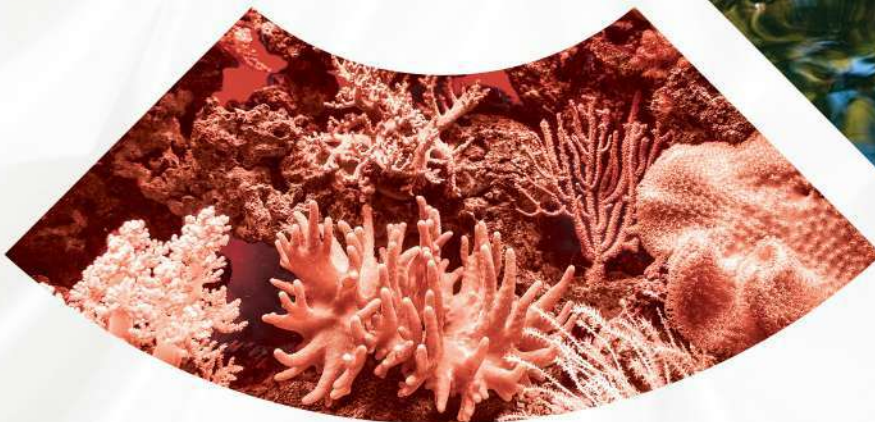


FORTUNE
Prelims Precise
Compilation
Volume II



**ENVIRONMENT &
ECOLOGY**



FORTUNE IAS

Toppers in Top 100



Preface

Fortune IAS Academy presents '**Prelims Precise**', a monthly current affairs magazine through which we make prelims current affairs revision precise and effective.

This magazine is a comprehensive resource that condenses the significant news of each month into distinct sections such as polity and governance, economic development, science & technology, among others.

Each content is organised with the why in news context followed by its explanation.

Fortune Prelims Precise is available to all Prelims cum Mains batch students (2024) as part of the course study material. **It can be purchased from Fortune IAS Academy for Rs. 75 per issue.**



Test your preparation with
January 2026
Monthly Current Affairs
quiz here

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Day Zero

- UN has warned that many **cities** are moving towards acute **water collapse** which is referred to as “Day Zero”
- “Day Zero” refers to the point when a **city’s usable water supply drops below a critical level**, forcing rationed emergency distribution instead of regular tap water.
- The term gained global attention during **Cape Town’s 2018 water crisis** and is now used by UN agencies to describe systemic urban water collapse.
- Water stress and scarcity are measured using the **Falkenmark Indicator** (per capita water availability) and the **Withdrawal-to-Availability (WTA) ratio**; stress occurs below 1,700 m³/person/year or 20–40% WTA, scarcity below 1,000 m³ or over 40% WTA, and absolute scarcity below 500 m³/person/year.
- Also, the **Water Poverty Index (WPI)**, developed by Caroline Sullivan, is a **holistic measure of water scarcity** combining five components—**Resources, Access, Capacity, Use, and Environment**—to capture both **natural and human factors**, highlighting how governance, infrastructure, and socio-economic conditions affect water security.

Environmental Protection Fund

- The Union Government has notified rules to operationalise the **Environmental (Protection) Fund**, a statutory fund under the **Environment (Protection) Act, 1986**, strengthened by the **Jan Vishwas Act, 2023**.
- The Fund utilises **monetary penalties from environmental law violations**—retained after decriminalisation—for 11 categories of activities including **pollution control, environmental restoration, monitoring, research, clean technology, IT systems, and capacity building**.
- For transparency, it will be **audited by the CAG**, while the **Central Pollution Control Board (CPCB)** will manage a **centralised online portal**.

GEI Target (Amendment) Rules, 2025

- The Union Government has notified the **second round of mandatory emission-intensity reduction targets** for carbon-intensive industries under the **Greenhouse Gases Emission Intensity (GEI) Target (Amendment) Rules, 2025**.
- These rules are framed under the **Environment (Protection) Act, 1986**.
- They operationalise India’s **Carbon Credit Trading Scheme (CCTS)** by setting **sector-specific GHG intensity targets** (measured in tCO₂e per unit of output), with **2023–24 as the baseline** and **3–7% reduction targets for 2026–27**.
- Compliance is overseen by the **Bureau of Energy Efficiency (BEE)**, while the **CPCB** can impose penalties, including compensation equal to **twice the average carbon credit price**.
- With the inclusion of **petroleum refineries, petrochemicals, textiles and secondary aluminium**, alongside earlier sectors like cement and aluminium, a large share of India’s **hard-to-abate industrial emissions** is now covered.
- Industries that overachieve targets earn **tradable carbon credit certificates**, creating a market-based incentive to cut emissions.

