

IAS ORIGIN

YOUR PATHWAY TO UPSC SUCCESS

WEEKLY CURRENT AFFAIRS

13TH OCT TO 18TH OCTOBER

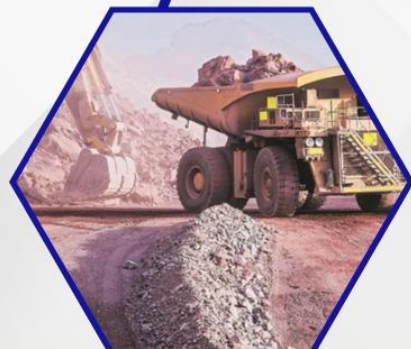


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01**MISSION DRISHTI**

Indian space-tech startup GalaxEye has announced the launch of 'Mission Drishti,' the world's first multi-sensor Earth Observation (EO) satellite, scheduled for the first quarter of 2026.

MISSION DRISHTI

Feature	Details
Startup	GalaxEye, a Bengaluru-based space-tech startup founded in 2021.
What is Mission Drishti	India's (and world's) first multi-sensor Earth Observation (EO) satellite that fuses Synthetic Aperture Radar (SAR) + high-resolution optical / multispectral sensors on the same platform.
Weight & Specs	~160 kg satellite. Spatial resolution: about 1.5 metres .
Launch Period	Scheduled for first quarter of 2026 .
Launch Vehicle / Slot	The launch slot has been secured; satellite likely to go up aboard a SpaceX rocket.
Constellation Plan	GalaxEye plans to deploy a constellation of 8-10 to 8-12 satellites by ~2029 to enable near-real-time Earth observation.
Technology	SyncFused Opto-SAR: fusion of SAR + optical imaging to allow all-weather, day-night , high-precision imaging.
Tests Done / Preparedness	Underwent structural testings at ISRO's U R Rao Satellite Centre (URSC) for environmental resilience (temperature, vibration, etc.).

APPLICATIONS & USES

- **Surveillance & Defense:** Border monitoring, maritime domain awareness because SAR can see through clouds/night.
- **Disaster Management:** During floods, storms, landslides etc., optical sensors often fail due to cloud cover; fused SAR helps.
- **Agriculture & Infrastructure:** Crop monitoring, damage assessment, utilities infrastructure, etc.
- **Insurance, Finance:** For risk assessment, crop insurance, etc., more frequent and reliable data helps.

SIGNIFICANCE

- **Indigenous capability:** It's privately built, pushing India's private sector in space tech.
- **First-of-its-kind fusion:** While there are satellites with SAR and others with optical, having both fused on one platform is a technical leap.
- **All-weather, all-time imaging:** Enhances reliability of earth observation data; useful especially for critical, time-sensitive applications.
- **Constellation & revisits:** Frequent revisit times will allow near real-time monitoring; this is crucial in disaster response, environmental monitoring.

CHALLENGES & CONSIDERATIONS

- **Data volume & processing:** SAR + optical produce large datasets; fusion in real time requires strong onboard processing, ground infrastructure.
- **Cost / Funding:** Building, launching, maintaining constellation is capital intensive; commercial viability depends on demand & partnerships.
- **Regulatory issues:** Permissions, space-orbit allocations, export controls (especially for high-resolution imagery).
- **Technical risks:** Environmental resilience in space, sensor calibration, aligning sensors, ensuring reliability during temperature, radiation, etc.
- **Competition:** Other countries / firms already doing dual-sensor constellations (or planning) might compete globally. GalaxEye will need to maintain innovation and cost-effectiveness.

02

INDIA-MONGOLIA STRATEGIC PARTNERSHIP

President of Mongolia undertook a State Visit to India, commemorating the 70th anniversary of diplomatic relations and the 10th anniversary of the Strategic Partnership between the two nations.



KEY OUTCOMES OF THE VISIT

JOINT DECLARATION & ELEVATION OF STRATEGIC PARTNERSHIP

- A “Joint Declaration on Strengthening the Strategic Partnership” was issued by India and Mongolia.
- Both sides agreed to launch a new phase in the partnership: aligning Mongolia’s “Vision 2050” with India’s “Viksit Bharat 2047” agenda, signalling long-term commitment.
- The visit reaffirmed that India is Mongolia’s “third neighbour” and regarded also as a spiritual & strategic partner.

ECONOMIC, ENERGY & CONNECTIVITY COOPERATION

- India announced a **US \$1.7 billion line of credit** to Mongolia for the building of a greenfield oil refinery (capacity ~1.5 million tonnes per annum) in Dornogovi, Mongolia. This is a flagship project symbolising bilateral cooperation.
- Mongolia's accession to the International Solar Alliance (ISA) was confirmed, reinforcing cooperation in clean energy.
- Use of third-country ports/transport corridors agreed to improve land-locked Mongolia's logistics and linkages, including charter flights between Ulaanbaatar–Delhi and Ulaanbaatar–Amritsar.
- Several MoUs/agreements (10+ bilateral documents) signed covering cooperatives, minerals, digital solutions, immigration, heritage restoration, etc. Defence, Security & Strategic Cooperation.
- India committed to capacity building for Mongolia's border security forces.
- The cooperation extends to defence training, defence attaché postings, etc. (as noted in analysis pieces).
- The partnership emphasised shared interests in regional stability (Indo-Pacific context) and in multilateral fora: the two nations will “amplify the voice of the Global South”.

CULTURE, EDUCATION & PEOPLE-TO-PEOPLE LINKS

- India will provide **70 additional scholarships** to Mongolian students for 2025–26 under the ITEC programme, in honor of the 70th anniversary.
- Cultural initiatives: release of commemorative stamps, tree-planting ceremony (linking Mongolia's “Billions of Trees” and India's “One Tree for Mother” campaign).
- Cooperation in Buddhist and heritage links: India sending Sanskrit teacher to Mongolia, digitizing manuscripts, restoration of monasteries.

MULTILATERAL & GLOBAL COOPERATION

- Mongolia reaffirmed support for India's aspirations (e.g., for a permanent seat in the UN Security Council) and deeper cooperation at the UN and other international fora.
- Shared commitment to global issues such as climate change, energy transition, clean technology.
- The tree-planting is symbolic of this environmental cooperation.

STRATEGIC SIGNALLING

- The visit sends a signal of India's "Act East & Act Central/West" orientation, reaching into Mongolia (a land-locked state between Russia & China) via the "third-neighbor" policy.
- For Mongolia, the deepening of ties with India diversifies its foreign policy away from dependency on its two immediate giant neighbors (China and Russia) — strengthening its "third neighbor" strategy.

MONGOLIA

- **Geography:** Mongolia is a landlocked country in Asia, located between **Russia to the north** and **China to the south**. The country is extremely dry, receiving only **4 inches of rainfall annually**.
 - Southern Mongolia is dominated by the **Gobi Desert** (cold desert).
 - The country is called the **Land of the Eternal Blue Sky** and the **Land of the Horse**.



- **People & Culture:** Many Mongolians live in traditional **yurts (gers)**, which are dome-shaped tents.
 - The **Naadam Festival**, celebrated in summer, features **sports, games, and food**, with children participating in events like **horse racing**.
 - Most of the population practices **traditional nomadic herding**, and Mongolia includes ethnic groups like **Mongols, Kazakhs, and Tuvans**.

- **Nature & Wildlife:** Mongolia is home to native species such as **Bactrian camels** with two humps and **resilient Mongolian horses**. Endangered species include **snow leopard** and **musk deer**.
 - The **first dinosaur egg ever discovered** was found in the **Gobi**, along with many **dinosaurs remains** and **fossils** from 100 million years ago, during the **late Cretaceous period**.
- **History:** The **Mongol Empire** rose to power under **Genghis Khan** and his sons in the 13th century, conquering much of Asia and Europe. **Marco Polo** and his family were the first Europeans to cross the Gobi around **AD 1275**.

INDIA–MONGOLIA BILATERAL RELATIONS

HISTORICAL EVOLUTION

- Diplomatic relations were established on **24 December 1955**.
mof.montsame.mn+1
- Mongolia opened its embassy in New Delhi in 1956; India established its embassy in Ulaanbaatar in 1971.
- **Key milestones:**
 - Joint Declaration (1973) mof.montsame.mn
 - Friendly Relations & Cooperation (1994) mof.montsame.mn
 - Comprehensive Partnership (2009) Montsame
 - Strategic Partnership (elevated in 2015 during PM Modi's visit to Mongolia)
- Over ~60 bilateral documents/agreements signed till date rolling through trade, economy, culture, defence, etc.

