapt to climate change.
11) India has contributed only 4 per cent (until 2019) to the cumulative global emissions and its per capita emission is far less than the world average.
12) In 2008, India launched the National Action Plan on Climate Change (NAPCC), establishing eight National Missions, covering several initiatives and a slew of measures in the area of solar, water, energy efficiency, forests, sustainable habitat, sustainable agriculture, sustaining Himalayan ecosystem, capacity building and research and development (R&D).
13) National Adaptation Fund for Climate Change (NAFCC), a central sector scheme, was initiated in 2015-16 to support adaptation activities in the States and Union Territories (UTs) of India that are vulnerable to the adverse effects of climate change. It supports adaptation action, in, inter alia, agriculture, water, forestry, livestock, and restoring ecosystems. At present (November 2022), 28 projects are under implementation.
14) The Government of India submitted its updated NDC on August 26, 2022 with enhanced targets translating the vision of the Hon'ble PM expressed through the "Panchamrit" at the UNFCCC COP 26 in Glasgow in November 2021.

- This period has seen a sizeable enhancement in the share of installed electricity capacity in solar and wind energy from 8.9 per cent in 2014-15 to 25.1 per cent in 2022-23 (April-Sept).
- Including the large hydro, the share of non-fossil sources in total installed electricity capacity is estimated to be about 40.4 per cent (on 31.09.2022) compared to 27.3 percent in 2014-15.

Status of Forest and Tree Cover

A. The forest and tree cover in India has shown a gradual and steady trend of increase in the last one and a half decades.
B. The country ranks third globally with respect to the net gain in average annual forest area between 2010 and 2020.
C. Schemes like the Green India Mission (GIM), Compensatory Afforestation Fund Management and Planning Authority (CAMPA), National Afforestation Programme (NAP), Green Highway Policy – 2015, Policy for enhancement of Urban Greens, National Agro-forestry Policy, and Sub-Mission on Agro-forestry (SMAF), etc. have helped in achieving it.

CARBON STOCK IN INDIA'S FOREST AND TREE COVER

A. The Indian State of Forest Report (ISFR) estimates the carbon stock of forests to be about 7,204 million tonnes in 20197, which is an increase of 79.4 million tonnes of carbon stock as compared to the estimates of the previous assessment for 2017. This translates into carbon emissions sequestrated through forest and tree cover to be 30.1 billion tonnes of CO_2 equivalent.
B. Among the Indian States, Arunachal Pradesh has the maximum carbon stock in forests (1023.84 million tonnes), followed by Madhya Pradesh (609.25 million tonnes.

- Preservation of ecosystems: a Critical adaptation action
- India has 75 Ramsar sites covering an area of 13.3 lakh ha, and 49 of these have been added in the last 8 years.
- As per a recent study, certain mangrove species in Chilika and Sundarbans along the east coast and Dwarka and Porbandar along the west coast of India are likely to reduce and shift landward by 2070 due to a decline in suitable habitats in response to precipitation and sea level changes.

- ❖ The National Coastal Mission Programme on 'Conservation and Management of Mangroves and Coral Reefs' is being implemented. Regulatory measures are implemented through Coastal Regulation Zone (CRZ) Notification (2019) under the Environment (Protection) Act, 1986; the Wild Life (Protection) Act, 1972; the Indian Forest Act, 1927; the Biological Diversity Act, 2002; and rules under these acts as amended from time to time.
- ❖ As per the ISFR 2021, the mangrove cover in the country has increased by 364 sq. km. in 2021 as compared to 2013.

RIVER CONSERVATION AND REJUVENATION

A. The Government is working on mapping and converging the 5Ps' – People, Policy, Plan, Programme and Project.
B. The government has recently released Detailed Project Reports (DPR) for the rejuvenation of 13 major rivers prepared by the Indian Council of Forestry Research and Education (ICFRE), Dehradun in consultation with the State Forest Departments and other line Departments.
C. Works proposed under these DPRs include afforestation on riverbanks leading to increased green cover, measures to contain soil erosion, recharge the groundwater table, sequester carbon dioxide, catchment area treatment, ecological restoration, moisture conservation, livelihood improvement & income generation, etc.

Approach to transition to Renewable Energy Sources

1) The target to achieve 40 per cent of the installed electric capacity from nonfossil fuel sources by 2030 submitted in 2015 NDCs has already been achieved.
2) India is now striving to achieve the target of 50 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030, in line with updated NDCs.
3) As per the Renewables 2022 Global Status Report, during the period 2014 -2021, total investment in renewables stood at US$ 78.1 billion in India.
4) Investment in renewable energy has been close to or higher than US$ 10 billion per year since 2016, except for a dip in 2020 likely due to various Covid-19 restrictions.
5) The likely installed capacity by the end of 2029-30 is expected to be more than 800 GW of which non-fossil fuel would be more than 500 GW.

Green Hydrogen-a critical source of alternate energy

1) Green hydrogen is an important element of India's Long Term Low Emissions Development Strategy (LT-LEDS).
2) The Government approved the National Green Hydrogen Mission on January 4, 2023 with an initial outlay of ₹19,744 crore. The Mission will facilitate demand creation, production, utilisation and export of Green Hydrogen and mobilisation of over ₹8 lakh crore of investment by 2030.

Long-Term Low Emissions Development Strategy (LT-LEDS)

1) Focus on the rational utilisation of national resources with due regard to energy security.
2) Rapid expansion of green hydrogen production, increasing electrolyser manufacturing capacity in the country, and a three-fold increase in nuclear capacity by 2032, alongside the overall development of the power sector
3) Increased use of biofuels, increase electric vehicle penetration and the increased use of green hydrogen fuel
4) Climate-resilient urban development

Finance for Sustainable Development

- Union Budget 2022-23 announced the issue of Sovereign Green Bonds that will help the government to tap the requisite finance from potential investors for deployment in public sector projects aimed at reducing the carbon intensity of the economy.
- A Green Finance working committee has also been set up to oversee and validate key decisions on the issuance of Sovereign green bonds.

Major decisions at COP27

- India participated in COP 27, with a focus on mainstreaming the theme of LiFE – Lifestyle for Environment.
- India invited all countries to join the LiFE movement, which is a pro-people and pro-planet effort seeking to shift the world from mindless and wasteful consumption to mindful and deliberate utilisation of natural resources.

India's Initiatives at the International Stage

1) International Solar Alliance (ISA)
2) Coalition for Disaster Resilient Infrastructure (CDRI)
3) Leadership Group for Industry Transition (LeadIT)

Other Environemental Initiatives

1) India ranks eighth in the world and fourth in Asia among the mega-diverse countries in the world.
2) India and Nepal signed a Memorandum of Understanding (MoU) in August 2022 on biodiversity conservation.
3) India is home to 53 Tiger Reserves with about 75% of the wild tiger population at the global level. India achieved the goal of doubling the tiger numbers in 2018, four years before the targeted year 2022.
4) In addition, 17 Tiger Reserves in the country have CA|TS international accreditation, and two have received International Tx2 Award.
5) The population of Asiatic Lions has shown a steady increase, with a population of 674 individuals (2020), 28.87% higher than the 523 lions in 2015.
6) As an attempt to reduce pollution the MoEFCC notified the Plastic Waste Management Amendment Rules, 2021, on August 12, 2021.
7) On July 1, 2022, a ban was imposed on the manufacture, import, stocking, distribution, sale and use of identified single-use plastic items, which have low utility and high littering potential, all across the country.
8) The Government published the Battery Waste Management Rules, 2022, to ensure environmentally sound management of waste batteries.
9) The Government notified the E-Waste (Management) Rules, 2022 that will launch a new Extended Producer Responsibility (EPR) regime for e-waste recycling.

Performance and Goals:

1) India has also committed to reduce emissions intensity of its GDP by 45% by 2030 from 2005 levels.
2) Another target has been set to achieve about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
3) India has already achieved its target of 40% installed electric capacity from non-fossil fuels ahead of 2030 and the likely installed capacity from non-fossil fuels will be more than 500 GW by 2030.
4) This would lead to a decline of average emission rate by around 29% by 2029-30 (compared to 2014-15).

- ❖ A mass MOVEMENT –LIFE was launched at the GLASGOW CLIMATE SUMMIT at UNFCCC COP26.
- ❖ In Nov 2022, SGrBs was issued. **RBI auctioned two tranches of ₹4,000 crore SGrBs.**
- ❖ The survey also highlighted **India's plans to be energy independent by 2047**, by relying on green hydrogen through the NGHM.
- ❖ The survey shows that **India is becoming a favoured destination for renewables** with investments standing at USD 78.1 billion in the past 7 years.
- ❖ SOLAR POWER CAPACITY INSTALLED a key metric under the National Solar Mission, stood at 61.6 GW as of October 2022.

BUDGET 2023-24: 'AMRIT DHAROHAR' TO ENCOURAGE CONSERVATION OF VITAL WETLANDS IN INDIA

1) Union Finance Minister Nirmala Sitharaman announced a special scheme called 'Amrit Dharohar' for protecting vital wetlands which sustain aquatic biodiversity. The scheme aims to achieve sustainable ecosystem development with the help of local communities.
2) It falls under 'Green Growth', one of the seven priorities of the budget.
3) "Hon'ble Prime Minister has given a vision for 'LiFE', or Lifestyle for Environment, to spur a movement of environmentally conscious lifestyle," said Sitharaman during her budget speech delivered in Parliament February 1, 2023.

4) The 2023-24 budget has allocated Rs 3,079.40 crore to the Ministry of Environment, Forest and Climate Change, which is a 24 per cent increase from last year's Rs 2,478 crore.
5) India currently has 75 Ramsar sites, which are wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands.
6) These wetlands have rare or unique biodiversity and play a huge role in protecting the ecological biodiversity of a region. "Local communities have always been at the forefront of conservation efforts," Sitharaman added.
7) The government will promote their unique conservation values through Amrit Dharohar. This scheme will be implemented over the next three years to encourage optimal use of wetlands and enhance bio-diversity, carbon stock, eco-tourism opportunities and income generation for local communities, the minister said.

GREEN GROWTH

NATIONAL GREEN HYDROGEN MISSION:

1) An outlay of Rs 19,700 crores has been allocated to the NGHM to facilitate transition of the economy to low carbon intensity, reduce dependence on fossil fuel imports, and make the country assume technology and market leadership in this sunrise sector.
2) The target is to reach an annual production of 5 MMT by 2030.

GOBARdhan Scheme:

1) 500 new 'waste to wealth' plants under GOBARDHAN SCHEME will be established to promoteCIRCULAR ECONOMY (200CBG PLANTS and 300 community/cluster-based plants). Total Investment - Rs 10,000 crore.
2) In due course, a 5% CBG mandate will be introduced for all organizations marketing natural and biogas.

Bhartiya Prakritik Kheti Bio-Input Resource Centres:

- Over the next 3 years, the Centre will facilitate 1 crore farmers to adopt natural farming by setting up 10,000 Bio-Input Resource Centres, creating a national-level distributed micro-fertilizer and pesticide manufacturing network.

OTHER INVESTMENTS IN GREEN ENERGY:

1) **Rs. 35,000 crore for priority capital investments towards energy transition** and NET ZERO OBJECTIVES and energy security (Ministry of Petroleum & Natural Gas).
2) **Battery Energy Storage Systems** with capacity of 4,000 MWH to be supported with VGF
3) **Rs 20,700 crore** (central support - Rs 8,300 crore) for **inter-state transmission system** for evacuation AND GRID INTEGRATION **of 13 GW renewable energy from Ladakh.**

MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes)

1) MISHTI is a new programme that will facilitate mangrove plantation along India's coastline and on salt pan lands. The programme will operate through "convergence between MGNREGS, Campa Fund and other sources," the FM said.
2) This new programme will aim at intensive afforestation of coastal mangrove forests. India has such forests on both its Eastern and Western coasts with the Sundarbans in Bengal being one of the largest mangrove forests on the planet.
3) Mangroves are not just some of the most bio-diverse locations in India, they also protect the coastlines from the vagaries of inclement weather. As climate change increases the incidence of extreme weather events across the world, mangrove plantations have shown to

make coastal lands resilient, preventing flooding, land erosion and acting as a buffer for cyclones.

4) Furthermore, they are also excellent carbon sinks. Mangrove trees can grow in saline waters, and can sequester up to four times more carbon than tropical rainforests.

PM PRANAM (PRIME MINISTER PROGRAMME FOR RESTORATION, AWARENESS, NOURISHMENT AND AMELIORATION OF MOTHER EARTH)

- This programme will seek to incentivise states and union territories promoting alternative fertilisers and the balanced use of chemical fertilisers. In September last year,
- The programme aims to ultimately bring down the government's subsidy burden, which is estimated to reach Rs 2.25 lakh crore in 2022-23: 39 per cent higher than last year's figure of Rs 1.62 lakh crore.

Bhartiya Prakritik Kheti Bio-Input Resource Centres

- To further facilitate the adoption of "natural farming," 10,000 Bio-Input Resource Centres will be set-up, creating a national-level distributed micro-fertiliser and pesticide manufacturing network. This will impact over 1 crore farmers over the next three years, the finance minister said in her speech.

1) Chemical fertilisers revolutionised agriculture when they were introduced, more than half a century ago. However, they also pose multiple risks that are increasingly being understood by scientists.
2) They are known to be a major source of water pollution – impacting both groundwater and rivers, ponds and lakes. Eutrophication caused by excessive use of chemical fertilisers is a death knell for fishes and other aquatic life, often covering lakes and ponds with a thick layer of algae and reducing the oxygen content in the water. Over a long period of time, they can also harm the soil, causing acidification, and hence have an impact on the land's productivity. Lastly, studies have found a link between the excessive use of chemical fertilisers and incidence of cancer among farmers.
3) The challenge for today's scientists and policy makers is to slowly wean the agricultural economy of chemical fertilisers while maintaining the high yields that they provide.

AMRIT DHAROHAR

1) This is a scheme that will be implemented over the next three years to encourage optimal use of wetlands, and enhance bio-diversity, carbon stock, eco-tourism opportunities and income generation for local communities.
2) Amrit Dharohar will emphasise on the importance of wetlands and their preservation, with an outlook that is inclusive of local communities as caretakers of the ecosystem.

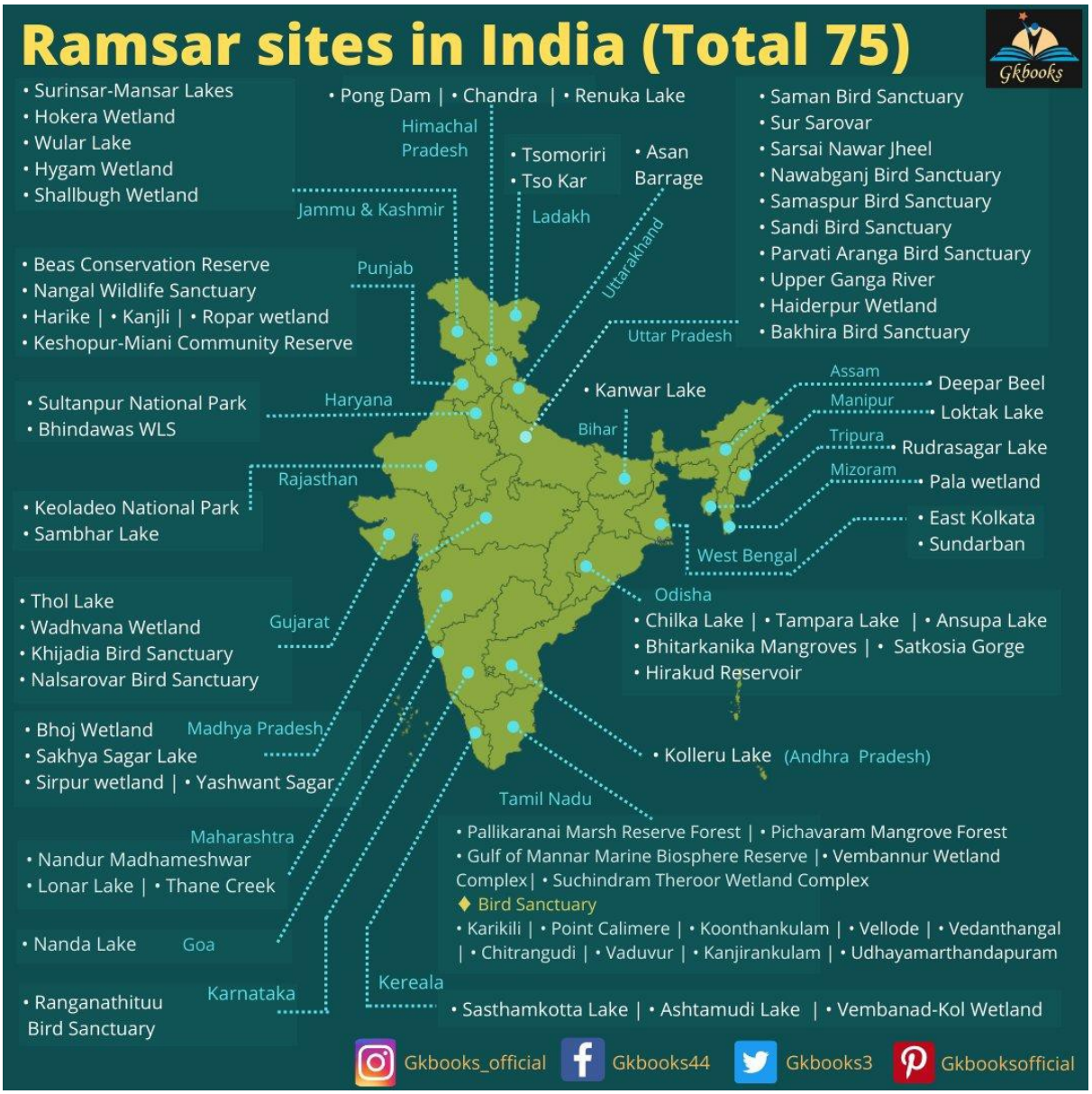
- The government had previously identified the importance of wetland ecosystems, with Prime Minister Narendra Modi saying in Man ki Baat, ""Now the total number of Ramsar sites in our country has increased to 75. Whereas, before 2014, there were only 26…"
-
- Ramsar sites are wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands (1971) for containing representative, rare or unique wetland types or for their importance in conserving biological diversity. These sites sustain a diverse variety of flora and fauna, from endangered aquatic life to migratory birds.
- India's 75 Ramsar sites are spread across the country, covering 1326678 hectares, according to a PIB press release. As many as 49 new sites have been added to the list since 2019, with 19 being added in 2022.

CHEETAH INTRODUCTION IN INDIA

- The last cheetahs in the Indian wilderness were recorded in 1947 where three cheetahs were shot in the Sal (Shorea robusta) forests of Koriya District, Chhattisgarh State. The main reasons for the extinction of cheetah in India were large scale capture of animals from the wild for coursing, bounty and sport hunting, extensive habitat conversion along with consequent decline in prey base and in 1952 Cheetahs were declared as extinct by the Government.
- The Government of India initiated G2G consultative meetings with Republic of Namibia which culminated in the signing of MoU between the two countries on 20th July 2022 for cheetah conservation. Following the signing of MoU, in a historic first wild to wild intercontinental translocation, eight cheetahs were translocated from Namibia to India on 17th September, 2022 and were released into the quarantine bomas by the Prime Minister of India. Post the mandatory quarantine period, the cheetahs have been released into the larger enclosure in phased manner. All the eight individual cheetahs are doing very well in terms of taking of feed, body condition, behaviour, activity and overall fitness.
- The goal of Cheetah introduction project in India is to establish viable cheetah meta-population that allows the cheetah to perform its functional role as a top predator and provide space for the expansion of the cheetah within its historic range thereby contributing to its global conservation efforts.
- The major objective of the introduction project is restoring open forest and savannah grassland that will benefit biodiversity and ecosystem services from these ecosystems. Further, the project provides opportunity for eco-development and eco-tourism to enhance local community livelihoods.
- Modalities of taking the cheetah project forward have already been discussed with South African Authorities and a second batch of 12 cheetahs are likely to be translocated to India during January 2023.

INDIA ESTABLISHES ASIA'S LARGEST RAMSAR SITES NETWORK IN THE 75TH YEAR OF INDEPENDENCE.

1) On the eve of 76th Independence Day (15th August 2022), India added ten wetlands to the List of Wetlands of International Importance (also called Ramsar Sites) within the framework of the Ramsar Convention, taking the total number of Ramsar Sites in India to incredible 75, the highest in Asia, in the 75th year of its independence.
2) India ratified the Ramsar Convention in 1982. Keoladeo National Park (in Rajasthan) and Chilika (in Odisha) were the first two sites to be placed on the Ramsar List by the Government of India. Till 1990, only four more sites were added to the list, and another 20 over the following two decades. Since 2014, Ramsar Site designation has received a significant policy push from the MoEFCC, and 49 wetlands have been added to the list. The network of Indian Ramsar Sites currently covers 1.33 million ha, which is approximately 8% of the known wetland extent of the country.
3) Ramsar Sites form an international network of wetlands which are important for conserving global biological diversity and sustaining human lives through the maintenance of their ecosystem components, processes and services. The international significance of these sites is indicated by their fulfilling at least one of the nine criteria set by the Convention. With 2,455 sites spanning 255.8 million ha, the Ramsar sites represent the world's largest protected area network.



1) The Ramsar sites in India are highly diverse. The contribution that Ramsar sites make to biological diversity can hardly be over emphasised.
2) A recent compilation of faunal diversity of 42 Indian Ramsar Sites by the Zoological Survey of India enlists 6200 species.
3) For several of the faunal groups, these wetlands represent a significant share of the known diversity (for example, over one-third of recorded mammalian species, one-fifth of reptiles, and about two-thirds of known bird species). While the smallest Ramsar Site is just 19.75 ha in the area (Vembannur), the largest, the Sunderbans, spans 0.42 million ha.
4) Ramsar Sites are one of the three pillars of the Ramsar Convention, the other two being working towards the wise use of wetlands and cooperating internationally on transboundary wetlands, shared wetlands and shared species.
5) The Ramsar Convention's pillar of wetlands wise use is very well aligned with L.I.F.E., international mass movement launched by Prime Minister Narendra Modi towards "mindful and deliberate utilization, instead of mindless and destructive consumption" to protect and preserve the environment.

6) Since 1986, the MoEFCC has been implementing a national scheme (presently known as the National Plan for Conservation of Aquatic Ecosystems) to assist state governments in preparing and implementing integrated management plans for Ramsar sites and other priority wetlands. Ramsar sites receive legal protection under Wetlands (Conservation and Management) Rules, 2017.
7) Each Ramsar site needs to have a management plan which outlines the pathway to wise use. A diagnostic approach for developing such management plans has been prescribed by the Ministry. In June 2022, the Ministry also formulated the 'Sahbhagita Guidelines' outlining an "all of society" approach and governance framework for wetlands conservation in the country.

Ban on identified Single Use Plastics from 1 July 2022 and Plastic Waste Management

1) India has taken resolute steps to reflect its commitment to eliminate single use plastics that are not biodegradable and have an adverse impact on environment.
2) The strategy adopted by the Government to tackle unmanaged and littered plastic waste has two pillars – ban on single use plastic items which have high littering potential and low utility, and implementation of extended producer responsibility on plastic packaging.
3) The country has taken a defining step to eliminate single use plastics. A ban has been imposed on identified single use plastic items from 1st July 2022. The ban was notified on 12th August 2021.
4) Ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene (Thermocol) for decoration; Plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 microns, stirrers.
5) Thickness of Plastic carry bags increased to 75 microns (30.9.2021) and to 120 microns (31.12.2022).
6) The introduction and use of alternatives to banned single use plastic items have led to creation of new employment opportunities, promote innovation and development of new business models.
7) The manufacturing of alternatives with eco-friendly material in the MSME sector will further support development of Atmanirbhar Bharat.
8) India had piloted a resolution in 2019 for addressing pollution caused by single use plastics which was adopted by the 4th meeting of United Nations Environment Assembly in 2019.
9) To develop alternatives to single use plastics "India Plastic Challenge – Hackathon 2021" was organized by the Ministry of Environment, Forest and Climate Change, for start-ups and students of colleges and Universities.
10) Two startups in the area of alternatives to single use plastics were awarded. A completely biodegradable alternative to thermocol from paddy straw waste (Parali) has been developed. This innovation will use Parali and also replace thermocol. Packaging material from seaweed has been developed as innovative alternative to single-use plastics.
11) National Expo on Eco-Alternatives to single use plastic and start up conference 2022 held on 26th and 27th September 2022 in Chennai. More than 150 manufacturers of eco-alternatives from across the country are participating in the Expo.
12) The eco-alternatives included material made from sea-weed, bagasse, rice and wheat bran, rice stubble, plant and agricultural residue, banana and areca leaves, jute and cloth.
13) Prakriti- Messenger of the Earth was launched as a mascot of sustainability and protection of environment spread awareness amongst general public.
14) A public movement is being built on elimination of single use plastics by NSS, NCC and more than 100,000 eco-clubs in schools and colleges. Puneet Sagar and Swachh Sagar Surakshit Sagar Campaign have showcased the importance of collective action in maintaining clean beaches and coasts.

15) The Guidelines for Extended Producer Responsibility on plastic packaging are unique and have led to the establishment of world's biggest framework for EPR implementation on plastic packaging.
16) The implementation of EPR on plastic packaging will lead to reduction in littered and unmanaged plastic waste in the country, promote circular economy of plastic packaging waste promote development of new alternatives to plastics and development of new business models move towards sustainable plastic packaging.
17) The EPR framework is implemented through a centralized online portal ensuring ease of doing business.
18) The Guidelines for EPR in plastic packaging promote an environmentally conscious lifestyle that focuses on 'mindful consumption' through the reuse of rigid plastic packaging and sustainable plastic packaging instead of 'mindless and destructive consumption' of single-use plastics.
19) The Guidelines for EPR in plastic packaging give a push for reducing plastic footprint in packaging through the use of recycled plastic content in manufacturing of plastic packaging material.

TX2 International Award to Tiger Reserves of India

1) The TX2 a Tiger Conservation Excellence award is organized by a consortium of international organisations namely the Conservation Assured | Tiger Standards (CA|TS), Fauna & Flora International, Global Tiger Forum, IUCN Integrated Tiger Habitat Conservation Programme, Panthera, UNDP Lion's Share, Wildlife Conservation Society and WWF's Tigers Alive Initiative.
2) The award is given to tiger reserves that have made significant progress towards doubling the tiger number since 2010 or displayed conservation excellence.
3) In 2010, the ambitious goal of doubling wild tiger number by 2022 was set by the 13 tiger range countries. The tiger reserves/ tiger conservation sites of range countries can submit the applications for TX2 awards.
4) From India, in 2020, the Pilibhit Tiger Reserve, Uttar Pradesh won the TX2 award and the Manas Tiger Reserve, Assam was selected for Conservation Excellence award for the transboundary conservation partnership.
5) The TX2 award for the year 2021 was bagged by the Sathyamangalam Tiger Reserve, Tamil Nadu. Declared as tiger reserve in 2013, the Sathyamangalam had a tiger population of 25 individuals in 2011.
6) Sustained management inputs (both technical and financial) by both Central Government and State Government for tiger conservation in Sathyamangalam have resulted increase in tiger numbers to 80 owing to enhanced protection, improved habitat management, scientific monitoring and involvement of local communities.
7) There are 53 Tiger Reserves covering an area of 75000 Sq Km in the country. India harbours more than 70% of the global tiger population and has honour of the largest tiger range country in the world.
8) Tigers are apex predator in the ecosystem and conserving tigers results in maintaining the balance of the ecosystem, conservation of the entire gamut of the biodiversity and ecosystem services.

STATE OF INDIA'S ENVIRONMENT REPORT 2022

Recently, the **Centre for Science and Environment (CSE),** released the **State of India's Environment Report 2022.**

- 75% of river monitoring stations report heavy metal pollution according to the recent State of Environment Report 2022.

- It is published by the environmental NGO, the Centre for Science and Environment (CSE).

KEY OBSERVATIONS OF THE REPORT:

River Pollution:

1) Three out of every four river monitoring stations in India posted alarming levels of heavy toxic metals such as **lead, iron, nickel, cadmium, arsenic, chromium and copper.**

2) In about a fourth of the **monitoring stations,** which are spread across **117 rivers and tributaries**, high levels of two or more toxic metals were reported.

3) Of the 33 monitoring stations in **Ganga**, 10 had high levels of contaminants.

The river has high levels of lead, iron, nickel, cadmium and arsenic.

1) India has 764 river quality monitoring stations across 28 states.

2) Of these, the Central Water Commission tested water samples from 688 stations for heavy metals between August 2018 and December 2020.

a) Of the 588 water quality stations monitored for pollution, total **coliform and biochemical oxygen demand** were high in 239 and 88 stations across 21 States - an indicator of poor wastewater treatment from **industry, agriculture and domestic households.**

b) India dumps **72% of its sewage waste without treatment.**

c) Ten States do not treat their sewage at all, as per the Central Pollution Control Board.

Coastline Erosion:

1) Over a third of India's coastline that is spread across 6,907 km saw some degree of erosion between 1990 and 2018.

2) **West Bengal** is the worst hit with over 60% of its shoreline under erosion.

3) Twenty-five **glacial lakes and water bodies** in **India, China and Nepal** have recorded **over 40% rise** in their water spread areas since 2009.

4) This has indicated a grave threat to five Indian states and two Union territories.

5) While the global average of the **Ocean Health Index**, a measure that looks at how sustainably humans are exploiting ocean resources, has improved between 2012 and 2021, India's score in the index has declined over the same period.

FOREST COVER:

1) India's total forest cover has registered a little over a **0.5% increase** between 2017 and 2021.

2) Most of the increase has taken place in the open forest category, which includes **commercial plantations.**

3) This has happened **at the cost of moderately dense forest,** which is normally the **area closest to human habitations.**

4) At the same time, **very dense forests,** which absorb maximum carbon dioxide from the atmosphere, occupy **just 3% of total forest cover.**

5) India has a forest cover of 77.53 million hectares. But recorded forests—the area under the forest department— with forest cover are only 51.66 million.

6) This gap of 25.87 million hectares —a size bigger than Uttar Pradesh— remains unaccounted, the organisation noted.

RIVER POLLUTION:	

REASONS	SOLUTIONS
1) The **sewage treatment plants are** major contributors of the Pollutants being discharged in the river. 2) **Pollutants** discharged from different types of **industries** is also a major issue. 3) **Agricultural activities** along the banks of the river contribute to river pollution. 4) **Agricultural waste and pesticide discharge** from the field also contribute to pollution. 5) **The low volume of water flow** in the river causes the pollutants to accumulate and raise the pollution level. 6) Spills or leaks from oil and chemical containers **MAJOR RIVER POLLUTANTS:** 1) Lead, iron, nickel, cadmium, arsenic, chromium and copper. 2) Organic pollutants, inorganic pollutants, pathogens, suspended solids, nutrients and agriculture pollutants, thermal, radioactive pollutants, heavy metals, etc,	Water conservation and Vegetation Planning: ➢ Water management must go hand-in-hand with vegetation planning to improve the ability of soils to hold water, even in times of intense and prolonged heat. Stopping discharge: ➢ Industrial discharge and agricultural runoff is the major reason of river pollution and should be controlled with policy implementations and awareness generation campaigns. Water Reuse: ➢ Even the wastewater that is currently being left to flow down drain pipes should also be utilised. Improved Infrastructure: ➢ As extreme rains become the norm, the structures being created under MGNREGA will need to be redesigned so that they last over the seasons.

COASTLINE EROSION: REASONS	SOLUTIONS
• The major reasons for coastal erosion include- 1) An increase in frequency of cyclones and 2) Sea-level rise 3) anthropogenic activities- ➢ The construction of harbors. ➢ beach mining. ➢ building of dams. 1) **Hydraulic action:** Hydraulic action occurs when waves striking a cliff face compress air in cracks on the cliff face.	Hard-erosion control methods: ➢ Seawalls and groynes serve as semi-permanent infrastructure. ➢ These structures are not immune from normal wear-and-tear and will have to be refurbished or rebuilt. Soft erosion strategies: ➢ These include Sandbag and beach nourishment.

2) **Attrition:** Attrition occurs when waves cause loose pieces of rock debris to collide with each other, grinding and chipping each other, progressively becoming smaller, smoother and rounder. 3) **Solution:** Solution is the process in which acids contained in sea water will dissolve some types of rock such as chalk or limestone. 4) **Abrasion:** Abrasion, also known as corrasion, occurs when waves break on cliff faces and slowly erode it.	➢ These are temporary options slowing the effects of erosion. <u>Relocation:</u> ➢ Relocation of infrastructure any housing farther away from the coast is also an option. Living shoreline: ➢ It uses plants and other natural elements. ➢ They are found to be more resilient against storms, improve water quality, increase biodiversity, and provide fishery habitats.

FOREST COVER REDUCTION: **REASONS**	**Solutions**
<u>Deforestation:</u> ➢ Conversion of forests for other land uses, including plantations, pastures, settlements, roads and infrastructure. ➢ Worldwide, the 420 million hectares of forests have been lost between 1990 and 2020, due to deforestation. ➢ <u>Climate Change:</u> ➢ As a critical factor of earth's ecosystem, vegetation is sensitive to climate change and its feedback has a pronounced effect on climate, hydrology, and ecology, etc. <u>Wood based fuel:</u> ➢ Approximately 124 million more people fell into extreme poverty after COVID-19 and this may have longer-term impacts on wood-based fuel, as there is evidence of increased wood-based fuel use in some countries during the pandemic. <u>Population:</u> ➢ Increases competition for land, as the demand for food for this large population. ➢ The demand for food is predicted to rise by 35 to 56 per cent by the 2050s. <u>Biomass extraction:</u>	<u>Land use planning:</u> ➢ Better and more responsible land-use planning to address the underlying drivers of forest cover reduction. <u>Policy framing:</u> ➢ Directing funding for recovery towards long-term policies aimed at creating sustainable and green jobs and further mobilising private-sector investment. <u>People's participation:</u> ➢ Empowering and incentivizing local actors, including women, youth and Indigenous Peoples, to take a leading role in the forest pathways. <u>Maximising synergies:</u> ➢ Maximising synergies among the three forest pathways and between agricultural, forestry, environmental and other policies and minimising trade-offs. <u>Global Warming solutions:</u> ➢ We need to act now to keep the **global temperature rise below 1.5°C**, reduce the risk of future pandemics, ensure food security and nutrition for all, eliminate poverty, conserve

➢ Demand for forest-based biomass is expected to rise further, mainly due to construction and packaging.	the planet's biodiversity and offer young people hope of a better world and a better future for all.

GOVERNMENT INITIATIVES

National River Conservation Plan for abatement of pollution:

- The plan has identified stretches of various rivers and undertaken conservation activities like interception & diversion of raw sewage, construction of sewerage systems, setting up of sewage treatment plants, low cost sanitation facilities, education and awareness creation, community participation, electric/improved wood crematoria and riverfront development.

Namami Gange Programme:

- It is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government.
- It aims to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga.
- The programme has also been assisted by World Bank.

Indian National Centre for Ocean Information Services (INCOIS):

- INCOIS has prepared and published an **atlas of Coastal Vulnerability Index (CVI)** maps for the entire coastline of India at a 1:100000 scale.
- It uses data on sea level rise, coastal slope, shoreline change rate, coastal elevation, coastal geomorphology, tidal range and significant wave height.