BBNJ (High Seas) Treaty

- The UN Biodiversity Beyond National Jurisdiction (BBNJ) Treaty has entered into force after crossing the required 60 ratifications, creating the **first legally binding global framework to protect biodiversity in international waters**.
- Also known as the **High Seas Treaty**, it operates **under the United Nations Convention on the Law of the Sea (UNCLOS) to conserve and sustainably use marine biodiversity** in areas beyond national jurisdiction (the High Seas).
 - ➔ High seas are the parts of the **ocean that lie beyond the jurisdiction** of any country, beginning outside a country’s **Exclusive Economic Zone (EEZ)**, i.e., beyond 200 nautical miles from the coast.

- It aims to achieve the “30 by 30” goal which protects 30% of the global ocean area by 2030 and enables large-scale conservation across two-thirds of the ocean, which lies beyond national control.
- It is built on **four pillars**: fair sharing of benefits from marine genetic resources, creation of **marine protected areas**, mandatory **environmental impact assessments** for activities on the high seas, and **capacity building** with technology transfer to support developing countries.
- It **supports SDG 14 (Life Below Water)** and contributes to addressing the triple planetary crisis of climate change, biodiversity loss, and pollution.
- **India has signed but not yet ratified** the BBNJ (High Seas) Treaty, as it is currently aligning its domestic, environmental, and maritime laws—specifically the Biological Diversity Act—with the treaty’s provisions..

Global Environment Facility

- The Global Environment Facility has approved funds for four new UN Environment Programme–led projects at its 70th Council meeting.
- The **Global Environment Facility (GEF)** is an international **financial mechanism** that provides **grants and funding** to developing countries to support projects that protect the global environment and promote sustainable development.
- **Established in the eve of 1992 Rio Earth Summit**, it is **composed of all 186 member countries (including India)** and the **World Bank serves as the GEF Trustee**, administering the GEF Trust Fund (contributions by donors).
- It has a **unique governing structure** organized around an Assembly, the Council, the Secretariat, 18 agencies, a Scientific and Technical Advisory Panel, and the Evaluation Office.
- The GEF provides **financial support** for implementing **conventions** including the Convention on Biological Diversity (**CBD**), **UNFCCC**, **UNCCD**, **Stockholm Convention**, **Minamata** Convention, Biodiversity Beyond National Jurisdiction (**BBNJ**) Agreement, and also aids the **Montreal Protocol**.

M-STRIPES

- India’s Tiger census and other animal surveys will be using the advanced **Monitoring System for Tigers: Intensive Protection and Ecological Status (M-Stripes/MSTripES)** app.
- The MSTripES program was launched by the **National Tiger Conservation Authority (NTCA)** along with the Wildlife Institute of India in 2010.
- It uses **Global Positioning System (GPS)**, **General Packet Radio Services (GPRS)**, and **remote sensing**, to collect information from the field.
- Forest staff use the **M-STRIPES mobile app** to record patrol routes, sightings, and ecological data, which helps improve **anti-poaching enforcement, habitat management, and decision-making in protected areas**.
- The system has **three modules**: **Patrol module**—records patrols, crime scenes, and observations with offline GPS and SOS alerts; **Ecological module**—monitors tigers, prey, human impact, and habitat nationwide; **Conflict module**—tracks human-wildlife conflicts with geotagged data to aid mitigation.

UV Index

UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX	UV INDEX
1	2	3	4	5	6	7	8	9	10	11+
Low (1,2)		Moderate (3,4,5)			High (6,7)		Very high (8,9,10)		Extreme (11+)	
Green PMS 375		Yellow PMS 102			Orange PMS 151		Red PMS 032		Purple PMS 265	

Table 4: Presenting the UV: International colour codes

- A **UV Index of 11 (Extreme)** was recorded in **Munnar**, prompting an orange alert by the **Kerala State Disaster Management Authority**.
- The **Ultraviolet Index (UV Index)**—developed by the **World Health Organization, World Meteorological Organization, and United Nations Environment Programme**—measures the intensity of harmful UV radiation reaching Earth's surface.
- There are **three types of UV radiation**: **UVA** (causes skin ageing), **UVB** (causes sunburn and skin cancer), and **UVC** (mostly absorbed by the ozone layer).
- UV levels are classified from **Low (1–2)** to **Extreme (11+)**, and high exposure can cause **sunburn, skin cancer, premature ageing, and eye damage such as cataracts**.
- India's tropical location and high-altitude regions contribute to **higher UV radiation levels**.