KEY PILLARS OF COOPERATION

POLITICAL & STRATEGIC

- India regards Mongolia as a “third-neighbour” (alongside USA/Japan in Mongolia's foreign policy parlance) — meaning Mongolia treats India as a strategic partner outside its immediate neighbours China & Russia. president.
- Shared democratic values, civilisational & Buddhist links. India emphasizes the spiritual dimension (Mongolia Buddhist heritage, Indian Buddhism roots).
- Defence cooperation via training, peacekeeping, joint exercises (e.g., “Nomadic Elephant”), capacity building.

ECONOMIC, TRADE & INVESTMENT

- Trade volume remains modest compared to India's major partners, but potential growth areas: minerals (copper, rare earths, coking coal), energy, agriculture, IT/digital.
- India's development assistance: concessional credit lines, infrastructure projects.
- Connectivity & logistics: Mongolia land-locked, dependent on neighbours; India supports using third-country ports/transport corridors.

ENERGY & NATURAL RESOURCES

- The oil refinery project is the flagship for energy cooperation. Mongolia depends heavily on imports (especially from Russia); the refinery can address energy security and reduce dependency. The Diplomat
- Clean energy cooperation: Mongolia joins ISA; discussions on renewables, solar, etc. The Diplomat
- Minerals: Mongolia is rich in copper, coal, rare earths — India interested in diversifying supply.

CULTURE, EDUCATION & PEOPLE-TO-PEOPLE

- Shared Buddhist heritage: many Mongolian monks study in India; India supports restoration of monasteries, manuscripts.
- Scholarships, training programmes, cultural exchange, heritage restoration, e-visa facilities (recently announced) to ease travel/tourism.

MULTILATERAL & REGIONAL COOPERATION

- Collaboration in UN, G20 (where applicable), Global South platforms, climate agendas.
- Mongolia's location between Russia & China gives it significance in regional geopolitics; India's engagement here adds strategic depth.

CURRENT STATUS & MAJOR PROJECTS

- Oil Refinery Project in Mongolia (Indian line of credit US\$1.7bn) is a major commitment.
- Recent agreements signed (October 2025): more than 10 MoUs covering cooperatives, digital, immigration, heritage.

- **Connectivity:** charter flights and use of third-country corridors; steps to mitigate Mongolia's land-locked disadvantage.
- **Education:** 70 new scholarships for Mongolian students.
- Defence/training for Mongolia's border security forces announced.

STRATEGIC IMPORTANCE & RELEVANCE FOR INDIA

- **Diversification of India's foreign policy:** engaging a country in Central Asia/Inner Asia which is beyond India's immediate neighborhood.
- Access to critical minerals and resources (Mongolia holds significant reserves of copper, coal, rare earths) — useful for India's industrial and strategic needs. Strategic symbolism: Mongolia outside China/Russia orbit maintaining friendly ties with India strengthens India's "third-neighbour" diplomacy.
- **Energy security:** Mongolia's refinery project reduces India's own dependency on choke-points and also gives India overseas engineering services/exports.
- Defence and security cooperation enhances India's footprint in the broader Indo-Pacific/Central Asia region.
- **Cultural/spiritual ties:** Reinforcing soft-power; Buddhism and civilizational links give India a unique connect with Mongolia.

CHALLENGES AND ISSUES AHEAD

- **Geography & connectivity:** Mongolia is land-locked between two large powers, limiting its outward connectivity; India too is far away — logistics and transport remain a challenge.
- **Trade imbalance & small volume:** Despite goodwill, trade volumes are modest. Need to convert strategic talk into substantial economic flows.
- **Mining/export logistics:** Even if Mongolia produces minerals, getting them to India (avoiding China routes) is difficult; dependency on Russian transport corridors.
- **Over-dependence on a single project:** Many of the promises (e.g., refinery) are still in future; must ensure timely execution.
- **Regional geopolitics:** Mongolia needs to balance its relations with China and Russia while deepening ties with India; any shift may impact the sensitive balance.
- Resource extraction & environmental/social issues in Mongolia have to be handled responsibly, considering local populations and international norms.

03

PRADHAN MANTRI FORMALISATION OF MICRO FOOD PROCESSING ENTERPRISES SCHEME

The **Union Finance Minister of India** announced the release of **₹3,791.1 crore** to States and Union Territories under the **Pradhan Mantri Formalization of Micro Food Processing Enterprises (PM-FME) Scheme**.

NEWS HIGHLIGHT (OCTOBER 2025)

- **Union Finance Minister** announced the release of **₹3,791.1 crore** to **States and Union Territories (UTs)** under the **Pradhan Mantri Formalization of Micro Food Processing Enterprises (PM-FME) Scheme**.
- The funds aim to **boost the formalization, capacity building, and competitiveness** of India's **micro food processing units**, especially in rural and semi-urban areas.
- This release is part of the **Centrally Sponsored Scheme (CSS)** implementation and marks a major push towards achieving '**Aatmanirbhar Bharat**' and the **Vision 2047 goal** of a globally competitive food processing sector.

BACKGROUND

- The **PM-FME Scheme** was **launched on 29th June 2020** by the **Ministry of Food Processing Industries (MoFPI)**.
- It was launched under the **Aatmanirbhar Bharat Abhiyan** to **support micro food processing enterprises (MFPEs)** in becoming **formal, competitive, and self-reliant**.
- The scheme follows the **One District One Product (ODOP)** approach to promote regional food specialties and create food clusters.



Progress under PMFME

Rs. 3,791.1 crore released by the Centre to the States/ UTs for implementation of various components across FY 2020-21 to FY 2025-26.

A total of **1,44,517** loans of amount **Rs. 11,501.79 crore** has been sanctioned to individual micro food processing units and groups (SHGs, FPOs, cooperatives) for credit linked subsidy across the country.

For FY 2024-25, **50875** loans sanctioned under the Credit Linked Subsidy.

Seed capital support approved for **1,03,201** SHG members, amounting to **Rs. 376.98 crore** during FY 2024-25.

Source: Ministry of Food Processing Industries

As of June 2025



NODAL MINISTRY

MINISTRY OF FOOD PROCESSING INDUSTRIES (MOFPI)

Implementation in coordination with State Nodal Agencies (SNAs) and District Resource Centres (DRCs).

FINANCIAL OUTLAY

Particulars	Details
Total Outlay	₹10,000 crore (2020–2025)
Centre-State Funding	60:40 (for most states)

North Eastern States, Himalayan States, UTs with Legislature	90:10
UTs without Legislature	100% Central Funding
New Release (2025)	₹3,791.1 crore released to States/UTs

SALIENT FEATURES OF THE SCHEME:

- **Common Infrastructure:** FPOs, Cooperatives, SHGs, and Government agencies setting up food processing units with shared facilities are eligible for a **35% credit-linked subsidy**, up to **₹3 crore**.
- **Credit-Linked Subsidy:** Individuals, FPOs, NGOs, Cooperatives, SHGs, and Pvt. Ltd. firms can avail a **35% subsidy**, up to **₹10 lakh per unit**, for upgrading or setting up new units.
- **One District One Product (ODOP):** Implements an **ODOP approach** to promote scale, value chain development, and marketing support- covering **713 districts in 35 States/UTs** with **137 unique products**.
- **Seed Capital for Self Help Groups:** Provides **₹40,000 per member**, up to **₹4 lakh per SHG**, as seed capital for working capital and small tools, disbursed through SHG federations.
- **Marketing & Branding:** Offers a **50% grant** for branding and marketing initiatives by FPOs, SHGs, Cooperatives, or SPVs to promote processed food products.
- **Capacity Building:** Provides training under the **Food Processing Entrepreneurship Development Programme** to enhance technical and business skills of beneficiaries.
- **Cost Sharing Pattern:** 60:40 between Centre and States, 90:10 for North Eastern and Himalayan States, 60:40 for UTs with legislature, and 100% Central funding for other UTs.

OBJECTIVES

- **Formalization** of the unorganized micro food processing sector.
- **Enhance competitiveness and efficiency** of small processors.
- **Provide access to credit**, technology, branding, and marketing.
- **Encourage cluster-based development** on ODOP lines.
- **Support women entrepreneurs**, SC/ST, OBC, minorities, and self-help groups (SHGs).

- **Generate employment** in rural and semi-urban areas.