Integrated Coastal Zone Management Project (ICZMP):

- It is a World Bank supported project that aims to build national capacity for implementation of comprehensive coastal management approach in India
- To implement ICZMP project, Ministry of Environment has established Society of Integrated Coastal Management (SICOM).

Declaration on Forests and Land Use:

- More than 140 countries have pledged, through **the Glasgow Leaders' Declaration on Forests and Land Use, to eliminate forest loss by 2030** and to support restoration and sustainable forestry.
- An additional $19 billion has been allocated to help developing countries achieve these objectives.

World Environment Day

1) World Environment Day (WED) is celebrated annually on **5 June**.
2) It was first held in 1973.
3) It has been a platform for raising awareness on environmental issues such as

- Marine pollution,
- Alien overpopulation(invasive alien species),
- Global warming,
- Sustainable consumption and

- Wildlife crime.

A. It is a global platform for public outreach, with participation from **over 143 countries** annually.
B. Each year, the program has provided **a theme and forum** for businesses, non government organizations, communities, governments and celebrities to advocate environmental causes.
C. **The theme of World Environment Day 2022** is **Only One Earth**, focusing on "Living Sustainably in Harmony with Nature".

- The report is the annual publication of the Centre for Science and Environment, and Down To Earth (magazine).
- The report focuses on climate change, migration, health and food systems. It also covers biodiversity, forest and wildlife, energy, industry, habitat, pollution, waste, agriculture and rural development.
- CSE is a public interest research and advocacy organisation based in New Delhi.
- India Stand on Achieving its National Targets
- Economy: The target for the economy is to raise the Gross Domestic Product (GDP) to nearly USD 4 trillion by 2022-23. But by 2020, the economy has grown only to USD 2.48 trillion.

The economy has largely shrunk during the Covid-19 pandemic, making it even more difficult to meet the deadline.

Employment: The target is to increase the female labour force participation rate to at least 30% by 2022-23.

It stood at 17.3% in January-March 2020.

- Housing: The targets are to construct 29.5 million housing units under Pradhan Mantri Awas Yojana (PMAY)-Rural and 12 million units under PMAY-Urban.

Only about 46.8% and 38% respectively of the targets under 'Housing for All' have been achieved.

- Drinking Water: The target is to provide safe piped drinking water to all by 2022-23.

Only 45% of the target has been achieved.

- Agriculture: The target is to double farmers' income by 2022. While the average monthly income of an agricultural household has increased to Rs 10,218 from Rs 6,426, this increase is largely due to increase in wages and income from farming animals.

1) The share of income from crop production in the average monthly income of an agricultural household has, in fact, dropped — to 37.2% in 2018-19, from 48% in 2012-13.
2) Digitisation of Land Records: Another target is to digitise all land records by 2022. While states like Madhya Pradesh, West Bengal and Odisha have made good progress, states like Jammu and Kashmir, Ladakh and Sikkim languish at 5%, 2% and 8.8% digitisation of land records, respectively.
3) Overall, the target is unlikely to be met, particularly because 14 states have witnessed deterioration in the quality of land records since 2019-20.

- Air Pollution: The target is to bring down Particulate Matter (PM) 2.5 levels in Indian cities to less than 50 micrograms per cubic metre (µg/m3). In 2020, when vehicular movement was restricted due to the pandemic, 23 of the 121 cities monitored for PM2.5 exceeded 50 $\mu g/m^3$.

Solid Waste Management: The target is to achieve 100% source segregation in all households.

- The overall progress is 78%; and while states like Kerala and Union territories like Puducherry have achieved the target, others like West Bengal and Delhi are woefully behind.
- **Manual scavenging** is targeted for eradication, but **India still has 66,692 manual scavengers.**

Forest Cover: The target is to increase it to 33.3% of the geographical area, as envisaged in the **National Forest Policy, 1988.**

By 2019, 21.6% of India was under forest cover.

Energy: The target is to achieve **175 GW of renewable energy** generation capacity by 2022.

Only 56% of this target has been achieved thus far.

INDIA'S PERFORMANCE ON SUSTAINABLE DEVELOPMENT GOALS

India has slipped three spots to rank 120 on the 17 Sustainable Development Goals (SDG) adopted as a part of the 2030 agenda by 192 United Nations member states in 2015.

INDIA'S INDICES ON SDGS:

SDG INDIA INDEX:

1) The Index for Sustainable Development Goals (SDGs) evaluates the progress of states and Union Territories (UTs) on various parameters including health, education, gender, economic growth, institutions, climate change and environment.
2) The index is developed in collaboration with the United Nations in India.
3) The index has become the primary tool for monitoring progress on the SDGs in India.
4) It has also fostered competition among the states and UTs by ranking them on the global goals.
5) The SDG India Index scores range between 0–100, higher the score of a State/UT, the greater the distance to the target achieved.

Top 5 positions

State	Score
Kerala	75
Himachal Pradesh, Tamil Nadu	74
Andhra Pradesh, Goa, Karnataka, Uttarakhand	72
Sikkim	71
Maharashtra	70

Bottom 5 positions

State	Score
Chhattisgarh, Nagaland, Odisha	61
Arunachal Pradesh, Meghalaya, Rajasthan, Uttar Pradesh	60
Assam	57
Jharkhand	56
Bihar	52

INDIA'S PERFORMANCE:

1) The country's overall SDG score improved by 6 points — from 60 in 2019 to 66 in 2020-21 — on accounts of improvement in performance in providing facilities including clean water and sanitation, affordable and clean energy among others.
2) While Kerala retained its rank at the top with a score of 75, Himachal Pradesh and Tamil Nadu both took the second spot with a score of 74. Bihar, Jharkhand and Assam were the worst performing states in this year's India index.
3) Chandigarh maintained its top spot among the UTs with a score of 79, followed by Delhi (68).

SDG URBAN INDEX:

1) NITI Aayog under the Indo-German Cooperation released the inaugural SDG Urban Index in 2021–22.
2) It ranks 56 urban areas on 77 SDG indicators across 46 targets of the SDG framework.
3) It will further strengthen SDG localization and institute robust SDG monitoring at the city level.

Performance of the urban areas in India:

- Shimla tops the Index followed by Coimbatore and Chandigarh.

- India's rank in the global Sustainable Development Report, 2022 has slipped for the third consecutive year. India has been ranked 121 in the index with an **SDG index score of 60.3**. It ranked 117 in 2020 and 120 in 2021.

1) In 2021 India ranked 117 among 192 nations.
2) India's overall SDG score was 66 out of 100.

India's **rank dropped primarily because of major challenges in 11 SDGs** including zero hunger, good health and wellbeing, gender equality and sustainable cities and communities.

India also **performed poorly in dealing with quality education and life on land aspects**.

- In 2021, India had suffered on the fronts of ending hunger and achieving food security, achieving gender equality and building resilient infrastructure, promoting inclusive and sustainable industrialisation and fostering innovation.

INDIAN STATES

- Jharkhand and Bihar are the least prepared to meet the SDGs by the target year 2030.
- Kerala ranked first, followed by Tamil Nadu and Himachal Pradesh in the second position.
- The third position was shared by Goa, Karnataka, Andhra Pradesh and Uttarakhand.
- Among the Union Territories, Chandigarh was ranked first, followed by Delhi, Lakshadweep and Puducherry in the second place and the Andaman and Nicobar Islands on the third

WORLD WILDLIFE DAY

celebrated every year on the 3rd of March since 2013.

- ❖ The date chosen coincides with the day of the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** which was signed in 1973.
- ❖ The **UNGA (General Assembly) resolution also designated the CITES Secretariat** as the facilitator for the global observance of this special day for wildlife on the **UN (United Nations)** calendar.

THEME OF 2022

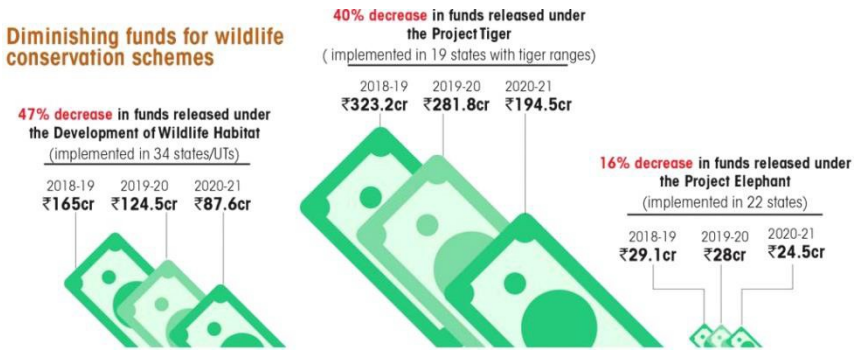
1) Theme: Recovering key species for ecosystem restoration.
2) This theme is chosen as a way to draw attention to the conservation status of some of the most critically endangered species of wild fauna and flora.

Significance

1) This aligns with UN **Sustainable Development Goals 1, 12, 14 and 15**, and their wide-ranging commitments on alleviating **poverty,** ensuring sustainable use of resources, and on conserving life both on land and below water to halt biodiversity loss.
2) Our planet is currently facing the urgent challenge that is the loss of biodiversity and up to a million species could disappear in the coming decades if unsustainable human activity, **climate change** and habitat degradation are left unchecked.

STATUS OF SPECIES OF FAUNA AND FLORA

1) Around more than **8000 species of wild fauna and flora are endangered** and close to 30,000 more are known to be on the verge of getting extinct or vulnerable.
2) It is also estimated that **around a million species are extinct.**
3) India accounts for **7-8% of all recorded species,** including over **45,000 species of plants and 91,000 species of animals.**
4) India is one of the **most biodiverse regions of the world**, home to three biodiversity hotspots - **the Western Ghats, the Eastern Himalayas, and the Indo-Burma hotspot.**
5) The country has **seven natural World Heritage Sites, eleven Biosphere Reserves and forty nine Ramsar sites.**
6) India is home to a **number of wildlife conservation parks and sanctuaries,** notable among those are **Jim Corbett National Park** in Uttarakhand, **Ranthambore National Park** in Rajasthan, **Gir National Park** in Gujarat, Bannerghatta Biological Park in Karnataka, **Periyar National Park** in Kerala, Hemis National Park in Ladakh, **The Great Himalayan National Park** in Himachal Pradesh.
7) The main factors that **contribute to the extinction of species** include **human activities such as habitat loss due to urbanisation, overexploitation, moving species from their natural habitat**, global pollution and climate change.
8) **Illegal wildlife trade** is also unsustainable, harming wild populations of animals and plants and pushing endangered species toward extinction. It also brings several public health consequences, such as the spreading of **zoonotic pathogens.**



India's Domestic Legal Framework for Wildlife Conservation

CONSTITUTIONAL PROVISIONS FOR WILDLIFE:

1) By the **42nd Amendment Act 1976** of the Constitution "Forests" was added as Entry 17A in the Concurrent List and the "protection of wild animals and birds" was added as Entry 17B.
2) **Article 51 A (g)** of the Constitution states that it shall be the **fundamental duty** of every citizen to protect and improve the natural environment including forests and Wildlife.
3) **Article 48 A** in the **Directive Principles of State policy,** mandates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.

Legal Framework:

1) **Wildlife (Protection) Act, 1972**
2) **Environment Protection Act, 1986**
3) **The Biological Diversity Act, 2002**

India's Collaboration With Global Wildlife Conservation Efforts:

1) **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**
2) **Convention on the Conservation of Migratory Species of Wild Animals (CMS)**
3) **Convention on Biological Diversity (CBD)**
4) **World Heritage Convention**
5) **Ramsar Convention**
6) **The Wildlife Trade Monitoring Network (TRAFFIC)**
7) **United Nations Forum on Forests (UNFF)**
8) **International Whaling Commission (IWC)**
9) **International Union for Conservation of Nature (IUCN)**
10) G**lobal Tiger Forum (GTF)**

WILDLIFE CONSERVATION IN INDIA

- ❖ According to the recent data by the **Wildlife Crime Control Bureau (WCCB)** and **State Forest and Police Authorities**, in the past three years (2018-2020), about 2054 cases were registered for killing or illegal trafficking of wild animals in India.

1) In order to control this, the WCCB has conducted a number of **species-specific enforcement operations** with coordination of State Enforcement Agencies.
2) WCCB is a **statutory multi-disciplinary body** established by the Government of India under the Ministry of Environment and Forests, to combat organized wildlife crime in the country. It has its **headquarter in New Delhi.**

- Impact of Illegal Wildlife Trade:
  Species face extinction because of demands arising out of illegal wildlife trade.

1) **Overexploitation of the wildlife resources** due to its illegal trade creates imbalances in the ecosystem.
2) Illegal wildlife trade as part of the illegal trade syndicates **undermines the economy of the country** and thereby creates social insecurity.
3) Wild plants that provide **genetic variation for crops** (natural source for many medicines) are threatened by the illegal trade.

- ➢ **WCCB** has conducted a number of **species-specific enforcement operations** with coordination of State Enforcement Agencies.

- WCCB is a **statutory multi-disciplinary body** established by the Government of India under the Ministry of Environment and Forests, to **combat organized wildlife crime in the country**. It has its **headquarter** in New Delhi.

SPECIES-SPECIFIC ENFORCEMENT OPERATIONS

SAVE KURNA:

- WCCB had launched **Operation "Save Kurma"** from 15th December 2016 to 30th January 2017.
- Its aim is to focus on:
- poaching,
- transportation and illegal trade of live turtles and tortoises.

OPERATION TURTSHIELD:

- Another operation **"Operation Turtshield- I"** from 1st December 2019 to 31st January 2020 and **Operation Turtshield-II"** (1st December 2020 to 28th February 2021) was taken up.
- Its aim was to **tackle the illegal trade of live turtles**.

OPERATION LESKNOW:

- WCCB conducted **Operation "Lesknow"** (1st August 2017 to 31st Aug 2017), "**Lesknow-II**" (1st September 2018 to 30th September 2018) and **Operation "Lesknow-III"** (1st September, 2019 to 30th September 2019)
- Its focus was to gain attention of enforcement agencies towards the illegal wildlife trade in **lesser-known species of wildlife**.

OPERATION CLEAN ART:

1) It was launched by WCCB in October 2019.
2) Its aim was to drag attention of enforcement agencies towards illegal wildlife trade in **Mongoose hair brushes**

Operation Softgold:

1) It was in operation from 1st October, 2018 to 31st March, 2019
2) Its aim was to tackle **Shahtoosh Shawl** (made from Chiru wool) illegal trade and to spread awareness among the weavers and traders engaged in this trade.

OPERATION BIRBIL:

1) Its aim was to curb illegal trade in **wild cat and wild bird species**.
2) It resulted in 23 cases being detected during the operation out of which 9 cases involved seizure of different bird species.

OPERATION WILDNET:

- It aimed to draw the attention of the enforcement agencies within the country to focus their

STEPS TAKEN

- **Wildlife Protection Act 1972:** Protected Areas like National Parks, Biodiversity Reserves, etc. were created
- **Project Tiger:** Initiated in 1972. It helped in the conservation of both tigers and the entire ecosystem.
- **Project Elephant:** Initiated in 1992 with the aim of conserving elephants and their habitat and of migratory routes by developing scientific and planned management measures.
- **Crocodile Conservation Project:** The main objectives of the crocodile project is to protect the remaining population of crocodiles and their natural habitat by establishing sanctuaries.
- **UNDP Sea Turtle Project:** To conserve the Olive Ridley Turtles. Initiated by Wildlife Institute of India, Dehradun as the Implementing Agency in 1999.
- **Cheetah Reintroduction Programme** in Kuno Palpur sanctuary in Madhya Pradesh from Namibia.
- **Vulture Conservation:** National Board for Wildlife (NBWL) has cleared a plan for conserving vultures.
- **India Rhino Vision (IRV) 2020:** The goal of IRV2020 was to increase the rhino population in Assam to 3,000 by establishing populations in new areas.
- **Wetland (Conservation and Management) Rules 2010** have been drafted to protect wetlands in India.
- **Related Organisations:** Wildlife Crime Control Bureau, Central Zoo Authority, National Tiger Conservation Authority, Wildlife SOS, Wildlife Trust of India, Wildlife Institute of India, Aaranyak, Nature Conservation Foundation, etc.
- **Citizens' participation:** The Prime Minister called for active participation of people in conservation efforts.

attention on the ever **increasing illegal wildlife trade over internet** using social media platforms.

OPERATION FREEFLY:

- Its focus was on illegal trade of **live birds** and "

OPERATION WETMARK:

- Its focus was to ensure **prohibition of sale of meat of wild animals** in wet markets across the country.

IMPACT OF ILLEGAL WILDLIFE TRADE

1) **Species face extinction** because of demands arising out of illegal wildlife trade.
2) **Overexploitation of the wildlife resources** due to its illegal trade creates imbalances in the ecosystem.
3) Wild plants that provide **genetic variation for crops** are threatened by the illegal trade.
4) Illegal wildlife trade as part of the illegal trade **syndicates undermines the economy of the country** and thereby creates social insecurity.

CONSTITUTIONAL PROVISIONS

1) **Article 51 A (g) of the Constitution** states that it shall be the fundamental duty of every citizen to protect and improve the natural environment including forests and Wildlife.
2) **Article 48 A in the Directive Principles of State policy**, mandates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.

1) VARIOUS SPECIES-SPECIFIC ENFORCEMENT OPERATIONS:

Operation Save Kurma: To focus on the poaching, transportation and illegal trade of live **turtles and tortoises.**

2) Operation Turtshield: It was taken up to tackle the illegal trade of live **turtles.**

3) Operation Lesknow: To gain attention of enforcement agencies towards the illegal wildlife trade **in lesser-known species of wildlife.**

4) Operation Clean Art: To drag attention of enforcement agencies towards illegal wildlife trade **in Mongoose hair brushes.**

5) **Operation Softgold:** To tackle **Shahtoosh Shawl** (made from Chiru wool) illegal trade and to spread awareness among the weavers and traders engaged in this trade.

6) Operation Birbil: To curb illegal trade **in wild cat and wild bird species.**

7) **Operation Wildnet:** It was aimed to draw the attention of the enforcement agencies within the country to focus their attention on the **ever increasing illegal wildlife trade over the internet** using social media platforms.

8) Operation Freefly: To check illegal trade of **live birds.**

9) **Operation Wetmark**: To ensure **prohibition of sale of meat of wild animals** in wet markets across the country.

A. **INDIA'S DOMESTIC LEGAL FRAMEWORK FOR WILDLIFE CONSERVATION:** **Constitutional Provisions for Wildlife:** The **42nd Amendment Act**, **1976**, Forests and Protection of Wild Animals and Birds was transferred from State to **Concurrent List**. B. **Article 51 A (g)** of the Constitution states	**INDIA'S COLLABORATION WITH GLOBAL WILDLIFE CONSERVATION EFFORTS:** **1) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** **2) Convention on the Conservation of Migratory Species of Wild Animals (CMS)** **3) Convention on Biological Diversity**

that it shall be the **fundamental duty** of every citizen to protect and improve the natural environment including forests and Wildlife. C. **Article 48 A** in the **Directive Principles of State policy**, mandates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country. **LEGAL FRAMEWORK:** **1) Wildlife (Protection) Act, 1972** **2) Environment Protection Act, 1986** **3) The Biological Diversity Act, 2002**	**(CBD)** **4) World Heritage Convention** **5) Ramsar Convention** **6) The Wildlife Trade Monitoring Network (TRAFFIC)** **7) United Nations Forum on Forests (UNFF)** **8) International Whaling Commission (IWC)** **9) International Union for Conservation of Nature (IUCN)** **10) Global Tiger Forum (GTF)**

INTERNATIONAL WHALING COMMISSION (IWC)

- IWC is an **Inter-governmental Organisation** whose purpose is the conservation of whales and the management of whaling.
- The legal framework of the IWC is the International Convention for the Regulation of Whaling which was established in 1946.
- The commission is the pre-eminent global body responsible for the conservation and management of whales and leads international efforts to tackle the growing range of threats to whales globally, including by-catch, ship strikes, entanglement, noise, and whaling.
- **India** is a member of IWC.

ANTARCTIC TREATY

1) The treaty was opened for signature on December 1, 1959, and officially entered into force on June 23, 1961.
2) The original signatories were 12 countries: Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Soviet Union, the United Kingdom and the United States.
3) **India** is also a party to the Antarctic Treaty.
4) Some important provisions of the Treaty:
5) Antarctica shall be used for **peaceful purposes** only.
6) **Freedom of scientific investigation** in Antarctica and cooperation toward that end shall continue.
7) Scientific observations and results from Antarctica shall be exchanged and made freely available.
8) India is expanding its infrastructure development in Antarctica. The government is rebuilding its station, **Maitri**, to make it bigger and last for at least 30 years.

ARCTIC COUNCIL

- **Established**: The Arctic Council was founded on the initiative of the Government of Finland in September 1989 where officials from the 8 Arctic Countries met in Rovaniemi, Finland, to discuss cooperative measures to protect the Arctic environment.
- **Headquarter**: The location of the Secretariat was rotated biennially with the Chairmanship of the Arctic Council.

- **Key Functions**:

The Arctic Council is an intergovernmental forum promoting cooperation, coordination, and interaction among the Arctic States, Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic.

The main focus areas of the Arctic Council are:

- The Environment and climate change
- Bio-diversity
- Oceans
- The indigenous Arctic peoples

Funding: By member states

India is an Observer State

BIO-CARBON FUND INITIATIVE

- **Established**: The BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) is a multilateral fund, supported by donor governments and **managed by the World Bank**. It is has been operational from 2013.
- **Headquarter**: USA
- **Key Functions:**

1) It seeks to promote reduced greenhouse gas emissions from the land sector, from deforestation and forest degradation in developing countries (REDD+), and from sustainable agriculture, as well as smarter land-use planning, policies and practices.
2) The initiative will be managed by the BioCarbon Fund, a public-private program housed within the World Bank that mobilizes finance for activities that sequester or conserve carbon emissions in forest and agricultural systems.
3) The new Initiative for Sustainable Forest Landscapes seeks to scale up land-management practices across large landscapes, including improved livestock management, climate-smart agriculture, and sustainable forest management, with a focus on protecting forests and greening and securing supply chains.
4) It will engage a broader range of actors, including the private sector, initially through a portfolio of four to six programs in Africa, Asia, and Latin America.

BIRDLIFE INTERNATIONAL

Former name — International Council for Bird Preservation

- Formation — 1922
- Type – INGO (international not-for-profit, non-governmental organisation)
- Headquarters — Cambridge, United Kingdom

1) global partnership of conservation organisations that strives to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources
2) It is the world's **largest partnership of conservation organisations,**
3) **Official listing authority for birds for the World Conservation Union's Red List** of threatened species

4) Regional work: BirdLife International has conservation work programmes in the following parts of the world, which it describes as "regions" – Africa, the Americas, Asia, Europe and Central Asia, the Middle East and the Pacific
5) BirdLife partnership has 6 Regional BirdLife Coordination Offices throughout the world and a Global Office in Cambridge, UK – together known as **"The BirdLife International Secretariat"**. The Secretariat co-ordinate and facilitate the BirdLife International strategies, programmers and policies.
6) **Important Bird and Biodiversity Area**(**IBA**) –area identified using an internationally agreed set of criteria as being globally important for the conservation of bird populations. Criteria are
7) **A1**. Globally threatened species — hold a population of a species categorized by the IUCN Red List as Critically Endangered, Endangered or Vulnerable.
8) **A2**. Restricted-range specie
9) **A3**. Biome-restricted species — adequate representation of all species restricted to a given biome, both across the biome as a whole and for all of its species in each rangestate.

CITES — WASHINGTON CONVENTION

- It is an International agreement to regulate worldwide commercial trade in wild animal and plant species.
- It 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.

A resolution calling for Japan and the European Union (EU) to close their legal domestic ivory markets was not adopted at the ongoing 18th Conference of Parties (CoP18) to the ***Convention on International Trade in Endangered Species (CITES)*** in Geneva on August 21, 2019.

The Conference also accepted a separate proposal by India, moved together with the EU, the US and the Philippines.

a. It is for inclusion of a species of 'Gecko lizard' for protection as a species not necessarily threatened with extinction.

b. It is found widely in South Asia, the US, and Madagascar.
c. To control the trade in order to avoid utilisation incompatible with their survival.
    i. Members voted to move the Smooth-coated otter (Lutrogale perspicillata) from CITES Appendix II to CITES Appendix I.
d. It is considered to be facing a high risk of extinction
e. It is detrimentally affected by international trade and habitat loss.
    i. The other proposal that was passed was to include the 'Tokay gecko' (Gekko gecko) in CITES Appendix II.
    ii. India had proposed Appendix I status for the small-clawed otter, mako shark, the Indian star tortoise and the Tokay gecko.

UN CONVENTION TO COMBAT DESERTIFICATION: COP 14

1) The 14th edition of the Conference of Parties (COP-14) to the UN Convention to Combat Desertification (UNCCD) ended on 13th September 2019.
2) Held in Greater Noida, this was the **first time that India hosted** an edition of the UNCCD COP.
3) The **theme** of the Conference was **'Restore land, Sustain future'.**
4) India being the global host for COP 14 **has taken over the COP Presidency from China for the next two years** till 2021.
5) India is among the select few countries to have hosted the COP of **all three Rio conventions** on **climate change, biodiversity and land.**
6) Key Takeaways
7) **Delhi Declaration:** Commitment for a range of issues, including gender and health, ecosystem restoration, taking action on climate change, private sector engagement, **Peace Forest Initiative** and **recovery of five million hectares** of degraded land in India.
8) The country parties have agreed to make the **Sustainable Development Goal target of achieving land degradation neutrality by 2030,** a national target for action.
9) **Peace Forest Initiative:** It is an initiative of **South Korea** to use ecological restoration as a peace-building process. It aims at addressing the issue of land degradation in **conflict-torn border areas** and would go a long way in alleviating tensions and building trust between communities living there and between enemy countries in particular.
10) **Drought Toolbox:** It is launched as a one-stop-shop for all **actions on drought.** It is a **sort of knowledge bank which contains tools that strengthen the ability of countries to anticipate and prepare for drought effectively** and mitigate their impacts as well as tools that enable communities to anticipate and find the land management tools that help them to build resilience to drought.
11) **International coalition for action on Sand and Dust storms (SDS):** The coalition will develop an **SDS source base map** with the goal of improving monitoring and response to these storms. SDS affects approximately 77% of UNCCD country Parties or approximately 151 countries.
12) **Initiative of Sustainability, Stability and Security (3S):** Launched by **14 African countries to address migration driven by land degradation.** It aims at restoring land and creating green jobs for migrants and vulnerable groups.
13) **Cooperation From Youth:** The global **Youth Caucus on Desertification and Land** convened its first official gathering in conjunction with the UNCCD COP14 to bring together youth advocates from different parts of the world, to build their capacity, share knowledge, build networks and to engage them meaningfully in the UNCCD processes.

UNCCD:

- Established in ***1994***.
- It is ***the sole legally binding international agreement linking environment and development to sustainable land management***.
- It is ***the only convention stemming from a direct recommendation of the Rio Conference's Agenda 21***.
- To help publicise the Convention, ***2006 was declared "International Year of Deserts and Desertification"***.

1) ***Focus areas:*** 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.
2) ***Aim***: Its 197 Parties aim, through partnerships, to implement the Convention and achieve the Sustainable Development Goals. The end goal is to protect land from over-use and drought, so it can continue to provide food, water and energy.
3) The Ministry of Environment, Forest and Climate Change is ***the nodal Ministry for this Convention***.

Need of the hour:

1) ***Responsible land governance*** is key to provide an enabling environment for ecosystem restoration, biodiversity protection, land use-based adaptation and for improving the livelihoods of many small-scale farmers.
2) At the UNCCD COP 14, parties to the convention have the opportunity ***to adopt an ambitious resolution on land tenure for Land Degradation Neutrality***. They must use this opportunity to empower communities to better adapt to the impacts of the climate emergency.

BASEL BAN AMENDMENT

- The ***1995 Basel Ban Amendment***, a global waste dumping prohibition, has become an international law after ***Croatia (***97th country to ratify) ***ratified it on September 6, 2019***.
- It will become a new Article in the Convention and will ***enter into force in the 97 countries after 90 days — on December 5***.
- ***1995 Basel Ban Amendment:***
- Adopted by the parties to the ***Basel Convention in 1995***.
- To protect human health and the environment against ***the adverse effects of hazardous wastes***.
- ***The amendment prohibits*** all export of hazardous wastes, including electronic wastes and obsolete ships from 29 wealthiest countries of the Organization of Economic Cooperation and Development (OECD) to non-OECD countries.
- ***Basel Convention — Control of Transboundary Movements of Hazardous Wastes and Their Disposal:***

1) Opened for signature on 22 March 1989
2) entered into force on 5 May 1992
3) Parties — 187.
4) It is an international treaty that was designed ***to reduce the movements of hazardous waste between nations***, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs).
5) It ***does not address the movement of radioactive waste***.
6) To implement and restrict the trade of hazardous waste between more developed countries and less developed countries an organization is formed which is known as **Basel Action Network (BAN)**

About Basel Action Network (BAN): Founded in 1997, the Basel Action Network is a charitable organization of the United States, based in Seattle. BAN is the world's only organization focused on confronting the global environmental justice and economic inefficiency of toxic trade and its devastating impacts.

Ratification status of other major countries:

1) According to BAN the United States, the world's most wasteful country per-capita, has not ratified the Basel Convention, nor the Ban Amendment
2) Other developed countries like Canada, Japan, Australia, and New Zealand, likewise, have e-waste export problems and they too have so far refused to ratify the Ban Amendment.
3) South Korea, Russia, India, Brazil, and Mexico are yet to ratify the ban.

CLIMATE ACTION SUMMIT

CLIMATE ACTION SUMMIT

- The UN Secretary-General, Antonio Guterres, hosted the 2019 Climate Action Summit.
- The Summit was held to boost ambition and accelerate actions to implement the 2015 Paris Agreement on Climate Change.
- It took place amidst one of the largest environmental protests ever and a heart-wrenching speech from Greta Thunberg.

ActNow campaign ActNow is the United Nations global call to individual action on climate change. The campaign is a critical part of the UN's coordinated effort to raise awareness, ambition, and action for climate change and accelerate implementation of the Paris Agreement.

It is primarily an online and social media campaign that seeks to educate and encourage individual actions, mainly by adjusting consumption patterns. It highlights the impact that collective action can have at this critical moment in ourplanet's history.

The more people act, the bigger the impact. ActNow harnesses advances in Artificial Intelligence (AI) to spur behaviour change. **Fridays For Future** It is a movement that began in Sweden in August 2018 by Greta Thunberg to protest against the lack of action on the climate crisis.

The hashtags **#FridaysForFuture** and **#Climatestrike** became so popular that many students and adults began to protest outside of their Parliaments and local city halls all over the world. **#Climatestrike** is a global event to demand an end to the age of fossil fuels & climate justice for everyone. It is a wake-up call to our generation to solve the greatest environmental challenge in human history.

CLEAN AIR CITIES DECLARATION

'Clean Air Cities Declaration' was unveiled at the C40 World Mayors Summit in Copenhagen, an event that occurs once every three years and is designed to implement "substantive clean air policies by 2025".

1) C40 Clean Air Cities Declaration:

2) Through this Declaration, mayors commit to using their power and influence to reduce air pollution and work towards meeting the World Health Organization's Air Quality Guidelines.
3) This means cities will continually reduce their local emissions, and advocate for reductions in regional emissions, resulting in continuous declines in air pollution levels that move towards the WHO guidelines.

Signatories of the declaration pledge to:

1) Set ambitious pollution reduction targets within two years that meet or exceed national commitments, putting them on a path towards meeting World Health Organization guidelines;
2) Implement substantive clean air policies by 2025 that address the unique causes of pollution in their cities; and
3) Publicly report progress on achieving these goals.

Expected outcomes:

- If the 35 signatories reduce annual average PM2.5 levels to WHO guidelines (10 ug/m3) it could avoid 40,000 deaths each year.
- C40 research shows that if all C40 cities cleaned their transport, buildings and industry this would reduce GHG emissions by 87%, PM2.5 by nearly 50% and would avoid over 220,000 premature deaths per year.

INTERNATIONAL SEED TREATY

1) ITPGRFA (International Treaty of Plant Genetic Resources for Food and Agriculture) also known as Seed Treaty is a comprehensive international agreement for ensuring food security through the conservation, exchange and sustainable use of the world's plant genetic resources.
2) It aims for food and agriculture (PGRFA), as well as the fair and equitable benefit sharing arising from its use.
3) The governing body meets biennially and India is a signatory to the treaty.

Objectives

- *Farmers' Contribution:* To recognize the contribution of farmers to the diversity of crops,
- *Access and Benefit Sharing:* Establish a global system to provide farmers, plant breeders and scientists with access to plant genetic materials,
- *Sustainability:* To conserve and sustainably use plant genetic resources for food and agriculture, and fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity.

Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act

1) The PPV&FR Act, 2001 was enacted to grant intellectual property rights to plant breeders, researchers and farmers who have developed any new or extant plant varieties.
2) The rights granted under this Act are exclusive right to produce, sell, market, distribute, import and export the variety.
3) According to the act, a farmer is entitled to save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under the PPV&FR Act, 2001 except the brand name.
4) The Act is compliant to Article-9 of the Seed Treaty.
5) A few months back in April 2019, PepsiCo sued Gujarati farmers by invoking the provisions of the act.

6) The PPV&FR Authority has registered about 3631 plant varieties out of which 1597 (44%) belong to the farmers.

Rights under the Act:

- ***Breeders' Rights:*** Breeders will have exclusive rights to produce, sell, market, distribute, import or export the protected variety. Breeder can appoint agent/ licensee and may exercise for civil remedy in case of infringement of rights.
- ***Researchers' Rights:*** Researcher can use any of the registered variety under the Act for conducting experiment or research. This includes the use of a variety as an initial source of variety for the purpose of developing another variety but repeated use needs prior permission of the registered breeder.

Farmers' Rights:

1) A farmer who has evolved or developed a new variety is entitled for registration and protection in like manner as a breeder of a variety;
2) Farmers variety can also be registered as an extant variety;
3) A farmer can save, use, sow, re-sow, exchange, share or sell his farm produce including seed of a variety protected under the PPV&FR Act, 2001 in the same manner as he was entitled before the coming into force of this Act provided farmer shall not be entitled to sell branded seed of a variety protected under the PPV&FR Act, 2001;
4) Farmers are eligible for recognition and rewards for the conservation of Plant Genetic Resources of land races and wild relatives of economic plants;
5) There is also a provision for compensation to the farmers for non-performance of variety under Section 39 (2) of the Act, 2001 and
6) Farmer shall not be liable to pay any fee in any proceeding before the Authority or Registrar or the Tribunal or the High Court under the Act.