Carbon Capture Technologies



- The **Union Budget 2026** allocated **₹20,000 crore** to scale up **Carbon Capture, Utilization and Storage (CCUS)** technologies over the next five years.

- **Carbon Capture and Utilisation (CCU)** captures **CO₂ emissions** from industries or the atmosphere and converts them into useful products instead of only storing them underground.
- The process involves **capture, compression and transport, and utilisation**, where CO₂ is transformed through chemical or biological processes into products like **sustainable aviation fuels, construction materials, and fertilizers**.
- CCU can be **retrofitted to existing plants** and supports the **circular economy** by turning waste emissions into valuable industrial inputs.

International Climate Initiative (IKI)

- **Germany and India** have launched a **€20 million Large Grant project** under the **International Climate Initiative (IKI)** to strengthen India's climate resilience.
- Established in **2008**, IKI is a **German government funding mechanism** that supports climate and biodiversity projects in over **150 developing and emerging countries**, including priority partners like India, Brazil, China, and South Africa.
- It helps countries implement their Paris Agreement commitments through **Nationally Determined Contributions (NDCs)** and supports goals under the **Convention on Biological Diversity**.
- The initiative focuses on **four areas**: climate mitigation, climate adaptation, conservation of carbon sinks (including REDD+), and biodiversity protection.

Note: The abbreviation **IKI** comes from the **German name** of the programme, **Internationale Klimaschutzinitiative (IKI)**.



PRIORITY COUNTRIES OF IKI

Dolphin Census in Odisha

- Odisha has recorded its highest marine dolphin population in five years, with 765 individuals counted in the 2026 state-wide census.
- It is conducted by the **Wildlife Wing of the Forest, Environment and Climate Change Department, Government of Odisha**, involving forest officials, marine experts, and field personnel **using boat- and shore-based transect surveys**.
- **Outcomes of 2026 Census:**
- **Total Population:** 765 dolphins (**highest in 5 years**).
- **Species-wise Distribution:** Humpback dolphins – 497, Irrawaddy dolphins – 208, Bottlenose dolphins – 55, Spinner dolphins – 3, Finless porpoise – 2.
- **Key Conservation Zones:** **Chilika Lake** – 159 Irrawaddy dolphins (largest single-area concentration globally) and **Gahirmatha Marine Sanctuary** – 474 Humpback dolphins.
- In India dolphins have been included in **Schedule I of the Wildlife (Protection) Act, 1972** and categorised as **‘Endangered’ on the International Union for the Conservation of Nature’s (IUCN) Red List**.

Addition to India’s Ramsar List

- The Union Environment Minister announced the addition of two new wetlands—**Patna Bird Sanctuary (Uttar Pradesh)** and **Chhari Dhand Wetland Reserve (Gujarat)** to India’s Ramsar List ahead of World Wetlands Day 2026.
- Patna Vihar Bird Sanctuary is a **protected bird sanctuary and wetland ecosystem**, known as the **smallest bird sanctuary in Uttar Pradesh** with over 106 migratory and resident bird species
- Chhari Dhand Wetland Reserve is a **seasonal desert wetland conservation reserve**, ecologically unique due to its **saline and freshwater interactions** which is **situated between Banni grasslands and the Rann of Kutch**.

- Ramsar Convention is an **international treaty signed at Ramsar, Iran (1971)** for **conservation and wise use of wetlands** where **India became a Contracting Party in 1982** and the **ramsar sites act as model ecosystems** for biodiversity conservation, climate resilience, and sustainable livelihoods.
- **State governments in India identify and submit proposals** for potential wetlands to the Ministry of Environment, Forest and Climate Change (MoEFCC), which then nominates them to the Ramsar Secretariat for designation.