TARGET BENEFICIARIES

Category	Coverage/Benefit
Individual Micro Units	Credit-linked capital subsidy up to 35% of project cost (max ₹10 lakh)
FPOs/SHGs/Cooperatives	Support for common infrastructure, branding, marketing
Support Institutions	Capacity building, incubation centres, R&D, testing labs
Women Entrepreneurs	60% beneficiaries targeted to be women

KEY COMPONENTS

- **Support to Individual Micro Units**
 - Credit-linked capital subsidy (35%) to upgrade technology and improve product standards.
- **Support for Group Enterprises**
 - FPOs, SHGs, or Cooperatives supported for shared infrastructure and common facilities.
- **Branding and Marketing Support**
 - Common branding under ODOP; support for packaging, marketing, and e-commerce integration.
- **Capacity Building & Skill Training**
 - In partnership with **NIFTEM (Kundli)** and **IIFPT (Thanjavur)**.
 - Focus on food safety, quality control, entrepreneurship, and digital literacy.
- **Seed Capital to SHGs**
 - ₹40,000 per SHG member for working capital and small tools.

ONE DISTRICT ONE PRODUCT (ODOP) APPROACH

Each district identifies **one unique product** with comparative advantage — examples include:

- **Mango (Malihabad, UP)**
- **Litchi (Muzaffarpur, Bihar)**
- **Tamarind (Chhattisgarh)**
- **Millets & Minor Cereals (Odisha, Karnataka)**

Aim: build **food clusters**, reduce wastage, and enhance local value addition.

ACHIEVEMENTS SO FAR (AS OF 2025)

Parameter	Status
Micro Enterprises Supported	~1.3 lakh units
SHG Members Provided Seed Capital	~3 lakh
ODOP Districts Identified	All 766 districts
Common Infrastructure Projects Approved	500+
Training & Capacity Building	1.8 lakh beneficiaries trained

SIGNIFICANCE OF THE ₹3,791.1 CRORE RELEASE

- **Boosts working capital & modernization** of micro units before the scheme's extended phase (2025–30).
- Strengthens **supply chains** for ODOP products.
- Improves **food safety standards, branding, and export potential**.
- Supports **women and rural entrepreneurs**, aiding **inclusive growth**.
- Aligns with **India's agri-export policy** and **Gati Shakti** vision for integrated logistics.

CHALLENGES IN IMPLEMENTATION

- **Low awareness** among rural entrepreneurs.
- **Delayed fund disbursement** by State Nodal Agencies.
- **Limited cold storage and logistics** infrastructure.

- **Difficulty in branding & marketing** for small producers.
- **Skill gaps** in quality control and digital literacy.
- **Overlap with other schemes** (PM Kisan SAMPADA, PMEGP, etc.) — needs convergence.

STEPS TAKEN TO ADDRESS CHALLENGES

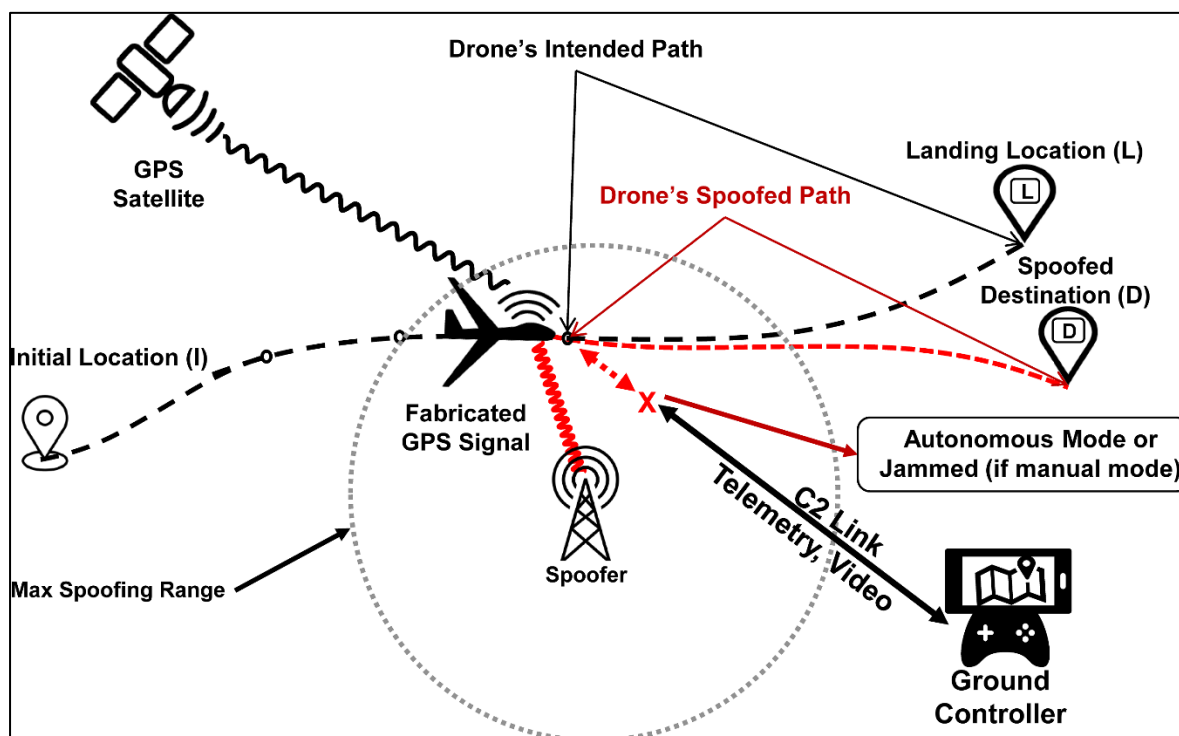
- Launch of **PM-FME Portal** for online application and tracking.
- Collaboration with **e-commerce platforms (Amazon, ONDC, Flipkart)** for market access.
- State-level **Food Tech Clusters** being developed.
- Integration with **PM Vishwakarma Yojana** for artisan-based food processors.
- Enhanced training through **digital modules** by NIFTEM & IIFPT.

OTHER GOVERNMENT INITIATIVES FOR FOOD PROCESSING SECTOR

- **Pradhan Mantri Kisan Sampada Yojana**
- **Production Linked Incentive (PLI) Scheme for the food processing industry.**
- **Priority Sector Lending (PSL):** Food and agro-processing units, along with cold chain infrastructure, are now recognized as priority sectors.
- **100% FDI under Automatic Route:** The food processing sector can receive full foreign direct investment through the automatic approval route.
- **Special Food Processing Fund:** Establishment of a ₹2,000 crore fund with the National Bank for Agriculture and Rural Development (NABARD).
- The **Mega Food Park Scheme** provides integrated infrastructure for food processing, offering up to Rs 50 crore per project.

04**GPS SIGNAL SPOOFING**

An Air India flight operating from Vienna to Delhi **was forced to divert** after a suspected **GPS signal spoofing** over the **Middle East** disrupted its navigation. The **spoofing of signals** caused severe degradation of the aircraft's **flight control systems**, including failures in **autopilot, auto thrust, flight director, and Autoland functions**.

**WHAT IS GPS/GNSS SPOOFING?**

GPS spoofing is the deliberate transmission of counterfeit GNSS signals (GPS, GLONASS, Galileo, BeiDou etc.) to cause a receiver to compute an incorrect position, velocity or time. Unlike **jamming** (which denies the signal by overpowering it), spoofing **deceives** the receiver with false but plausible signals.

HOW SPOOFING WORKS?

- **Basic idea:** an attacker broadcasts fake satellite signals that mimic true GNSS signals but carry corrupted timing/ephemeris so the receiver locks onto the false signals and reports wrong location/time.
- **Types of spoofing:**
 - Meaconing: rebroadcast of authentic signals with delay/shift.
 - Generation/spoofing: synthesized signals that imitate satellites (more advanced).

- Protocol-level attacks: target receiver software to accept false data.
- **Attack vectors/targets:** ships (AIS/GPS), civil aircraft avionics, drones/UAVs, financial networks (time-stamping), telecom base stations, autonomous vehicles, IoT sensors, critical infrastructure.