INTERNATIONAL UNION FOR PROTECTION OF NEW PLANT VARIETIES (UPOV CONVENTION)

1) The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organization with headquarters in Geneva (Switzerland).
2) UPOV was established by the International Convention for the Protection of New Varieties of Plants. The **Convention was adopted in Paris in 1961** and it was revised in 1972, 1978 and 1991.
3) UPOV's **mission is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants**, for the benefit of society.
4) The UPOV Convention provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: **the breeder's right**.
5) In the case of a variety protected by a breeder's right, the **authorization of the breeder is required to propagate the variety for commercial purposes. The breeder's right is granted by the individual UPOV members.**
6) Only the breeder of a new plant variety can protect that new plant variety. It is **not permitted for someone other than the breeder to obtain protection of a variety**.
7) There are **no restrictions on who can be considered to be a breeder** under the UPOV system: a breeder might be an individual, a farmer, a researcher, a public institute, a private company etc.
8) **India is not a member.**

UN GLOBAL CLIMATE ACTION AWARD

1) Infosys has won the United Nations Global Climate Action Award (UNGCAA).
2) **About Global Climate Action Award:**
3) The Climate action awards are given by the Momentum for Change initiative at UN Climate Change.
4) The award-winning projects fall within four focus areas namely (a) Planetary Health (b)Climate Neutral Now (c)Women for Results and (d)Financing for Climate Friendly Investment.
5) The projects are recognized as innovative solutions that not only address climate change but also help drive forward progress on many other sustainable development goals such as innovation, gender equality and economic opportunity.
6) **About Momentum for Change initiative:**
7) The UN Climate Change's Momentum for Change initiative is implemented with the support of the Rockefeller Foundation.
8) The initiative operates in partnership with the World Economic Forum (WEF), donors supporting implementation of UN Climate Change's Gender Action Plan and Climate Neutral Now.

PLATFORM OF SCIENCE-BASED OCEAN SOLUTIONS

- **It aims** to enhance the sharing of knowledge created by various actors in the ocean and climate community to advance ocean-climate action.
- **Objectives:**

1) To encourage the incorporation of the ocean in climate strategies (NDCs, NAPs, Adaptation Communications, and National Policy Frameworks).
2) To facilitate access to key resources and solutions for the ocean,
3) To highlight the importance of the IPCC Special Report on Oceans and Cryosphere in a Changing Climate (SROCC) and its main findings, as the best available science for the planning and implementation of national policies
4) To involve and engage a large number of actors in ocean-climate action: academia, the public sector, the private sector and the civil society

VISION PLAN (2021-2031) FOR INDIAN ZOOS

- Union Environment Minister released the Vision Plan (2021-2031) for Indian zoos by Central Zoo Authority (CZA) to upgrade them to global standards and strengthening of Central Zoo Authority.
- The exhaustive 10 years vision plan has been arrived at after a very stringent data mining and stakeholder consultive process and is expected to give a direction towards ex-situ conservation approaches in India.

OBJECTIVE

- The vision document is *committed to making CZA and Indian zoos a greater force* for conservation by providing unparalleled animal care, cutting edge research, and immersive visitor experiences that strike meaningful chords with people of all ages.

CENTRAL ZOO AUTHORITY (CZA)

A. It is the statutory regulatory body for zoos in India. It was established in 1992.
B. Objective: To complement and strengthen the national effort in the conservation of the rich biodiversity of the country, particularly the fauna as per the National Zoo Policy, 1998.
C. Functions: It enforces minimum standards and norms for the upkeep and healthcare of animals in Indian zoos.

1) Every zoo in the country is required to obtain recognition from CZA for its operation.
2) It can also de-recognise zoos.

INTERNATIONAL GEOSPHERE-BIOSPHERE PROGRAMME (IGBP)

- IGBP was launched in 1987
- Coordinate international research on global-scale and regional-scale interactions between Earth's biological, chemical and physical processes and their interactions with human systems.
- The Aim has three key elements:

1) The planet
2) The planet under pressure
3) Transformation in an era of rapid global change

GLOBAL GREEN GROWTH INSTITUTE

- **Established When and by Whom:** GGGI was first launched as a think tank in 2010 by Korean President Lee Myung-bak, and was later converted into an international treaty-based organization in 2012 at the Rio+20 Summit in Brazil.
- **Headquarter:** It is headquartered in Seoul, Republic of Korea
- **Key Functions:** GGGI works to produce three major outcomes: adoption and implementation of green growth plans; provision of research for policymakers; and private sector engagement in the implementation of the national green growth plans. The organization uses three approaches to achieve these outcomes: Green Growth Planning & Implementation (GGP&I), Knowledge Development & Management (KDM), and Public-Private Cooperation (PPC).
- **Funding:** Funds are given by Contributing members. Contributing members are defined as Member countries that make a multi-year financial contribution of core funding of no less than USD 15 million over three years. Participating members are defined as Member countries that are not contributing members.

INDIA SPECIFIC TRIVIA:

1) GGGI has been working in India to promote green growth and sustainable development since 2013.
2) GGGI has worked at national, state, and city levels to develop and implement green growth strategies that reconcile short-term priorities with long-term vision of higher economic growth, environmental sustainability, and social inclusion
3) At the state level, GGGI worked closely with the governments of Karnataka, Himachal Pradesh (HP), and Punjab to develop comprehensive green growth strategies together with each.

4) GGGI also supported each of the three state governments in adopting integrated analytical approaches to assess green growth challenges and prioritize opportunities across key sectors, including energy, water, agriculture, and forestry
5) Building on these strategies, in 2015, GGGI supported the state governments in implementing specific green growth opportunities by formulating detailed project proposals, policy implementation roadmaps, and capacity building initiatives.

KIMO (LOCAL AUTHORITIES INTERNATIONAL ENVIRONMENTAL ORGANISATION)

- **Established When and by Whom:** KIMO was founded in August 1990 by four municipalities and from this modest start has grown in size to represent over 70 members in Belgium, Denmark, The Faroe Islands, Germany, The Netherlands, Sweden and the United Kingdom.
- **Headquarter:** Esbjerg, Denmark
- **Key Functions:**

KIMO is committed to the development of sustainable coastal communities by:

1) Preventing pollution of the seas and coastal waters of North-Western Europe and preserving, improving and enhancing them for future generations
2) Protecting coastal communities from the impacts of marine pollution and climate change.
3) Representing its member local authorities and associated members at an international and national level.

CENTRAL POLLUTION CONTROL BOARD:

1. It is a statutory body established under the Water (Prevention and Control of Pollution) Act 1974.
2. It provides technical services to the Ministry of Environment and Forests under the provisions of the Environment (Protection) Act, 1986.
3. It Co-ordinates the activities of the State Pollution Control Boards by providing technical assistance and guidance and also resolves disputes among them.
4. Some of the functions are:
5. Advises the central government on any matter related to pollution in water and air pollution, and plan and execute a nationwide program to prevent it.
6. Plan and organise training programs for personnel related to the prevention of water and air pollution.
7. Collect technical and statistical data for better implementation of programs. Prepare manuals and guidelines and create public awareness.

BIODIVERSITY ACT, 2002

THREE-TIERED INSTITUTIONAL STRUCTURE- AT THE NATIONAL, STATE, AND LOCAL LEVELS.

Head Office	The National Biodiversity Authority (NBA) has been set up in October, 2003 in Chennai.
Structure	The NBA consists of a Chairperson, five non-official and ten ex-officio members to be appointed

	by the Central Government to represent various Ministries
Vision of NBA	Conservation and sustainable use of India's rich biodiversity and associated knowledge with people's participation, ensuring the process of benefit sharing for well-being of present and future generations.
Mission of NBA	To ensure effective implementation of Biological Diversity Act, 2002 and the Biological Diversity Rules 2004 for conservation of biodiversity, sustainable use of its components and fair and equitable sharing of benefits arising out of utilization of genetic resources
POWERS AND FUNCTIONS OF NBA	1) It shall be the duty of the National Biodiversity Authority to regulate activities and by regulations issue guidelines for access to biological resources and for fair and equitable benefit sharing. 2) The National Biodiversity Authority may grant approval for undertaking any activity. 3) The National Biodiversity Authority may advise the Central Government on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of benefits arising out of the utilization of biological resources. 4) The National Biodiversity Authority may advise the State Governments in the selection of areas of biodiversity importance to be notified as heritage sites and measures for the management of such heritage sites. 5) The National Biodiversity Authority may perform such other functions as may be necessary to carry out the provisions of this Act. 6) The National Biodiversity Authority may, on behalf of the Central Government, take any measures necessary to oppose the grant of intellectual property rights in any country outside India on any biological resource obtained from India or knowledge associated with such biological resource which is derived from India.
National Biodiversity Fund	1) Any grants and loans made to the National Biodiversity Authority. 2) All charges and royalties received by the National Biodiversity Authority. 3) All sums received by the National Biodiversity Authority from such other sources as may be decided upon by the Central Government.

NATIONAL BIODIVERSITY AUTHORITY

	The State Biodiversity Boards (SBBs) constituted by the State Governments deal with all matters relating to access by Indians for commercial purposes.
Function	1) The State Biodiversity Boards (SBB'S) have the function of advising the State Government on matters of biodiversity and its equitable distribution 2) To the guidelines of the Central Government but more importantly to regulate granting of approvals or requests for commercial utilization of biological resources. 3) The State Boards require a prior intimation for obtaining biological resources only

	from Indian citizens or corporate associations or organizations registered in India. 4) This power of the State Biodiversity Boards which is applicable only on Indian citizens or organizations can be easily exploited by vested interests of commercial giants which have substantial overseas shareholders.
State Biodiversity Board	1) The Biodiversity Act provides for payment of a prescribed fee to the Biodiversity Management Committees established at the Municipal or Panchayat level under "Access and Benefit Sharing "by companies who are using biological resources or use traditionally available knowledge which is often a bone of contention between companies and these Boards as they possess the power to grant them access to bio-resources of the State. 2) Since the grant of approval by the State Boards is only restricted to Indian companies and organizations the tactic of employing commission agents to get this approval is widely used for commercial exploitation as approval from the National Biodiversity Authority implies a cumbersome process requiring strict adherence to established regulations.
State Biodiversity Fund	1) Constitution of State Biodiversity Fund: 2) There shall be constituted a Fund to be called the State Biodiversity Fund and there shall be credited to- 3) Any grants or loans made by the National Biodiversity Authority; 4) All sums received by the State Biodiversity Board from such other sources as may be decided upon by the State Government.

STATE BIODIVERSITY BOARDS

BIODIVERSITY MANAGEMENT COMMITTEE

	The local bodies are required to set up Biodiversity Management Committees (BMCs) in their respective areas for conservation, sustainable use, documentation of biodiversity and chronicling of knowledge related to biodiversity.
Structure	The BMC will be constituted by : PRIs/ULBs members of the Participatory forest/natural resources management committees' members, members of horticulture/foot botanists/tribal heads, etc., based on the local conditions.
Functions of BMCs	1. Conservation and sustainable utilization of biological resources. 2. Eco-restoration of the local biodiversity. 3. Proper feedback to the SBB in the matter of IPR, Traditional Knowledge and local Biodiversity issues, wherever feasible and essential feedback to be provided to the NBA.

	4. Management of Heritage Sites including Heritage Trees, Animals/ Microorganisms etc., and Sacred Groves and Sacred Water bodies. 5. Regulation of access to the biological resources and/ or associated Traditional Knowledge, for commercial and research purposes. 6. Sharing of usufructs arising out of commercial use of bio-resources. 7. Conservation of traditional varieties/breeds of economically important plants/animals. 8. Biodiversity Education and Awareness building. 9. Documentation, enable procedure to develop bio-cultural protocols. 10.Sustainable Use and Benefit Sharing. 11.Protection of Traditional Knowledge.
People's Biodiversity Register (PBR)	This shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them.

CSE'S STATE OF ENVIRONMENT REPORT- HIGHLIGHTS

The Centre for Science and Environment (CSE) has released its State of Environment Report, 2021 on February 25, 2021. The report highlighted how the Covid-19 pandemic will impact the children across world.

- The report highlighted that the pandemic will impact the 375 million children across the world.
- Children including from newborns to 14-year-olds will suffer long-lasting impacts.
- These children will be vulnerable to being underweight, stunting and increased child mortality.
- Their education and work productivity will also be impacted.
- As per the report, pandemic has forced over 500 million children out of school globally. Out of the total children, India accounted for more than half.
- The report further highlighted that; 115 million additional people might get pushed into extreme poverty due to pandemic. Most of the poorer people live in South Asia.

INDIA STAND

- As far as sustainable development is concerned, India ranked 117 among 192 nations.
- Further, India's air, water and land have become more polluted in between the year 2009 and 2018.
- The Central Pollution Control Board highlighted that, out of 88 major industrial clusters in the country, 35 went through environmental degradation, 33 went through worsening air quality, 45 clusters comprised of polluted water and while 17 clusters had land pollution

Tarapur in Maharashtra was the most polluted cluster.

- The experts from the Centre for Science and Environment highlighted that the data shows that action has not been taken in the past three years control and reduce the pollution even in those areas that were already polluted.

CENTRE FOR SCIENCE AND ENVIRONMENT (CSE)

- CSE is a not-for-profit public interest research and advocacy organisation. It is based in New Delhi. The organisation was established in the year 1980. The organisation works on the poor planning, environment-development issues, climate shifts in India and advocate for policy changes & better implementation of existing policies.

NATIONAL ENVIRONMENT ORGANISATION

ANIMAL WELFARE BOARD OF INDIA:

1) It is an **advisory and statutory body** on laws of animal welfare and to promote it.
2) It was set up in **1962**, according to **section 4 of Prevention of Cruelty to Animals Act, 1960.**
3) It is first of its kind in the world, headquartered in **Ballabhgarh (Faridabad, Haryana)** and pioneered or guided by Mrs Rukmini Devi Arundale.
4) The board consist of 28 members, for a period of 3 years.

SOME OF ITS FUNCTIONS ARE:

- To advise the central government on the amendment of the cruelty of animals.
- To advise the central government of any local authority on improvements in the design of the vehicle to reduce the burden on animals.
- Provide all types of measures like sheds, food, water and veterinary assistance,
- To maintain slaughterhouse to reduce the pain of animals and take all steps to ensure that unwanted animals are destroyed by the local authority using a less painful method.
- To encourage financial assistance and grant for making facilities like shelter home, hospital and medicals and give financial assistance to any local animal organisations.
- Give education relating to human nature of animal and promote animal welfare.

COMPENSATORY AFFORESTATION FUND ACT 2016

- The Compensatory Afforestation Fund Management and Planning Authority (**CAMPA) Act** or **Compensatory Afforestation Fund Act** seeks to provide an appropriate institutional mechanism, **both at the Centre and in each State and Union Territory**, to **ensure expeditious utilization in the efficient and transparent manner of amounts released in lieu of forest land diverted for the non-forest purpose** which would mitigate the impact of diversion of such forest land.
- The **CAF Act was passed by the centre in 2016** and the related rules were **notified in 2018.**

The CAF Act was enacted to manage the funds collected for compensatory afforestation which till then was managed by **ad hoc Compensatory Afforestation Fund Management and Planning Authority (CAMPA).**

- **Compensatory afforestation** means that every time forest land is diverted for non-forest purposes such as mining or industry, the user agency pays for planting forests over an equal

area of non-forest land, or when such land is not available, twice the area of degraded forest land.

1. It 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.
2. As per the rules, 90% of the CAF money is to be given to the states while 10% is to be retained by the Centre.
3. The funds can be used for the treatment of catchment areas, assisted natural generation, forest management, wildlife protection and management, relocation of villages from protected areas, managing human-wildlife conflicts, training and awareness generation, the supply of wood saving devices, and allied activities.
4. The act also seeks to establish National and State Compensatory Afforestation Fund Management and Planning Authorities to manage the funds.
5. The determination of NPV (Net Present Value) will be delegated to an expert committee constituted by the central government. *NPV is the ecological cost of forests.*

OBJECTIVES OF CAMPA LAW

1. To promote afforestation and development activities in order to compensate for forest land that is intended to be diverted to non-forest uses.
2. To law down effective guidelines for the State
3. To facilitate necessary assistance in terms of scientific, technological, and other requisites that may be required by the authority responsible for the State CAMPA.
4. To recommend measures based on strategic planning to the authorities of the State CAMPA
5. To resolve issues that arise between inter-state or Centre-State.

CAMPA ACT 2016:

1. To compensate for the loss of forest area and to maintain sustainability, the Government of India came up with a well-defined Act, known as **CAMPA (Compensatory Afforestation Fund Management and Planning Authority)**.
2. The law establishes the **National Compensatory Afforestation Fund under the Public Account of India** and **a State Compensatory Afforestation Fund under the Public Account of each state.**
3. **These Funds will receive payments for**

A. compensatory afforestation,
B. Net present value of forest (NPV), and
C. other project specific payments.

- The National Fund will receive 10% of these funds, and the State Funds will receive the remaining 90%.
- According to the Act's provision, a company diverting forest land must provide alternative land to take up compensatory afforestation.
- For afforestation, the company should pay to plant new trees in the alternative land provided to the state.

CRITICISM/ISSUES WITH CAMPA:

- In 2002, the Supreme Court had observed that collected **funds for afforestation were under-utilized by the states** and it ordered for centrally pooling of funds under **ad hoc** Compensatory Afforestation Fund.
- The law says that **land selected for afforestation should preferably be contiguous to the forest being diverted** so that it is easier for forest officials to manage it. But if no suitable non-forest land is found, degraded forests can be chosen for afforestation. In several states

like Chattisgarh, Odisha, and Jharkhand where the intensity of mining is very high, **finding the non-forest land for afforestation to compensate for the loss of forest is a big task**.

- **Utilization of CAMPA fund:** Several state governments are **not utilizing it properly**. An amount of Rs 86 lakh from CAMPA funds meant for afforestation was reportedly spent on litigation work in Punjab.
- Infrastructure development is one area of fund usage. Experts argue that CAMPA funds can become general development fund.
- Moreover, **at several places, the loss of natural species is compensated with the plantation of non-native species** in the name of the artificial plantation. **It serves as a threat to even the existing ecosystem.**
- Questions can be raised on the **quality of new forests.**
- There is **no provision regarding consultation of tribal Gram Sabhas during compensatory afforestation.** It defeats the pith and substance of the Forest Rights Act.

WAY FORWARD:

1. The proposed objective of the Act must be fulfilled by utilizing the CAMPA funds only for the purpose it is meant for. It should efficiently be used only for afforestation and wildlife conservation activities.
2. A closer look at the state government activities using CAMPA funding is needed. The central government should adopt the concept of outcome budgeting for allocation of funds to the state government in which funding will be done on an installment basis by checking the outcome of previous funds.
3. State governments should restore the existing forests rather than creating new ones.

National CAMPA Advisory Council has been established with the following mandate:

A. Lay down broad guidelines for State CAMPA.
B. Facilitate scientific, technological and other assistance that may be required by State CAMPA.
C. Make recommendations to State CAMPA based on a review of their plans and programmes.
D. Provide a mechanism to State CAMPA to resolve issues of an inter-state or Centre-State character.

About Project Tiger:

A. It is a **Centrally Sponsored Scheme** launched in 1973.
B. It has the aim of ensuring that the population of Bengal tigers is well-maintained in their natural habitats, this project continues to do everything possible to protect and save the tiger.

Tiger protecting force:

A. The government has also set up a tiger protecting force that ensures there is no poaching of any kind or any human-tiger conflict.
B. This invariably will help in preventing tigers from being extinct.

Increasing the number of tigers:

A. In 2006, surveys suggested that the number of tigers was just 1,411 which was a cause of concern worldwide.
B. In over a decade, India has seen a consistent rise in the number of tigers.

<u>Tiger Reserves:</u>

- There are **54 tiger reserves across 18 Tiger Range States** in India.

Objectives of Project Tiger:

- To ensure that any factor leading to the reduction of tiger habitats is limited.
- Any damages done to these habitats should be repaired so that the ecosystem is balanced
- Maintain a viable tiger population.

Significance:

A. **Tiger is an umbrella species** which ensures viable populations of other **wild animals (co-predators, prey)** and forest, thereby ensuring the ecological viability of the entire area and habitat, which also ensures the water and climate security of the region.
B. **India has 80 per cent of the world's tiger population**.
C. A viable tiger population is one which has **80-100 tigers with a minimum of 20 breeding females, with a sex ratio skewed towards females.**

Notification of Tiger Reserves:

A. Proposal is obtained from the State.
B. In-principle approval is communicated from the **National Tiger Conservation Authority**, soliciting detailed proposals under **section 38V of the Wildlife (Protection) Act, 1972.**
C. The **National Tiger Conservation Authority** recommends the proposal to the State after due diligence.
D. The **State Government notifies the area as a Tiger Reserve.**

About Conservation Assured | Tiger Standards:

- **CA|TS is a tool or a comprehensive system** that will provide a reference point to evaluate the existing management effectiveness of tiger conservation within integrated landscape planning, and ensure that benefits from these efforts are optimised.

About Project Cheetah:

A. The introduction of cheetahs in India is being done under Project Cheetah.
B. It is the world's first intercontinental large wild carnivore translocation project.

Coexistence approach:

- India has opted for this approach.
- It is even more unique because this is the first-time cheetahs will be reintroduced in an unfenced protected area (PA).

Significance of Coexistence approach:

A. The Coexistence approach is considered more favourable by social scientists.
B. Fencing has proven to be a valuable tool in eliminating cheetahs' tendency to range over wide distances in **South Africa and Malawi**, thus allowing for population growth.
C. The core conservation area of **Kuno National Park** is largely free of anthropogenic threats.

Challenges associated with Coexistence approach:

A. **Kuno National Park** will be more challenging, as it is not enclosed /fenced.
B. There have been no successful cheetah reintroductions into unfenced systems.

C. Anthropogenic threats to cheetah survival include snaring for bush meat and retaliatory killings due to livestock depredation.
D. This would place them at the risk of human-related mortality including snaring and retaliatory killings by livestock farmers.

CLEAN DEVELOPMENT MECHANISM (CDM)

The **Clean Development Mechanism (CDM)** is a **carbon offset program** managed by the **United Nations Framework Convention on Climate Change** (UNFCCC). It enables nations to fund projects in other nations that reduce their greenhouse gas emissions and claim the avoided emissions as part of their own efforts to reach global emissions objectives. The **Kyoto Protocol** lists three flexible mechanisms, and this one is one of them. Setting standards and approving projects are both responsibilities of CDM. Authorized third parties verify and certify offset credits.

CARBON CREDIT

A. A concept called carbon credit exchange aims to persuade nations to reduce their greenhouse gas emissions.
B. This is accomplished by rewarding those who adhere to their obligations and offering developing countries financial inducements to do the same.
C. Credits that are surplus to the goal of lowering emissions can be traded on the global market. One credit equals one tonne of avoided CO_2 emissions.
D. The project would increase funding for poor countries, where many initiatives are being carried out.

CLEAN DEVELOPMENT MECHANISM

A. **Article 12** of the **Kyoto Protocol** essentially defines the Clean Development Mechanism (CDM).
B. The CDM permits the public and private sectors in high-income countries the chance to buy carbon credits from offset projects in low- or middle-income countries because it is the largest **regulatory project-based mechanism.**
C. Such initiatives can generate **saleable certified emission reduction (CER) credits,** which are used to count toward achieving Kyoto commitments and are each equal to one tonne of CO_2.
D. It is the first worldwide environmental investment and credit program of its kind, offering CERs, a standardized mechanism for offsetting emissions.
E. Many regard the mechanism as a trailblazer. It is the first global environmental investment and credit scheme of its kind, offering CERs as a standardised emissions offset instrument.
F. For example, a CDM project activity could include rural electrification using solar panels or the installation of more energy-efficient boilers.

CLEAN DEVELOPMENT MECHANISM - OBJECTIVES

A. A clean development mechanism's objectives are as follows:
B. Assist in slowing down and preventing climate change.
C. Aid developing nations in the creation of long-lasting strategies.
D. Aid developed nations in cutting emissions and switching to more eco-friendly energy sources.
E. Aid nations in putting innovative emission-reduction plans into action.
F. Reducing the use of fossil fuels.
G. Generating energy from animal feces and actively controlling it.
H. Reducing the pollution that is generated throughout the manufacturing process.

CLEAN DEVELOPMENT MECHANISM - OPERATING DETAILS

A. Identification of the Project: This is the first stage, during which research is done to identify a theory that has the potential to reduce greenhouse gas emissions.
B. Approval From the Government: Once the idea has been acknowledged, it is submitted for Indian government approval to the Ministry of Environment, Forests, and Climate Change.
C. Development of the Project: In compliance with the Kyoto Protocol, research is being done to create a baseline against which the change in emissions will be tracked.
D. Authentication: The preliminary identification survey's findings are verified by an impartial organization chosen by the CDM Administrative Entity.
E. Registration Process: The chosen initiative becomes a CDM project with formal acceptance by the governing council, entitling it to all the financial and legal benefits granted by the Kyoto Protocol.
F. Tracking: Following registration, changes in greenhouse gas emissions are monitored over time, and the project's execution is improved as necessary.
G. Verification: Before sending the information to be certified, a team of experts verifies all of the information and outcomes.
H. Certification: The supervising authority acknowledges, following careful verification, that the project has successfully reduced emissions in line with the plan.

CDM - Standard Authority & Administrative Bodies

- **Executive Board (EB):** The management of the CDM is done by the EB of the CDM. The Kyoto Protocol's governing body, which consists of delegates from all the nations that have accepted the agreement, is ultimately responsible to the EB.
- **Accreditation Panel:** The accreditation of specified operational entities or auditors is under the control of the accreditation panel.
- **Methodologies Panel:** The Methodologies Panel (Meth Panel) examines the baseline-setting and baseline-monitoring methodologies as well as the methodologies for the more than 100 approved project types.
- **Registration and Issuance Team:** Requests for project registration and issuance are examined by the Registration and Issuance Team (RIT).
- **Designated National Authority:** Each member nation has a Designated National Authority (DNA), which confirms projects' voluntarily taking part in the CDM and makes it easier for host nations to confirm that the activity supports their own national sustainable development.
- **Designated Operational Entities:** CDM projects are validated and verified by Designated Operational Entities (DOE), auditors recognized by the UNFCCC.

SIGNIFICANCE

- It assists developed countries in meeting their pledges to reduce emissions.
- It helps developing countries achieve long-term development.
- CDM projects generate tradable, saleable certified emission reduction (CER) credits, which can be used by industrialised countries to meet a portion of their Kyoto Protocol emission reduction targets.
- CDM projects provide other benefits such as:

1) investment in climate change mitigation projects in developing countries;
2) technology transfer or diffusion in host countries; and
3) improved community livelihoods through job creation or increased economic activity.

CDM - CHALLENGES

1) Carbon Leakage: In theory, crediting methods could lessen leakage. In reality, the baseline against which credits are awarded is defined, and this influences the amount of leakage in part.
2) Additionality, Transaction Costs & Bottlenecks: The Kyoto Protocol's environmental efficacy requires additional emission reductions from the CDM.
3) The CDM is essentially a transfer of income to non-Annex I nations without any additionality. However, additionality is a tough concept to demonstrate and is hotly contested.
4) CDM project approval has experienced delays (bottlenecks) due to additionality assessment.
5) Incentives: The CDM does not penalize increased emissions, but it does reward them. As a result, it is almost like a subsidy for carbon reduction.
6) As a result, businesses may have a perverse incentive to increase their emissions in the short term in order to qualify for credits for long-term emission reductions.
7) Local Resistance: According to some civil society organizations, the majority of CDM projects benefit large corporations while harming marginalized individuals.
8) A grassroots campaign of waste pickers began to oppose a CDM project in New Delhi in 2012.
9) A CDM project in Panama in 2012 prevented the Panamanian government and the indigenous Ngöbe-Buglé people from reaching a peace agreement.
10) Market Deflation: The largest carbon market and the source of the majority of the demand for CERs from the CDM is the European Union Emissions Trading Scheme.
11) The market price for CERs dropped by approximately 70% in a year, to a new record low of €2.67 per tonne, in July 2012.
12) The low CER price was linked by analysts to the excess of EU emissions allowances, reduced pricing for EU emissions allowances, and the weakening European economy.

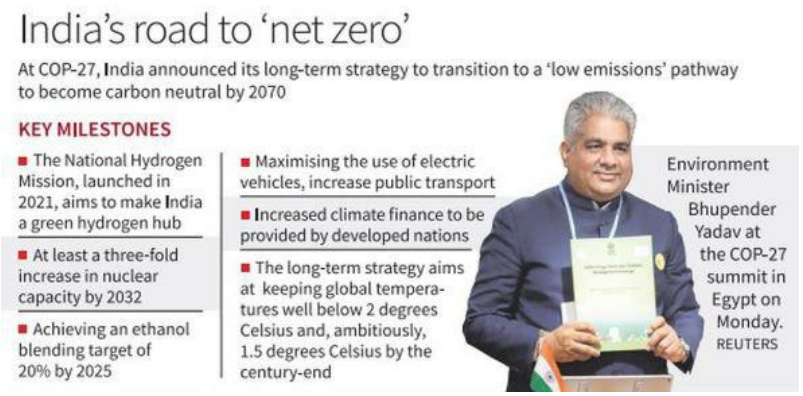
CONCLUSION

- The mechanism promotes sustainable development and emission reductions while providing industrialised countries with some flexibility in meeting their emission reduction or limitation targets. A project utilizing a clean development mechanism must result in quantifiable advancements in climate change mitigation. The project must be able to significantly reduce greenhouse gas emissions and offer genuine, long-term benefits.

ENVIS Program

- Environmental Information System (ENVIS) program was started in December, 1982 to provide environmental information to decision makers, policy planners, scientists and engineers, research workers, etc. all over the country.
- ENVIS has started implementing the world bank assisted Environment Management Capacity Building Technical Assistance Project (EMCBTAP) since January, 2002 which aims at structuring the ENVIS scheme by extending its reach through involvement of Institutions/Organizations in State Governments, academia sector, corporate sector, NGO sector, etc.

LT-LEDS (Long Term-Low Emission Development Strategy)



India has announced its long-term strategy to transition to a "low emissions" pathway at the United Nations Conference of Parties (COP) ongoing in Sharm el-Sheikh, Egypt.

LT-LED Strategy

A. The LT-LEDS are qualitative in nature and are a requirement emanating from the **2015 Paris Agreement**.
B. Hereby, countries explain how they will transition their economies beyond achieving near-term **NDC targets.**
C. It signifies their path towards the larger climate objective of cutting emissions by 45% by 2030 and achieve net zero around 2050.

NET ZERO

- A state in which a **country's emissions are compensated by absorption and removal** of greenhouse gases (**GHGs**) from the atmosphere is called Net Zero State; it is also referred to as carbon-neutrality.
- It is done through **natural processes** as well as **futuristic technologies** such as **carbon capture and storage**.

Nationally Determined Contributions (NDCs):

A. To achieve the targets under the agreement, the member countries must **submit the targets themselves**, which they believe would lead to substantial progress towards reaching the Paris temperature goal.
B. Initially, these targets are called **Intended Nationally Determined Contributions (INDCs)**.
C. They are **converted to NDCs when the country ratifies** the agreement.

Key announcements by India

- **Nuclear energy:** India is set to expand its nuclear power capacity by at least three-fold in the next decade.
- **Green hydrogen:** India aims for becoming an international hub for producing green hydrogen through the National Hydrogen Mission.
- **Ethanol blending:** India aspires to maximise the use of electric vehicles, with ethanol blending to reach 20% by 2025 (it is currently 10%) and a "strong shift" to public transport for passenger and freight traffic.
- **Energy efficiency:** India will also focus on improving energy efficiency by the Perform, Achieve and Trade (PAT) scheme.
- **Carbon sequestration:** India's forest and tree cover are a net carbon sink absorbing 15% of CO2 emissions in 2016, and it is on track to fulfilling its NDC commitment of 2.5 to 3 billion tonnes of additional carbon sequestration in forest and tree cover **by 2030**.

Hurdles in achieving net-zero

- **Huge cost of transition:** The transition to low carbon pathway will entail several costs amounting to several trillion dollars. It involves the development of new technologies, new infrastructure, and other transaction costs.
- **No climate finance mechanism:** Provision of climate finance by developed countries will play a very significant role and needs to be considerably enhanced.

Significance of India's LTS

- India's long-term strategy (LTS) follows up on the net zero pledge.
- It clearly outlines key interventions across sectors that are going to be the focus of India's efforts.

CONSIDERATIONS MADE BY INDIA

India's approach is based on the following four key considerations that underpin its long-term low-carbon development strategy:

- **India has contributed little to global warming**: its historical contribution to cumulative global GHG emissions being minuscule despite having a share of ~17% of the world's population.
- **Huge domestic energy demand:** India has significant energy needs for development.
- **National circumstances:** India is committed to pursuing low-carbon strategies for development and is actively pursuing them, as per national circumstances
- **India needs to build climate resilience:** It is the capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance.

NATIONAL AFFORESTATION PROGRAMME

A. NAP is a flagship programme of the National Afforestation and Eco-development Board (NAEB) that provides physical and capacity-building assistance to the implementing agencies, the **Forest Development Agencies (FDAs).**

B. The **National Afforestation Programme (NAP)** was created by combining four 9th Plan officially financed afforestation initiatives from the Ministry of Environment and Forests.

C. The scheme will be run as a 100 percent centrally sponsored scheme by the **National Afforestation and Eco-Development Board, Ministry of Environment and Forests.**

D. The National Action Plan (NAP) intends to **promote and expedite** the ongoing process of devolving forest conservation, protection, management, and development tasks to village-level **Joint Forest Management Committees (JFMCs),** which are recognised societies.

E. NAP is a centrally funded plan that is executed with a money sharing pattern of **60:40 percent between the Centre and the States**, with a sharing pattern of **90:10 for Northeastern** and **hilly states.**

F. The system is administered through a three-tier institutional structure consisting of the **State Forest Development Agency (SFDA**) at the state level, the **Forest Development Agency (FDA)** at the forest division level, and JFMCs at the village level.

National Afforestation Programme - Major Components

A. The scheme's main components include:
B. Afforestation under Seven plantation models
C. Maintenance of previous years plantations and ancillary activities like soil and moisture conservation activities (SMC)
D. Fencing, overheads

E. Micro-planning
F. Awareness-raising
G. Entry Point Activities (EPA) etc.

Conservation and Development Strategies of NAP

A. Forest conservation and development are primarily accomplished through three strategies: **afforestation via natural/artificial regeneration, protection, and management.**
B. The Ministry of Environment is implementing three major schemes for forest development: the **National Afforestation Programme (NAP), the National Mission for a Green India (GIM),** and the **Forest Fire Prevention and Management Scheme (FFPM).**
C. While NAP focuses on reforestation of degraded forest lands, GIM focuses on improving forest quality and increasing forest cover, as well as cross-sectoral activities on a landscape scale.
D. The FFPM is in charge of forest fire prevention and management.
E. For scientific forest management, states prepare a management plan known as a Working Plan, which highlights various activities to be undertaken in a forest division for effective forest management.
F. To achieve the targeted objectives of national afforestation programmes, the Ministry has approved the **merger of NAP into Green India Mission (GIM)**, and accordingly financial allocation for both schemes is provided under one budgetary head, thereby augmenting overall greening efforts.
G. Funds collected as compensatory levies from states under the **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** are used in plantation activity, including compensatory afforestation by states/UTs.