Turtle Trails

- The **Union Budget 2026–27** proposed developing **‘turtle trails’** along key nesting sites of the **Olive Ridley Sea Turtle** to promote eco-tourism and conservation.
- These are **regulated eco-tourism pathways and guided experiences** near turtle nesting beaches, with low-impact infrastructure and community participation.
- Key locations include **Rushikulya** and **Gahirmatha Beach** in **Odisha**, along with nesting beaches in **Karnataka** and **Kerala**.
- The Olive Ridley is the **smallest sea turtle species** and is known for **Arribada**, a mass nesting phenomenon where thousands of turtles come ashore simultaneously to lay eggs.
- It is listed as **Vulnerable** by the **International Union for Conservation of Nature**, included in **Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora**, and protected under **Schedule I of the Wildlife (Protection) Act, 1972**.

Nationally Determined Contribution (2031–2035)

- The Union Cabinet approved **India's updated NDC for 2031–2035** to submit to the UNFCCC.
- NDCs are **five-year climate action plans** under the **Paris Agreement (Article 4)**, outlining emission reduction and adaptation targets.
- India met its 2015 targets nearly a decade early.

NDC 3.0 Targets for 2035:

- **Emissions Intensity:** Cut GDP emissions intensity by 47% from 2005 levels.
- **Non-Fossil Power:** 60% of installed power capacity from non-fossil sources.
- **Carbon Sink:** Add 3.5–4 billion tonnes CO₂ equivalent via forests and trees.

The Paris Agreement, adopted in 2015, seeks to limit global warming well below 2°C, preferably 1.5°C.

• Small steps

India's third set of nationally-determined contributions (NDCs) makes small upgrades to the last one

	NDC-1	NDC-2	NDC-3	PROGRESS
Year of announcement	2015	2022	2026	
Target year	2030	2030	2035	
Goal 1: Reducing emissions intensity (emissions per unit GDP)	33-35% from 2005 levels	45% from 2005 levels	47% from 2005 levels	36% reduction achieved by 2020
Goal 2: Share of non-fossil electricity sources	40%	50%	60%	52% in February 2026
Goal 3: Creating additional carbon sinks (forests, trees)	2.5 to 3 bn tonnes over 2005 stock	2.5 to 3 bn tonnes over 2005 stock	3.5 to 4 bn tonnes over 2005 stock	2.3 bn tonnes created by 2021

Nagoya Protocol

- India has submitted its First National Report (NR1) on the implementation of the Nagoya Protocol to the Convention on Biological Diversity Secretariat.
- The Nagoya Protocol on **Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS)** to the Convention on Biological Diversity is a **supplementary agreement to the Convention on Biological Diversity**.
- It was **adopted on 29 October 2010 in Nagoya, Japan** and entered into force on 12 October 2014, 90 days after the deposit of the fiftieth instrument of ratification and **India ratified it in 2012**.

- It provides a **transparent legal framework for the effective implementation of the fair and equitable sharing of benefits** arising out of the utilization of genetic resources.
- It **applies to genetic resources and traditional knowledge (TK)** associated with genetic resources and to the benefits arising from their utilization that are covered by the CBD.
- Note: The **Convention on Biological Diversity (CBD)** is the **international legal instrument** for “the **conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits** arising out of the utilization of genetic resources” that has been **ratified by 196 nations at the 1992 Rio Earth Summit**.

Anavaran Portal

- The **Forest Survey of India (FSI)**, under the Ministry of Environment, Forest and Climate Change, has stopped its **Anavaran-Deforestation Alert System**, operational in pilot phase since January 2024.
- Using **satellite data and machine learning**, it issued **forest loss alerts** to states every 15 days for targeted inspections.
- Based on **Google Earth Engine with Sentinel-2 images** and integrated **Sentinel-1 Synthetic Aperture Radar (SAR)** for all-weather monitoring, it was similar to global systems like **Terra-1 in Latin America**.
- FSI, established in **1981** and headquartered in **Dehradun**, also publishes the biennial India State of Forest Report (ISFR).
- **Sentinel-1 and Sentinel-2** are core, freely available **polar-orbiting satellite** missions developed by the **European Space Agency (ESA)** for the **Copernicus programme**.
- **Sentinel-1 uses radar (SAR)** for 24/7 all-weather imaging of land/ocean, while **Sentinel-2 provides high-resolution optical imagery** for land monitoring.