NOTABLE REAL-WORLD INCIDENTS & TREND

(RECENT, HIGH-VALUE FOR ANSWERS)

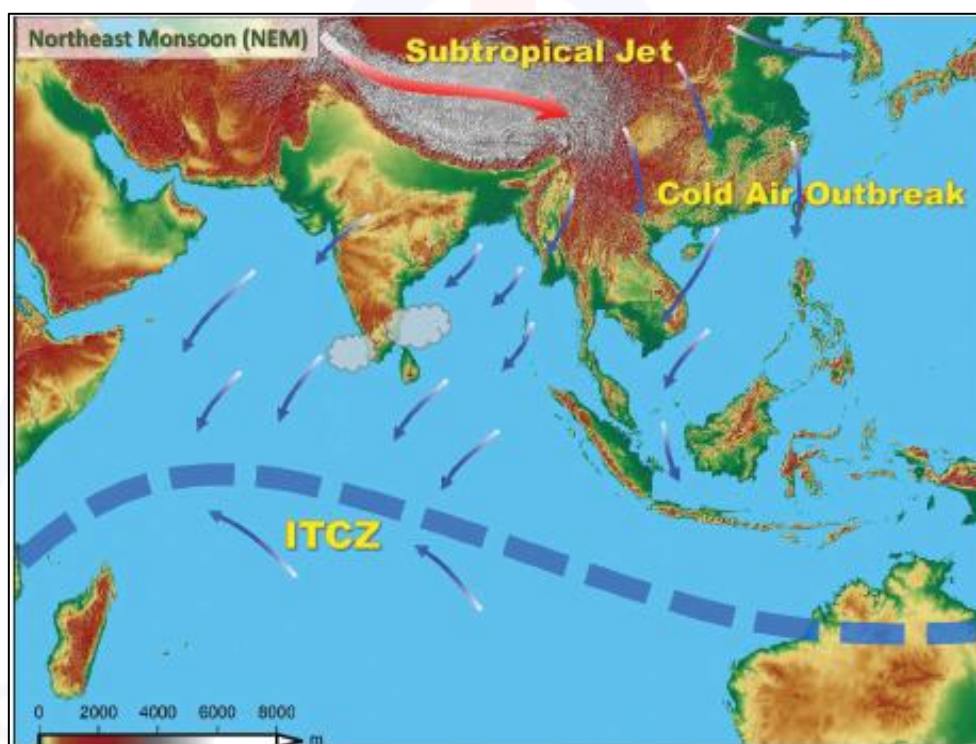
- **Widespread regional incidents:** conflict zones (Black Sea, Baltic, Middle East) have seen surges in GNSS interference thousands of events recorded 2023–2025 affecting shipping and aviation. Analysts have tied many Black Sea/Baltic events to deliberate interference.
- **Civil aviation & commercial shipping:** OPSGROUP and aviation bodies documented patterns (2023–2024) where aircraft showed wrong positions or IRS/FMS anomalies consistent with spoofing; shipping near the Black Sea and Baltic experienced vessel position anomalies and AIS redirections.
- **Recent high-profile diversions / alerts (2024–2025):** aviation regulators & IATA reported a sharp rise in GNSS interference and issued safety advisories; some passenger flights have declared emergencies or diverted after GPS anomalies.
- **Attribution patterns:** independent investigations (e.g., C4ADS, academic groups) linked several spoofing events to state-grade emitters (e.g., activity traced to Russian sites in Crimea/Black Sea in multiple reports).

05**NORTHEAST MONSOON**

The timely onset of the **northeast monsoon** in **October 2025** has brought much-needed relief to **Tamil Nadu and Andhra Pradesh**, regions that rely heavily on it for both agriculture and water security.

NORTHEAST MONSOON (NEM)

- The **Northeast Monsoon** (also called Retreating Monsoon or Post-Monsoon Season) is the **seasonal rainfall** experienced mainly over the **southeastern coast of India** — especially **Tamil Nadu, southern Andhra Pradesh, and parts of Kerala & Puducherry** — **between October and December**.
- It occurs when the **Southwest Monsoon withdraws**, and **winds reverse direction** — blowing from the **northeast to the southwest**.

**MECHANISM OF NORTHEAST MONSOON**

- **Withdrawal of Southwest Monsoon:**
 - By **mid-September**, the southwest monsoon starts retreating from northwest India due to the **southward movement of the Inter-Tropical Convergence Zone (ITCZ)**.
 - By **early October**, the monsoon withdraws from most parts of India.
- **Reversal of Pressure & Wind Patterns:**

- After withdrawal, **continental high pressure** builds up over **north and central India** (cold, dry air mass).
- The winds blow from the **northeast (land to sea)** — i.e., from the **Siberian and Tibetan High-pressure zones** toward the **low-pressure area over the Bay of Bengal**.
- **Moisture Pickup:**
 - When these **northeasterly dry continental winds** travel over the **warm Bay of Bengal**, they **pick up moisture**.
 - On reaching the **southeast coast of India**, they cause **orographic rainfall** (especially along the **Coromandel Coast**).
- **Associated Weather Systems:**
 - **Tropical cyclones and depressions** forming over the **Bay of Bengal** are common during this period.
 - These systems **enhance rainfall** over Tamil Nadu, Andhra Pradesh, and Odisha.

TIME PERIOD

Stage	Approximate Duration	Characteristics
Withdrawal of SW Monsoon	Mid-September – Early October	Drying of north & central India
Onset of NEM	Mid-October	Wind reversal to northeast
Peak Period	November	Frequent cyclones & heavy coastal rains
End of NEM	December	Transition to dry winter season

GEOGRAPHICAL DISTRIBUTION OF NEM RAINFALL

Region	Rainfall Characteristic	Key Areas
Tamil Nadu	Gets ~48–50% of its annual rainfall from NEM	Chennai, Cuddalore, Nagapattinam, Tirunelveli
Andhra Pradesh (South Coastal)	Moderate rainfall	Nellore, Chittoor

Puducherry	High rainfall	Karaikal, Puducherry town
Kerala (South)	Light rainfall	Thiruvananthapuram region
Interior Karnataka	Very little rainfall	Rain shadow region

Fact: Tamil Nadu remains **dry during Southwest Monsoon** because it lies **in the rain shadow** of the Western Ghats — hence **NEM is vital** for the state's water resources.

ROLE OF TROPICAL CYCLONES

- About **35–40% of all cyclones in the Bay of Bengal** occur during **October–December** (NEM period).
- These cyclones bring **intense but localized rainfall** and can cause **flooding or destruction** along the **east coast**.
- **Example:**
 - **Cyclone Gaja (2018), Nivar (2020), Mandous (2022)** – caused heavy rainfall in Tamil Nadu and Andhra Pradesh.

CLIMATIC & ATMOSPHERIC FEATURES

Parameter	NEM Characteristic
Wind Direction	Northeasterly (land → sea)
Origin of Air Mass	Continental (cold & dry)
Moisture Source	Bay of Bengal
Type of Rainfall	Orographic and cyclonic
Temperature	Gradually falling due to onset of winter
Pressure	High over north India, low over Bay of Bengal

IMPORTANCE OF NORTHEAST MONSOON

- **Agricultural Importance:**
 - Lifeline for **rabi crops** and **paddy cultivation** in Tamil Nadu.
 - Supports **horticulture, fisheries, and groundwater recharge** in coastal regions.
- **Water Resources:**
 - Refills **tanks, reservoirs, and rivers** (e.g., Cauvery, Vaigai).
 - Crucial for **drinking water supply** and **urban needs** (e.g., Chennai).
- **Economic Importance:**
 - Supports **hydropower generation** and **fishing industries**.
 - Affects **transport, infrastructure, and disaster management policies**.

VARIABILITY & CHALLENGES

HIGH YEAR-TO-YEAR VARIABILITY

- NEM rainfall is **more erratic** than Southwest Monsoon.
- Influenced by **ENSO (El Niño–Southern Oscillation)** and **Indian Ocean Dipole (IOD)**.

Condition	Effect on NEM
El Niño	Often increases NEM rainfall (warmer Pacific shifts convection toward Indian Ocean)
La Niña	Can suppress NEM rainfall
Positive IOD	Enhances rainfall
Negative IOD	Reduces rainfall

CYCLONE-RELATED RISKS

- Flooding, coastal erosion, urban waterlogging (esp. in Chennai).
- Example: **2015 Chennai Floods** — record rainfall due to NEM & cyclonic depression.

CLIMATE CHANGE

- IMD data shows **increased variability** and **shifts in onset/withdrawal dates**.
- Possible increase in **intense rainfall events** due to warming Bay of Bengal.

IMD & FORECASTING MECHANISMS

- **IMD (India Meteorological Department)** monitors NEM using:
 - Satellite-based cloud movement,
 - Sea Surface Temperature (SST),
 - ENSO & IOD conditions.
- Issues **Seasonal Forecasts & Cyclone Alerts** for southern coastal states.
- **Regional Specialized Meteorological Centre (RSMC), New Delhi**, tracks and names cyclones in the North Indian Ocean.

RECENT TRENDS (2023–2025)

Year	Notable Feature	Impact
2023	Weak NEM due to neutral ENSO	Deficit rainfall in Tamil Nadu
2024	Strong NEM due to El Niño	Heavy rains in Chennai & Puducherry
2025 (forecast)	Moderate NEM expected with neutral ENSO & weak IOD	IMD predicts near-normal rainfall (announced October 2025)

COMPARISON: SOUTHWEST VS NORTHEAST MONSOON

Feature	Southwest Monsoon	Northeast Monsoon
Period	June–September	October–December
Wind Direction	SW → NE	NE → SW
Major Rainfall Area	Western Coast, NE India	Tamil Nadu & SE coast

Moisture Source	Arabian Sea & Bay of Bengal	Bay of Bengal
Associated Systems	Monsoon trough, low-pressure areas	Tropical cyclones, depressions
Share in India's Rainfall	~75–80%	~11%



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06

TOMAHAWK CRUISE MISSILES

U.S. President has indicated that Washington may **consider supplying long-range Tomahawk cruise missiles** to Ukraine if Russia does not undertake credible measures to de-escalate the ongoing conflict.