National Afforestation Programme - Significance

A. NAP and GIM, along with other afforestation schemes, have helped to restore degraded forest areas throughout the country.
B. This has contributed to the stabilisation and expansion of forest cover, as evidenced by the **India State of Forest Report (ISFR)** published by the Forest Survey of India (FSI).
C. According to the most recent India State of Forest Report (ISFR 2021), the country's **total forest and tree cover is 8,09,537 square kilometres (24.62 percent of the country's geographical area),** up from 7,94,245 square kilometres (24.16 percent) in ISFR 2015. This represents an **increase of 15,292 square kilometres** in the country's forest and tree cover.
D. The ISFRs also stated that the positive change could be attributed to conservation measures or management interventions such as afforestation activities, participation of local people for better protection in both plantation and traditional forest areas, expansion of trees outside of forests, tree plantation drives, and so on.
E. Through the **School Nursery Yojana and the Nagar Van Yojana,** the Ministry also promotes tree planting as a people's movement.
F. Tree plantation/afforestation is a cross-sectoral effort undertaken by various departments of the Centre and State Governments, Non-Governmental Organizations, civil society, corporate bodies, and others to achieve the targeted objectives of national afforestation programmes.

National Afforestation and Eco-Development Board (NAEB)

A. In August 1992, the National Afforestation and Eco-development Board (NAEB) was established by the Ministry of Environment and Forests.

B. Through a participatory planning process called Joint Forest Management and microplanning, the National Afforestation and Ecodevelopment Board has developed specific schemes for promoting afforestation and management strategies.
C. That assist the states in creating tailored afforestation and management strategies and eco-development packages for increasing biomass production.
D. Promoting afforestation, tree planting, ecological restoration, and eco-development initiatives across the nation is the responsibility of the National Afforestation and Eco-Development Board (NAEB).
E. It lays emphasis on environmentally vulnerable regions including the Western Himalayas, Aravallis, and Western Ghats, as well as degraded forest areas, lands next to degraded forest areas, national parks, sanctuaries, and other protected places.

SOUTH ASIA CO-OPERATIVE ENVIRONMENT PROGRAMME(SACEP)

Union Minister of Environment and Forest and Climate Change has attended the 15th meeting of the Governing Council of South Asia Co-operative Environment Programme (SACEP) in Dhaka,Bangladesh.

SACEP:

A. South Asia Co-operative Environment Programme (SACEP) is an intergovernmental organization.It is headquartered in Colombo,SriLanka.
B. It was established in 1982 by the governments of South Asia to promote and support protection, management and enhancement of the environment in the region.
C. The members of SACEP includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.
D. SACEP also acts as the Secretariat for the South Asian Seas Programme which comes under the purview of UNEP's Regional Seas Programme.

Objectives of SACEP:

A. Recognition of environmental degradation caused by factors like poverty, overpopulation, over consumption and wasteful production threatening economic development and human survival,
B. Integration of environment and development as essential prerequisites to Sustainable Development, and
C. Importance of co-operative action in the South Asian region where many ecological and development problems transcend national and administrative boundaries.

SOUTH ASIAN SEAS PROGRAMME(SASP):

A. The South Asian Seas Programme(SASP) is a regional agreement which was formally adopted in 1995 among the five maritime countries of South Asia sharing the Indian Ocean.
B. The five maritime countries are Bangladesh, India, Maldives, Pakistan and Sri Lanka.
C. It aims to protect and manage the marine environment and related coastal ecosystems of the region in an environmentally sound and sustainable manner.
D. SASP is part of the global Regional Seas Programme established under the auspices of the UN Environment Programme(UNEP).

ICFRE-ICIMOD's REDD+ Himalayan programme extended till 2020

Launched in January 2016 in Mizoram, the project addressed the drivers of deforestation and forest degradation in India's Himalayan states

- The Reducing Emissions from Deforestation and Forest Degradation (REDD+) programme being carried out in the himalayan states jointly by Indian Council of Forestry Research and Education (ICFRE) and International Centre for Integrated Mountain Development (ICIMOD) has been extended till July 2020.

- The International Centre for Integrated Mountain Development (ICIMOD) is an intergovernmental knowledge and learning centre working on behalf of the people of the Hindu Kush Himalaya (HKH). We are based in Kathmandu, Nepal and work in and for our eight regional member countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.
- We work to improve the lives and livelihoods of men, women, and children of the HKH and protect mountain environments and cultures. The knowledge we create and share helps the people of the HKH become more resilient, make the most of new opportunities, and prepare for change. Our work strengthens regional cooperation for conservation and sustainable mountain development.

- ICFRE-ICIMOD's REDD+ Himalaya: Developing and using experience in implementing REDD+ in the Himalaya programme was launched in January 2016 in Mizoram to addresse the drivers of deforestation and forest degradation in India's Himalayan states.
- While the initiative was meant to last only till 2018, it was on August 26, 2019, "extended till July 2020 keeping in view of the contributions made" by the agencies, RS Rawat, scientist in-charge biodiversity and climate change division, ICFRE told *Down to Earth* in an e-mail.
- "The project was aimed at capacity building. We found that people's major dependence on forest was for fuelwood, so we tried giving the people wooden stoves with better fuel efficiency. We also created alternative sources of income through planting bamboo, share coffee plantation," said VRS Rawat, advisor ICFRE, who was involved with the process.
- "People grow turmeric in the area and to process it, they use fire to dry it. We provided a village with solar drier for this process to reduce the demand for fuelwood," Rawat added.
- The project is supported by the environment, nature conservation and nuclear safety ministry of Germany, was implemented in four countries of the Hindu Kush Himalayan region— Bhutan, India, Myanmar and Nepal.
- The REDD+ programme was initiated by the United Nations in 2005 to mitigate climate change through enhanced forest management in developing countries. It aimed to create incentives for communities so that they stop forest degrading practices.
- More than 300 REDD+ initiatives have taken place since 2006. The mechanism is enshrined in the 2015 Paris Agreement and its implementation transitions from smaller, isolated projects to larger, jurisdictional programmes with support from bilateral and multilateral agencies.

UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED),

- The **Earth Summit,** often referred to as the **United Nations Conference on Environment and Development (UNCED)**, took place in **Rio de Janeiro, Brazil, from June 3–14, 1992**. A massive effort was made to focus on the effects of human socio-economic activities on the environment at this international conference, which was held to commemorate the **20th anniversary of the first Human Environment Conference in Stockholm, Sweden, in 1972**. Political leaders, diplomats, scientists, media representatives, and non-governmental organizations (NGOs) from 179 different countries attended.

UNCED - Background

1. Sustainable development has a long history in the United Nations, dating back to the 1972 United Nations Conference on the Human Environment in Stockholm, Sweden.
2. The United Nations Conference on the Human Environment was the UN's first major environmental conference.
3. The Stockholm Declaration and Plan of Action were adopted by the conference, outlining principles for the preservation and enhancement of the human environment, as well as recommendations for international environmental action.
4. The Conference also established the United Nations Environment Programme (UNEP), the first UN programme solely dedicated to environmental concerns.
5. Twenty years later, at the historic Rio de Janeiro Earth Summit in 1992, the United Nations sought to assist governments in rethinking economic development and finding ways to stop polluting the planet and depleting its natural resources.
6. The two-week "Earth Summit" was the culmination of a process that began in December 1989, of planning, education, and negotiations among all United Nations Member States, culminating in the adoption of Agenda 21, an official global consensus on development and environmental cooperation.

UNCED

1. The Rio de Janeiro conference emphasised how various social, economic, and environmental factors are interdependent and evolve together, and how success in one sector necessitates action in other sectors to be sustained over time.
2. The main goal of the Rio 'Earth Summit' was to create a broad agenda and a new blueprint for international action on environmental and development issues that would help guide international cooperation and development policy in the twenty-first century.
3. The conference resulted in the signing of two new environmental treaties, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity; and the adoption of the Rio Declaration on Environment and Development, Agenda 21, and the Statement of Forest Principles.

- Agenda 21 is a broad assessment of social and economic sectors with the goal of improving each's environmental and developmental impact.
- The Rio Declaration summarises consensus principles of sustainable development.
- The Statement on Forest Principles commits parties to using forest resources more sustainably.

UNCED - Issues Addressed

1. The issues addressed in the United Nations Conference On Environment and Development include:
2. Systematic examination of industrial processes, especially those that produce harmful waste, such as radioactive compounds or toxic components, like lead in gasoline.

3. Alternative energy sources to offset the usage of fossil fuels, which has been related to anthropogenic climate change.
4. Increasing reliance on public transit networks to lessen vehicle emissions, traffic in cities, and health issues brought on by smoking and dirty air.
5. The significance of safeguarding the world's oceans is due to the growing demand and limited quantity of water.

UNCED - Achievements

A. **Kyoto Protocol:** A major accomplishment of the conference was a deal on the Climate Change Convention, which produced the Kyoto Protocol and the Paris Agreement.
B. **Indigenous People & Environment:** A further observation indicated that "no operations that will degrade the environment or are culturally unsuitable shall be conducted on the territory of indigenous peoples."
C. **Convention on Biological Diversity (CBD):** The Earth Summit saw the opening of the CBD for signing, which marked the beginning of a redefining of policies that did not inevitably support the destruction of natural ecoregions and so-called uneconomic growth.
D. **World Oceans Day:** The idea for World Oceans Day was first presented during this conference, and it has been celebrated ever since.
E. **Local Government Honours Award:** The Local Government Honours Award recognised twelve communities for their creative regional environmental initiatives.
F. **International Educational:** These included Kitakyushu in Japan for incorporating an international education and training component into its municipal pollution control programme; Sudbury in Canada for its ambitious programme to repair environmental damage caused by the nearby mining industry; and Austin in the United States for its green building strategy.
G. **Commission on Sustainable Development:** The 'Earth Summit' also resulted in the establishment of the Commission on Sustainable Development, the first world conference on the sustainable development of small island developing states in 1994, and negotiations for the establishment of an agreement on straddling stocks and highly migratory fish stocks.

UNCED - Outcome

<u>Rio Declaration on Environment and Development</u>

- The 1992 United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, resulted in the short declaration known as the Rio Declaration on Environment and Development, or Rio Declaration.
- The Rio Declaration set forth 27 guiding principles for the future sustainable development of nations.
- It was endorsed by more than 175 nations. The Rio Declaration states 27 principles and refers to the "integral and interrelated nature of the Earth, "our home."
- According to the first principle, human beings are the main focus of sustainable development because they have a right to have productive lives that are in tune with the environment.

<u>AGENDA 21</u>

- The United Nations' Agenda 21 is a non-binding action plan for sustainable development.
- It is a result of the 1992 Rio de Janeiro, Brazil, Earth Summit, a United Nations conference on environment and development.
- It is an action plan that may be carried out at the local, national, and international levels by the UN, other multilateral organizations, and various sovereign governments.

- ❖ Every local government should create its own local Agenda 21 is one of the project's main goals.
- ❖ The initial goal of Agenda 21 was to achieve global sustainable development by the year 2000; the "21" in the name refers to the intended year of the 21st century.

Local Agenda 21

A. Local Agenda 21 (LA21), **a voluntary process,** is an effort to create a comprehensive action plan for environmental protection, economic success, and community well-being in the local jurisdiction or area.
B. It is directed by the local government and involves the entire community.
C. Planning and execution across the economic, social, and environmental sectors must be integrated in order to accomplish this.
D. Complete community involvement, evaluation of present conditions, target setting for reaching certain goals, monitoring, and reporting are essential components.
E. Local Agenda 21 includes **partnership building, community engagement, capacity building, and awareness raising**.

Agenda 21 for Culture

1. During the first World Public Meeting on Culture, held in Porto Alegre, Brazil in 2002, it was proposed to create a document with guidelines for local cultural policies, similar to what Agenda 21 meant for the environment in 1992.
2. The first document with a global mission that promotes laying the **foundation for a project by cities and local governments for cultural development** is Agenda 21 for Culture.
3. **Cities and local governments from around the world** came to an agreement on Agenda 21 for Culture to formalize their commitment to human rights, cultural diversity, sustainability, participatory democracy, and fostering a peaceful world.
4. The inaugural **Universal Forum of Cultures,** which took place in **Barcelona** on May 8, 2004, included the 4th Forum of Local Authorities for Social Inclusion of Porto Alegre, which gave its approval.
5. After it was approved, **United Cities and Local Governments (UCLG)** accepted Agenda 21 for Culture as a reference guide for its cultural programs and took over coordination of the initiative.
6. **Cities, local governments, and networks** that put culture at the center of their development processes converge at the UCLG Committee on Culture.
7. Around the world, an increasing number of towns and local governments have adopted Agenda 21 for culture in their local councils.
8. International organizations, national governments, and civil society now show more interest in the process.

Rio+5

1. A special session (Rio +5) of the UN General Assembly was held in 1997 to review Agenda 21's five-year implementation progress.
2. The Assembly acknowledged that growth had been "uneven" and noted some major issues, such as escalating globalization, widening income disparities, and a persistent worsening of the environment worldwide.
3. After the Cold War, the creation of the Earth Summit was a reaction to the need for member states to collaborate worldwide on development issues.
4. The Earth Summit was convened as a forum for member states to work together because issues related to sustainability were too big for individual members to handle.

5. Since their inception, several organizations, including non-governmental organizations (NGOs), working in the sustainability field have developed in a way that is similar to the topics covered in these conferences.

Johannesburg Summit

1. The Rio Earth Summit's 10-year anniversary follow-up event was the Johannesburg Summit in 2002, also known as the World Summit on Sustainable Development (WSSD).
2. Johannesburg, South Africa, hosted the Summit from August 26 to September 4, 2002.
3. The summit's main objectives were to renew global support for sustainable development at the highest political level and to quicken the pace of Agenda 21 implementation.
4. In order to meet everyone's fundamental requirements, raise living standards overall, and better manage and safeguard ecosystems for long-term sustainability, it advocates for the integration of environment and development.

Rio+20

- Rio de Janeiro, **Brazil** hosted the **Earth Summit in 1992**. As a result, it is also known as RIO Summit.
- Its more recent RIO Summit was known as "RIO +20" since there were two summits **twenty years apart,** in 1992 and 2012.
- It was meant to be a high-level meeting **attended by heads of state and government as well as other delegates**, with the **goal of producing a targeted political statement** that would **help define international environmental policy.**
- Rio+20 is regarded as a **crucial opportunity for the international community** to reaffirm its commitment to **sustainable development** and explore creative models to inspire global action on sustainability.

FOREST PRINCIPLES

1. The Forest Principles, sometimes known as the **Rio Forest Principles**, were technically known as the Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation, and Sustainable Development of All Types of Forests.
2. The United Nations Conference on Environment and Development produced it in 1992. (the "Earth Summit").
3. It is a non-binding document that offers numerous suggestions for sustainable forestry growth and conservation.
4. The Group of 77's demands for more foreign aid in order to pay for the setting aside of forest reserves hindered the document's negotiation at the Earth Summit.
5. These proposals were contested by developed nations, and the resulting text was a compromise.

CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

1. The Convention on Biological Diversity (CBD), also referred to as the Biodiversity Convention or the United Nations Convention on Biological Diversity (UNCBD), is a **multilateral treaty.**
2. The Convention on Biological Diversity (CBD) is an international legal instrument that has been ratified by 196 countries for "the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the utilization of genetic resources."
3. Its overarching goal is to encourage actions that will lead to a more sustainable future.
4. All habitats, species, and genetic resources are covered by the agreement.

Framework Convention on Climate Change (UNFCCC)

- The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental convention that aims to lower atmospheric concentrations of greenhouse gases in order to prevent dangerous anthropogenic interference with the earth's climate system.
- The United Nations Framework Convention on Climate Change (UNFCCC), commonly known as the **Earth Summit, the Rio Summit, or the Rio Conference, was ratified in 1992**.
- Each participating nation is expected to make a commitment to stabilize greenhouse gas emissions under this framework.
- A Conference of the Parties (COP) is an annual gathering of the 197 parties to the convention to review the status of efforts to combat climate change.

UNCED - Significance

- The 'Earth Summit' concluded that the concept of sustainable development was an attainable goal for all people around the world, regardless of whether they were on a local, national, regional, or international scale.
- It also acknowledged that integrating and balancing economic, social, and environmental concerns in meeting our needs is critical for the survival of human life on the planet, and that such an integrated approach is feasible.
- The conference also acknowledged that integrating and balancing economic, social, and environmental dimensions necessitated new perspectives on how we produce and consume, live and work, and make decisions.
- This concept was revolutionary at the time, and it sparked a lively debate within governments and between governments and their citizens about how to ensure development sustainability.
- The Earth Summit was also the first United Nations conference to openly welcome representatives from non-governmental organizations (NGOs), business, and industry.
- The United Nations Conference on Environment and Development established the concept of "major groups"—Business and Industry, Children and Youth, Farmers, Indigenous Peoples, Local Authorities, NGOs, the Scientific and Technological Community, Women, Workers and Trade Unions—whose participation is required to achieve sustainable development.

COMMISSION ON SUSTAINABLE DEVELOPMENT (CSD)

- The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in December 1992 to ensure effective follow-up of United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit.
- From its inception, the CSD was highly participatory in structure and outlook, by engaging in its formal proceedings a wide range of official stakeholders and partners through innovative formulae.
- At its eleventh session in 2003, the Commission decided on a multi-year work programme consisting of review and policy years. Since its establishment in 1992, the Commission has greatly advanced the sustainable development agenda within the international community.
- At the United Nations Conference on Sustainable Development (Rio+20), Member States agreed to establish a high level political forum that will subsequently replace the Commission on Sustainable Development.

GLOBAL ENVIRONMENT FACILITY (GEF)

- The Global Environment Facility (GEF) is a multilateral financial mechanism that grants funds to developing countries for projects that benefit the global environment while also promoting sustainable livelihoods in local communities. The Global Environment Facility (GEF) was established to provide new and additional grants as well as concessional funding to cover the additional costs associated with converting a project with national benefits into one with global environmental benefits.

GLOBAL ENVIRONMENT FACILITY

- It is a **"financial mechanism"** established as per **Article 11 of the UNFCCC** for convention implementation that will operate under the supervision and accountability of the UNFCCC COP.
- According to Article 11(1), the COP is responsible for determining the financial mechanism's policies, programme priorities, and eligibility criteria in relation to the convention.
- **Article 21** designates the GEF as the interim financial mechanism.
- The **World Bank established** the Global Environment Facility (GEF) **in 1991** in collaboration with the **United Nations Development Programme (UNDP)** and the **United Nations Environment Programme (UNEP)** to provide funding to protect the global environment.
- At the Rio Earth Summit in 1992, the GEF was restructured and separated from the World Bank system to become a permanent, separate institution.
- However, since 1994, the World Bank has served as a Trustee of the GEF Trust Fund and has provided administrative services.
- It is headquartered in Washington, DC, USA.
- The programme supports a global active portfolio of over 200 investments.
- India is a GEF donor as well as a recipient.

ORGANIZATION STRUCTURE

- The Global Environment Facility is governed by an Assembly, a Council, a Secretariat, 18 agencies, a Scientific and Technical Advisory Panel (STAP), and an Evaluation Office.
- The GEF serves as a financial mechanism for a number of environmental treaties.

Assembly

- The GEF Assembly is made up of all 184 member countries, also known as participants. It meets at the ministerial level every three to four years to:

1) review general policies;
2) review and evaluate the GEF's operation based on reports submitted to Council;
3) review the Facility's membership; and
4) consider, for approval by consensus, amendments to the Instrument for the Establishment of the Restructured Global Environment Facility based on Council recommendations.

Council

1) The Council, the GEF's main governing body, is made up of 32 members elected by GEF member countries' constituencies (14 from developed countries, 16 from developing countries, and two from economies in transition).
2) Members of the council rotate at different intervals determined by each constituency.
3) The Council, which meets twice a year, develops, adopts, and evaluates GEF-financed operational policies and programmes.
4) It also reviews and approves the work programme (projects submitted for approval), reaching a consensus on decisions.

Conventions

- ❖ The GEF provides funding to developing countries to help them meet the goals of international environmental treaties.
- ❖ Five conventions rely on the GEF as a "financial mechanism":

1) Convention on Biological Diversity (CBD)
2) UN Framework Convention on Climate Change (UNFCCC)
3) The United Nations Convention to Combat Desertification (UNCCD)
4) Stockholm Convention on Persistent Organic Pollutants (POPs)
5) Minamata Mercury Convention

Scientific and Technical Advisory Panel (STAP)

- ❖ The GEF relies on the Scientific and Technical Advisory Panel (STAP) for scientific and technical advice on policies, operational strategies, programmes, and projects.
- ❖ Six members of the Panel are internationally recognised experts in the GEF's key areas of work.
- ❖ They have the backing of a global network of experts and institutions.
- ❖ The United Nations Environment Programme (UNEP), which hosts the STAP Secretariat, serves as the GEF's liaison.

Trustee

1) The World Bank acts as the GEF Trustee and manages the GEF Trust Fund (contributions by donors).
2) Its responsibilities include assisting in the mobilisation of resources for the Trust Fund, disbursing funds to GEF Agencies, preparing financial reports on investments and resource use, and monitoring the application of budgetary and project funds.

Independent Evaluation Office

1) The Independent Evaluation Office reports to the Council directly.
2) It is led by a Director, who is appointed by the Council and oversees a team of specialised evaluators.
3) It collaborates with the Secretariat and the GEF Agencies to share best practices and lessons learned.
4) The Office conducts independent assessments of the GEF's impact and effectiveness.

Secretariat

1) The Secretariat, which coordinates overall GEF activity implementation, is led by a Chief Executive Officer (CEO)-Chairperson, who is appointed by the Council for a four-year term (renewable for one additional term).
2) The Secretariat is in charge of putting Assembly and Council decisions into action.
3) It coordinates and oversees programmes; ensures policies are implemented in consultation with the GEF Agencies; chairs interagency group meetings to ensure effective collaboration among the GEF Agencies; and coordinates with Convention Secretariats, among other things.

Agencies

1) The GEF Agencies are the GEF's operational arm.
2) They collaborate closely with project sponsors, which include government agencies, civil society organisations, and other stakeholders, to design, develop, and implement GEF-funded projects and programmes.
3) GEF Agencies are made up of eighteen institutions.

Participant Countries

- GEF member countries are referred to as participants in the Instrument, which includes both donors and recipients.
- The GEF currently has 184 member countries.
- In general, the GEF has developed and developing participants.
- They are represented on the GEF Council by 32 constituencies (14 developed countries, 16 developing countries, and 2 transition economies), each with a Council member and an alternate Council member.
- Every four years, representatives from all member countries gather at the GEF Assembly.

GEF - Focal Areas

- GEF Focal Points are classified into two types: **political and operational.**
- Political Focal Points exist in all GEF member countries, but only recipient countries eligible for GEF assistance have Operational Focal Points.
- GEF Political Focal Points are primarily concerned with governance, including policies and decisions, as well as relations among member countries within their constituencies.
- GEF Operational Focal Points are in charge of running GEF activities in their respective countries. This includes reviewing and approving project proposals to ensure that they are consistent with national priorities and strategies.
- The following are the main focal points under GEF:

1) Biodiversity
2) Climate change
3) International waters
4) Ozone depletion
5) Land degradation
6) Persistent Organic Pollutants

GEF - Funding

- GEF funds are available to developing and transition economies seeking to meet the goals of international environmental conventions and agreements.
- Government agencies, civil society organisations, private sector companies, and research institutions, among other partners, are given assistance in implementing projects and programmes related to environmental conservation, protection, and renewal.
- Donor countries make financial contributions through several trust funds administered by the World Bank as the GEF Trustee and serviced by a functionally independent Secretariat based at the World Bank.
- The Trustee assists in mobilising GEF resources every four years through a replenishment process transfers funds to GEF Agencies and prepares financial reports on investments and resource use.
- The Trustee submits periodic reports to the GEF Council that include a variety of fund-specific financial data.

GEF - Mechanism of Action

1) It has a unique collaboration with 18 international organisations, including state bodies, multilateral development banks, UN agencies, and international NGOs (NGOs).
2) In order to address the world's environmental concerns, 183 nations, international organisations, civil society organisations, and the commercial sector have come together to form the GEF.

3) It serves as a catalyst and innovator by fostering multi-stakeholder partnerships to protect imperilled ecosystems on land and at sea, create greener cities, enhance food security, and advance clean energy for a society that is more wealthy and climatically resilient.

GEF AND INDIA

1) It is both a donor and a recipient of GEF funds.
2) In India, the Finance Ministry is the political focal point for the GEF, while the Environment Ministry is the operational focal point.
3) India, Bhutan, Maldives, Sri Lanka, Nepal, and Bangladesh have formed a Permanent Constituency in the GEF's Executive Council.
4) The GEF provides funding to India for work in three major areas: **biodiversity, climate change, and land degradation.**

Global Environment Facility for Covid-19 Pandemic

- To assist in addressing the current situation and reducing the likelihood of new environmental crises arising in the near future, the GEF has developed a set of plans divided into immediate, medium, and long term plans.
- In addition, efforts are being made to promote a **green economic recovery** that is consistent with sustainable and nature-based development.
- Ecosystem pressures are bringing wild animals and humans into dangerously close proximity. The Global Environment Facility's (GEF) response includes measures to address the following issues:

1) Deforestation
2) Wildlife trading
3) Urban sprawl

Plans of Global Environment Facility

Immediate Actions

1) **Wildlife Trading** - There will be a focus on regulating and monitoring the consumption of wildlife products and bushmeat. The GEF is collaborating with the World Bank and other African and Asian partners to invest in innovative solutions.
2) A group of experts will analyse the future risks posed by infectious diseases. They will investigate the underlying causes of deforestation and ecosystem collapse.
3) GEF will investigate ways to sustain current programmes and projects by identifying risks associated with them as a result of the current pandemic and ensuring that gains made in the past and favourable outcomes expected in the future are not jeopardised.

Medium-Term Actions

1) A **green recovery blueprint** would be developed by investigating various methods of deploying upcoming and ongoing projects.
2) The blueprint will also include opportunities and risks associated with the COVID-19 pandemic.
3) It will investigate how the crisis will affect mining, cities, and food security.

Long-Term Measures

- It will look into ways to restore the balance between natural and human systems, as well as a long-term solution to the COVID-19 pandemic.

Agencies Associated with GEF

1) Asian Development Bank
2) African Development Bank
3) European Bank for Reconstruction and Development
4) Food and Agriculture Organization (FAO)
5) Inter-American Development Bank
6) International Fund for Agricultural Development
7) United Nations Development Programme (UNDP)
8) UN Environment Programme
9) United Nations Industrial Development Organization (UNIDO)
10) World Bank Group
11) Conservation International
12) Development Bank of Latin America
13) Development Bank of Southern Africa
14) Foreign Economic Cooperation Office (Chinese Government)
15) Brazilian Biodiversity Fund
16) International Union for the Conservation of Nature (IUCN)
17) West African Development Bank
18) World Wildlife Fund (WWF-US)

CONCLUSION

- GEF works in major areas such as biodiversity, climate change (mitigation and adaptation), chemicals, international waters, land degradation, sustainable forest management/REDD+, and ozone layer depletion. India is one of the developing countries that has participated in the GEF since its inception in 1991. It was instrumental in shaping the GEF.

NATIONAL ENVIRONMENT POLICY (2006) OF INDIA

There are different policies for forests, water, and environmental pollution. But the experience in implementing these policies over the years has brought out the need for a comprehensive policy approach to the management of the environment in the country. Therefore, a new national environment policy was announced in 2006.

Objectives of National Environment Policy (2006):

The following are the objectives of the national environment policy:

1) **Conservation of Critical Environmental Resources:** To protect and conserve critical environmental resources and invaluable natural and man-made heritage which are essential for life-supporting livelihoods and welfare of the society.
2) **Inter-generational Equity:** To ensure judicious use of environmental resources to meet the needs and aspirations of present and future generations.
3) **Efficiency in Environmental Resources Use:** To ensure efficient use of environmental resources in the sense of reduction in their use per unit of economic output and to minimize adverse environmental impacts on society.
4) **Environmental Governance in the Management of Resources:** To apply the principles of resources. To apply the principles of good governance (i.e. transparency, rationality, accountability, reduction in costs and time, and public participation) to the management of environmental resources.
5) **Enhancement of Resources:** Appropriate technology and traditional knowledge, managerial skills, and social capital will be used for the conservation and enhancement of resources.

6) **Livelihood Security for the Poor:** To ensure equitable access to environmental resources for poor tribal communities, which are most dependent on environmental resources for their livelihood.
7) **Integration of Environmental Concerns for Socio-economic Development;** to integrate environmental concerns into policies, plans, programs, and projects for socio-economic development.

Strategy for Conservation of Environmental Resources
The following strategy will be adopted for conservation of environmental resources in India:

1. Land Degradation:

The following steps will be taken to reduce land degradation:

1) Encourage adoption of science based and traditional sustainable land use practices through research and development.
2) Pilot scale demonstrations and farmers' training.
3) Promote reclamation of wasteland and degraded forest land through formulation and adoption of multi-stakeholder partnerships involving the land owning agency, local communities and investors.
4) To reduce desertification through action plans.

2. Forests:

To formulate an innovative strategy for the increase of forest and tree cover from the present level of 23 percent of the country's land area, to 33 percent in 2012 through afforestation of degraded forest land, wasteland, and tree cover on private or revenue land.

Key elements of the strategy would include:

1. The implementation of multi-stakeholder partnerships involving the forest department, local communities, and investors, with clearly defined obligations and entitlements for each partner, following good governance principles, to derive environmental livelihood, and financial benefits.
2. Rationalization of restrictions on the cultivation of forest species outside notified forest areas.
3. Enabling farmers to undertake social and farm forestry where their returns are more favorable than cropping.
4. Universalization of the Joint Forestry Management System throughout the country.
5. Formulating an appropriate methodology for reckoning and restoring the environmental values of forests that are unavoidably diverted to other uses.
6. Giving legal recognition of the traditional rights of forest-dwelling tribes and provide long-term incentives to the tribals to conserve the forests.

3. Wildlife:

In respect of wildlife conservation, the following steps would be pursued:

1) Expanding the Protected Area Network of the country. It must be ensured that the overall area of the network in each biogeographic zone would increase in the process.
2) Paralleling multi-stakeholder partnerships for afforestation.Further, formulating and implementing similar partnerships for enhancement of wildlife habit in conservation and community reserves.
3) Encouraging eco-tourism at wildlife sites.

4) Implementing measures for captive breeding and release into the wild identified endangered species.

4. Biodiversity:

According to the National Environment Policy, a large- scale exercise has been already completed for providing inputs towards a National Biodiversity Action Plan. However, following measures would be taken to protect biodiversity at national level.

1) Strengthen the protection of biodiversity hot spots.
2) Pay attention to the potential impacts of development projects on biodiversity resources and natural heritage.
3) The genetic material of threatened species of flora and fauna must be conserved on priority.
4) Conferring intellectual property rights for traditional knowledge.

5. Wetlands:

Wetlands, natural and man-made, freshwater or brackish, provide numerous ecological services. They provide habitat to aquatic flora and fauna. But now wetlands are under threat from drainage and conversion for agriculture and human settlements, besides pollution.

The key strategy for action will include the following steps:

1) To set up a legally enforceable regulatory mechanism for identified valuable wetlands to prevent their degradation and enhance their conservation.
2) To formulate and implement sustainable tourism strategies for identified wetlands thorough multi-stakeholder partnerships involving public agencies, and local communities.
3) To take explicit account of impacts on wetlands of significant development projects during environmental appraisal of such projects.

6. Conservation of Man-made Heritage:

Man-made heritage reflects the pre-history, ways of living and culture of people. In the case of India, such heritage is at the core of our national identity. At the same time, considerable economic value, and livelihoods may be derived from conservation of man- made heritage and their sustainable use.

The following action plans would be required for their sustainable use.

1) In setting ambient environmental standards, especially for air quality, the potential impacts on designated heritage sites must be taken into account.
2) Integrated regional development plans should be drawn up with participation of the local community with respect to shifting polluting activities and waste far away from sites.
3) Impacts on designated heritage sites must be considered at the stage of developing the terms of reference for environmental impact assessments of the projects.

7. Environmentally Sensitive Zones:

Environmentally sensitive zones may be defined as areas with identified environmental resources with incomparable values, which require special attention for their conservation. In order to conserve and enhance these resources, without impeding legitimate socio-economic development of these areas, the following actions will be taken.

1) Identify and give legal status to Environmentally Sensitive Zones in the country.
2) Formulate area development plans for these zones on a scientific basis with adequate participation by the local communities.

3) Create local institutions for the environmental management of such areas.

8. Strategy for Sustainable Mountain Development:

- ❖ Mountain ecosystems play a key role in providing forest cover, feeding perennial river systems, conserving genetic diversity, and providing an immense resource base for livelihoods through sustainable tourism.
- ❖ There has been significant adverse impact on mountain ecosystems by way of deforestation, submergence of river valleys, pollution of freshwater resources, despoiling of landscapes, degradation of human habitat, loss of genetic diversity, retreat of glaciers, and pollution.

Keeping in view, the following action plan for sustainable mountain development would be taken up:

1) Adopting best practice norms for infrastructure construction in mountain regions to avoid or minimize damage to sensitive ecosystems and despoiling of landscapes.
2) Encouraging cultivation of traditional varieties of crops and horticulture by promotion of organic farming and enabling farmers to realize a price premium.
3) Promoting sustainable tourism through adoption of best practice norms for tourism facilities and access to ecological resources.
4) Developing strategies or particular unique mountains capes.

9. Strategy for Sustainable Coastal Resources:

1) Coastal environmental resources provide habitats for marine species, which in turn comprise the resource base for large numbers of fisher folk, protection from extreme weather events, a resource base for sustainable tourism, agricultural and urban livelihoods.
2) In recent years, there has been significant degradation of coastal resources, for which the proximate causes include poorly planned human settlements, improper location of industries and infrastructure, pollution from industries, and settlements, and over exploitation of living natural resources.

In keeping with these adverse effects on coastal resources, the following measures would be taken:

1) To mainstream the sustainable management of mangroves into the forestry sector regulatory regime, ensuring that they continue to provide livelihoods to local communities.
2) To disseminate available techniques for regeneration of coral reefs, and support activities based on application of such techniques.
3) To embody considerations of sea-level rise in coastal management plans.
4) India has passed Coastal Regulation Zone (CRZ) notification in February 1991 and Integrated Coastal Zone Management (ICZM) to ensure protection to coastal environmental in India. Their rules and regulations are firmly founded on scientific principles. Specific projects should be consistent with the approval of ICZM plans.

10. Strategy for Conservation of Freshwater Resources:

- ❖ The fresh water resources comprise the river systems, groundwater and wetlands. Each of these has a unique role and characteristic linkage to other environmental entities.

River Management:

The following comprise elements of an action plan for river management:

1) Promoting integrated approaches to management of river basins by the concerned river authorities, considering upstream and downstream inflows and withdrawals by reason.

2) Monitoring authorities will check pollution loads and natural regeneration capacities to ensure adequate flows and adherence to water quality standards.
3) To consider and mitigate the impacts on river flora and fauna.
4) To consider mandating the installation of water saving closets and taps in the building byelaws of urban centres.

Groundwater:

- Groundwater is present in underground aquifers in many parts of the country. The water table has been falling rapidly in many areas of the country in recent years. This is largely due to withdrawal for agricultural, industrial, and urban use in excess of annual recharge.
- In urban areas, apart from withdrawals for domestic and industrial use, housing and infrastructure such as roads prevent sufficient recharge. In addition, some pollution of groundwater occurs due to leaching of stored hazardous waste and use of agricultural chemicals in particular pesticides.

The following action plans are required in this direction:

1) The efficient use of groundwater would accordingly, require that the practice of non-metering of electricity supply to farmers be discontinued.
2) To promote efficient water use techniques such as sprinkler or drip irrigation among farmers.
3) To support practices of contour bunding and revival of traditional methods for enhancing groundwater recharge.
4) To mandate water (rainwater) harvesting in all new constructions in relevant urban areas to enhance groundwater recharge.
5) To support research and development in cost effective techniques suitable for rural drinking water projects.