Poppy cultivation

- The issue of **illegal poppy cultivation** was raised in the Chhattisgarh Assembly.

- India is one of the few countries that legally grows **opium poppy (Papaver somniferous)**, the source of opium gum containing alkaloids like **morphine**—a critical pain reliever for terminal patients—and **codeine**, used in cough syrups.
- Under the **Narcotic Drugs & Psychotropic Substances Act, 1985**, the Central Government regulates opium cultivation for medical and scientific purposes.
- It notifies licensed tracts for growing and **General Conditions**—including a Minimum Qualifying Yield (MQY)—every year, mainly in **Madhya Pradesh, Rajasthan, and Uttar Pradesh**.
- The Gwalior based **Central Bureau of Narcotics (CBN)**, under the Department of Revenue, **Ministry of Finance, issues licenses, measures fields to prevent over-cultivation, and ensures farmers tender all opium to the CBN at government-fixed rates** through designated weighing centres.
- Poppy plant seeds called **khus khus** are used to produce **poppyseed oil** for cooking and industrial uses, **poppy straw** from dried stalks for alkaloid extraction, and dried **Pods/flowers for decoration**.

Cassava Brown Streak Disease

- A recent study warns that over a third of Africa is at risk of **Cassava Brown Streak Disease (CBSD)**, caused by **Cassava Brown Streak Virus (CBSV)** and **Ugandan Cassava Brown Streak Virus (UCBSV)**.
- First seen in **mid-20th century East Africa**, it has spread from **coastal Tanzania, Kenya, and Mozambique inland to Uganda, Malawi, Rwanda, Burundi, and the DRC, reaching higher altitudes**.
- Transmitted mainly by the whitefly **Bemisia tabaci**, CBSD causes leaf, stem, and root necrosis, often destroying crops.
- **Control** involves clean cuttings or resistant varieties.
- **Cassava (Manihot esculenta Crantz)** is a staple for ~800 million people.
- There's a **risk of spreading** to Asia and Latin America via infected planting material.

Jumpstart approach in conservation



- A Great Indian Bustard (GIB) chick hatched in Gujarat using the **“Jumpstart Approach”**, an **ex-situ to in-situ conservation method**.
- Since Gujarat had only **a few females and no males**, natural breeding was not possible.
- The method involves **replacing infertile eggs in the wild with fertile eggs** produced in captivity.
- A **fertilized egg from Rajasthan was transported** and placed in a wild female's nest in Kutch, which incubated and hatched it.
- The critically endangered **Great Indian Bustard (Ardeotis nigriceps)**, also called **Godawan**, is one of the heaviest flying birds and a **flagship species** of India's grasslands.
- Once widespread in arid and semi-arid regions, it is now restricted to **Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, and Karnataka**.
- It belongs to the **Otididae** family, shows **sexual dimorphism**, and males have a **gular pouch** for booming mating calls (audible up to 500 m).
- It breeds in the **monsoon**, laying **one egg**, with slow reproduction (one egg every 1–2 years).

National Biodiversity Authority (NBA)

- The National Biodiversity Authority (NBA) has **approved new guidelines** to streamline the use of **Access and Benefit Sharing (ABS) funds** and regulate designated repositories under the **Biological Diversity Act, 2002**.
- NBA is a **statutory body** under the **Ministry of Environment, Forest and Climate Change** that regulates biodiversity conservation, sustainable use, and fair sharing of benefits from biological resources.

- **Access and Benefit Sharing (ABS)** is a system under the **Biological Diversity Act, 2002** that ensures that when companies, researchers, or industries use India's biological resources for **commercial products (like medicines, cosmetics, or agricultural products)**, they must share part of the monetary or non-monetary benefits with the country and local communities who have conserved or traditionally used those resources.

- These benefits are **collected and regulated through the National Biodiversity Authority and State Biodiversity Boards**, and are used for biodiversity conservation and community welfare.

- The revised framework **standardizes ABS fund distribution**—allocating 25–40% to institutions and 60–75% to local communities when the source is known, and a 30:70 split when it is not, while also **enabling collective use of funds** for widely distributed biological resources.