WHAT ARE TOMAHAWK MISSILES?

- The Tomahawk is a long-range, all-weather, **subsonic cruise missile**. It can be launched from **ships and submarines** for precision strikes on high-value or heavily defended targets.
 - The missile's **low-altitude flight path** and **advanced guidance systems** allow it to evade radar and navigate complex terrain.
 - **Propulsion:** The missile fires a solid propellant at launch, then runs on a turbofan that emits minimal heat, so it's hard to spot with infrared sensors.
- **Guidance Systems:** Uses **GPS, Inertial Navigation System (INS), TERCOM** (terrain mapping), and **DSMAC** (digital scene matching) for high precision.
 - Modern variants allow **mid-flight reprogramming**, enabling real-time target adjustments or mission aborts.



EXPLAIN DIFFERENCE BETWEEN BALLISTIC AND CRUISE MISSILE

Aspect	Ballistic Missile	Cruise Missile
Definition	A missile that is powered initially, then follows a ballistic (parabolic) trajectory under gravity for most of its flight.	A missile that is powered throughout its flight and flies within the Earth's atmosphere using aerodynamic lift.
Flight Path	High-arching, space-bound path (goes out of the atmosphere, then re-enters).	Low-altitude, terrain-following path (within atmosphere).

LAUNCH AND PROPULSION

Aspect	Ballistic Missile	Cruise Missile
Propulsion	Rocket-powered only for initial phase (boost phase). After that, it coasts.	Jet engine (like turbojet, turbofan, or ramjet) powers it throughout.
Stages	Often multi-stage (1–3 stages).	Usually single-stage.

FLIGHT PHASES (FOR BALLISTIC MISSILES)

- **Boost Phase:** Rocket motors propel it into space.
- **Midcourse Phase:** Coasts outside the atmosphere along a ballistic path.
- **Terminal Phase:** Re-enters atmosphere, accelerates towards the target by gravity.

Cruise missiles don't have such phases — they fly **continuously and horizontally**.

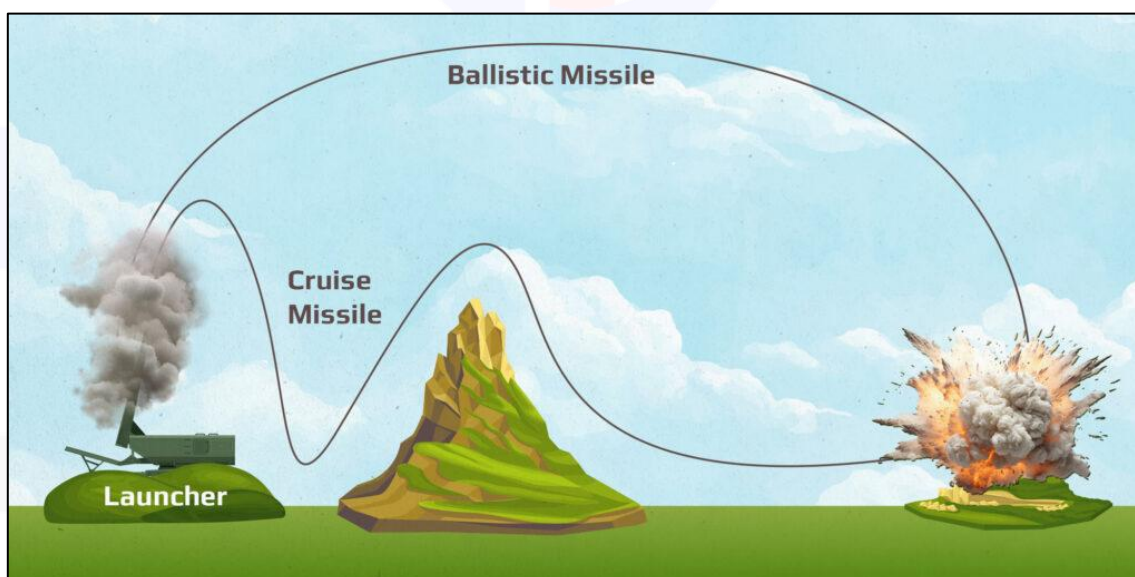
SPEED AND RANGE

Parameter	Ballistic Missile	Cruise Missile
Speed	Very high (up to Mach 20).	Comparatively slower (Mach 0.7–3).

Range	Very long — up to 15,000 km (ICBM).	Short to medium — usually up to 3,000 km.
Accuracy	High with modern guidance (CEP < 50 m).	Very high accuracy due to GPS, terrain mapping, and continuous propulsion.

TRAJECTORY AND DETECTABILITY

Aspect	Ballistic Missile	Cruise Missile
Trajectory	Predictable; follows gravity.	Unpredictable; can change course mid-air.
Altitude	Travels through outer space (exo-atmospheric).	Flies low (50–100 m) to avoid radar detection.
Radar Visibility	Easy to detect due to high altitude.	Harder to detect — stealthy and terrain-hugging.



GUIDANCE SYSTEM

Aspect	Ballistic Missile	Cruise Missile
Guidance	Inertial navigation, GPS, sometimes star-tracking.	GPS, TERCOM (Terrain Contour Matching), DSMAC (Digital Scene Matching).

Mid-course Correction	Limited (once launched).	Continuous — can adjust to avoid defenses.
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PAYLOAD AND PURPOSE

Aspect	Ballistic Missile	Cruise Missile
Payload	Usually nuclear or large conventional warheads.	Mostly conventional, but can also carry nuclear warheads.
Use	Strategic deterrence — long-range attacks (ICBM, SLBM).	Tactical strikes — precision targeting of enemy bases or ships.

EXAMPLES

Type	Indian Examples	International Examples
Ballistic Missiles	Agni series (Agni-V, Agni-P), Prithvi-II, Dhanush, Shaurya	Minuteman III (USA), DF-41 (China), Topol-M (Russia)
Cruise Missiles	BrahMos, Nirbhay	Tomahawk (USA), Kalibr (Russia), CJ-10 (China)

STRATEGIC IMPORTANCE

- **Ballistic Missiles** form the backbone of **India's nuclear triad** (Agni & K-series).
- **Cruise Missiles** like **BrahMos** are used for precision strikes and **conventional deterrence**.
- India's **Integrated Guided Missile Development Programme (IGMDP)** developed both types to ensure comprehensive strategic and tactical capabilities.

SUMMARY TABLE

Parameter	Ballistic Missile	Cruise Missile
Flight Path	Parabolic (space arc)	Low, straight, terrain-hugging
Power Source	Rocket (initial)	Jet engine (continuous)

Speed	Hypersonic (Mach 5–20)	Subsonic/Supersonic (Mach 0.8–3)
Detectability	Easier	Harder
Guidance	Inertial, GPS	GPS, TERCOM, DSMAC
Accuracy	Moderate to high	Very high
Range	Up to 15,000 km	Up to 3,000 km
Use	Strategic nuclear	Tactical conventional/nuclear
Indian Example	Agni-V	BrahMos

Question: 1. Consider the following statements: (2023)

1. Ballistic missiles are jet-propelled at subsonic speeds throughout their flights, while cruise missiles are rocket powered only in the initial phase of flights.
2. Agni-V is a medium-range supersonic cruise missile, while BrahMos is a solid-fuelled intercontinental ballistic missile.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

Explanation: (d)

Question: 2. What is “Terminal High Altitude Area Defense (THAAD)”, sometimes seen in the news? (2018)

- a. An Israeli radar system
- b. India’s indigenous anti-missile programme
- c. An American anti-missile system
- d. A defence collaboration between Japan and South Korea.

Ans: (c)

07

MADAGASCAR

Madagascar's armed forces have taken control of the government, ousting the **incumbent President** following a **youth (Gen Z) led rebellion** over **economic crises** and **governance failures**. It has experienced **frequent military-backed power shifts** since **1960**, with the last major unrest in 2009.