Policy for Pollution Abatement:

The following measures will be adopted to control the pollution at local and national level:

1. Water Pollution:

The following measures will be adopted to control water pollution:

1) To enhance reuse of treated sewage and industrial waste water before final discharge to water bodies.
2) To set up common effluent treatment plants on cost recovery basis.
3) To take explicit account of groundwater pollution in pricing policies of pesticides and fertilizers.
4) To develop a strategy for strengthening regulation regarding the impact of ship breaking on marine resources.
5) To promote research and development in the field of low cost technologies for sewage treatment.
6) To develop public-private partnership for setting up effluent and sewage treatment plants.

2. Air Pollution:

The following are elements of an action plan for air pollution:

1) To accelerate the national programs of dissemination of improved fuelwood stoves, and solar cookers for rural women. To provide incentive-based instruments for controlling air pollution

2) To provide adequate investments in low pollution mass transport systems with the help of public and private partnerships. To give greater legal standing to local community and NGOs to undertake monitoring of environmental compliance, to promote reclamation of wastelands by energy plantations.

3. Noise Pollution:

The following would comprise elements of an action plan on abatement of Noise Pollution:

1) Make appropriate distinctions between different environments in terms of setting ambient noise standards, e.g. rural versus urban , educational and hospital establishments versus other areas, daytime versus night time in residential areas; areas in the vicinity of rail, road and airport infrastructure etc.
2) Distinguish between noise standards and protection measures the context of occupational exposure, and environmental exposure to third parties.
3) Formulate noise emissions norms i.e. loudspeakers, automobile horns and fireworks ratings appropriate to various activities o ensure that exposure levels to third parties who are not participants in the activity do not exceed prescribed ambient standards.

Encourage dialogue between state/local authorities and religious/ community representatives on the adoption of enforceable specific durations, timings for use of loudspeakers or fireworks.

4. Soil Pollution:

The following are elements of an action plan on soil pollution:

1) Develop and implement strategies for clean-up of pre-existing toxic and hazardous waste dumps, in particular, in industrial areas and reclamation of such lands for sustainable use.
2) Strengthen the capacities of local bodies for segregation, recycling, and reuse of municipal solid wastes.
3) Develop and implement strategies for recycling, reuse, and final environmentally benign disposal of plastics wastes, including through the promotion of relevant technologies, and use of incentive-based instruments.
4) Promote organic farming of traditional crop varieties through research.
5) Develop transparent, voluntary, and science-based eco-labeling schemes.
6) Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials.
7) Develop public-private partnerships for setting up and operating secure landfills and incinerators for toxic and hazardous wastes, both industrial and biomedical.

LEGAL FRAMEWORK:

There are already many laws to deal with the problems of **environmental pollution in India**. These are

1) ENVIRONMENTAL PROTECTION ACT -1986
2) the Water (Prevention and Control of Pollution) Act 1974,
3) the Water Cess Act 1977 and The Air (Prevention and Control of Pollution) Act 1981.

The law in respect of management and conservation of forests and biodiversity is contained in the

1) Indian Forest Act 1927,
2) the Forest (Conservation) Act 1980,
3) the Wild Life (Protection) Act 1972 and
4) the Biodiversity Act 2003.

REDD and REDD+

The United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) is a collaborative program of Food and Agricultural Organization (FAO), United Nations Development Programme (UNDP) & United Nations Environment Programme This article helps one understand Carbon stocks, causes of forest degradation, and major carbon sinks.

- REDD+ is a financing model negotiated under the UNFCCC to reduce greenhousegas emissions from deforestation and forest degradation in developing countries.
- It is divided into three phases, which are roughly associated with readiness, implementation, and payment for results.
- REDD+ is a voluntary climate mitigation path developed by Parties to the UNFCCC The primary objective of REDD is to reduce emissions from deforestation and forestdegradation.
- The objective of REDD+ is to conserve forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks.
- REDD+ was first negotiated under in 2005, with the objective of mitigating climate change through reducing net emissions of greenhouse gases through enhanced forest management in developing countries.
- Most of the key REDD+ decisions were completed by 2013, with the final pieces of the rulebook finished in 2015.
- According to the proponents, REDD+ is an effective, efficient, and equitable mechanismfor reducing emissions from deforestation and forest degradation.

CAUSES FOREST DEGRADATION

- Deforestation is completely clearing or removing forests in a locationmay be for agricultural activities.
- Whereas forest degradation means forests still exist, but it is no longer able to sustain people, wildlife.
- It will no longer be able to filter the air we breathe, the water we drink or provide animals with food.
- The reasons behind forest degradation are high temperatures, climate change, forest fires, forests getting infested with pests and diseases.

DIFFERENCE BETWEEN REDD AND REDD+

THE DIFFERENCES BETWEEN REDD AND REDD+ ARE TABLED BELOW:

REDD	REDD+
REDD is the abbreviation for “reducing emissions from deforestation and forest degradation”	REDD+, with the “plus” referring to “the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries”.
REDD is mostly focused towards avoiding carbon emissions from: 1) deforestation and 2) forest degradation	REDD+ activities include the following: 1) Reducing emissions from deforestation 2) Reducing emissions from forest degradation 3) Conservation of forest carbon stocks 4) Sustainable management of forests 5) Enhancement of forest carbon stocks

- ❖ Forest carbon stock is the amount of carbon that has been sequestered from the atmosphere and is now stored within the forest ecosystem. This carbon is stored in the above-ground biomass, below-ground biomass, soil, deadwood and litter.

MAJOR CARBON SINKS

Carbon sinks are natural systems that suck up and store carbon dioxide from the atmosphere. The major carbon sinks are listed below.

1) Plants
2) Soil
3) Oceans

INDIA AND REDD+ ACTIVITIES

Reducing Deforestation –

1) In India, there is no large scale deforestation happening except in a few states.
2) All the same, there is a scope of increasing the performance of REDD+ by further reducing deforestation.

Reducing Forest Degradation –

1) India has been monitoring and reporting forest cover according to tree crown density classes.
2) Thus, in the Indian context, degradation may be defined as "Transition from higher to lower tree crown density and/or removal of lower canopy biomass or disturbance of soil, leading to a reduction in forest carbon stocks".
3) Monitoring of tree crown density is the most cost-effective and practical alternative for monitoring degradation.

Conservation of Forest Carbon Stocks –

1) The area under Protected Area (PA) management is increasing in India and has potential for REDD+ activity on 'Conservation of Forest Carbon Stocks'.
2) Since in the PAs, all extraction is regulated or highly restricted, the forest vegetation, biodiversity and in turn, forest carbon stocks are potentially conserved.
3) REDD+ can be considered as a financing or resource mobilization tool to strengthen the management of PAs in future.
4) Himalayan regions where green felling is banned over the past three decades can also be considered as a candidate region for developing the REDD+ concept of 'Conservation of forest carbon stocks'.

SUSTAINABLE MANAGEMENT OF FORESTS –

1) Sustainable management of forests (SMF) is practised by implementing the Forest Working Plan approved by the Government of India.
2) The working plans are prepared following a strict National Forest Working Plan Code.
3) SMF activities can be used to incentivize maintenance of forest carbon stocks, by means of improvement in the quality of existing stocks and sustainable extraction of biomass.

Enhancement of Forest Carbon Stocks –

1) In the Indian context, enhancement of carbon stocks could be defined as "conversion of non-forest or degraded forests to forests through afforestation, reforestation, restoration forestry and forest management practices, leading to enhancement of carbon stocks".
2) Large potential for implementing these activities exists in India. Agroforestry and farm forestry also has the potential to be included under this category of REDD+ activities.
3) National Agroforestry Policy 2014 creates an enabling environment for this action.

UN-REDD AND REDD+

UN-REDD	REDD+
The United Nations Programme on **Reducing Emissions from Deforestation and Forest Degradation**. Headquarters: Geneva, Switzerland. Membership: 64 Partner Countries.	**Reducing emissions from deforestation and forest degradation** and the role of conservation, sustainable management of forests and **enhancement of forest carbon stocks** in developing countries (REDD+)
It is a multilateral **collaborative programme** of the **Food and Agriculture Organization of the United Nations (FAO)**, **United Nations Development Programme (UNDP)** and **United Nations Environment Programme (UNEP).** It was created in 2008 in response to the UNFCCC decisions on the Bali Action Plan and REDD at COP-13.	Voluntary climate change mitigation approach that has been developed by Parties to the UNFCCC.
It partners with **developing countries** to support them in establishing the technical capacities needed to implement **REDD+** and meet UNFCCC requirements for REDD+ results-based payments.	REDD+ goes beyond simply deforestation and forest degradation. It aims to incentivize developing countries to reduce emissions from deforestation and forest degradation, **conserve forest carbon stocks**, sustainably manage forests and enhance forest carbon stocks.

In addition to the UN-REDD Programme, other initiatives assisting countries that are engaged in REDD+ include the **World Bank's Forest Carbon Partnership Facility**, the **Global Environment Facility**, the **Green Climate Fund** etc.

WORLD NATURE ORGANISATION

- **Established**: Formed in **2010** (Established in **2014**)
- **What is it**: an intergovernmental organisation which promotes global environmental protection
- **Location**: Geneva

❖ **Functions:**

1) WNO acts as a centre of competence for environmental protection, green technologies and sustainability, and as a mediator and initiator, making available experience of practical applications and strategies, offering support on all issues related to responsible conduct as regards the natural environment and its resources and assisting States to benefit from efficient development and from scientific and technology transfer.
2) The World Nature Organization promotes sustainable conduct as regards the natural environment, together with new, environments-friendly technologies, green economies and renewable energies.
3) **India is not a member.**

WORLD FOOD PROGRAMME:

➢ **Established** : The WFP was formally established in 1963 by the FAO and the United Nations General Assembly.
➢ **Headquarter**: Rome
➢ **Key Functions:**

1) The WFP strives to eradicate hunger and malnutrition, with the ultimate goal in mind of eliminating the need for food aid itself.
2) WFP's efforts focus on emergency assistance, relief and rehabilitation, development aid and special operations.
3) WFP food aid is also directed to fight micronutrient deficiencies, reduce child mortality, improve maternal health, and combat disease, including HIV and AIDS.
4) WFP has coordinated the five-year Purchase for Progress (P4P) pilot project which assists smallholder farmers by offering them opportunities to access agricultural markets and to become competitive players in the marketplace.

❖ **Funding**: The WFP operations are funded by voluntary donations from world governments, corporations and private donors
❖ ***The objectives of the World Food Programme are:***

1) Save lives and protect livelihoods in emergencies.
2) Support food security and nutrition and (re)build livelihoods in fragile settings and following emergencies.
3) Reduce risk and enable people, communities and countries to meet their own food and nutrition needs.
4) Reduce under-nutrition and break the inter-generational cycle of hunger.
5) Zero Hunger in 2030.

FOREST CARBON PARTNERSHIP FACILITY

1) It is a global partnership of governments, businesses, civil society, and Indigenous Peoples focused on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, the sustainable management of forests, and the enhancement of forest carbon stocks in developing countries (activities commonly referred to as REDD+).
2) The **World Bank** assumes the functions of trustee and secretariat.
3) The World Bank, the Inter-American Development Bank and United Nations Development Programme are Delivery Partners under the Readiness Fund and responsible for providing REDD+ readiness support.

objectives

1) To assist countries in their REDD+ efforts by providing them with financial and technical assistance.
2) To pilot a performance-based payment system for REDD+ activities.
3) To test ways to sustain or enhance livelihoods of local communities and to conserve biodiversity.
4) To disseminate broadly the knowledge gained in Emission Reductions Programs (ERPs).

NATIONAL BIODIVERSITY AUTHORITY:

1) It was created in **2003** under the **Biodiversity act 2002**.
2) It is an **autonomous and statutory** body for advisory and regulatory functions under government for conservation, sustainable use of resources and sharing of resources.

Some of the objectives are:

- Prior approval for intellectual property rights in research in biological resources or knowledge obtained from India.
- Protection of knowledge of local people through registration of knowledge.
- It advises the central government relating to conservation and sustainable and equitable use of benefits.
- Advises to the state government on selecting areas as heritage sites which are important biologically.
- Without permission, no one can transfer the knowledge and/or grant in biological resources. NBA gives approval for transfer.

Note: State biodiversity board work as local level biodiversity management committee. It gives advises on biological management and right use of benefits from the environment and promotes conservation.

BIOLOGICAL DIVERSITY (AMENDMENT) BILL, 2021

- Recently, the **Biological Diversity (Amendment) Bill, 2021** was tabled in the Parliament.
- The amendments seek to **decriminalise certain provisions** and bring **more foreign investments** in the chain of biological resources, including **research, patent and commercial utilisation**, without compromising the **national interest.**
- However, opposition parties have **cited concerns** over the bill and it is being referred to **a select committee.** They demanded the bill to be referred to the Parliament standing committee.

A **Select Committee** is formed for examining a particular Bill and its membership is limited to Members of Parliament from one House. It's chaired by MPs from the ruling party.

Objective: The bill looks to relax certain rules in the **Biological Diversity Act, 2002.**

The 2002 Act imposed a **heavy "compliance burden"** on Indian medicine practitioners, seed sector, industry & researchers and made it hard to conduct collaborative research and investments.

1. **Simplify Research Process:** The amendments also streamline the process of Patenting for Indian researchers to encourage patenting.
2. For this, **regional patenting centres** will be opened across the country.

Boosting Indian Medicine System: It seeks to give a fillip to **"Indian system of medicine"**, and facilitate fast-tracking of research, patent application process, transfer of research results while utilising the biological resources available in India.

1. It seeks to empower local communities to be able to utilise resources, particularly of medicinal value, such as seeds.
2. The Bill looks to encourage farmers to **increase cultivation of medicinal plants.**
3. These objectives to be achieved without compromising the objectives of the **United Nation Convention on Biological Diversity.**

- **Decriminalising Certain Provisions:** It seeks to decriminalise certain provisions in the chain of biological resources.
- These changes were brought in consonance with **India's ratification of Nagoya Protocol** (access to generic resources and the fair and equitable sharing of benefits arising from their utilisation) in 2012.

- **Allowing Foreign Investments:** It also allows for **foreign investment in research in biodiversity.** However, this investment will necessarily have to be made through Indian companies involved in biodiversity research.
- For foreign entities the approval from the **National Biodiversity Authority** is necessary.

Exempting AYUSH Practitioners: The Bill seeks to exempt registered **AYUSH medical practitioners** and people accessing codified traditional knowledge, among others, from giving prior intimation to State biodiversity boards for accessing biological resources for certain purposes.

Biological Diversity Act, 2002: It was enacted by the Parliament, to provide for:

1) Conservation of biological diversity,
2) Sustainable use of its components
3) Fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge.

NAGOYA PROTOCOL

a) It is mandated that benefits derived from the use of biological resources are shared in a fair and equitable manner among the indigenous and local communities.
b) When an Indian or foreign company or individual accesses biological resources such as medicinal plants and associated knowledge, it has to take prior consent from the national biodiversity board.
c) The board can impose a benefit-sharing fee or royalty or impose conditions so that the company shares the monetary benefit from commercial utilisation of these resources with local people who are conserving biodiversity in the region.

CONCERNS RAISED BY THE EXPERTS

1) **Trade over Conservation**: It prioritises **intellectual property** and commercial trade at the expense of the act's key aim of conserving biological resources.
2) **Threat of Bio-piracy:** The exemptions to **AYUSH Practitioners** no longer need to take approvals, would pave the way for **"bio piracy".**
3) **Biopiracy** is the practice of exploiting naturally occurring genetic or biochemical material in commerce.
4) **Marginalising Biodiversity Management Committees (BMCs):** The proposed amendments allow for state biodiversity boards to represent BMCs to determine terms of benefit sharing,
5) Under the Biodiversity Act 2002, national and state biodiversity boards are required to consult the **biodiversity management committees (constituted by every local body)** while taking any decision relating to the use of biological resources.
6) **Sidelining Local Communities:** The bill also exempts cultivated medicinal plants from the purview of the Act. However, it is practically impossible to **detect which plants are cultivated and which are from the wild.**

7) This provision could allow large companies to **evade the requirement for prior approval or share the benefit** with local communities under the access and benefit-sharing provisions of the Act.

WILDLIFE CRIME CONTROL BUREAU:

It is a statutory body which is constituted under the **Wildlife Protection Act, 1972** to prevent illegal activities like smuggling and poaching.

Some of the functions are:

1) Collection of intelligence and establishment of centralized wildlife crime data bank.
2) Implementation of provisions of act and obligations under various protocols and conventions.
3) Assistance to different authority in foreign countries under international organisations.
4) Developing infrastructure and building scientific and professional investigations.

CENTRAL ZOO AUTHORITY:

- Constituted under amendment of **Wildlife Protection Act in 1991** by adding a new section for Zoos and constituted authority by the central government.
- Following are the functions of authority in the act:

1) Decide minimum standards for zoos and ensure all services to take care of animals.
2) Identify endangered species for better protection of it. Exchange and loaning of animals for breeding purposes.
3) Organise training of zoo personnel and coordinate research and educational programs and maintain all the data about different species.

WILDLIFE TRUST OF INDIA:

1) It is a non-profit government organisation to conserve nature especially critically endangered species and threatened habitats with the help of different communities.
2) Functions through local communities and government on a range of projects for preventions and rehabilitation of wildlife.

NATIONAL GANGA RIVER BASIN AUTHORITY:

- Constituted in 2009 under the **Environment (Protection) Act, 1986**. It is a body for planning, coordinating and financing for both centre and state.
- The main functions include:

1) Conservation and reduction of pollution in the Ganga River and using comprehensive planning and management.
2) Development of the river basin is the core approach for management. All the activities and measure are aimed at reducing pollution and relevant to river ecology.
3) Management of minimum ecology flow. Infrastructures like sewerage, catchment area and protection against flood.
4) Investigation and research project for improving the quality of water and creating public awareness to use water conservation practices.
5) Monitor and review of all the programmes and activities.

CENTRAL POLLUTION CONTROL BOARD:

1) It is a statutory body established under the Water (Prevention and Control of Pollution) Act 1974.
2) It provides technical services to the Ministry of Environment and Forests under the provisions of the Environment (Protection) Act, 1986.
3) It Co-ordinates the activities of the State Pollution Control Boards by providing technical assistance and guidance and also resolves disputes among them.
4) Some of the functions are:
5) Advises the central government on any matter related to pollution in water and air pollution, and plan and execute a nationwide program to prevent it.
6) Plan and organise training programs for personnel related to the prevention of water and air pollution.
7) Collect technical and statistical data for better implementation of programs. Prepare manuals and guidelines and create public awareness.

NATIONAL TIGER CONSERVATION AUTHORITY:

- On the recommendation of the Tiger Task Force by the Prime Minister of India Project Tiger and many Tiger reserves in India.
- Helping the state and the central government in the management of tiger reserves.
- Some of the key functions are:

1) To approve a conservation plan prepared by the state government. Provide management guidelines and measures addressing man and animal conflict.
2) Provide information related to the estimation of population of tiger, natural prey, habitat status, and disease outbreak and mortality survey.
3) Program for skill development for forest personnel.

FOREST SURVEY OF INDIA:

- Established in 1981 under the union ministry of Environment, forest and Climate Change.
- Monitoring of changing the situation of land and forest resources and use it for national planning, conservation, management and preservation of forest resources.
- Key functions are:
- Prepare state of **Forest Report biennially** for assessment of the country's forest cover. Develop a database for forest and non-forest areas.
- To prepare thematic maps using aerial photographs. Act and functions as a nodal agency collection, compilation and storage of spatial database on forest resources.
- Strengthen research and development infrastructure and training of forest personnel in the application of technologies like remote sensing and GIS etc.
- To support the state forestry department in survey mapping and inventory.

NATIONAL BOARD OF WILDLIFE:

- Constituted under the **Wildlife Protection Act**. Prime minister Chairman of the board and vice chairman is union minister of environment and forest.
- Some of the functions are:

1) Deal with Environment impact assessment projects.
2) Recommendation on the setting of areas like a national park and wildlife sanctuaries and decide all the activities under protected areas.
3) Frame policies for the protection of wildlife and prevent illegal trade and poaching. For altering the tiger reserves state needs approval from this body.
4) Publish a report on the **state of wildlife in India**.

NATIONAL GREEN TRIBUNALS:

- Created under the **National Green Tribunal Act, 2010** for handling all the cases related to environmental issues.
- It can have 20 members each from the judicial background and expert members.
- It has the power of the civil court and guided by the principle of natural justice.
- Appeals against the order of NGT have to be made to Supreme Court within 90 days and the cases under NGT have to be disposed within 6 months.

WORKING STYLE/POWERS OF NGT

- Over the past few years, the National Green Tribunal (NGT) developed as an important body for regulation of the environment and passing strict orders on issues related to pollution, deforestation, waste management, etc. Some of the major powers of the National Green Tribunal include:

1) NGT provides a way for the evolution of environmental jurisprudence through the development of an alternative dispute resolution mechanism.
2) It helps in the reduction of the litigation burden on environmental matters in the higher courts.
3) NGT provides a faster solution for various environment-related disputes that are less formal and less expensive.
4) It curbs environment-damaging activities. NGT ensures the strict observation of the EIA process.
5) NGT provides reliefs and compensations for any damages caused to persons and properties.

The National Green Tribunal resolves various civil cases under the following seven laws that are related to the environment:

1) Water Act (Prevention and Control of Pollution), 1974
2) Water Cess Act (Prevention and Control of Pollution), 1977
3) Forest Act (Conservation), 1980
4) AIR ACT (PREVENTION AND CONTROL OF POLLUTION) 1981
5) Environment (Protection) Act, 1986
6) Public Liability Insurance Act, 1991
7) BIOLOGICAL DIVERSITY ACT -2002

GENETIC ENGINEERING ADVISORY COMMITTEE:

1) Established according to the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells 1989' in accordance with the **Environment Protection Act, 1986** and works under Dept of Biotechnology, Ministry of Environment, Forests and Climate change
2) Approves filed trails for genetically modifies crops and can take punitive action for non-compliance.
3) Appraise the activities including large scale use of catastrophic micro-organisms and industrial production from an environmental perspective.

TIGER CENSUS REPORT

Union Environment Minister has released a detailed report of All India Tiger Census Report 2018 ahead of Global Tiger Day.

Facts:

1) The All India tiger estimation has been carried out once in every four years since 2006.
2) **Highest Tiger Reserves:** Corbett Tiger Reserve(Uttarakhand) has the highest tigers followed by Nagarhole tiger reserve(Karnataka) and Bandipur Tiger Reserve(Karnataka).
3) **Dampa** Tiger Reserve(Mizoram), Buxa Tiger Reserve(West Bengal) and Palamau Reserve(Jharkhand) have no tigers left.

TIGER ESTIMATION

Tiger census will commence at Bandipur and at Nagarahole as part of the All-India Tiger and Mega Herbivore Estimation.

- This is part of the nation-wide enumeration that is held once in four years and is the fifth such exercise being taken up — the earlier ones being held in 2006, 2010, 2014, 2018.

1) Nagarahole Tiger Reserve is located in Kodagu district and Mysore district in Karnataka.
2) Bandipur National Park is located in Chamarajnagar district, Karnataka
3) It was established as a tiger reserve under Project Tiger in 1973. It is part of the Nilgiri Biosphere Reserve since 1986.

MSTRIPES

- This year's enumeration exercise entails the use of MSTRIPES (Monitoring System for Tigers Intensive Protection and Ecological Status) app.
- Apart from the tiger counts, the exercise will also throw up data on mega herbivores, including elephants and gaurs.
- The use of apps ensures that the data is not only digitised but is uploaded on a real-time basis and is robust.
- **Global Tiger Day:** It was observed for the first time in 2010 on July 29th at the St. Petersburg Tiger Summit in Russia when all 13 tiger range countries came together for the first time with the commitment of doubling the number of wild tigers by 2022.

a) **13 tiger range countries:** India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Russia, Thailand and Vietnam.
b) **Project Tiger:** It is a Centrally Sponsored Scheme of Government of India launched in 1973 for in-situ conservation of wild tigers in designated tiger reserves.

INTERNATIONAL ORGANIZATIONS REGARDING ENVIRONMENT AND CONSERVATION

EARTH SYSTEM GOVERNANCE PROJECT (ESGP)

- Established When and by Whom: Developed under the auspices of the International Human Dimensions Programme on Global Environmental Change. It started in January 2009.
- Headquarter: The Earth System Governance Project Office is hosted at Lund University, Sweden.

Key Functions:

1) The Earth System Governance Project aims to contribute to science on the large, complex challenges of governance in an era of rapid and large-scale environmental change.

2) The project seeks to create a better understanding of the role of institutions, organizations and governance mechanisms by which humans regulate their relationship with the natural environment
3) The Earth System Governance Project aims to integrate governance research at all levels. The project aims to examine problems of the 'global commons', but also local problems from air pollution to the preservation of waters, waste treatment or desertification and soil degradation
4) However, due to natural interdependencies local environmental pollution can be transformed into changes of the global system that affect other localities. Therefore, the Earth System Governance Project looks at institutions and governance processes both local and globally
5) The Earth System Governance Project is a scientific effort, but also aims to assist policy responses to the pressing problems of earth system transformation

GLOBAL ENVIRONMENT FACILITY (GEF)

Established When and by Whom: The Global Environment Facility was established in October 1991 as a $1 billion pilot program in the World Bank to assist in the protection of the global environment and to promote environmental sustainable development.

Headquarter: Washington, District of Columbia, United States of America

Key Functions: It addresses six designated focal areas:

1) biodiversity,
2) climate change,
3) international waters,
4) ozone depletion,
5) land degradation and
6) Persistent Organic Pollutants.

- The Global Environment Facility (GEF) unites 183 countries in partnership with international institutions, civil society organizations (CSOs), and the private sector to address global environmental issues while supporting national sustainable development initiatives.
- Today the GEF is the largest public funder of projects to improve the global environment.
- An independently operating financial organization, the GEF provides grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.

Funding: The GEF also serves as the financial mechanism for the following conventions:

a) Convention on Biological Diversity (CBD)
b) United Nations Framework Convention on Climate Change (UNFCCC)
c) UN Convention to Combat Desertification (UNCCD)
d) Stockholm Convention on Persistent Organic Pollutants (POPs)
e) Minamata Convention on Mercury

INDIA SPECIFIC TRIVIA:

a) *India has formed a permanent Constituency in the Executive Council of the GEF together with Bangladesh, Sri Lanka, Bhutan, Nepal and Maldives.

b) The Council Meetings are held semi-annually or as frequently necessary. At each meeting, the Council elects a Chairperson from among its members for the duration of that meeting. India's Executive Director in the World Bank represents the GEF Council from our Constituency.
c) India is both a donor and a recipient of GEF. It has been a leading developing country participant in the GEF since its inception in 1991 and has played a major role in shaping the restructuring of the GEF. It had contributed US $ 6.0 million to the core fund in the GEF Pilot Phase.
d) India has pledged an amount of US $ 9.0 million towards the resources of each of the Five GEF replenishments. The total funds pledged so far amounts to US$ 51 million and an amount of US$ 48.75 million has been paid by December 2012 towards GEF replenishments.
e) Ministry of Finance is the political focal point while Ministry of Environment & Forests is the Operational Focal Point for the GEF Projects.

GLOBAL GREEN GROWTH INSTITUTE

Established When and by Whom: GGGI was first launched as a think tank in 2010 by Korean President Lee Myung-bak, and was later converted into an international treaty-based organization in 2012 at the Rio+20 Summit in Brazil.

Headquarter: It is headquartered in Seoul, Republic of Korea

- Key Functions: GGGI works to produce three major outcomes: adoption and implementation of green growth plans; provision of research for policymakers; and private sector engagement in the implementation of the national green growth plans. The organization uses three approaches to achieve these outcomes: Green Growth Planning & Implementation (GGP&I), Knowledge Development & Management (KDM), and Public-Private Cooperation (PPC).
- Funding: Funds are given by Contributing members. Contributing members are defined as Member countries that make a multi-year financial contribution of core funding of no less than USD 15 million over three years. Participating members are defined as Member countries that are not contributing members.

INDIA SPECIFIC TRIVIA:

a) GGGI has been working in India to promote green growth and sustainable development since 2013.
b) GGGI has worked at national, state, and city levels to develop and implement green growth strategies that reconcile short-term priorities with long-term vision of higher economic growth, environmental sustainability, and social inclusion
c) At the state level, GGGI worked closely with the governments of Karnataka, Himachal Pradesh (HP), and Punjab to develop comprehensive green growth strategies together with each.
d) GGGI also supported each of the three state governments in adopting integrated analytical approaches to assess green growth challenges and prioritize opportunities across key sectors, including energy, water, agriculture, and forestry
e) Building on these strategies, in 2015, GGGI supported the state governments in implementing specific green growth opportunities by formulating detailed project proposals, policy implementation roadmaps, and capacity building initiatives.

KIMO (LOCAL AUTHORITIES INTERNATIONAL ENVIRONMENTAL ORGANISATION)

- ❖ Established When and by Whom: KIMO was founded in August 1990 by four municipalities and from this modest start has grown in size to represent over 70 members in Belgium, Denmark, The Faroe Islands, Germany, The Netherlands, Sweden and the United Kingdom.

Headquarter: Esbjerg, Denmark

Key Functions:

1) KIMO is committed to the development of sustainable coastal communities by:
2) Preventing pollution of the seas and coastal waters of North-Western Europe and preserving, improving and enhancing them for future generations
3) Protecting coastal communities from the impacts of marine pollution and climate change.
4) Representing its member local authorities and associated members at an international and national level.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

- ❖ Established When and by Whom: It was first established in 1988 by two United Nations organizations, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), and later endorsed by the United Nations General Assembly.

Headquarter: Geneva, Switzerland

KEY FUNCTIONS:

1) The IPCC produces reports that support the United Nations Framework Convention on Climate Change (UNFCCC).
2) IPCC reports cover all relevant information to understand the risk of human-induced climate change, its potential impacts and options for adaptation and mitigation.
3) The IPCC does not carry out its own original research.
4) Thousands of scientists and other experts contribute on a voluntary basis.
5) The 2007 Nobel Peace Prize was shared, in two equal parts, between the IPCC and an American Environmentalist.

The aims of the IPCC are to assess scientific information relevant to:

a) Human-induced climate change,
b) The impacts of human-induced climate change,
c) Options for adaptation and mitigation.

- ➢ Funding: The IPCC receives funding through the IPCC Trust Fund, established in 1989 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO).
- ➢ India specific trivia: India will have its own climate change models to project the impact of global warming over the decades and these will form part of the forthcoming Sixth Intergovernmental Panel on Climate Change Reports that is expected to be available in 2020.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

- ➢ It is the international body for assessing the science related to climate change.

- It was set up in 1988 by the WMO and UNEP to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.
- IPCC assessments provide a scientific basis for governments at all levels to develop climate related policies, and they underlie negotiations at the UN Climate Conference – the UNFCCC

Assessment Report of IPCC

- The Assessment Reports, the first of which had come out in 1990, are the most comprehensive evaluations of the state of the earth's climate.
- ✓ Every few years (about 7 years), the IPCC produces assessment reports.
- ✓ **Hundreds of experts** go through every available piece of relevant, published scientific information to prepare a common understanding of the changing climate.
- ✓ The four subsequent assessment reports, each thousands of pages long, came out in **1995, 2001, 2007 and 2015.**
- ✓ These have formed the basis of the **global response to climate change.**
- ✓ Over the years, each assessment report has built on the work of the previous ones, **adding more evidence, information and data.**
- ✓ So that most of the conclusions about climate change and its impacts have far greater clarity, certainty and wealth of new evidence now, than earlier.
- ✓ It is these negotiations that have produced the **Paris Agreement**, and previously the KYOTO PORTOCOL
- ✓ The Paris Agreement, negotiated on the basis of the FIFTH ASESSMENT REPORT.

The Assessment Reports - by three working groups of scientists.

1) **Working Group-I** - Deals with the scientific basis for climate change.
2) **Working Group-II -** Looks at the likely impacts, vulnerabilities and adaptation issues.
3) **Working Group-III** - Deals with actions that can be taken to combat climate change.

IPCC ASSESSMENT REPORT

In 1990 the first Intergovernmental Panel on Climate Change Assessment Report was published, which was the most in-depth assessment of the earth's climate condition.

- About every 7 years, the Assessment Reports are published by the Intergovernmental Panel on Climate Change.
- To produce a shared understanding of Climate Change, hundreds of professionals pore through every piece of relevant published scientific material.
- The four successive assessment reports were published in the year of 1995, 2001, 2007, and 2015.
- In Response to climate change, they have served as the foundation worldwide.
- The Kyoto Protocol and the Paris Agreement are the results of their discussion.
- In response to the fifth assessment report, the Paris agreement was negotiated.
- Three scientific working groups produced the Assessment Reports.
- The scientific foundation of climate change is focused on working group 1.
- Working group 2 is responsible for investigating potential consequences, vulnerabilities, and adaptive challenges.
- Possible climate change mitigation measures are focused on by working group 3.

IPCC 6TH ASSESSMENT REPORT

The Intergovernmental Panel on Climate Change Sixth Assessment Report is an update of the Fifth Assessment Report released in 2013.

- The first Assessment Report was released in 1990 and so far, five assessment reports have been produced.
- In the second part of the 6th Assessment Report titled 'Climate Change 2022: Mitigation of Climate Change, working group 3 contribution to the 6th assessment report is released by the Intergovernmental Panel on Climate Change.
- It is a part of the Intergovernmental Panel on Climate Change 6th Assessment cycle. Other reports of Assessment Report 6 are-

a) Report of working group 1 titled 'Climate Change 2021: The Physical Science Basis' was released in August 2021.
b) The report of working group 2 titled 'Climate Change 2022: impacts, adaptation, and vulnerability released in February 2022.
c) The Synthesis Report is scheduled to be released in September 2022.

KEY FINDINGS OF IPCC LATEST REPORTS

The key findings of IPCC latest report are mentioned below.

GREENHOUSE GASES

1) Over the period between 2010 to 2019, the total anthropogenic emissions of greenhouse gases continued to rise as did the total cumulative emissions of carbon dioxide since 1850.
2) While Greenhouse gas emissions rose less rapidly between 2010 to 2019 than they did between 2000 and 2009, they were higher than those of any previous decade.
3) All major Global sectors have seen an increase in greenhouse gas emissions since 2010.
4) Primarily the cities are responsible for a growing share of global emissions.
5) The carbon emissions from fossil fuels and industrial processes are reduced because of the improvement in the energy intensity of GDP and carbon intensity of energy.
6) The rise in global industrial activity, transportation, energy supply, agriculture, and buildings, however, increases emissions more than this.

Least Developed Countries Emissions

1) At least 18 countries have sustained Greenhouse Gas emission reduction for more than 10 years.
2) Least Developed Countries and Small Island Developing States have much lower per capita emissions than the global average, excluding CO2 emitted from land use, land-use change, and forestry.
3) There is a disproportionately high share of global household green gas emissions coming from the 10% of households with the highest per capita emissions.