CAQM (Commission for Air Quality Management)

- The **Commission for Air Quality Management (CAQM)** has fined six thermal power plants in Punjab, Haryana, and Uttar Pradesh ₹61.85 crore for not complying with biomass co-firing norms.
- CAQM is a **statutory body** established under the **CAQM Act, 2021** to address air pollution in the **National Capital Region (NCR)** and **adjoining states**, replacing the earlier Supreme Court-mandated **Environment Pollution**

(**Prevention and Control**) **Authority (EPCA)**, established in 1998 to tackle air pollution in the National Capital Region (NCR).

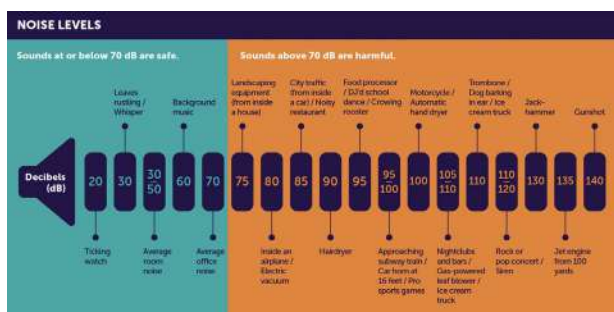
- CAQM includes representatives from MoEFCC, NCR states, CPCB, ISRO, and NITI Aayog, and is responsible for coordinating and enforcing air quality management.
- It can impose environmental compensation for violations and is the nodal authority for implementing the **Graded Response Action Plan (GRAP)** to control pollution based on AQI levels in Delhi-NCR.

State of India's Bats (Solbats) 2024–25

- The **State of India's Bats (SolBats) 2024–25**, the first national-level assessment of bat species in India, to map bat diversity, distribution, and conservation status was released.
- It was produced by **Nature Conservation Foundation (NCF)**, a premier Indian wildlife research organization, and **Bat Conservation International (BCI)**, a Texas, USA based global non-profit dedicated to bat protection along with
- It highlights that India has **135 bat species**, including 16 endemic and 7 threatened species, but suffers from major research gaps with many species still data-deficient.
- **West Bengal and Meghalaya show the highest diversity**, and bats are increasingly using man-made structures as roosts.
- The report also underlines their **key ecological role** in pollination, seed dispersal, and pest control, while **identifying critically endangered** species like the Kolar Leaf-nosed Bat and endangered species such as the Nicobar Flying Fox and Salim Ali's Fruit Bat.

Note: Bats belong to the order **Chiroptera** and are the only mammals capable of sustained flight, occupying a unique evolutionary niche with a long history of virus co-evolution. They show **extreme size variation**, from the **2-gram Bumblebee Bat** to **large Flying Foxes** with up to 2-metre wingspans, and most microbats use **echolocation** (20–200 kHz ultrasonic calls) for navigation in darkness, though many also rely on vision. Their **wings are modified forelimbs** with membranes stretched between elongated fingers, and their upside-down roosting helps them take off easily due to weak hind limbs.

National Ambient Noise Monitoring Network (NANMN)



- Reports say that the Union Budget 2026–27 reduced the allocation for pollution control to ₹1,091 crore, affecting the expansion of the **National Ambient Noise Monitoring Network (NANMN)**.
- The NANMN, launched by the **Central Pollution Control Board (CPCB) in 2011**, monitors real-time ambient (outdoor) noise levels **across 70 stations in seven major cities** (Delhi, Mumbai, Chennai, Bengaluru, Kolkata, Hyderabad, and Lucknow), covering **commercial, industrial, residential, and silent zones**.
- It was developed following the **guidelines of the National Environmental Policy (NEP)-2006** and the **Noise Pollution (Regulation and Control) (Amendment) Rules, 2010**.

Biennial Transparency Report (BTR)

- India is in the final stages of preparing its first **Biannual Transparency Report (BTR)** under the **2015 Paris Agreement**.
- The BTR is a **mandatory report** through which countries disclose their greenhouse gas emissions, climate actions, and climate support received or provided under the **Enhanced Transparency Framework (ETF)**.
- The BTR replaces the earlier **Biannual Update Reports (BURs)** submitted by developing countries and introduces a more rigorous system with **Technical Expert Review** by UNFCCC-accredited experts to improve transparency and data accuracy.
- According to India's latest emissions inventory, the **energy sector** is the largest contributor to emissions (**75.66%**), followed by **agriculture (13.72%)**, **industrial processes (8.06%)**, and **waste (2.56%)**.