MADAGASCAR

- It is an **island nation** in the **Indian Ocean**, bordered by the **Mozambique Channel** to the west and neighboring **Comoros, Réunion islands**, and **Mauritius**.
- **Geography:** The **4th-largest island** in the world, it features **lush rainforests, dry deserts, grassy plains, and coastal coral reefs and mangrove forests**.
- **Nature & Wildlife:** Nearly **90% of flora and fauna are endemic**, due to ocean isolation.
 - **Famous species:** **Lemurs** (including **silky sifakas** and **aye-ayes**), **giant leaf-tailed geckos, spider tortoises, Dumeril's boas, Madagascan plovers**.
 - **Marine life:** **Humpback whales and pygmy blue whales** along coasts.
 - **National tree:** **Baobab tree**, notable for water-storing trunk.
- **History:** France invaded Madagascar in **1883**, making it a **colony in 1896**. After the **1947 Malagasy Uprising**, the island gained **independence in 1960**.

- **People & Culture:** About **80% of the population** depends on **agriculture**, growing **coffee, vanilla, and sugarcane**, with **rice** as the staple food.
 - **Music** is important in its culture, with the **valiha, a tube zither made from bamboo**, as the national instrument.



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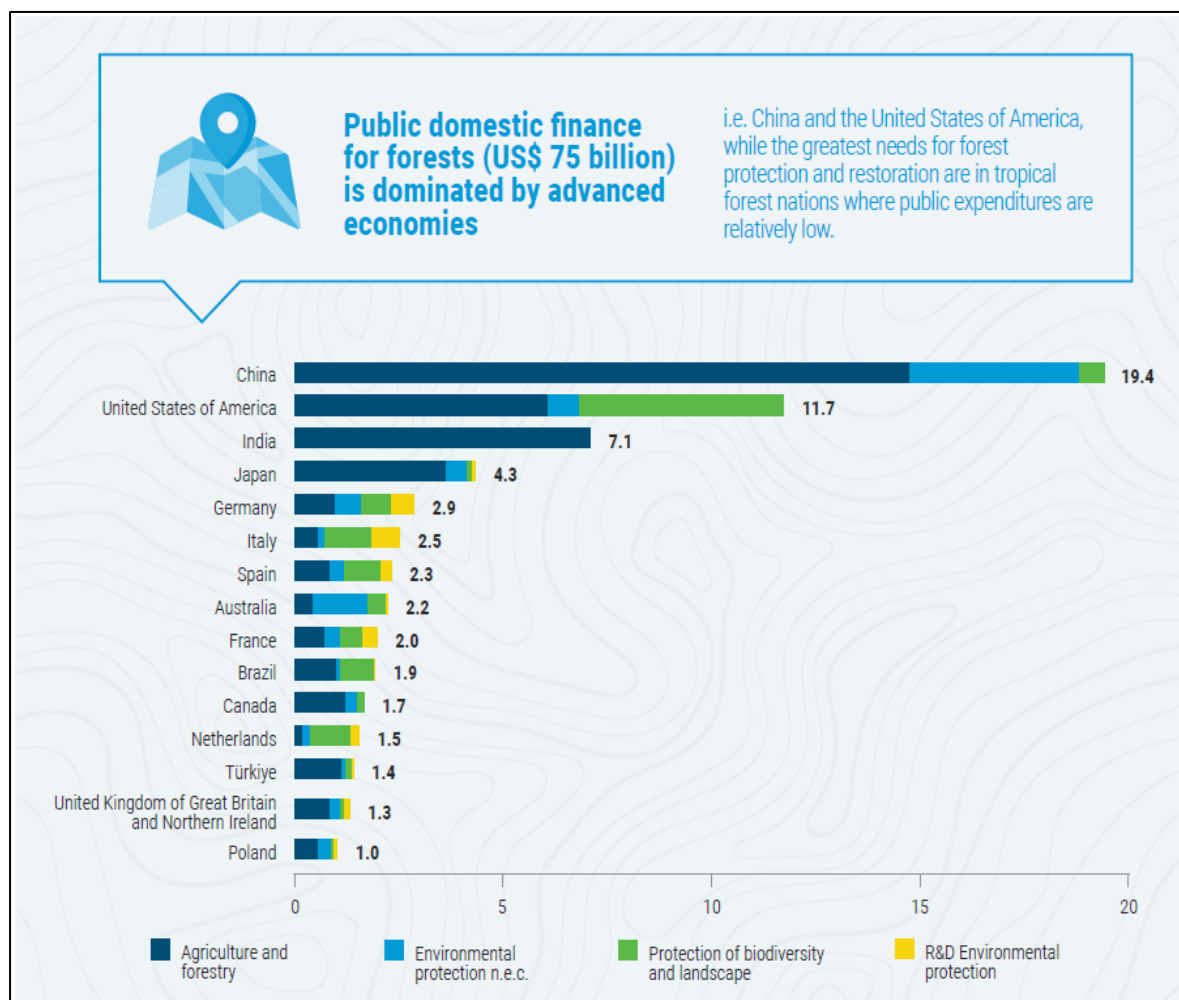
08**STATE OF FINANCE FOR FORESTS (SFF) 2025
REPORT**

The first State of Finance for Forests (SFF) 2025 Report by the UN Environment Programme (UNEP) highlights that global investments in forests must triple by 2030 to achieve climate, biodiversity, and land restoration goals.

**STATE OF FINANCE FOR FORESTS (SFF) 2025 REPORT:****TRENDS HIGHLIGHTED IN THE REPORT:**

- **Severe underfunding of forests:** Only **US billion** was invested in forests in 2023—**91% public, 9% private**—while **US billion** is needed annually by 2030 to meet global climate goals.
- **Dominance of public finance:** Governments contributed **US billion**, led by **China and the U.S.**, with **tropical forest nations** accounting for just **17% of domestic spending**, showing major regional disparities.
- **Low private sector participation:** Private Forest finance was **US billion**, mainly via **certified commodity chains (39%)** and **impact investing (23%)**, while high-risk tropical commodities got minimal funds despite causing **97% of global deforestation**.
- **Environmentally harmful flows persist:** Environmentally damaging agricultural subsidies reached **US billion** in 2023, and banks financed **US trillion** to firms with deforestation risk—vastly exceeding green investments.

- **Rising need for nature-based solutions:** Achieving Rio Convention targets requires expanding 1 billion ha by 2030, with protected forests and avoided deforestation needing US billion annually, while reforestation requires US billion.



INDIA-SPECIFIC TRENDS IN STATE OF FINANCE FOR FORESTS 2025 REPORT:

- **Public Finance Dominates:** India's forestry sector remains heavily dependent on **public funding** through schemes like **CAMPA** and **Green India Mission**, reflecting strong state-led conservation but minimal private participation.
- **Limited Private Investment:** Private capital in forest finance is **extremely low**, with negligible engagement in **biodiversity credits or carbon markets**, showing untapped potential for green investors.
- **High Domestic Commitment:** India spends **over 30 times more domestically** on forest protection than it receives in international aid, proving a robust national commitment to environmental restoration.

- **Shift Toward Nature-Based Solutions:** National programmes such as LiFE, Green Credit Programme (2023), and REDD+ pilots align with UNEP’s call for scaling up nature-positive and carbon-resilient investments.
- **Community & Equity Focus Growing:** India’s forest finance increasingly integrates Joint Forest Management (JFM) and tribal livelihood projects, echoing UNEP’s emphasis on inclusive, community-led forest governance.

POSITIVES IN REPORT:

- **Increased policy focus on forests:** Growing integration of **forest finance into climate and biodiversity agendas**, especially through **REDD+**, **UN-REDD**, and **ODA** grants (80% concessional).
- **Emergence of innovative asset classes:** Growth in **carbon markets (US billion)**, **biodiversity credits**, and **impact investing** reflect new opportunities for sustainable private finance.
- **Gender and community inclusion:** Projects like Ecuador’s **gender-responsive credit line (US million)** for 228 women producers show positive progress in equitable access to finance.
- **Public leadership in forest-rich nations:** Despite fiscal constraints, **tropical countries** spend **36 times more** domestically than they receive in international forest aid—signaling local ownership and commitment.
- **Growing global awareness:** The report establishes a data-driven foundation for forest finance tracking, ensuring better transparency and accountability in green investments.

CHALLENGES HIGHLIGHTED:

- **Massive funding gap:** A **US billion annual shortfall** persists between current investment and required levels for climate and biodiversity goals.
- **Weak private participation:** Only **1 in every 10 forest dollars** comes from private sources; risk aversion and low returns deter investors.
- **Dependence on harmful subsidies:** Governments still fund **US billion** in harmful agriculture subsidies, counteracting forest conservation efforts.
- **Low access for local communities:** Indigenous Peoples and Local Communities received just **US million**, less than 0.5% of international finance.

- **Data and governance gaps:** Lack of consistent tracking of **private finance flows** and **gender-inclusive policies** hampers evidence-based decision-making.