Raise in Temperature

1) The global surface temperature was 1.09 degrees Celsius higher in 2011-2020 than 1850-1900, with larger increases over land than over the ocean.
2) Since 1850, each of the last four decades has been successively warmer than any decade that preceded it.
3) From 1850-1900 to 2010-2019, humans caused global surface temperature increases estimated to be 1.07 degrees Celsius.
4) The Arctic sea ice area decreased by about 40% in September and about 10% in March between 1979-1988 and 2010-2019.

5) The global mean sea level increased by 0.20 between 1901 and 2018.
6) Climate zones have shifted poleward in both hemispheres.

Impending Threats

1) Concentrations of carbon dioxide unmatched for at least 2 million years.
2) Glacial Retreat unmatched for 2000 + years.
3) The last decade was warmer than any period for 1,25,000 years.
4) The sea level has risen faster than in any prior century for 3,000 years.
5) Summer Arctic ice coverage is smaller than at any time in the last 1000 years.
6) The ocean is warming faster than at any time Since the end of the last ice age.
7) Ocean acidification at the highest level in the last 26,000 years.

Technology with Low Emissions

1) Since 2010, unit costs of several low-emission technologies have fallen, and their global adoption has risen continuously.
2) Due to weaker enabling conditions, including limited finance, technology development and transfer, and capacity, Innovation has lagged in developing countries.
3) Digitalization has adverse side-effects unless appropriately governed, for example, increasing electronic waste, negative impacts on labour markets, etc.

Financial Shortfall

1) In developing countries for the Agriculture, Forestry, and other land use sector, the gaps are the widest for the financial flow.
2) It is recommended to scale up public grants as well as increase levels of public finance in developing countries.

Recommendations of IPCC Report

Following mitigation strategies are suggested by the report to achieve rapid and deep Greenhouse Gas Emissions reduction-

1) Deploying carbon dioxide removal to counterbalance hard-to-eliminate emissions through biological methods such as reforestation and soil carbon sequestration.
2) Maximize synergies and minimize trade-offs in policies, regulatory and economic instruments to enhance the support for climate action.
3) Mitigation efforts can be embedded within the wider development context.
4) There should be equitable partnerships that are built on engagement with civil society actors, political actors, businesses, youth, labour, media, indigenous people, and local communities.
5) Integration of adaptation and mitigation within and across sectors.
6) Supported by clear policy choices and signals from governments and the international community scaling up the mitigation financial flows.
7) Policy packages that enable Innovation and build capacity.
8) Through the partnership, agreements, institutions, and initiatives operating at global, sub-global, and sectoral levels and engaging multiple actors by International Cooperation.

Regional Findings for India

Following impacts are likely to be seen in India-

a) During the 21st century, all over South Asia, heat waves and humid heat stress will be more intense and frequent.

b) During the 21st century, both annual and summer monsoon precipitation will increase with enhanced inter-annual variability.
c) Increases in precipitation and river floods.
d) Fire weather seasons are projected to lengthen and intensify.
e) During the 21st century, most regions of the Hindu Kush Himalaya covered areas, and snow volumes will decrease.
f) In higher carbon dioxide emissions scenarios, snowline elevations will rise and glacier volumes are likely to decline with greater mass loss.
g) Regional-mean sea level continues to rise and will contribute to more frequent coastal flooding.

CLIMATE CHANGE 2021 REPORT: IPCC

Recently, the Intergovernmental Panel on Climate Change (IPCC) released the first part of its Sixth Assessment Report (AR6) titled Climate Change 2021: The Physical Science Basis.

a) It is prepared by the scientists of Working Group-I. The two remaining parts would be released in 2022.
b) It noted that global net-zero by 2050 was the minimum required to keep the temperature rise to 1.5 degree Celsius.
c) It sets the stage for the Conference of Parties (CoP) 26 conference in November 2021.

Average Surface Temperature:

1) The average surface temperature of the Earth will cross 1.5 °C over pre-industrial levels in the next 20 years (By 2040) and 2°C by the middle of the century without sharp reduction of emissions.
   In 2018, the IPCC's Special Report Global Warming of 1.5°C had estimated that two-fifths of the global population lived in regions with warming above 1.5°C.
2) The last decade was hotter than any period of time in the past 1,25,000 years. Global surface temperature was 1.09°C higher in the decade between 2011-2020 than between 1850-1900.

3) This is the first time that the IPCC has said that the 1.5°C warming was inevitable even in the best case scenario.

CARBON DIOXIDE (CO_2) CONCENTRATIONS:

1) They are the highest in at least two million years. Humans have emitted 2,400 billion tonnes of CO_2 since the late 1800s.
2) Most of this can be attributed to human activities, particularly the burning of fossil fuels.
3) The effect of human activities has warmed the climate at a rate unprecedented in 2,000 years.
4) The world has already depleted 86% of it's available carbon budget.
5) Impact of Global Warming:

SEA- LEVEL RISE:

1) Sea-level rise has tripled compared with 1901-1971. The Arctic Sea ice is the lowest it has been in 1,000 years.
2) Coastal areas will see continued sea-level rise throughout the 21st century, resulting in coastal erosion and more frequent and severe flooding in low-lying areas.
3) About 50% of the sea level rise is due to thermal expansion (when water heats up, it expands, thus warmer oceans simply occupy more space).

PRECIPITATION & DROUGHT:

Every additional 0.5 °C of warming will increase hot extremes, extreme precipitation and drought. Additional warming will also weaken the Earth's carbon sinks present in plants, soils, and the ocean.

Heat Extremes:

Heat extremes have increased while cold extremes have decreased, and these trends will continue over the coming decades over Asia.

Receding Snowline & Melting Glaciers:

1) Global Warming will have a serious impact on mountain ranges across the world, including the Himalayas.
2) The freezing level of mountains are likely to change and snowlines will retreat over the coming decades.
3) Retreating snowlines and melting glaciers is a cause for alarm as this can cause a change in the water cycle, the precipitation patterns, increased floods as well as an increased scarcity of water in the future in the states across the Himalayas.
4) The level of temperature rise in the mountains and glacial melt is unprecedented in 2,000 years. The retreat of glaciers is now attributed to anthropogenic factors and human influence.

INDIAN SUB-CONTINENT SPECIFIC FINDINGS:

1) Heatwaves: Heatwaves and humid heat stress will be more intense and frequent during the 21st century over South Asia.
2) Monsoon: Changes in monsoon precipitation are also expected, with both annual and summer monsoon precipitation projected to increase.

3) The South West Monsoon has declined over the past few decades because of the increase of aerosols, but once this reduces, we will experience heavy monsoon rainfall.
4) Sea Temperature: The Indian Ocean, which includes the Arabian Sea and Bay of Bengal, has warmed faster than the global average.

5) The sea surface temperature over Indian ocean is likely to increase by 1 to 2 °C when there is 1.5°C to 2°C global warming.
6) In the Indian Ocean, the sea temperature is heating at a higher rate than other areas, and therefore may influence other regions.

Net- Zero Emissions:

1) It means that all man-made greenhouse gas emissions must be removed from the atmosphere through reduction measures, thus reducing the Earth's net climate balance, after removal via natural and artificial sink, to zero.
2) This way humankind would be carbon neutral and global temperature would stabilise.

Current Situation:

1) Several countries, more than 100, have already announced their intentions to achieve net-zero emissions by 2050. These include major emitters like the United States, China and the European Union.
2) India, the third largest emitter in the world, has been holding out, arguing that it was already doing much more than it was required to do, performing better, in relative terms, than other countries.

3) Any further burden would jeopardise its continuing efforts to pull its millions out of poverty.
4) IPCC has informed that a global net-zero by 2050 was the minimum required to keep the temperature rise to 1.5°C. Without India, this would not be possible.

5) Even China, the world's biggest emitter, has a net-zero goal for 2060.
6) Intergovernmental Panel on Climate Change

- It is the international body for assessing the science related to climate change.
- It was set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.
- IPCC assessments provide a scientific basis for governments at all levels to develop climate related policies, and they underlie negotiations at the UN Climate Conference – the United Nations Framework Convention on Climate Change (UNFCCC).

IPCC ASSESSMENT REPORTS

- ❖ Every few years (about 7 years), the IPCC produces assessment reports that are the most comprehensive scientific evaluations of the state of earth's climate.
- ❖ So far, five assessment reports have been produced, the first one being released in 1990. The fifth assessment report had come out in 2014 in the run up to the climate change conference in Paris.
- ❖ The Assessment Reports - by three working groups of scientists.

1) Working Group-I - Deals with the scientific basis for climate change.
2) Working Group-II - Looks at the likely impacts, vulnerabilities and adaptation issues.
3) Working Group-III - Deals with actions that can be taken to combat climate change.

IPCC: PART TWO OF SIXTH ASSESSMENT REPORT

Recently, the Intergovernmental Panel on Climate Change (IPCC), released the second part of its sixth assessment report. This second part of the report is about climate change impacts, risks and vulnerabilities, and adaptation options.

- ✓ The first part of this report, on the physical science of climate change in 2021. It had warned that 1.5 degree Celsius warming was likely to be achieved before 2040 itself.
- ✓ The third and final part of the report, which will look into the possibilities of reducing emissions, is expected to come out in April 2022.

Important Observations of the Report

1) Population at Risk: Noting that over 3.5 billion people, over 45% of the global population, were living in areas highly vulnerable to climate change.
2) Indian Scenario: The report identifies India as one of the vulnerable hotspots, with several regions and important cities facing very high risk of climate disasters such as flooding, sea-level rise and heat-waves.

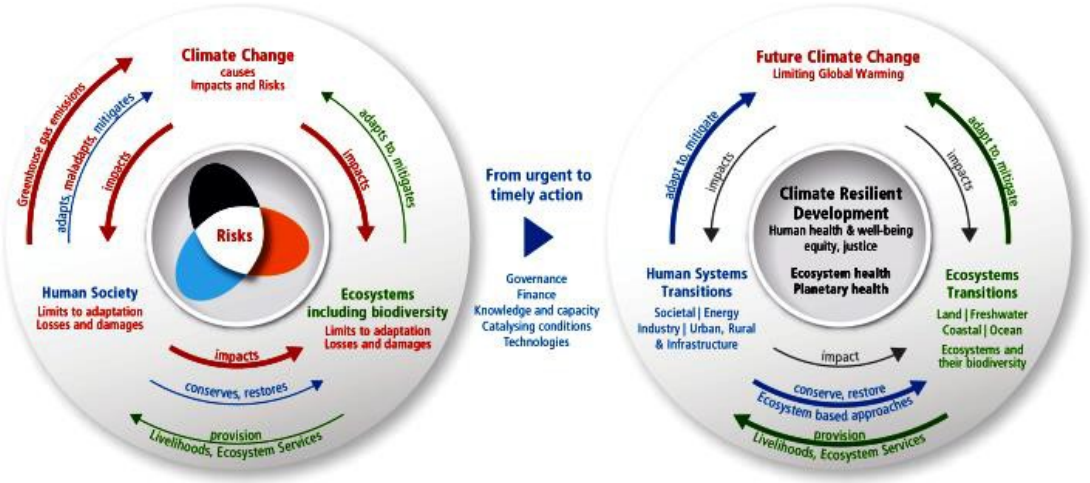
For example, Mumbai is at high risk of sea-level rise and flooding, while Ahmedabad faces serious danger of heat-waves.

a) Complex, Compound and Cascading Risks: The latest report warns that multiple disasters induced by climate change are likely to emerge in different parts of the world in the next two decades.
b) Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions.

Near to Long-term Risks: Even if adequate efforts are made to keep the global rise in temperatures within 1.5 degree Celsius from pre-industrial times.

a) Even temporarily exceeding this warming level will result in additional severe impacts, some of which will be irreversible.
b) The magnitude and rate of climate change and associated risks depend strongly on near-term mitigation and adaptation actions.
c) Projected adverse impacts and related losses and damages escalate with every increment of global warming.

Coupled System: There is a strong focus on the interactions among the coupled systems climate, ecosystems (including their biodiversity) and human society.



Regional Variation: Vulnerability of ecosystems and people to climate change differs substantially among and within regions.

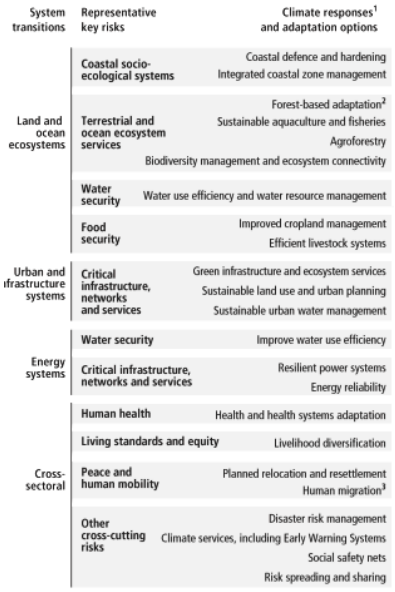
- ❖ These are driven by patterns of intersecting socio-economic development, unsustainable ocean and land use, inequity, marginalization, historical and ongoing patterns of inequity such as colonialism, and governance.
- ❖ Health Impacts of Climate Change: It has found that climate change is increasing vector-borne and water-borne diseases such as malaria or dengue, particularly in sub-tropical regions of Asia.

1) It has also said deaths related to circulatory, respiratory, diabetic and infectious diseases, as well as infant mortality, are likely to increase with a rise in temperature.
2) Increasing frequency of extreme weather events like heatwaves, flooding and drought, and even air pollution was contributing to under-nutrition, allergic diseases and even mental disorders.

Current Adaptation and its Benefits: Progress in adaptation planning and implementation has been observed across all sectors and regions, generating multiple benefits.

1) However, adaptation progress is unevenly distributed with observed adaptation gaps..
2) Many initiatives prioritise immediate and nearterm climate risk reduction which reduces the opportunity for transformational adaptation.

ADAPTATION RISKS & STRATEGIES



System transitions	Representative key risks	Climate responses[1] and adaptation options
Land and ocean ecosystems	Coastal socio-ecological systems	Coastal defence and hardening Integrated coastal zone management
	Terrestrial and ocean ecosystem services	Forest-based adaptation[2] Sustainable aquaculture and fisheries Agroforestry Biodiversity management and ecosystem connectivity
	Water security	Water use efficiency and water resource management
	Food security	Improved cropland management Efficient livestock systems
Urban and infrastructure systems	Critical infrastructure, networks and services	Green infrastructure and ecosystem services Sustainable land use and urban planning Sustainable urban water management
Energy systems	Water security	Improve water use efficiency
	Critical infrastructure, networks and services	Resilient power systems Energy reliability
Cross-sectoral	Human health	Health and health systems adaptation
	Living standards and equity	Livelihood diversification
	Peace and human mobility	Planned relocation and resettlement Human migration[3]
	Other cross-cutting risks	Disaster risk management Climate services, including Early Warning Systems Social safety nets Risk spreading and sharing

- ❖ Gaps in Adaptation: The report also highlights large gaps in the adaptation actions that are being taken and the efforts that are required. It says these gaps are a result of "lack of funding, political commitment, reliable information, and sense of urgency".
- ❖ Adaptation is essential to reduce harm, but if it is to be effective, it must go hand in hand with ambitious reductions in greenhouse gas emissions because with increased warming, the effectiveness of many adaptation options declines.
- ❖ Need for Holistic Changes: It is clear now that minor, marginal, reactive or incremental changes won't be sufficient.
- ❖ In addition to technological and economic changes, shifts in most aspects of society are required to overcome limits to adaptation, build resilience, reduce climate risk to tolerable levels, guarantee inclusive, equitable and just development and achieve societal goals without leaving anyone behind.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)

- ✓ **Established When and by Whom:** The International Union for Conservation of Nature (IUCN) is the world's oldest and largest global environmental organisation.
- ✓ Founded in 1948, today IUCN the largest professional global conservation network. IUCN has more than 1,200 member organizations including 200+ government and 900+ non-government organizations.

Headquarter: The Union's headquarters are located in Gland, near Geneva, in Switzerland.

Key Functions: Conserving biodiversity is central to the mission of IUCN. The main areas of function are:

- ➢ Science – the IUCN Red List of Threatened Species™.
- ➢ Action – hundreds of conservation projects all over the world.
- ➢ Influence – through the collective strength of more than 1,200 government and non-governmental Member organizations.
- ➢ **Funding:** Funded by governments, bilateral and multilateral agencies, foundations, member organisations and corporations.

More about the IUCN

1) Governance by a Council elected by member organizations every four years at the IUCN World Conservation Congress.
2) Observer Status at the United Nations General Assembly.

INDIA SPECIFIC TRIVIA:

1) India became a State Member of IUCN in 1969, through the Ministry of Environment, Forest and Climate Change (MoEFCC).
2) The IUCN India Country Office was established in 2007 in New Delhi.
3) IUCN India works with Members and Commissions to reduce ecosystem and species loss by providing the necessary tools and knowledge to value, conserve and use biodiversity sustainability; enhance governance and policy for better management of ecosystems and habitats, including protected areas; and address challenges related to poverty alleviation, food security and climate change.

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

- **Established When and by Whom:** It was founded as a result of the UN Conference on the Human Environment (Stockholm Conference) in 1972
- **Headquarter:** Nairobi, Kenya
- **Key Functions:**

1) It coordinates UN's environmental activities, assisting developing countries in implementing environmentally sound policies and practices.
2) Its activities cover a wide range of issues regarding the atmosphere, marine and terrestrial ecosystems, environmental governance and green economy.
3) UNEP has also been active in funding and implementing environment related development projects
4) UNEP has aided in the formulation of guidelines and treaties on issues such as the international trade in potentially harmful chemicals, transboundary air pollution, and contamination of international waterways
5) UNEP is also one of several Implementing Agencies for the Global Environment Facility (GEF) and the Multilateral Fund for the Implementation of the Montreal Protocol
6) The International Cyanide Management Code, a program of best practice for the chemical's use at gold mining operations, was developed under UNEP's aegis.

- **Funding:** The three main sources of funding of UN Environment are the UN Regular Budget, the Environment Fund, the core funding that enables UN Environment to implement its global and regional work, and Earmarked Contributions.
- **India specific trivia:** UN Environment has sponsored the development of solar loan programs, with attractive return rates, to buffer the initial deployment costs and entice consumers to consider and purchase solar PV systems.

A. The most famous example is the solar loan program sponsored by UN Environment helped 100,000 people finance solar power systems in India.
B. Success in India's solar program has led to similar projects in other parts of the developing world like Tunisia, Morocco, Indonesia and Mexico.
C. The UNEP has a few focus areas, in which they prioritise work. They are:

1) Climate change
2) Ecosystem management
3) Disasters and conflicts
4) Environmental governance
5) Resource efficiency

6) Chemicals and waste
7) Environment under review

UNEP FUNCTIONS

The major functions of the UNEP are discussed below:

The UNEP engages in developing global conventions on the environment and related issues. It hosts the secretariats of various conventions such as:

1) Minamata Convention
2) United Nations Convention on Biological Diversity
3) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
4) Basel Convention
5) Stockholm Convention
6) Rotterdam Convention
7) Montreal Protocol
8) Vienna Convention
9) Convention on Migratory Species
10) Tehran Convention
11) Bamako Convention
12) Carpathian Convention
13) Climate & Clean Air Coalition (CCAC)

A. It promotes environmental science and related information.
B. It finances and implements developmental projects related to the environment.
C. It engages with national governments, NGOs, etc. in relation to environmental policy and implementation.
D. The UNEP also formulates treaties and guidelines in the domain of international trade in harmful chemicals, international waterways pollution and transboundary pollution of air.
E. It also awards and honours individuals as well as institutions that do stellar work in this field.

MAJOR PROGRAMMES OF THE UNEP

1) Earth Hour
2) Clean up the World
3) Billion Tree Campaign
4) Seal the Deal
5) Pain for the Planet
6) Awareness and Preparedness for Emergencies at Local Level (APELL)
7) TUNZA
8) Faith for Earth

UNITED NATIONS ENVIRONMENT ASSEMBLY (UNEA)

The UNEP's governing body is called the **United Nations Environment Assembly**, which is said to be the world's highest decision making body on the environment.

1) It meets once in two years to establish priorities for international environmental policies and develop international environmental law.
2) Formed in 2012, it is headed by a Bureau and its President.
3) The Bureau comprises ten environment ministers of various countries who all hold two-year terms, based on geographical rotation.
4) Currently, it has 193 member states (all UN member countries).

UNEP AND INDIA

India has had a close relationship with the UNEP since the programme's inception. There are many projects completed, as well as ongoing projects, of the UNEP in India.

1) The UNEP's presence in India started in 2016 with an office at New Delhi.
2) The nodal agency for India's interactions with the UNEP is the GOI's Ministry for Environment, Forests and Climate Change.
3) The Permanent Representative of India to UNEP is India's High Commissioner for Kenya.
4) India's annual financial contribution to the UNEP is to the tune of USD 100,000.
5) The UNEP has recognised India's initiatives in the environment sector.

The UNEP awarded PM Narendra Modi with the 'Champions of the Earth' award along with French President Emmanuel Macron in the category 'policy leadership'.

This was in recognition of the, among others, the International Solar Alliance, initiated by India.

1) In 2019, India joined the Climate & Clean Air Coalition (CCAC), whose Secretariat is hosted by the UNEP.
2) India plans to work with CCAC nations on best practices and experiences for the effective implementation of the National Clean Air Programme (NCAP).

WORLD NATURE ORGANIZATION (WNO)

Established When and by Whom: WNO initiative was born in 2010 by states which are threatened by rising sea levels. The WNO Treaty officially entered into force on 1st May 2014.

Location : Geneva

KEY FUNCTIONS:

- It is an intergovernmental organisation which promotes global environmental protection.
- WNO acts as a centre of competence for environmental protection, green technologies and sustainability, and as a mediator and initiator, making available experience of practical applications and strategies, offering support on all issues related to responsible conduct as regards the natural environment and its resources and assisting States to benefit from efficient development and from scientific and technology transfer.
- The World Nature Organization promotes sustainable conduct as regards the natural environment, together with new, environments-friendly technologies, green economies and renewable energies.
- **India specific trivia:** India is not a member

WORLD FOOD PROGRAMME

- **Established When and by Whom:** The WFP was formally established in 1963 by the FAO and the United Nations General Assembly.
- **Headquarter:** Rome
- **Key Functions:**

1) The WFP strives to eradicate hunger and malnutrition, with the ultimate goal in mind of eliminating the need for food aid itself.
2) WFP's efforts focus on emergency assistance, relief and rehabilitation, development aid and special operations.
3) WFP food aid is also directed to fight micronutrient deficiencies, reduce child mortality, improve maternal health, and combat disease, including HIV and AIDS.

4) WFP has coordinated the five-year Purchase for Progress (P4P) pilot project which assists smallholder farmers by offering them opportunities to access agricultural markets and to become competitive players in the marketplace.

- **Funding:** The WFP operations are funded by voluntary donations from world governments, corporations and private donors
- **India specific trivia:** The World Food Programme has been working in India for over 50 years. In line with the developments in India, WFP has realigned its focus from a food aid provider to a catalytic partner to the Government of India, strengthening food-based social safety nets.

INTERNATIONAL WHALING ORGANIZATION

- **Established When and by Whom:** The IWC was set up under the International Convention for the Regulation of Whaling which was signed in Washington DC on 2nd December 1946.
- **Headquarter:**
- **Key Functions:**

1) The preamble to the Convention states that its purpose is to provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry.
2) An integral part of the Convention is its legally binding 'Schedule.' The Schedule sets out specific measures that the IWC has collectively decided are necessary in order to regulate whaling and conserve whale stocks.
3) These measures include catch limits (which may be zero as it the case for commercial whaling) by species and area, designating specified areas as whale sanctuaries, protection of calves and females accompanied by calves, and restrictions on hunting methods. Unlike the Convention, the Schedule can be amended and updated when the Commission meets (a change requires at least three quarters majority agreement).
4) There are a number of reasons why changes to the Schedule may be necessary. These include new information from the Scientific Committee, and variations in the requirements of aboriginal subsistence whalers.
5) The Commission also co-ordinates and, in several cases, funds conservation work on many species of cetacean. In addition to research, this includes building an international entanglement response capacity, working to prevent ship strikes, and establishment of Conservation Management Plans for key species and populations.
6) The Commission has also adopted a Strategic Plan for Whalewatching to facilitate the further development of this activity in a way which is responsible and consistent with international best practice.

- **Funding:** Financial contributions from member governments form the IWC's core income, but additional voluntary donations to support particular work programmes are generously made by non-governmental organisations (NGOs), industry bodies, and also by member governments.
- **India specific trivia:** India is a Member

BIO-CARBON FUND INITIATIVE

- **Established When and by Whom:** The BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) is a multilateral fund, supported by donor governments and managed by the World Bank. It is has been operational from 2013.
- **Headquarter:** USA
- **Key Functions:**

1) It seeks to promote reduced greenhouse gas emissions from the land sector, from deforestation and forest degradation in developing countries (REDD+), and from sustainable agriculture, as well as smarter land-use planning, policies and practices.
2) The initiative will be managed by the BioCarbon Fund, a public-private program housed within the World Bank that mobilizes finance for activities that sequester or conserve carbon emissions in forest and agricultural systems.
3) The new Initiative for Sustainable Forest Landscapes seeks to scale up land-management practices across large landscapes, including improved livestock management, climate-smart agriculture, and sustainable forest management, with a focus on protecting forests and greening and securing supply chains.
4) It will engage a broader range of actors, including the private sector, initially through a portfolio of four to six programs in Africa, Asia, and Latin America.

- **Funding:** Norway, the United Kingdom, and the United States together committed $280 million – up to $135 million from Norway, $120 million from the U.K, and $25 million from the U.S. – as part of their efforts to slow climate change.

ARCTIC COUNCIL

- **Established When and by Whom:** The Arctic Council was founded on the initiative of the Government of Finland in September 1989 where officials from the 8 Arctic Countries met in Rovaniemi, Finland, to discuss cooperative measures to protect the Arctic environment.
- **Headquarter:** The location of the Secretariat was rotated biennially with the Chairmanship of the Arctic Council.
- **Key Functions:**

The Arctic Council is an intergovernmental forum promoting cooperation, coordination, and interaction among the Arctic States, Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic.

The main focus areas of the Arctic Council are:

1) The Environment and climate change
2) Bio-diversity
3) Oceans
4) The indigenous Arctic peoples

- **Funding:** By member states
- **India specific trivia:** India is an Observer State

NATIONAL GANGA RIVER BASIN AUTHORITY,

National Ganga River Basin AuthorityIt was established in 2009 under Environment Protection Act, 1986 (which also declared Ganga as 'National river'). It is a financing, planning, implementing, monitoring, coordinating authorities for Ganga under Jal Shakti Ministry.

1) In 2014, it is transferred from MoEF to Ministry of Jal Shakti.
2) PM is the Chairperson. In 2016, it was changed to National Ganga Council (NGC).
3) NMCG (National Mission on Clean Ganga), 2016
4) It is the implementation wing of NGC set up in 2016 under River Ganga Authority Order 2016 (which dissolved NGRBA).
5) It has 2 tier management structure (Govning Council & Executive Committee - 1000 crore approval).

6) It has 5 tier structure at National, State & Dist level: NGC (PM), Empowered Task Force (MoJS), NMCG (2016), State Ganga Committees & Dist Ganga Committees.
7) NMCG organized Ganga Vriksharopan Abhiyan in 5 Ganga basin States - UK, UP, BR, JH, WB. It is campaign for awareness.
8) Ganga Gram Swachta Sammelan = Emphasis on Open Defection Free, Solid and Liquid Waste Management, Water conservation, Groundwater Recharge, Modern Crematorium, Tree plantation, Organic & medicinal plant agri.

NAMAMI GANGE PROGRAMME

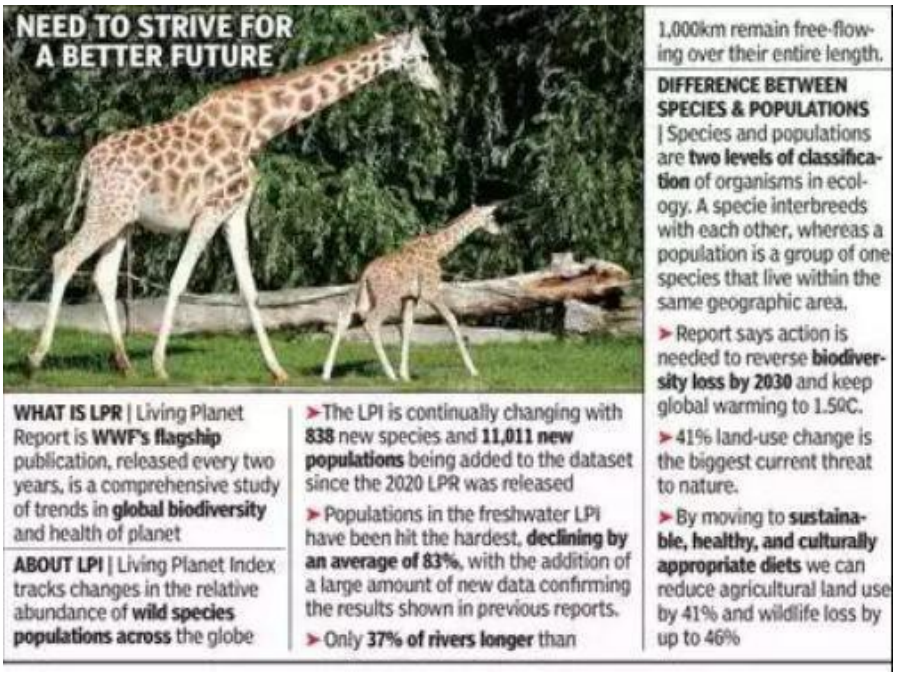
1) It is an **umbrella programme** which integrates ongoing initiatives.
2) **Main pillars of NGP** are **Sewerage Treatment Infrastructure; River-Surface Cleaning** in parts; **Afforestation**; **Industrial Effluent** Monitoring; **River-Front Development**; Bio-Diversity; Public Awareness; **Ganga Gram.**
3) Commissioning of **sewage treatment plants (STP)** and laying sewer lines are at the heart of the mission to clean the Ganga.

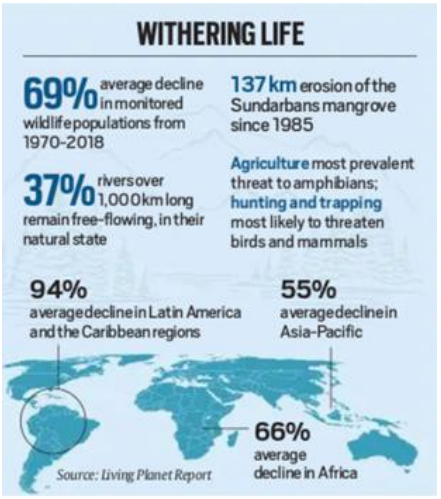
LIVING PLANET REPORT: WWF

LIVING PLANET REPORT 2022

❖ There has been a **69% decline in the wildlife populations of mammals, birds, amphibians, reptiles and fish,** across the globe in the last 50 years, according to the LIVING PLANET REPORT-LPR **2022** by WWF-WORLD WIDE FUND FOR NATURE This report is **released every two years.**

KEY FINDINGS OF THE REPORT





Region-wise Decline in Wildlife Populations:

- ❖ The highest decline in the wildlife populations (94%) was in the Latin America and the Caribbean region.
- ❖ Africa recorded a 66% fall in its wildlife populations from 1970-2018 whereas the Asia-Pacific recorded a decline of 55%.

Decline in Freshwater Species:

1) Freshwater Species populations globally reduced by 83%.
2) Habitat loss and barriers to MIGRATION routes were responsible for about half of the threats to monitored migratory fish species.

Collapsing Vertebrate Wildlife Populations:

1) Living Planet Index (LPI) showed that vertebrate wildlife populations are collapsing at a particularly staggering rate in tropical regions of the world.
2) Featuring about 32,000 populations of 5,230 species across the world, LPI is a measure of the state of the world's biological diversity based on population trends of vertebrate species from terrestrial, freshwater and marine habitats.

Mangrove Degradation:

1) MANGROVES continue to be **lost to AQUACULTURE agriculture** and **coastal development at a rate of 0.13% per year.**
2) Many mangroves are also **degraded by overexploitation and pollution,** alongside **natural stressors such as storms and coastal erosion.**
3) Around **137 square kilometres of the SUNDARBANS mangrove forest in India and Bangladesh has been eroded** since 1985, **reducing land and ecosystem services for many of the 10 million people who live there.**

Key Threats to Biodiversity:

WWF identified six key threats to biodiversity to highlight **'threat hotspots' for terrestrial vertebrates:**

1) AGRICULTURE
2) Hunting
3) Logging
4) POLLUTION
5) INVASIVE SPECIES
6) CLIMATE CHANGE

INDIA SPECIFIC STUDY

1) **The Himalayan region and the Western Ghats** are some of the most vulnerable regions in the country in terms of biodiversity loss, and where increased biodiversity loss is expected in future if temperatures are to increase.
2) India has seen a **decline in population of the likes of honeybees and 17 species of freshwater turtles** in this period.

WORLD WILDLIFE FUND FOR NATURE

1) It is the world's **leading conservation organization** and works in more than 100 countries.
2) It was established in 1961 and is headquartered at Gland, Switzerland.
3) Its **mission is to conserve nature** and reduce the most pressing threats to the diversity of life on Earth.
4) WWF collaborates at every level with people around the world to develop and deliver innovative solutions that protect communities, wildlife, and the places in which they live.

RECOMMENDATIONS OF THE REPORT

1) The planet is experiencing **double emergencies of human-induced climate change and BIODIVERSITY loss**, threatening the well-being of current and future generations. Biodiversity loss and climate crisis should be dealt with as **one instead of two different issues as they are intertwined.**
2) A nature-positive future needs **transformative, game-changing shifts in how we produce, how we consume, how we govern and what we finance.**
3) An **all-inclusive collective approach towards a more sustainable path** must be adopted. It will ensure that the costs and benefits from our actions are socially just and equitably shared.

PAST EXPERIENCE :

According to the *Living Planet Report 2020* released by the World Wide Fund for Nature, the population of vertebrate species has largely declined in the past half- century.

- **Vertebrates :** Vertebrates are animals that have **backbones or vertebral columns.** They are also characterized by a muscular system consisting primarily of bilaterally paired masses and a central nervous system partly enclosed within the backbone.

World Wildlife Fund for Nature

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4) WWF collaborates at every level with people around the world to develop and deliver innovative solutions that protect communities, wildlife, and the places in which they live.

Methodology: The Report used the **Living Planet Index** to calculate the decline in vertebrate species.

- **Living Planet Index (LPI):** It is a measure of the state of the world's biological diversity based on population trends of vertebrate species in terrestrial, freshwater and marine habitats.
- It is released by **Institute of Zoology (Zoological Society of London)**

1) Founded in 1826, Zoological Society of London is an international conservation charity working for wildlife conservation.
2) LPI tracked almost 21,000 populations of more than 4,000 vertebrate species between 1970 and 2016.

FINDINGS:

It shows an average **68% decline in global vertebrate species populations,** between 1970 and 2016. In the Asia Pacific the decline stands at 45%.

A 94% decline in the LPI for the **tropical subregions of the americas** is the largest fall observed in any part of the world.

Freshwater species populations have reduced by 84% on average since 1970.

1) Freshwater species populations are being lost faster than terrestrial or marine species. According to the **International Union for Conservation of Nature (IUCN),** almost 1/3rd of freshwater species are now threatened with extinction.
2) Wildlife populations in freshwater habitats suffered a decline of 84%, equivalent to 4% per year, particularly in Latin America and the Caribbean.