RECOMMENDATIONS:

- **Triple investments by 2030:** Scale annual investments to **US billion by 2030** through blended finance, carbon pricing, and restructured subsidies.
- **Reform harmful subsidies:** Redirect environmentally damaging agricultural subsidies toward **nature-positive incentives** for forest protection.
- **Mobilize private capital:** Expand **green bonds, carbon markets, and biodiversity credits**, and enhance transparency to attract investors.
- **Empower communities and women:** Create **direct financing channels** for Indigenous Peoples and women-led forest initiatives to ensure equity and ownership.
- **Strengthen governance and data systems:** Build robust **forest finance tracking frameworks** and integrate forests into **national climate finance plans**.

CONCLUSION:

The **State of Finance for Forests 2025** underscores stark truth forests are vital yet undervalued in global finance. Bridging the funding gap demands systemic shifts from subsidies to sustainability, from pledges to measurable finance. As UNEP notes, unlocking forest potential is central to achieving **climate, biodiversity, and SDG goals** by 2030.

09

SYNCHRONOUS ALL INDIA ELEPHANT ESTIMATION (SAIEE) 2021–25

After over a year's delay, the Synchronous All India Elephant Estimation (SAIEE) 2021–25 results were released in Dehradun by the Union Environment Ministry and Wildlife Institute of India (WII), reporting 22,446 elephants across India.

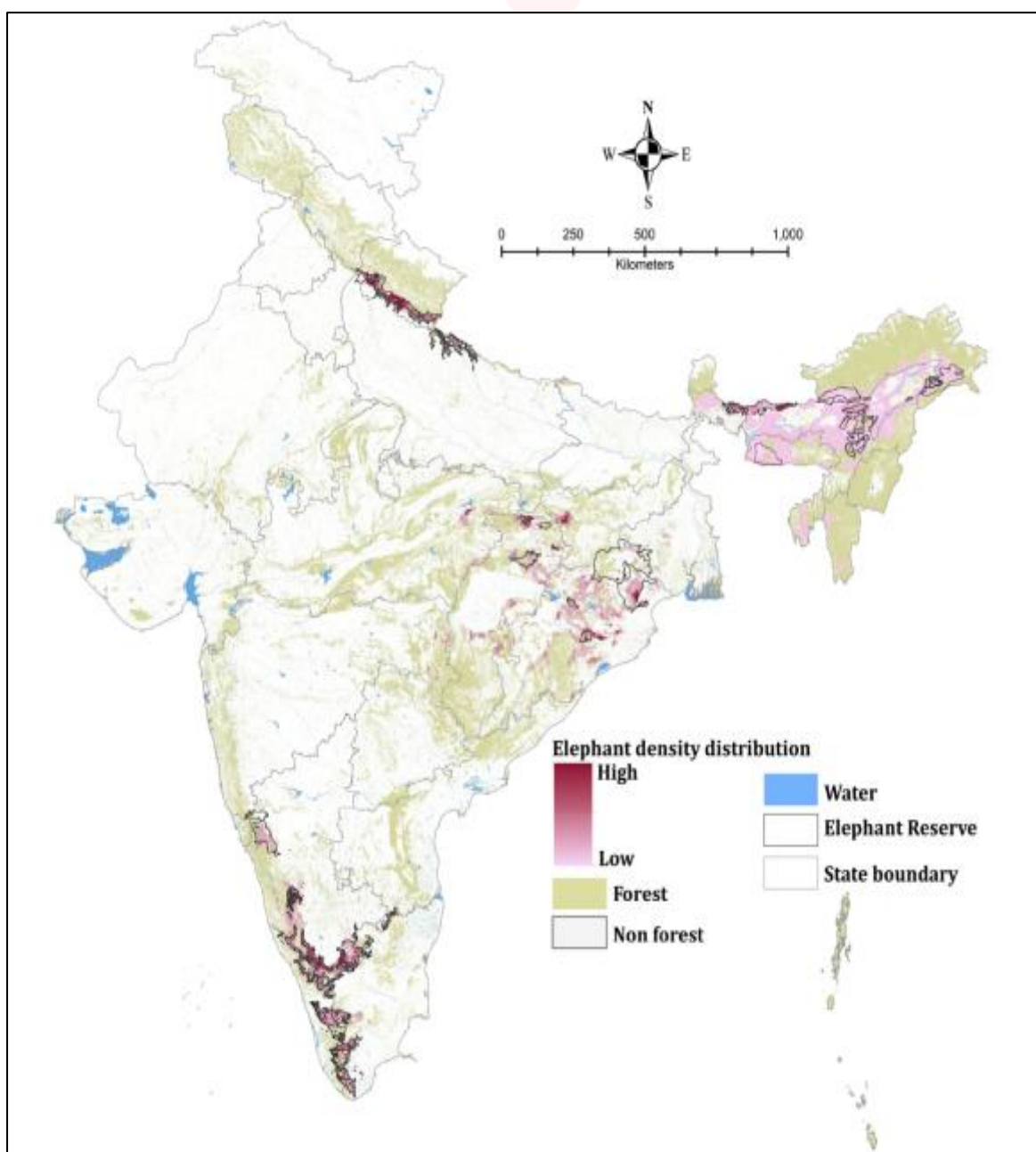


WHAT IS SAIEE 2021–25?

- SAIEE stands for Synchronous All India Elephant Estimation. It is a nationwide exercise to estimate the population, distribution, and status of the Asian elephant (Asian Elephant) in India.
- The 2021-25 version (often referred to as SAIEE 2021-25) is the most recent round, replacing older methods and establishing a **new baseline** for elephant population estimation.
- It is conducted under the aegis of the Wildlife Institute of India (WII) and the Ministry of Environment, Forest and Climate Change (MoEFCC) / Project Elephant programme.
- The exercise uses a methodology modelled after the national tiger estimation framework, but tailored to elephants (because unlike tigers, elephants do not have distinctive coat patterns facilitating individual identification).

WHY WAS THE EXERCISE NEEDED?

- Historically, India has had periodic estimates of elephant populations, but they often relied on visual counts, dung-decay methods or incomplete surveys, leading to concerns about accuracy, comparability and monitoring trends.
- With increasing developmental pressures in elephant habitats (habitat fragmentation, linear infrastructure, human-elephant conflicts), reliable data are essential for making informed conservation decisions.
- Establishing a new baseline allows India to monitor trends, identify population declines/increases, evaluate conservation efforts (e.g., corridors, reserves) and refine policy (such as under the Project Elephant).



KEY FEATURES & METHODOLOGY OF SAIEE 2021-25

- The survey design divides forested elephant habitats into **cells and grids**: e.g., 100 km² cells further subdivided into 25 km² and 4 km² grids for sampling — mimicking tiger census design.
- A major methodological innovation: **genetic mark-recapture** using elephant dung samples. Since elephants lack unique natural markings (like tiger stripes), extracting DNA from dung allows individual identification, estimation of density and hence population size.
- Large-scale field work: in one news report, over 21,000 dung samples were collected, covering hundreds of thousands of kilometres of trails.
- The results caution that the new estimate is **not strictly comparable** with earlier estimates because of the changed methodology and thus should be treated as a **fresh baseline**.

KEY FINDINGS OF SAIEE 2021-25

- The national estimate of wild Asian elephant population: **22,446 elephants** in India.
- Earlier estimates (2017) had pegged the figure higher (around 27,000 or more) but direct comparison is not valid due to methodology differences.
- Regional distribution:
 - Western Ghats region: ~11,934 elephants (largest cluster)
 - North Eastern Hills & Brahmaputra flood-plains: ~6,559 elephants
 - Shivalik Hills & Gangetic plains: ~2,062 elephants
 - Central India & Eastern Ghats: ~1,891 elephants
- State-wise: Karnataka has the highest count in the country (~6,013 elephants) followed by Assam (~4,159), Tamil Nadu (~3,136), Kerala (~2,785), Uttarakhand (~1,792) etc.
- The survey has highlighted **sharp declines** in certain states (e.g., Jharkhand, Odisha) and **increases/migration** in others (e.g., Chhattisgarh) — although these finer trends require further verification.