- **Megafauna,** or bigger species in terms of size, are more vulnerable because they were subjected to intense anthropogenic threats and overexploitation.

- For eg. Large fishes are also heavily impacted by dam construction that blocks their migratory routes to spawning and feeding grounds.
- Since 1970, our **Ecological Footprint** has exceeded the Earth's rate of regeneration.

1) Ecological Footprint measures the ecological assets that a given population requires **to produce the natural resources it consumes** (including plant-based food and fiber products, livestock and fish products, timber and other forest products, space for urban infrastructure) and to absorb its waste, especially carbon emissions.
2) The human enterprise currently demands **1.56 times more than the amount that Earth can regenerate.** It is like living off 1.56 Earths.

THREATS TO BIODIVERSITY:

1) **Changes in Land and Sea Use, including Habitat Loss and Degradation:** This refers to the modification of the environment where a species lives, by complete removal, fragmentation or reduction in quality of key habitat.
2) **Species Overexploitation:** Direct overexploitation refers to unsustainable hunting and poaching or harvesting. Indirect overexploitation occurs when non-target species are killed unintentionally.
3) **Pollution:** Pollution can directly affect a species by making the environment unsuitable for its survival. It can also affect a species indirectly, by affecting food availability or reproductive performance.
4) **Invasive Species and Disease:** Invasive species can compete with native species for space, food and other resources, can turn out to be a predator for native species, or spread diseases that were not previously present in the environment. Humans also transport new diseases from one area of the globe to another.
5) **Climate Change:** As temperatures change, some species will need to adapt by shifting their range to track a suitable climate. The effects of climate change on species are often indirect. For eg, change in **migratory patterns of birds.**

FOREST SURVEY REPORT 2021

The India State of Forest Report 2021 is used for the planning, formulation of policies for forest management as well as forestry and agro-forestry sectors.

- released; increase of 2,261 sq km in the total forest and tree cover of the country in last two years.

  Area-wise Madhya Pradesh has the largest forest cover in the country

  Maximum increase in forest cover witnessed in Andhra Pradesh (647 sq km) followed by Telangana (632 sq km) and Odisha (537 sq km).

  17 states/UT's have above 33 percent of the geographical area under forest cover.

  Total carbon stock in country's forest is estimated to be 7,204 million tonnes, an increase of 79.4 million

  Total mangrove cover in the country is 4,992 sq km, an increase of 17 sq Km observed

  Focus of government not to just conserve forests quantitatively but to qualitatively enrich it: Shri Bhupender Yadav

INDIA STATE OF FOREST REPORT 2021

In a first, ISFR 2021 assessed forest cover in tiger reserves, tiger corridors, and the Gir forests, home of Asiatic lion.

1) The forest cover in tiger corridors has increased by 15 sq km (0.32%) between 2011 and 2021 but decreased by 22.6 sq km (0.04%) in tiger reserves.
2) In the last 10 years, forest cover has increased in 20 tiger reserves and decreased in 32.

Forest cover increased well in:

1) Buxa (West Bengal)
2) Annamalai (Tamil Nadu)
3) Indravati reserves (Chhattisgarh)

The highest losses have been found in:

- Kawal (Telangana)
- Bhadra (Karnataka)
- Sunderban Reserve (West Bengal).

Pakke tiger reserve in Arunachal Pradesh has the highest forest cover, at nearly 97%.

KEY FINDINGS OF THE ISFR 2021

Increase in forest and tree area:

1) The forest and tree cover in the country continues to increase. An additional cover of 1,540 square kilometers increased over the past two years.
2) India's forest cover is now7,13,789 square kilometers (21.71% of the country's geographical area) which is an increase from 67% in 2019.
3) Tree cover is defined as all tree patches of size less than one hectare occurring outside the recorded forest area. This covers trees in all formations including scattered trees. Tree cover has increased by 721 sq km.

Increase/Decrease in Forests:

1) The states that have shown the highest increase in forest cover are **Telangana (3.07%), Andhra Pradesh (2.22%),** and **Odisha (1.04%).**
2) Five states in the Northeast have shown a loss in forest cover: **Arunachal Pradesh, Manipur, Meghalaya, Mizoram,** and **Nagaland**

States with Highest Forest Area/Cover:

1) **Area-wise: Madhya Pradesh** has the largest forest cover in the country followed by Arunachal Pradesh, Chhattisgarh, Odisha, and Maharashtra.
2) **Forest cover as a percentage of total geographical area:** Mizoram, Arunachal Pradesh, Meghalaya, Manipur, and Nagaland.

The 'forest area' denotes the legal status of the land as per the government records, whereas the term 'forest cover' indicates the presence of trees over any land.

MANGROVES:

1) Mangroves have increased by 17 sq km making India's total mangrove cover as 4,992 sq km.
2) Top 3 states showing mangrove cover increase: Odisha (8 sq km), Maharashtra (4 sq km), and Karnataka (3 sq km).

Forest Prone to Fires:

1) 46% of the forest cover is prone to forest fires.
2) 81% are extremely prone, 7.85% are very highly prone and 11.51% are highly prone.
3) By 2030, 45-64% of forests in India will experience the effects of climate change and rising temperatures.
4) Forests in all states (except Assam, Meghalaya, Tripura, and Nagaland) will be highly vulnerable climate hot spots.
5) Ladakh (forest cover 0.1-0.2%) is likely to be the most affected.

TOTAL CARBON STOCK:

1) Forest carbon stock is the **amount of carbon that has been sequestered from the atmosphere** and stored within the forest ecosystem. Such carbon is mainly stored within living biomass and soil and to some extent in deadwood and litter.
2) The total carbon stock in the country's forests is estimated at 7,204 million tonnes, showing an increase of 79.4 million tonnes since 2019.

Bamboo Forests:

- Bamboo forests have grown from 13,882 million culms (stems) in 2019 to 53,336 million culms in 2021.

CONCERNS AS PER THE FINDINGS OF THE REPORT:

A decline in Natural Forests:

1) There is a 1,582 sq km decline in moderately dense or natural forests.
2) The decline even with an increase of 2,621 sq km in open forest areas shows the degradation of forests in the country.
3) The scrub area has increased by 5,320 sq km which indicates the complete degradation of forests in these areas.
4) Very dense forests have increased by 501 sq km.

A decline in Forest Cover in Northeast:

1) The forest cover in the northeast has shown an overall decline of 1,020 sq km.
2) The Northeast states cover 98% of the total geographical area but have 23.75% of total forest cover.
3) This decline in this region has been attributed to the series of natural calamities that occurred here like landslides and heavy rains, as well as to anthropogenic activities such as shifting agriculture, developmental activities, and extensive deforestation.

1) Minister for Environment, Forest and Climate Change, Shri Bhupender Yadav, today released the 'India State of Forest Report 2021' prepared by the Forest Survey of India (FSI) which has been mandated to assess the forest and tree resources of the country.
2) Sharing the findings, the Minister informed that the total forest and tree cover of the country is 80.9 million hectare which is 24.62 percent of the geographical area of the country. As compared to the assessment of 2019, there is an increase of 2,261 sq km in the total forest and tree cover of the country.
3) The Minister expressed happiness over the fact that the present assessment reveals that 17 states/UT's have above 33 percent of the geographical area under forest cover and stated that the focus of the government under the leadership of Prime Minister Shri Narendra Modi is not just to conserve the forests quantitatively but to enrich it qualitatively.
4) The ISFR-2021 provides information on forest cover, tree cover, mangrove cover, growing stock, carbon stock in India's forests, forest fire monitoring, forest cover in tiger reserve areas, above ground estimates of biomass using SAR data & climate change hotspots in Indian forests.

MAJOR FINDINGS

1) The total forest and tree cover of the country is 80.9 million hectare which is 24.62 percent of the geographical area of the country. As compared to the assessment of 2019, there is an increase of 2,261 sq km in the total forest and tree cover of the country. Out of this, the increase in the forest cover has been observed as 1,540 sq km and that in tree cover is 721 sq km.
2) Increase in forest cover has been observed in open forest followed by very dense forest. Top three states showing increase in forest cover are Andhra Pradesh (647 sq km) followed by Telangana (632 sq km) and Odisha (537 sq km).
3) Area-wise Madhya Pradesh has the largest forest cover in the country followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra. In terms of forest cover as percentage of total geographical area, the top five States are Mizoram (84.53%), Arunachal Pradesh (79.33%), Meghalaya (76.00%), Manipur (74.34%) and Nagaland (73.90%).
4) 17 states/UT's have above 33 percent of the geographical area under forest cover. Out of these states and UT's, five states/UTs namely Lakshadweep, Mizoram, Andaman & Nicobar Islands, Arunachal Pradesh and Meghalaya have more than 75 percent forest cover while 12 states/UTs namely Manipur, Nagaland, Tripura, Goa, Kerala, Sikkim, Uttarakhand, Chhattisgarh, Dadra & Nagar Haveli and Daman & Diu, Assam, Odisha, have forest cover between 33 percent to 75 percent.
5) Total mangrove cover in the country is 4,992 sq km. An increase of 17 sq Km in mangrove cover has been observed as compared to the previous assessment of 2019. Top three states showing mangrove cover increase are Odisha (8 sq km) followed by Maharashtra (4 sq km) and Karnataka (3 sq km).

6) Total carbon stock in country's forest is estimated to be 7,204 million tonnes and there an increase of 79.4 million tonnes in the carbon stock of country as compared to the last assessment of 2019. The annual increase in the carbon stock is 39.7 million tonnes.

METHODOLOGY

- In tune with the Government of India's vision of digital India and the need for integration of digital data sets, FSI has adopted using the vector boundary layers of various administrative units upto districts level as provided by Survey of India along with digital open series topo sheets, in order to ensure comprehensive compatibility with the geographical areas as reported in Census, 2011.
- The biennial assessment of forest cover of the country using mid-resolution Satellite data is based on interpretation of LISS-III data from Indian Remote Sensing satellite data (Resourcesat-II) with a spatial resolution of 23.5 meters with the scale of interpretation 1:50,000 to monitor forest cover and forest cover changes at District, State and National level.

This information provides inputs for various global level inventories, reports such as GHG Inventory, Growing Stock, Carbon Stock, Forest Reference Level (FRL) and international reporting to UNFCCC targets under CBD Global Forest Resource Assessment (GFRA) for planning and scientific management of forests.

1) Satellite data for the entire country was procured from NRSC for the period October to December 2019. The satellite data interpretation is followed by rigorous ground truthing. Information from other collateral sources are also used to improve the accuracy of the interpreted image.
2) The accuracy level achieved in the current assessment is the significantly high. The accuracy of forest cover classification has been assessed 92.99%. The accuracy of classification between forest and non-forest classes has been assessed 95.79% against internationally accepted accuracy of classification of more than 85%. A rigorous QC & QA exercise was also carried out.

Water (Prevention and Control of Pollution) Act in 1974

- Planning interventions for water bodies started as early as 1927.
- In the Water (Prevention and Control of Pollution) Act in 1974, directions were given to control the flow of sewage and industrial effluents into water bodies.

Ramsar Convention

1) The need for lake conservation was felt when India became a signatory to the Ramsar Convention on Wetlands, 1982.
2) The Convention called for the conservation and wise use of wetlands (including water bodies).
3) Twenty-six Ramsar sites, covering an area of 689,000 ha, were identified in India.

National Wetland Conservation Programme

1) The Indian government operationalised the Programme in closed collaboration with concerned state governments during 1985-86 under the MoEFCC notification.

2) Recognising the importance of lakes, the Ministry launched NLCP, a centrally sponsored scheme exclusively aimed at restoring the water quality and ecology of lakes in different parts of the country.
3) Under the programme, 115 wetlands were identified, which required urgent conservation and management initiatives.
4) The selection of lakes was on hydrological (Lake size over 10 acres or 3 acres if of religious and cultural importance and lake depth more than three metres), scientific and administrative criteria.
5) The scheme was approved by the Union government during the Ninth Plan (June 2001) as 100 per cent central grant.
6) From 100 per cent central funding, the costs are now shared according to a ratio of 70:30 between the Union and the concerned state government.

Repair, Renovation and Restoration of Waterbodies' Scheme

- In continuation with the NLCP, the Centre had launched this Scheme in 2005,
- The objectives of the scheme were comprehensive improvement and restoration of traditional waterbodies, including increasing tank storage capacity, ground water recharge, etc.

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

1) Later, in 2016, the National Lake Conservation Plan was merged with National Wetlands Conservation Programme to form NPCA.
2) The principal objectives of NPCA are holistic conservation and the restoration of lakes and wetlands through an integrated and multidisciplinary approach with a common regulatory framework.
3) All lakes that were a part of NLCP, were brought under this scheme, and are being restored till date.

Urban Lakes still needs more attention

A. Even after 26 years of pollution abatement works, only ten per cent of waste water generated in the country is treated.
B. The rest collects as cess pools or is discharged into the 14 major, 55 minor and several hundred other rivers.
C. It is quite clear that the overall status of quality of water in rivers, lakes and its links to groundwater has not been adequately addressed.
D. Out of the 43 Indian guidelines passed by the central and state government, 41 per cent of those talk about conservation and restoration of waterbodies but only 10 per cent exactly describe the conservative measure.
E. Only 22 per cent of the guidelines are on subjects related to policies to be adopted by state government, urban local bodies etc.
F. This clearly identifies the missing links and marks the future prospects that India should adopt for the preparation of better and sustainable lake management plans.

CARBON CAPTURE AND UTILISATION TECHNOLOGIES

According to a study conducted by Radboud University, most Carbon Capture and Utilisation and Storage (CCUS) technologies, which suck carbon dioxide (CO_2) from the atmosphere and convert it into fuel or other valuable products, might fail to help the world reach Net Zero emissions by 2050.

1) The study noted that a majority of these systems are energy intensive and the resultant product can also release CO_2 into the atmosphere.
2) 'Net zero emissions' refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.

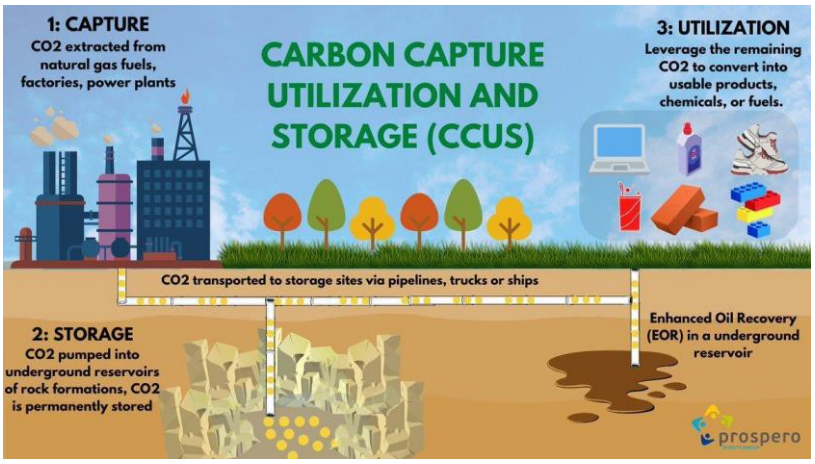
CCUS

- **NITI Aayog** has recently released a study report on Carbon Capture, Utilisation, and Storage (CCUS) Policy Framework and its Deployment Mechanism in India.

FRAMEWORK

1) The report explores the importance of Carbon Capture, Utilisation, and Storage as an **emission reduction strategy**.
2) **The report outlines broad level policy interventions needed** across various sectors for its application.
3) **India's per capita CO2 emissions were about 1.9 tonnes per annum** which is less than 40% of the global average and about **one-fourth of that of China**.

CARBON CAPTURE UTILISATION AND STORAGE (CCUS)



1) It aims to reduce carbon emission by either **storing or reusing** it so that captured carbon dioxide **does not enter the atmosphere**.
2) **It's a three-step process involving**: capturing the carbon dioxide produced by power generation or industrial activity, such as steel or cement making; transporting it; and then storing it deep underground.
3) **It is the technology for decarbonising carbon dioxide (CO2)** from high polluting sectors such as steel, cement, oil, gas, petrochemicals, chemicals and fertilisers.
4) Possible storage sites for carbon emissions include **saline aquifers or depleted oil and gas reservoirs**.
5) It would help in **promoting the low carbon-hydrogen economy** and in removal of the CO2 stock from the atmosphere.

MAJOR CHALLENGES

1) **High Cost**: the key challenge would be to reduce the cost of the mechanisms to implement the technology.

2) **The private sector is unlikely to invest in CCUS** unless there are sufficient incentives or unless it can benefit from the sale of CO2 or gain credits for emissions avoided under carbon pricing regimes.
3) **CO2 Transport and Storage Sites Could Be Dangerous:** While accident rates during the transport of CO2 are relatively low, the potential for a dangerous leak still exists.
4) **Security concerns**: Because the gas is highly toxic and leakages in high quantity at such sites would render the air largely unbreathable.

KEEP IN MIND :

India's updated NDC

1) Achieving 50% of its total installed capacity from non-fossil-based energy sources.
2) 45% reduction in emission intensity by 2030.
3) Taking steps towards achieving Net Zero by 2070.

SIGNIFICANCE OF THE MOVE

- **Production of Clean products**: CCUS can enable the production of clean products while still utilising our rich endowments of coal and reducing imports and thus leading to an Atmanirbhar Indian economy.
- **Decarbonising various sectors**: Implementation of CCUS technology is certainly an important step to decarbonise the hard-to-abate sector.
- **The projects will also lead to a significant employment generation.**

a) It estimates that about 750 mtpa of carbon capture by 2050 can create employment opportunities of about 8-10 million on full time equivalent (FTE) basis in a phased manner.
b) **It can Reduce the Social Cost of Carbon**: The social cost of carbon is a value of the estimated costs and benefits to society from climate change caused by one additional metric ton of CO2 released into the atmosphere in a year.
c) **Circular economy**: It can provide a wide variety of opportunities to convert the captured CO2 to different value-added products like:

1) Green urea
2) Food and beverage form application
3) Building materials (concrete and aggregates)
4) Chemicals (methanol and ethanol)
5) Polymers (including bioplastics)
6) Enhanced oil recovery (EOR) with wide market opportunities in India, thus contributing substantially to a circular economy.

- **Sunrise sectors**: It has an important role to play in enabling sunrise sectors such as coal gasification and the nascent hydrogen economy in India.
- **Enrich concrete:** Captured CO2 could be used to strengthen concrete, leading to increased infrastructure durability.

WAY FORWARD

1) **There will be a positive impact on the economy** if we are able to get value-added products such as green methanol, green ammonia that can be produced from this captured CO2.
2) India's dependency on fossil-based Energy Resources is likely to continue in future and hence **CCUS policy in Indian Context is the need of the hour**.
3) **Key to a successful CCUS implementation in India** is to enact a **policy framework** that supports the creation of sustainable and **viable markets** for CCUS projects.

4) The policy should be **carbon credits or incentives based** to seed and promote the CCUS sector in India through tax and cash credits.
5) **The policy should establish early-stage financing** and funding mechanisms for CCUS projects.

1) Carbon Capture, Utilization, and Storage (CCUS) encompasses methods and technologies to remove CO_2 from the flue gas and from the atmosphere, followed by recycling the CO_2 for utilization and determining safe and permanent storage options.
2) CO_2 captured using CCUS technologies is converted into fuel (methane and methanol), refrigerants and building materials.
3) The captured gas is used directly in fire extinguishers, pharma, food and beverage industries as well as the agricultural sector.
4) CCUS technologies can play an important role in meeting net zero targets, including as one of few solutions to tackle emissions from heavy industry and to remove carbon from the atmosphere.
5) CCUS is considered an important tool to help countries halve their emissions by 2030 and reach net-zero by 2050.
6) These goals are crucial to meet the Paris Agreement targets for restricting global warming to 2 degrees Celsius (°C), and preferable to 1.5°C, over pre-industrial levels.

APPLICATIONS OF CCUS

- **Mitigating Climate Change**: Despite the adoption of alternative energy sources and energy efficient systems to reduce the rate of CO_2 emissions, the cumulative amount of CO_2 in the atmosphere needs to be reduced to limit the detrimental impacts of climate change.
- **Agriculture:** Capturing CO_2 from biogenic sources such as plants and soil to boost crop growth in a greenhouse could work.
- **Industrial Use:** Combining CO_2 with steel slag - an industrial byproduct of the steel manufacturing process — to make construction materials compatible with the Paris Agreement goals.
- **Enhanced Oil Recovery:** CCU is already making inroads into India. For instance, Oil and Natural Gas Corporation signed a MoU with Indian Oil Corporation Limited (IOCL) for Enhanced Oil Recovery (EOR) by injecting CO_2.

CHALLENGES ASSOCIATED WITH CCUS

A. **Expensive:** Carbon capture involves the development of sorbents that can effectively bind to the CO_2 present in flue gas or the atmosphere, which is expensive.
B. **Lesser Demand for Recycled CO_2:** Converting CO_2 into useful chemicals of commercial importance, or utilizing CO_2 for oil extraction or remediation of alkaline industrial wastes, would add economic value to this greenhouse gas.
C. However, the demand for CO_2 is limited compared to the vast amount of CO_2 that needs to be removed from the atmosphere, to reduce the detrimental environmental impacts of climate change.

DRAFT POLICY FRAMEWORK FOR DISTRIBUTED RENEWABLE ENERGY

- Recently, the Union Ministry of New and Renewable Energy (MNRE) released a draft policy framework for DRE livelihood applications.
- The aim is to achieve the objective of a decentralised and distributed RENEWABLE ENERGY supply in the country, particularly for rural populations with little or no access to power.

Provisions of the Draft Policy Framework

Committee to Monitor the Progress:

- MNRE proposed forming a committee to monitor the progress of DRE projects, which will meet at least once every six months.
- Within the committee, each member ministry shall nominate the main point of contact for inter-ministerial collaboration.
- Depending on the scheme being implemented on DRE livelihood application, the committee may co-opt additional ministries/departments as members.

Digital Catalogue of DRE-Powered Solutions:

- MNRE will make available a digital catalogue of DRE-powered solutions to be used by various stakeholders to raise awareness.

Objectives Outlined in the New Framework

1) Enabling a market-oriented ecosystem.
2) Increasing the adoption of DRE-based livelihood solutions by enabling easy finance for the end-user.
3) Encouraging development and management of high-quality products.
4) Developing effective DRE livelihood applications through innovation as well as research and development.
5) Establishing energy-efficiency standards for high-potential livelihood products
6) Using applications powered by mini/micro-grids operating in hybrid mode along with the main grid.

Significance of Distributed Renewable Energy

1) DRE and its downstream applications offer an opportunity to not only meet India's climate and energy access targets, but also provide attractive returns to financial investors.
2) It also provides pathways for India to reduce import-dependence on crude oil as well as create economic growth and jobs in the long run.
3) In addition, addressing existing policy and financing gaps would not only allow for better targeting and risk-hedging of government spending programs, but would also allow capital to be recycled efficiently, thereby enhancing both the duration and magnitude of the impact.

ISSUES WITH DRE

Lack of Technology:

- In order to use renewable energy in their livelihoods, people need access to technology and financing, which are not available to most rural households in India despite the existence of several technology options to deploy small-scale renewable energy-based livelihood applications.
- Local communities in the villages often find it difficult to pay upfront for these innovations.

Unique Challenge for Women:

Microbusinesses, under-represented groups and women face unique challenges when it comes to acquiring assets. As a result, businesses that use operating expense-based financial models, such as pay-as-you-go or leasing, may be eligible for credit facilitation.

Others:

- ❖ Lack of proper financing channels, consumer awareness, consumer affordability and quality products/standards are some of the major challenges facing DRE in India.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

1) The EIA is a process of evaluating the likely environmental impacts of a proposed project or development.
2) The UNEP defines **Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making.**
3) It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.
4) EIA was **introduced in India in 1978**, with respect to river valley projects.
5) Later the EIA legislation was enhanced to include other developmental sections.
6) EIA comes under Notification on Environmental Impact Assessment (EIA) of developmental projects 1994 under the provisions of **Environment (Protection) Act, 1986.**
7) Besides EIA, the Government of India under Environment (Protection) Act 1986 issued a number of other notifications, which are related to environmental impact assessment.

AMENDMENTS IN EIA RULES

1) **Thermal power plants** up to 15 MW based on biomass or non-hazardous municipal solid waste using auxiliary fuel such as coal, lignite or petroleum products up to 15 per cent have also been exempted — as long as the fuel mix is eco-friendly
2) **Fish handling ports and harbours**-Taking into account issues of livelihood security of fishermen involved at fish handling ports and harbours, and the less pollution potential of these ports and harbours compared to others, increasing the threshold of ports which exclusively deals in fish handling, and caters to small fishermen, will be exempted from environmental clearance
3) **Toll plazas** that need more width for installation of toll collection booths to cater to a large number of vehicles are exempted
4) **Airport**-Expansion activities in existing airports related to terminal building expansion without increase in the airport's existing area, rather than expansion of runways also exempted.
5) **Strategic Projects**-For projects of strategic importance-"Highway projects related to defence and strategic importance in border States are sensitive in nature and that needs to be executed on priority keeping in view strategic, defence and security considerations.
6) Exemption of such projects from the requirement of Environmental Clearance in border areas, subject to specified Standard Operating Procedure along with standard environmental safeguards for such projects for self-compliance by the agency executing such projects.
7) Any project which is 100 km from the Line of Control, among other locations, will be exempted from an environmental clearance before construction.

SIGNIFICANCE OF THE AMENDMENTS

1) Faster infrastructure development in strategic areas like border areas.
2) Quick expansion projects without the need for an elaborate EIA process.
3) It will improve the investment climate and attract investment in these sectors.
4) Create jobs and support livelihood especially poor fishermen.
5) Ease the traffic flow on congested highways due to easier expansion of toll plaza.

Issues with these amendments

1) There are several projects with significant environmental impacts that are exempted from the notification.
2) Some of the exempted projects can have a huge impact on biodiversity and the ecosystem.
3) Public residing in the area will not have any say as these projects will be outside the purview.
4) Apart from strategic projects , other projects must go through scrutiny and analysis of the environmental impact it will have.

FUNDAMENTAL COMPONENTS OF EIA

1) **Screening** to determine which projects or developments require a full or partial impact assessment study;
2) **Scoping** to identify which potential impacts are relevant to assess (based on legislative requirements, international conventions, expert knowledge, and public involvement), to identify alternative solutions that avoid, mitigate or compensate for adverse impacts on biodiversity, and finally to derive terms of reference for the impact assessment;
3) **Assessment and evaluation of impacts and development of alternatives**, to predict and identify the likely environmental impacts of a proposed project or development, including the detailed elaboration of alternatives;
4) **Reporting the Environmental Impact Statement (EIS) or EIA report**, including an environmental management plan (EMP), and a non-technical summary for the general audience.
5) **Review of the Environmental Impact Statement (EIS)**, based on the terms of reference (scoping) and public (including authority) participation.
6) **Decision-making** on whether to approve the project or not and under what conditions; and
7) **Monitoring, compliance, enforcement, and environmental auditing**. Monitor whether the predicted impacts and proposed mitigation measures occur as defined in the EMP. Verify the compliance of the proponent with the EMP, to ensure that unpredicted impacts or failed mitigation measures are identified and addressed in a timely fashion.

The genesis of Environmental Impact Assessment

- EIA originated in the early 1970s, with the implementation of the National Environment Policy Act (NEPA) 1969 in the US.
- A large part of the initial development occurred in a few high-income countries, like Canada, Australia, and New Zealand (1973-74). However, there were some developing countries as well, which introduced EIA relatively early – Columbia (1974), and the Philippines (1978).
- In 1989, the World Bank adopted EIA for significant development projects, in which a borrower country had to undertake an EIA under the Bank's supervision.

STRATEGIC ENVIRONMENT ASSESSMENT

- Strategic Environment Assessment (SEA) refers to the systematic analysis of the environmental effects of development policies, plans, programs, and other proposed strategic actions.
- It takes place at earlier stages of the decision-making cycle and considers a broad range of potential alternatives.
- SEA represents a proactive approach to integrating environmental considerations into the higher levels of decision-making.

HISTORY OF ENVIRONMENTAL IMPACT ASSESSMENT IN INDIA

- ❖ The EIA was first used during 1976-77 in India when the Planning Commission asked the Department of Science and Technology to examine the river-valley projects from an environmental angle.

1) This was subsequently extended to cover those projects, which required the approval of the Public Investment Board.
2) Till 1994, environmental clearance from the Central Government was an administrative decision and lacked legislative support.

1) On 27 January 1994, the Union Ministry of Environment and Forests (MoEF), under the Environmental (Protection) Act 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for expansion or modernization of any activity or for setting up new projects listed in Schedule 1 of the notification.
2) In 2006, The MoEF notified new EIA legislation making it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours, and airports), and industries including very small electroplating or foundry units to get environment clearance.
3) However, unlike the EIA Notification of 1994, the 2006 legislation had put the onus of clearing projects on the state government depending on the size/capacity of the project.

1) Certain activities permissible under the Coastal Regulation Zone Act, 1991 also require similar clearance. Additionally, donor agencies operating in India like the World Bank and the ADB have a different set of requirements for giving environmental clearance to projects that are funded by them.
2) In 2020, a draft notification on EIA 2020 was issued to consolidate all the 55 amendments and 230 office memorandums issued since 2006.

EIA PROCESS IN INDIA

- ❖ The ENVIRONMENT PROTECTION RULES-1986 impose certain restrictions on the construction/ expansion/ modernization of specific projects without prior approval from the Central, State, or Union Territory level Environmental Impact Assessment Authority (EIAA) constituted under the ENVIRONMENT PROTECTION ACT-1986
- ❖ The rules categorize the projects into two categories- A and B based on the magnitude of their scale and impact on the natural and artificial resources.

1) The projects belonging to Category A require approval from the Ministry of Environment and Forests on behalf of the Central Government, on the advice of an Expert Appraisal Committee (EAC), constituted by the Central Government for this specific purpose. For example- Construction or Expansion of Ports, harbours, airports, nuclear power, related projects, Primary metallurgical industries- IRON,STEEL,COPPER individual projects, etc.
2) Projects and Activities falling under Category B require the approval of a State EIAA, based on the advice of a State Expert Appraisal Committee (SEAC), constituted under the said notification.

ADVANTAGES OF EIA:	**DISADVANTAGES:**
1) Reduces cost and time of project implementation and design. 2) Encourages environmentally sound projects which are compliant with environmental legislation in place. 3) Protection of environment along with balanced usage of resources. 4) Decision-makers are informed of the pros and cons of the projects in detail. 5) EIA reports are a critical component of India's	1) It is a time-consuming process that may be depicted as withholding the pace of developmental activities. 2) There is little public participation in actual implementation. 3) Sometimes too focused on the scientific analysis and the real-time impact is neglected. 4) Compliance monitoring after EIA is not carried out regularly. 5) Impact assessment processes are in place and

environmental decision-making process 6) It helps in predicting environmental impacts at an early stage in project planning and design. 7) The EIA reports are also important to define measures that the project could take to contain or offset project impacts. 8) EIA-based approvals for most projects also involve the process of conducting public hearings, so that who are likely to be affected can be taken on board before approving the project.	applied in many countries, yet biodiversity is often inadequately addressed. 6) There is a need to better address biodiversity considerations in environmental impact assessments and strategic environmental assessments.

CONCLUSION

1) The EIA notification of 2006 was not good enough for ensuring the protection of the environment, while the 2020 draft is more in the favour of ease of doing business.
2) This has bettered India's ranking in World Bank's EASE OF DOING BUSINESS REPORT but India's ranking has steadily declined in the ENVIRONMENTAL PERFORMANCE INDEX.
3) The government has to find ways to strike a balance between environmental and developmental progress. And the EIA should incorporate perspectives of multiple stakeholders in a balanced manner keeping environment as a priority.

Recently, the Environmental Impact Assessment (EIA) Rules have been amended, and a number of exclusions from obtaining environmental clearance have been notified by the Ministry of Environment, Forests, and Climate Change (MoEF&CC).

AMENDMENTS TO EIA RULES

1) **Exemption to the Strategic and Defense infrastructure Projects:** Exempts highway projects from environmental review before construction, including those that are 100 km from the Line of Control and other strategic and defence locations.
2) **Exemption to the Highway projects:** In border states, highway projects of strategic and defensive importance are exempted from EIA norms while taking into account strategic, defensive, and security issues.
3) **Exemption to the thermal power plant:** Thermal power plants up to 15 MW that use biomass or non-hazardous municipal solid waste and use auxiliary fuels like coal, lignite, or petroleum products up to 15% are also exempt from this rule.
4) **Exemption for Ports and Harbours Used for Fishing:** Fish handling ports and harbours are exempt from environmental clearance since they are less likely to cause pollution than other ports and harbours and serve small fishermen.
5) **Toll Plazas:** Toll plazas that require additional width for the installation of toll collection booths to accommodate numerous vehicles and expansion activities at existing airports related to the expansion of terminal buildings without enlarging the airport's current area, as opposed to the expansion of runways, etc., are two additional projects exempt from this rule.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

1) The Environmental Impact Assessment (EIA), according to UNEP, is a tool used to determine the environmental, social, and economic impacts of a project prior to making a decision.

2) It seeks to anticipate environmental effects early in the project planning and design process, identify strategies for minimising negative effects, adapt projects to the local environment, and give predictions and options to decision-makers.
3) **Aim:** To identify methods and means to lessen negative consequences, mould projects to suit the local environment, estimate environmental impacts early in project planning and design, and provide the options and predictions to decision-makers.
4) In India, the Environment Protection Act, 1986, which incorporates many provisions on EIA methodology and process, provides statutory backing for EIA.

EIA in India

1) Prior to 1994, the Central Government's approval of environmental matters was an administrative choice without any backing from the legislature.
2) Under the Environmental (Protection) Act of 1986, the then-Union Ministry of Environment and Forests promulgated an EIA notification on January 27, 1994, requiring environmental clearance (EC) before expanding or modernising any activity or initiating new projects that are listed in Schedule 1 of the notification.
3) In September 2006, the Ministry of Environment, Forests, and Climate Change (MoEFCC) announced revised EIA regulations in the form EIA Notification 2006.

EIA NOTIFICATION 2006

Decentralization of Project Clearances: It divided the growth initiatives into two groups:

- **Category A** (national level appraisal): projects are evaluated by the Expert Appraisal Committee(EAC) and the Impact Assessment Agency (IAA) (E.
- **Category B** (state level appraisal): Projects in this category are given approval by the State Level Expert Appraisal Committee (SEAC) and the State Level Environment Impact Assessment Authority (SEIAA).

1) **Introducing the various Stages:** With the amendment, the EIA cycle now has four stages: screening, scoping, public hearings, and appraisal.
2) **Category A projects** must get an environmental clearance that is required; as a result, they are exempt from the screening procedure.
3) **Category B projects** after being screened, are further divided into B1 (mandatory EIA required) and B2 categories (Not requiring EIA).
4) **Provides for the Mandatory Approval of Projects:** Environmental clearance is required for projects in the mining, thermal power, river valley, infrastructure (road, highway, ports, harbours, and airports), as well as very small electroplating and foundry units.

DRAFT EIA NOTIFICATION, 2020

1) Ministry of Environment, Forest and Climate Change has made an amendment to EIA Notification 2006.
2) All projects or activities in respect of bulk drugs and intermediates, manufactured for addressing various ailments, have been re-categorized from the existing Category 'A' to 'B2' category.
3) Projects falling under Category B2 are exempted from requirement of collection of Base line data, EIA Studies and public consultation.
4) The re-categorization of such proposals has been done to facilitate decentralization of appraisal to State Level so as to fast track the process.

5) This step will help in increasing the availability of the important medicines/ drugs in the country within short span of time.
6) This amendment is applicable to all proposals **received up to 30th September 2020.**
7) The **states have also been issued advisories to expeditiously process such proposals.**
8) Further, to **ensure expeditious disposal of the proposals within given time-line,** Ministry has also **advised states to use information technology**g. video conference, considering the fact that in view of the prevailing situation on ground, appraisal of proposals may not be possible through physical meetings.

ISSUES INVOLVED

- It proposes to **reduce the period of public consultation hearings** to a maximum of 40 days, and reduces from 30 to 20 days the time provided for the public to submit their responses during a public hearing for any application seeking environmental clearance.
- This can pose a **problem to those affected people** who **do not have access to information and technology** and those that are not aware of the process itself.
- It **allows the central government to declare some areas as "economically sensitive areas" without a public hearing or environmental clearance**, and s**everal "red" and "orange"-classified toxic industries could now operate as close as 0-5 km from a Protected Area.**
- The government also gets to decide on the "strategic" tag for any projects for which no information on such projects shall be placed in the public domain. This may lead to summary clearance for any project deemed strategic without having to explain why.
- Projects that have commenced operations – by way of construction, installation, excavation, production, etc – without obtaining necessary clearances can be legalised after payment of a penalty.
- Post facto clearance is the violation of the fundamental principles of environmental jurisprudence and is contrary to both the precautionary principle as well as the need for sustainable development.
- **Exemptions:** The new draft exempts a long list of projects from public consultation and prior clearance

For example, linear projects such as roads and pipelines in border areas will not require any public hearing. All inland waterways projects and expansion/widening of national highways including roads that cut through forests and dredging of major rivers, will be exempt from prior clearance.

1. The latest draft EIA notification does away with the need to carry out studies covering all seasons in a year. This will lead **to less reliable data and projections for pollutants and will mask the full environmental impact of a project.**
2. The notification allows project proponents to engage private consultants for preparing the EIA reports propelling a situation where expertise and

Technicalities would be adopted to obscure the process and make it difficult to understand.

ENVIRONMENTAL CONVENTIONS

1. RAMSAR CONVENTION

1. It is called the Convention on Wetlands
2. It was adopted in the city of Iran, Ramsar in 1971.
3. It came into force in 1975.

LIST OF RAMSAR SITES OF INDIA

	Ramsar Site	State	Designated Year
1	**Kolleru Lake**	**Andhra Pradesh**	2002
2	**Deepor Beel**	**Assam**	2002
3	Kanwar (Kabar) Taal	Bihar	2020
4	Nanda Lake	Goa	2022
5	Khijadia WLS	Gujarat	2021
6	**Nalsarovar BS**	**Gujarat**	2012
7	Thol Lake	Gujarat	2021
8	Wadhvana Wetland	Gujarat	2021
9	Bhindawas WLS	Haryana	2021
10	**Sultanpur NP**	**Haryana**	2021
11	**Chandra Taal**	**Himachal Pradesh**	2005
12	**Pong Dam Lake**	**Himachal Pradesh**	2002
13	Renuka Lake	Himachal Pradesh	2005
14	**Ranganathituu BS**	**Karnataka**	2022
15	**Ashtamudi Wetland**	**Kerala**	2002
16	**Sasthamkotta Lake**	**Kerala**	2002
17	**Vembanad-Kol Wetland (Longest Lake in India)**	**Kerala**	1905
18	Bhoj Wetland	Madhya Pradesh	2002
19	Sakhya Sagar	Madhya Pradesh	2022
20	Sirpur wetland	Madhya Pradesh	2022
21	Yashwant Sagar	Madhya Pradesh	2022
22	**Lonar Lake (Impact Crater Lake)**	**Maharashtra**	2020
23	**Nandur Madhameshwar**	**Maharashtra**	2019
24	**Thane Creek**	**Maharashtra**	2022
25	**Loktak Lake**	**Manipur**	1990
26	Pala Wetland	Mizoram	2021
27	Ansupa Lake	Odisha	2021
28	**Bhitarkanika Mangroves**	**Odisha**	2002

29	**Chilika Lake (Oldest Ramsar Site in India)**	**Odisha**	**1981**
30	**Hirakud Reservoir**	**Odisha**	2021
31	**Satkosia Gorge**	**Odisha**	2021
32	Tampara Lake	Odisha	2021
33	**Beas CnR**	**Punjab**	2019
34	**Harike Wetland**	**Punjab**	1990
35	Kanjli Wetland	Punjab	2002
36	Keshopur-Miani CmR	Punjab	2019
37	**Nangal WLS**	**Punjab**	2019
38	Ropar Wetland	Punjab	2002
39	**Keoladeo National Park**	**Rajasthan**	**1981**
40	**Sambhar Lake**	**Rajasthan**	1990
41	Chitrangudi BS	Tamil Nadu	2021
42	**Gulf of Mannar Marine BR**	**Tamil Nadu**	2022
43	Kanjirankulam BS	Tamil Nadu	2022
44	Karikili BS	Tamil Nadu	2022
45	Koonthankulam BS	Tamil Nadu	2021
46	Pallikaranai Marsh Reserve Forest	Tamil Nadu	2022
47	**Pichavaram Mangrove**	**Tamil Nadu**	2022
48	Point Calimere WLS & BS	Tamil Nadu	2002
49	Suchindram Theroor Wetland Complex	Tamil Nadu	2022
50	Udhayamarthandapuram BS	Tamil Nadu	2022
51	Vaduvur BS	Tamil Nadu	2022
52	Vedanthangal BS	Tamil Nadu	2022
53	Vellode BS	Tamil Nadu	2022
54	Vembannur Wetland Complex	Tamil Nadu	2022
55	Rudrasagar Lake	Tripura	2005
56	**Hokera Wetland**	**UT of JK**	2005
57	Hygam Wetland CnR	UT of JK	2022

58	Shallbugh Wetland CnR	UT of JK	2022
59	Surinsar-Mansar Lakes	UT of JK	2005
60	**Wular Lake**	**UT of JK**	1990
61	**Tso Kar (High Altitude Ramsar Site)**	**UT of Ladakh**	2020
62	**Tsomoriri (High Altitude Ramsar Site)**	**UT of Ladakh**	2002
63	Bakhira WLS	Uttar Pradesh	2021
64	Haiderpur Wetland	Uttar Pradesh	2021
65	Nawabganj BS	Uttar Pradesh	2019
66	Parvati Arga BS	Uttar Pradesh	2019
67	Saman BS	Uttar Pradesh	2019
68	Samaspur BS	Uttar Pradesh	2019
69	Sandi BS	Uttar Pradesh	2019
70	Sarsai Nawar Jheel	Uttar Pradesh	2019
71	Sur Sarovar (Keetham Lake)	Uttar Pradesh	2020
72	Upper Ganga River (Brijghat to Narora)	Uttar Pradesh	2005
73	Asan Barrage	Uttarakhand	2020
74	East Kolkata Wetlands	West Bengal	2002
75	**Sundarban Wetland (Largest Ramsar Site in India)**	**West Bengal**	**2019**

2. STOCKHOLM CONVENTION

1) It is a convention on Persistent Organic Pollutants (POPs)
2) It was adopted in 2001 in Geneva, Switzerland.
3) It came into force in 2004.

RATIFICATION OF 7 PERSISTENT ORGANIC POLLUTANTS

1) The **Union Cabinet** has approved the **ratification of seven chemicals** listed **under Stockholm Convention on Persistent Organic Pollutants (POPs).**
2) The **Cabinet further delegated its powers** to ratify chemicals under the Stockholm Convention to Union Ministries of External Affairs **(MEA)** and Environment, Forest and Climate Change **(MEFCC)** in respect of POPs for streamlining the procedure.

KEY POINTS

Persistent Organic Pollutants: POPs are identified chemical substances that are characterised by:

1) Persistence in the environment.

2) Bio-accumulation in the fatty acids in living organisms.
3) Less soluble in water.
4) Adverse effect on human health/ environment.

- Exposure to POPs can lead to cancer, damage to central & peripheral nervous systems, diseases of the immune system, reproductive disorders and interference with normal infant and child development.
- The property of **long-range environmental transport (LRET)** makes them spread widely in the atmosphere.

The Stockholm Convention:

- It is a global treaty to protect human health and the environment from POPs.
- It was opened for signature in 2001 in Stockholm (Sweden) and became effective in 2004.
- POPs are listed in various Annexes to the Stockholm Convention after thorough scientific research, deliberations and negotiations among member countries.

Objectives:

1) Support the transition to safer alternatives.
2) Target additional POPs for action.
3) Cleanup old stockpiles and equipment containing POPs.
4) Work together for a POPs-free future.

- **India ratified the Stockholm Convention in 2006** as per **Article 25(4),** which enabled it to keep itself in a default "opt-out" position such that amendments in various Annexes of the convention cannot be enforced on it unless an instrument of ratification/ acceptance/ approval or accession is explicitly deposited with UN depositary.

1) The convention calls to **ban nine of the dirty dozen chemicals** (key POPs), limit the use of DDT to malaria control, and curtail inadvertent production of dioxins and furans. The convention **listed twelve distinct chemicals** in three categories:

A. **Eight pesticides** (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene)
B. **Two industrial chemicals** (poly chlorinated biphenyls and hexachlorobenzene)
C. **Two unintended by-products of many industrial processes involving chlorine** such as waste incineration, chemical and pesticide manufacturing and pulp and paper bleaching (poly chlorinated dibenzo-p-dioxins and dibenzofurans, commonly referred to as dioxins and furans).

Recent Cabinet Decision: The Union Cabinet has approved the ratification of seven chemicals listed **under Stockholm Convention.** These chemicals are regulated under the following domestic provision for POPs:

<u>Regulation of Persistent Organic Pollutants Rules:</u>

- Considering its commitment towards providing a safe environment and addressing human health risks, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** had notified the 'Regulation of Persistent Organic Pollutants Rules, in 2018 **under** the provisions of **Environment (Protection) Act, 1986.**
- The regulation inter alia prohibits the manufacture, trade, use, import and export of seven chemicals, namely:

1) Chlordecone,
2) Hexabromobiphenyl,
3) Hexabromodiphenyl ether and Hepta Bromodiphenyl Ether (Commercial octa-BDE),
4) Tetrabromodiphenyl ether and Pentabromodiphenyl ether (Commercial penta-BDE),
5) Pentachlorobenzene,
6) Hexabromocyclododecane, and
7) Hexachlorobutadiene.

SIGNIFICANCE OF DECISION:

1) The Cabinet's approval for ratification of POPs demonstrates **India's commitment to meet its international obligations** with regard to protection of environment and human health.
2) It also indicates the **resolve of the Government to take action on POPs** by implementing control measures, develop and implement action plans for unintentionally produced chemicals, develop inventories of the chemicals' stockpiles and review.
3) The ratification process would enable India to access the **Global Environment Facility (GEF)** financial resources.

GLOBAL ENVIRONMENT FACILITY

A. GEF was established with the **Rio Earth Summit** of 1992.
B. **Headquarter:** Washington, D.C., USA.
C. The GEF is jointly managed by the **United Nations Development Programme** (UNDP), the **World Bank**, and the **United Nations Environment Programme (UNEP).**
D. The financial mechanism was established to help tackle our planet's most pressing environmental problems.
E. It provides **funds to the developing countries and transition economies** for projects related to climate change, biodiversity, the ozone layer, etc.

It is a financial mechanism for 5 major international environmental conventions:

1) The **United Nations Framework Convention on Climate Change** (UNFCCC),
2) **The United Nations Convention on Biological Diversity** (UNCBD),
3) The **Stockholm Convention on Persistent Organic Pollutants** (POPs),
4) The **United Nations Convention to Combat Desertification** (UNCCD), and
5) The **Minamata Convention on Mercury.**

CITES

- It is a convention on International Trade in Endangered Species of Wild Fauna and Flora
- It was adopted in 1963.

1) It came into force in 1975. CITES COP
2) The Convention of Parties (COP) to CITES is the supreme decision-making body of the Convention and comprises all its Parties.
3) COP CITES meets every two-three years.
4) The latest COP was CITES COP18 that took place in 2019 in Geneva, Switzerland.
5) India hosted CoP (3rd) in 1981.CITES species

CITES Appendix UPSC	Description	Examples of Species

CITES Appendix 1	A. Species that are in danger of extinction B. Commercial trade is prohibited. C. Permits are required for import and export. D. Trade permitted just for research only if the origin country ensures the trade won't harm the species' chance of survival.	a) Asiatic lions and tigers. b) Sea turtles, gorillas, lady slippers orchids, etc. c) Total 931 species on the list.
CITES Appendix 2	a) Species that aren't facing imminent extinction but need monitoring so that any trade doesn't become a threat. b) Trade permits obtained legally and only if the origin country ensures that its harvesting and trade won't harm the species' chance of survival.	American Alligators Paddlefish, Mahogany, corals, etc. Total 34,419 species on the list.
CITES Appendix 3	a) Species that are protected in at least one country. b) Regulations for these species vary, but typically the country that requested the listing can issue export permits, and export from other countries requires a certificate of origin.	Honeybadger (used for medicinal purposes) Walruses, Map turtles, certain beetles, etc. Total 147 species on the list.

CITES INDIA

a) India became a member, and ratified CITES in 1976.
b) India is one of the few countries to have made extensive use of Appendix III of CITES, compared to other Parties to the Convention.
c) Due to the extreme diversity India possesses, India is recognized for harbouring up to 7-8% of all the species recorded by CITES in the world.
d) Wildlife Crime Control Bureau is the nodal authority for the CITES implementation in India.

4. Convention on Biological Diversity (CBD)

1) It is a convention for the conservation of biological diversity.
2) It was adopted in 1992
3) It came into force in 1993.

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5. Bonn Convention

1) It is a convention on the Conservation of Migratory Species of Wild Animals.

2) It was adopted in 1979.
3) It came into force in 1983.

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6. Vienna Convention

1) It is a convention for the Protection of Ozone Layer.
2) It was adopted in 1985.
3) It came into force in 1988.

7. Montreal Protocol

1) It is an international environment protocol on substances that deplete the Ozone Layer.
2) It was adopted in 1987.
3) It came into force in 1989.

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8. Kyoto Protocol

It is an international protocol to reduce greenhouse gas emissions.

It was adopted in 1997.

1) It came into force in 2005. It is legally binding
2) Only members of UNFCCC can become parties to the Kyoto Protocol.
3) Kyoto Protocol was adopted at the 3rd session of UNFCCC
4) To meet the targets of the Kyoto Protocol, member countries cannot include international shipping and international aviation
5) Countries can use Land Use (LU), land-use change (LUC), and Forestry to meet their Kyoto targets.

India at the Kyoto Protocol

a) India was exempted from legally binding commitments on greenhouse gas emissions.
b) India emphasized on the differentiation between developed and developing nations concerning the burden of responsibility for climate action.
c) India successfully defended its obligation on socio-economic development while concurrently forcing developed countries of the Annex I category to take more responsibilities on curtailing greenhouse gas emissions.

UNFCCC

- Recently, 24th meeting of the Conference of the Parties (COP24) to the United Nations Framework Convention on Climate Change (UNFCCC) concluded in Katowice, Poland.

Origin

a) The UNFCCC, signed in 1992 at the United Nations Conference on Environment and Development also known as the Earth Summit, the Rio Summit or the Rio Conference
b) The UNFCCC entered into force on March 21, 1994, and has been ratified by 197 countries.

The WMO and UNEP established the Intergovernmental Panel on Climate Change (IPCC) in 1988, to assess the magnitude and timing of changes, estimate their impacts, present strategies for how to

respond and to provide an authoritative source of up-to-date interdisciplinary knowledge on climate change.

OBJECTIVE

a) According to Article 2, the Convention's ultimate objective is "to achieve, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".
b) This objective is qualified in that it "should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".
c) Institutional Arrangements

The Conference of the Parties (COP)

Article 7.2 defines the COP as the "supreme body" of the Convention, as it is its highest decision-making authority. The climate change process revolves around the annual sessions of the COP.

COP President and Bureau

a) The office of the COP President normally rotates among the five United Nations regional groups. The President is usually the environment minister of his or her home country. S/he is elected by acclamation immediately after the opening of a COP session. Their role is to facilitate the work of the COP and promote agreements among Parties.
b) The work of the COP and each subsidiary body is guided by an elected Bureau. To ensure continuity, it serves not only during sessions, but between sessions as well.

Subsidiary Bodies (SBs)

- The Convention establishes two permanent subsidiary bodies (SBs), namely the Subsidiary Body for Scientific and Technological Advice (SBSTA), by Article 9, and the Subsidiary Body for Implementation (SBI), by Article 10. These bodies advise the COP.
- The SBSTA's task is to provide the COP "with timely advice on scientific and technological matters relating to the Convention".
- The SBI's task is to assist the COP "in the assessment and review of the effective implementation of the Convention"

The Secretariat

The secretariat, also known as the Climate Change Secretariat, services the COP, the SBs, the Bureau and other bodies established by the COP.

Other Bodies

a) Other bodies have been set up by the COP to undertake specific tasks. These bodies report back to the COP when they complete their work
b) COP 1 established two ad hoc groups to conduct negotiations on specific issues.
c) COP 11 established the "Dialogue" to exchange experiences and analyse strategic approaches for long-term cooperative action to address climate change.

TIMELINE OF IMPORTANT EVENTS

1979	First World Climate Conference (WCC)
1988	IPCC established
1990	In November IPCC and second WCC call for global treaty on climate change and in December UN General Assembly Negotiations on a Framework Convention Begin.
1992	The text of the United Nations Framework Convention on Climate Change is adopted at the United Nations Headquarters in New York.
1994	UNFCCC enters into force
1995	COP 1 (Berlin, Germany)
1996	August The UNFCCC secretariat relocates from Geneva to its current home in Bonn(Germany), paving the way for the city to become an international sustainability hub and home to 18 UN organizations.
1997	COP 3 (Kyoto, Japan) Kyoto Protocol adopted- The Protocol legally binds developed countries to emission reduction targets.
1998	Buenos Aires Plan of Action
2001	COP 6-2(second part of 6th COP) The COP 6-2 took place from 16 to 27 July 2001 in Bonn, Germany. A major breakthrough is achieved at the second part of the sixth Conference of the Parties meeting in Bonn, with governments reaching a broad political agreement on the operational rulebook for the 1997 Kyoto Protocol.
2001	COP 7 (Marrakesh, Morocco) Resulted in the Marrakesh Accords, setting the stage for ratification of the Kyoto Protocol. This formalized the agreement on operational rules for International

	Emissions Trading, the Clean Development Mechanism and Joint Implementation along with a compliance regime and accounting procedures.
2002	COP 8 (New Delhi, India) Delhi Declaration. The Delhi Declaration focuses on the development needs of the poorest countries and the need for technologytransfer for mitigating climate change.
2005	(February 16) Entry of Kyoto Protocol into force with the Russian Federation ratification to the Kyoto Protocol, sealing its entry into force.
2005	COP11/CMP1 (December) The first Meeting of the Parties to the Kyoto Protocol (MOP 1) takes place in Montreal.
2006	In January the Clean Development Mechanism, a key mechanism under the Kyoto Protocol, opens for business. The CDM is one of the Flexible Mechanisms defined in the Kyoto Protocol that provides for emissions reduction projects which generate Certified Emission Reduction units (CERs) which may be traded in emissions trading schemes.
2007	COP13 Parties agreed on the Bali Road Map and Bali action plan, which charted the way towards a post-2012 outcome. The Plan has five main categories: shared vision, mitigation, adaptation, technology and financing.
2008	COP 14, Poznan (Poland) The launch of the Adaptation Fund under the Kyoto Protocol and The Poznan Strategic Programme on Technology Transfer.
2009	COP15 (Copenhagen) Copenhagen Accord drafted. Developed countries pledge up to USD 30 billion in fast-start finance for the period 2010-2012.
2010	COP 16 (Cancun) Resulted in the Cancun Agreements, a comprehensive package by governments to assist developing nations in dealing with climate change. The Green Climate Fund, the Technology Mechanism and the Cancun Adaptation

	Framework are established.
2011	COP 17 (Durban) Governments commit to a new universal climate change agreement by 2015 for the period beyond 2020.(Resulted in the Paris Agreement of 2015)
2012	COP18/CMP8 (Doha) The Doha Amendment to the Kyoto Protocol is adopted. COP18 also launched a second commitment period of the Kyoto Protocol.
2013	COP19/CMP9 (Warsaw) Key decisions adopted include: Further advancing the Green Climate Fund and Long-Term Finance, The Warsaw Framework for REDD Plus and the Warsaw International Mechanism for Loss and Damage.
2015	COP 21 (Paris) Paris Agreement adopted. It aims: To keep global temperatures "well below" 2.0C (3.6F) above pre-industrial times and "endeavor to limit" them even more, to 1.5C Rich countries should help poorer nations by providing "climate finance" to adapt to climate change and switch to renewable energy. The agreement requires rich nations to maintain a $100bn a year funding pledge beyond 2020.
2016	COP22 (Marrakech) A crucial outcome of the Marrakech climate conference was To move forward on writing the rule book of the Paris Agreement. Launched the Marrakech Partnership for Climate Action.
2017	COP23, Bonn (Germany) Countries continued to negotiate the finer details of how the agreement will work from 2020 onwards. First set of negotiations since the US, under the presidency of Donald Trump,

	announced its intention earlier this year to withdraw from the Paris deal. It was the first COP to be hosted by a small-island developing state with Fiji taking up the presidency, even though it was being held in Bonn.
2018	COP 24, Katowice (Poland)

SHORTCOMINGS

1) **Non-inclusive:** Most scientists agree the most dangerous environmental air pollutants today are microscopic particulates that come from car engines and combustion-based power plants, but these pollutants are largely ignored by the Kyoto Protocol.
2) **Slow progress:** It took a long time for COP to bring Russia to agree into participating in the Kyoto Protocol. (until 2005)
3) UNFCCC failed to persuade USA to ratify the Kyoto protocol thereby keeping one of the largest emitter of greenhouse gases away from commitments.
4) **Unsustainable targets:** The world reached at almost 1degree Celsius warming post industrialization and the Paris contributions are not enough to maintain 2 degree Celsius levels.
5) **Unsatisfactory Response:** Many countries argued for a tougher target of 1.5C - including leaders of low-lying countries that face unsustainable sea levels rises in a warming world.
6) **Financial Constraints:** The agreement requires rich nations to maintain a $100bn a year funding pledge beyond 2020, which is not enough as highlighted by several pacific island countries.
7) **Non-binding agreement:** The US withdrawal from the 2015 Paris climate agreement, citing, that the deal punished" the US and would cost millions of American jobs", has created new barriers and more pressure on rest of the nations in achieving the targets of Paris agreement.

8) As part of the US withdrawal, USA has stopped the payment of the extra $2bn that had been promised in to the Green Climate Fund.
9) **No enforcement mechanism:** Under the Paris agreement, each country determines, plans, and reports its own efforts to mitigate global warming. The only penalty for non-compliance is a so-called "name and shame" — or "name and encourage" — system whereby countries that fall out of compliance are called out and encouraged to improve.

ACHIEVEMENTS

1) Kyoto protocol only required wealthy nations to cut emissions, which was a bone of contention; however this anomaly was corrected with the signing of Paris agreement in 2015.
2) UNFCCC initiatives helped create Public awareness regarding climate change, which is much higher today than in the late 90s.
3) Although climate science in the late 90s was certainly strong enough—to negotiate an international treaty, it is hard to deny that the scientific understanding of the climate crisis has improved considerably over the past two decades in which UNFCCC played a significant role.
4) UNFCCC has enabled planning and implementation of concrete adaptation activities under the National Adaptations Programme of Action (NAPAs) and the Nairobi work programme.
5) UNFCCC helped create innovative ideas in mitigating climate change like the Clean Development mechanism (CDM) under which developing country's projects that reduce

emissions earn credits that can be sold to countries or companies with a commitment to reduce emissions.

6) Since the establishment of UNFCCC national governments have encouraged and increased cooperation on the development and transfer of technology.
7) UNFCCC efforts support the developing countries in combating climate change by providing a platform for finance, technology transfers, discussions, global partnerships, etc.

9. UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

1) It is an international environmental treaty governing actions to combat climate change through adaptation and mitigation efforts directed at control of emission of GreenHouse Gases (GHGs) that cause global warming.
2) It was adopted in 1992.
3) It came into force in 1994.

10. Rio Summit

It is a United Nations Conference on Environment and Development.

It was held in 1992 at Rio de Janeiro, Brazil. Rio Summit

1) Some 2,400 representatives of non-governmental organizations (NGOs) attended, with 17,000 people at the parallel NGO "Global Forum" (also called Forum Global), who had Consultative Status.
2) A significant accomplishment of the summit was an agreement on the Climate Change Convention which in turn led to the Kyoto Protocol and the Paris Agreement.
3) Another agreement was "not to carry out any activities on the lands of indigenous peoples that would cause environmental degradation or that would be culturally inappropriate".

RIO SUMMIT 1992 – IMPORTANT OUTCOMES

The Rio Summit 1992 is also called the Earth Summit. This summit led to the development of the following documents:

1) Rio Declaration on Environment and Development
2) Agenda 21
3) Forest Principles

A. The first document called the Rio Declaration, in short, contained 27 principles that were supposed to guide countries in future sustainable development.
B. Agenda 21 is an action plan concerning sustainable development, but it is non-binding.
C. The Forest Principles is formally called 'Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests'. It makes many recommendations for conservation and sustainable development forestry and is non-binding.

11. UNCCD

A. It is a United Nations Convention to Combat Desertification.
B. It was adopted in 1994.

It came into force in 1996. United Nations Convention To Combat Desertification (UNCCD):

1) PM Modi delivered the keynote address at the UN 'high-level dialogue on desertification, land degradation and drought'.
2) He spoke at the Opening Segment in his capacity as the President of the 14th Session of the Conference of Parties (COP) of the United Nations Convention to Combat Desertification (UNCCD).

KEY HIGHLIGHTS OF HIS ADDRESS:

1) In last 10 years, around 3 million hectares of forest cover added in India, enhancing the combined forest cover to almost one-fourth of the country's total area.
2) India is on track to achieve its national commitment of Land degradation neutrality.
3) India is also working towards restoring 26 million hectares of degraded land by 2030. This will achieve an additional carbon sink of 2.5 to 3 billion tons of carbon dioxide equivalent.
4) He gave an example of the Banni region in Rann of Kutch in Gujarat to illustrate how restoration of land can start a virtuous cycle of good soil health, increased land productivity, food security and improved livelihoods.

UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION (UNCCD):

1) It is the first and only internationally legally binding framework set up to address the problem of desertification.
2) Its secretariat has been located in Bonn, Germany.

12. BASEL CONVENTION

1) It is a convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
2) It was adopted in 1989.
3) It came into force in 1992.

13. CARTAGENA PROTOCOL

1) It is an international environmental protocol on Biosafety to the Convention on Biological Diversity.
2) It was adopted in 2000.
3) It came into force in 2003.

14. UN-REDD

1) It is a United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation.
2) It was created in 2008.

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15. NAGOYA PROTOCOL

1) It is an international environment 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 (CBD).
2) It was adopted in 2010.
3) It came into force in 2014.

16. COP24

1) It is the 24th meeting of the conference of parties (COP) to the United Nations Framework Convention on Climate Change.
2) It took place in 2018.

17. COP21

1) It is the 21st meeting of the conference of parties (COP) to the United Nations Framework Convention on Climate Change.
2) It took place in 2018.

18. Kigali Agreement

1) It is an amendment to the Montreal Protocol.
2) It was adopted in 2016.
3) It came into force in 2019.

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19. Minamata Convention

1) It is an international environmental treaty intended to protect health and the environment from the adverse effects of mercury.
2) It was adopted in 2013.
3) It came into force in 2017.

20. Rotterdam Convention

1) It is an international environmental convention on Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.
2) It was adopted in 1998.
3) It came into force in 2004.

21. COP25

1) It is the 25th meeting of the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC).
2) It took place in 2019.

WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2022

- ❖ Recently, the Prime Minister addressed the **The Energy and Resources Institute's** (TERI) **World Sustainable Development Summit.**
- ❖ World Sustainable Development Summit

1) The World Sustainable Development Summit (WSDS) is the annual flagship event of TERI. It was earlier known as Delhi Sustainable Development Summit. Instituted in 200.
2) It is the only Summit on global issues, taking place in the developing world.

OBJECTIVE:

1) It has been conceptualized as a single platform to accelerate action towards sustainable development and climate change.
2) It aims to bring together global leaders and thinkers in the fields of sustainable development, energy and environment sectors on a common platform.

TERI

1) TERI is a non-profit research institute.
2) It conducts research work in the fields of energy, environment and sustainable development for India and the Global South.
3) It was established in 1974 as Tata Energy Research Institute and renamed to The Energy Resources Institute in 2003.

India's Stand at the Summit

Equitable Energy Access:

1) India has fulfilled its commitments by ensuring that equitable energy access to the poor remains a cornerstone of its environmental policy.
2) These included initiatives such as 90 million households getting access to clean cooking fuel under the Ujjwala Yojana scheme.
3) And farmers being encouraged to set up solar panels under the PM-KUSUM scheme where farmers could use and sell surplus power to the grid, which would promote sustainability and equity.

REDUCING EMISSIONS:

- ➢ Discussed the **LED bulbs distribution scheme (UJALA)** that has been running for over seven years that had reportedly **saved close to 220 billion units of electricity** and **prevented 180 billion tonnes of carbon dioxide emissions** per year.
- ➢ The **National Hydrogen Mission** aims to tap into **'green hydrogen'** and it was up to the academic and research institutes such as TERI to come up with scalable solutions.

RAMSAR SITES:

1) Mentioned international recognition for India's efforts by the **International Union for Conservation of Nature (IUCN)** and India now having 49 **Ramsar sites** (wetlands) spread over more than 1 million hectares.
2) India is a **megadiverse country**. With **2.4% of the world's land area**, India accounts for nearly **8% of the world's species.**

<u>Restoration of Degraded Land:</u>

1) Restoring degraded land has been one of the main focus areas since 2015 and more than 11.5 million hectares have been restored.
2) India is on track to achieve the national commitment of Land Degradation Neutrality under the Bonn Challenge.
3) India firmly believes in fulfilling all its commitments made under the UNFCCC. India also raised itsambitions during CoP-26 at Glasgow.
4) For example, India announced that it will reach carbon neutrality by 2070 by 2030.

Coordinated Actions:

1) Sustainability requires **coordinated action for the global commons.** India's efforts have recognised this inter-dependence.
2) Through the **International Solar Alliance,** India's aim is **''One Sun, One World, One Grid''.**
3) The **world must work towards ensuring availability of clean energy** from a world-wide grid everywhere at all times. This is the **''whole of the world'' approach** that India's values stand for.
4) It also urged countries to act on the basis of globally agreed rules taking into accountthe principles of equity and **Common but Differentiated Responsibilities and Respective Capabilities** (acting on climate change based on national circumstances).
5) The **Paris Agreement** goals cannot be reached unless equity is implemented by all countries staying within their fair share of the global carbon budget.

INFRASTRUCTURE FOR RESILIENT ISLAND STATES:

1) The **Coalition for Disaster Resilient Infrastructure (C.D.R.I.)**, aims to build strong infrastructure in areas prone to frequent natural disasters.
2) On the side-lines of CoP-26, India also launched an initiative called **"Infrastructure for Resilient Island States".**
3) The Island Developing States are the most vulnerable and hence need urgent protection.

Launched LIFE - LIfestyle For Environment Initiative:

- LIFE is about making lifestyle choices to improve our planet. LIFE **will be a coalition of like-minded people across the world** who will promote sustainable lifestyles.
- They will be called 3Ps - **Pro Planet People.** This global movement is the Coalition forLIFE.

SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE

Sustainable Development:

1) Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
2) This most widely accepted definition of Sustainable Development was given by the Brundtland Commission in its report 'Our Common Future' (1987).
3) Sustainable Development Goals (SDGs) are a global effort that has one major objective — achieving a better future for all.

Climate Change:

1) It is a **long-term change in the average weather patterns** that have come to defineEarth's local, regional and global climates.
2) Climate data records provide evidence of climate change key indicators, such as global land and ocean temperature increases, **rising sea levels,** ice loss at Earth's poles and in mountain glaciers, frequency and severity changes in extreme weather such

as **hurricanes**, **heatwaves**, **wildfires**, **droughts**, **floods** and precipitation, and cloud and vegetation cover changes, to name but a few.

GAPS IN ENFORCEMENT OF GREEN LEGISLATIONS

A. Between 2014 and 2019, the Ministry of Environment, Forest and Climate Change (MoEFCC) has granted over 11,500 environment and forest clearances.
B. However, the Government's development roadmap is criticised for ignoring the climate change conservation commitments on account of weak political will and the absence of an effective compliance mechanism.
C. Legal Framework of Environment Protection in India

CONSTITUTIONAL PROVISIONS:

- Article 48A of the Constitution specifies that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.
- Article 51A further provides that every citizen shall protect the environment.

STATUTORY PROVISIONS:

A. Wildlife Protection Act, 1972
B. Forest (Conservation) Act, 1980
C. Environment (Protection) Act, 1986
D. National Green Tribunal (NGT) Act, 2010
E. Coastal Regulation Zone Notification, 2011
F. Environment Impact Assessment(EIA), 2006

ENFORCEMENT OF ENVIRONMENTAL LAWS IN INDIA

A. Shortage of Personnels: The Union Environment Ministry has less than 80 officials for field verification under green laws, who are expected to visit thousands of project sites at least once a year.
B. Lack of Political Will: In 2006, a report by the Organisation for Economic Co-operation and Development (OECD) blamed the "absence of strong political will" for significant funding limitations faced by all environmental institutions in India.
C. This condition has remained the same more or less.
D. Dilution of Green Clearances: Instead of strengthening the monitoring mechanism and applying effective punitive tools, successive governments have relied on amnesty (post-facto clearance), incentives (subsidies) or self-certification that helped cut non-compliance.
E. No Public Participation: The Green legislations in India are silent about the public participation as regards environmental protection.
F. There is a need to involve the citizens in environmental protection to check arbitrariness and raise awareness and empathy towards the environment.

examples of Violations of Green Legislations in India

Ken-Betwa Link Project (KBLP):

A. Ever since it was proposed in the mid-90s, KBLP has been considered unviable by several experts for its immense environmental cost.
B. The project was rejected in 2011, only to be revived with a techno-economic clearance in 2016.
C. In 2017, its forest clearance was made conditional on compensating for the diversion of 60.17 sq km of forest land by adding an equal extent of revenue land to the Panna tiger reserve.

Arunachal Pradesh:

A. For 17 years, both the Environment ministry and the state have been ignoring the most crucial condition imposed by the Supreme Court in 2004 for clearing the 2,000-MW Subansiri project
B. The Ministry issued the final forest clearance to the twice-rejected 3,000-MW Dibang multipurpose project despite being made aware that Arunachal had not complied with the key precondition of declaring the catchment forests as a national park.

ALL THE BEST

SHIKSHA TEAM –THE MENTORS FAMILY

jñānaṃ paramaṃ dhyeyam