State/Landscape	Population
Karnataka	6,013
Tamil Nadu	3,136

Kerala	2,785
Western Ghats	11,934
Jharkhand	217
Odisha	912
Madhya Pradesh	97
Chhattisgarh	451
Maharashtra (Western Ghats & Gadchiroli)	63
West Bengal (South)	31
Andhra Pradesh	120
Central India & Eastern Ghats	1,891
Uttarakhand	1,792
Uttar Pradesh	257
Bihar	13
Shivalik Hills & Gangetic Plains	2,062
Arunachal Pradesh	617
Assam	4,159
Manipur	9
Meghalaya	677
Mizoram	16
Nagaland	252
Tripura	153
West Bengal (North)	676
North Eastern Hills & Brahmaputra Flood Plains	6,559
TOTAL	22,446

MAJOR CONSERVATION CHALLENGES IDENTIFIED

The SAIEE report and associated commentary highlight several key threats to elephant populations and their habitats:

- **Habitat loss & fragmentation:** Conversion of forest to plantations (coffee, tea), agriculture, infrastructure projects has reduced contiguous habitat.
- **Linear infrastructure:** Roads, railways, pipelines, high-tension power lines intersect elephant corridors, causing fatalities (electrocution, collisions) and breaking connectivity.
- **Human-Elephant Conflict (HEC):** As elephants spill into human landscapes or get squeezed by habitat fragmentation, crop-raiding, property damage and human fatalities increase.
- **Corridor disruption & migration stress:** Blocked movement routes force elephants into sub-optimal habitats or human-dominated areas.
- **Data gaps & monitoring difficulties:** Some landscapes, especially in Northeast India, had limited sampling — which delays or complicates robust trend analysis.

IMPLICATIONS FOR POLICY & CONSERVATION

- Because SAIEE 2021-25 provides a **new baseline**, policy makers should use this as the starting point for monitoring future trends and evaluating effectiveness of interventions (e.g., under Project Elephant or National Elephant Corridor Project).
- Strengthening wildlife corridors and maintaining connectivity between habitats becomes urgent, given the distribution data (e.g., Western Ghats stronghold, but smaller clusters elsewhere).
- Measures to mitigate linear infrastructure impacts: e.g., wildlife crossings on roads/rails, undergrounding of power lines, ensuring mines or plantations do not fragment key habitats.
- Human-elephant conflict mitigation must be area-specific: in states showing rising conflict and declining elephant numbers (or vice versa) targeted strategies are needed.
- Data & science-based conservation: The shift to genetic mark-recapture is a positive step, but regular surveys, improved sampling (especially in remote areas), and transparency in methodology are essential for robust conservation science.
- Since India holds a major portion of global Asian elephant population (~60%), effective conservation here has **global significance**.

10

FAO CELEBRATES 80 YEARS OF PARTNERSHIP WITH INDIA

On World Food Day 2025, the Food and Agriculture Organization (FAO) and the Government of India celebrated 80 years of partnership in New Delhi.



Food and Agriculture Organization of the United Nations

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

- **Full Form:** Food and Agriculture Organization (FAO)
- **Headquarters:** Rome, Italy
- **Founded:** 16 October 1945 (celebrated annually as **World Food Day**)
- **Parent Organization:** United Nations
- **Motto:** “Fiat Panis” (Latin for “Let there be bread”)

PURPOSE AND MANDATE

FAO is a **specialized agency of the United Nations** that leads **international efforts to defeat hunger**, improve nutrition, and promote sustainable agriculture.

Its **main goals** include:

- Eliminating hunger, food insecurity, and malnutrition.
- Making agriculture, forestry, and fisheries more productive and sustainable.
- Reducing rural poverty.
- Enabling inclusive and efficient agricultural and food systems.
- Increasing resilience to disasters, climate change, and conflicts.

STRUCTURE

- **Members:** 194 countries (including India), the **European Union**, and **two associate members**.
- **Governing Body:** FAO Conference (meets biennially).
- **Director-General (as of 2025):** **Qu Dongyu** (China).

MAJOR INITIATIVES

- **Codex Alimentarius Commission** – sets international food safety and quality standards.
- **Global Information and Early Warning System (GIEWS)** – monitors food supply and hunger.
- **FAO–World Bank Cooperation** – on agricultural investment and food security.
- **Blue Growth Initiative** – supports sustainable fisheries.
- **Green Cities Initiative** – promotes urban food systems.
- **Hand-in-Hand Initiative** – targets investment in rural transformation.

FAO AND INDIA: 80 YEARS OF PARTNERSHIP (1945–2025)

- India joined FAO in **October 1945** as a **founding member**.
- FAO has played a **crucial role** in India's agricultural development — from the **Green Revolution** to **digital agriculture** today.

KEY AREAS OF COLLABORATION:

- **Food Security & Nutrition:**
 - Support for the **Public Distribution System (PDS)** and **Mid-Day Meal Scheme**.
 - Technical support for India's **National Food Security Act (2013)**.
- **Sustainable Agriculture:**
 - Promotion of **climate-smart farming**, **soil health**, and **natural farming**.
 - Joint initiatives like **Farmer Field Schools** and **One Health Approach**.
- **Fisheries & Livestock:**
 - Development of the **Blue Revolution**, **Animal Health Systems**, and **Dairy Sector Reforms**.
- **Digital Agriculture:**

- FAO assists India in implementing **AI and data-driven** farm management.
- **Biodiversity & Climate:**
 - Projects for **forest management, desertification control, and climate resilience** in agriculture.
- **Recent Cooperation (2025):**
 - **80 Years of Partnership** celebrated with a focus on “**Food Security and Sustainable Agriculture in the Digital Era.**”
 - Launch of new initiatives under **FAO-India Country Programming Framework (CPF) 2023–2027**, focusing on:
 - Agri-tech and AI for small farmers
 - Water-efficient irrigation
 - Reducing food loss and waste

INDIA'S CONTRIBUTIONS TO FAO

- India regularly supports FAO's **South-South Cooperation** by sharing best practices with developing countries.
- FAO's **Asia-Pacific Regional Office** works closely with Indian agricultural institutions.
- India also provides **financial and technical assistance** to FAO projects in **Asia and Africa**.

ACHIEVEMENTS IN 80 YEARS:

- India moved from food scarcity to self-sufficiency, now feeding 1.4 billion people.
- Partnership strengthened Green Revolution, National Food Security Act (NFSA), Minimum Support Price (MSP), and Public Stockholding System.
- Promoted nutrition-sensitive and climate-resilient agriculture, micro-irrigation, natural farming, and AgriStack for digital governance.

11**WE RISE INITIATIVE**

NITI Aayog's Women Entrepreneurship Platform (WEP) and DP World launched the 'We Rise – Women Entrepreneurs Reimagining Inclusive and Sustainable Enterprises' initiative.

NITI Aayog's Women Entrepreneurship Platform (WEP) and DP World have launched the '**We Rise – Women Entrepreneurs Reimagining Inclusive and Sustainable Enterprises**' initiative. This collaboration aims to empower women-led Micro, Small, and Medium Enterprises (MSMEs) in India to expand globally through mentorship, trade facilitation, and strategic partnerships.

**ABOUT THE 'WE RISE' INITIATIVE**

- **Objective:** To support 100 high-potential women-led MSMEs in enhancing their export readiness and scaling their businesses internationally.
- **Key Features:**
 - **Mentorship:** Providing guidance on trade compliance, branding, and cross-border logistics.
 - **Market Access:** Enabling entrepreneurs to showcase products at **Bharat Mart** in Dubai, a global B2B and B2C marketplace within the Jebel Ali Free Zone.
 - **Strategic Partnerships:** Leveraging DP World's global logistics network to facilitate international trade.

- **Public-Private Collaboration:** Integrating WEP's ecosystem of over 90,000 women entrepreneurs with DP World's trade infrastructure.

ROLE OF THE WOMEN ENTREPRENEURSHIP PLATFORM (WEP)

- **Established:** Incubated by NITI Aayog in 2018 and transitioned into a public-private partnership in 2022.
- **Functions:**
 - Acts as a national aggregator to strengthen India's women entrepreneurship ecosystem.
 - Addresses six key ecosystem needs: access to finance, market linkages, training and skilling, mentoring and networking, compliance and legal assistance, and business development services.

SIGNIFICANCE

- **Economic Empowerment:** Empowers women entrepreneurs to participate actively in global trade, contributing to inclusive economic growth.
- **Alignment with National Goals:** Supports the Government's vision of women-led development and aligns with the "Viksit Bharat @2047" initiative.
- **Sustainable Development:** Promotes sustainable and inclusive business practices among women-led enterprises.

12

UN-GGIM ASIA-PACIFIC (UN-GGIM-AP)

India has been elected as the Co-Chair of the United Nations Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP) for a three-year term (2025–2028).



UN-GGIM ASIA-PACIFIC (UN-GGIM-AP)

- The UN-GGIM-AP is one of the five regional committees of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM).
- It coordinates regional efforts to promote geospatial governance, data sharing, and sustainable development through mapping and information systems.
- **Established in 1995** as the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP).
- Rebranded as **UN-GGIM-AP** in **2012** following the creation of UN-GGIM in 2011, integrating regional geospatial initiatives under the UN umbrella.

TERM AND MEMBERSHIP:

- Represents **56 national geospatial authorities** from countries across Asia and the Pacific.
- India's Co-Chair term will run **till 2028**, reflecting its growing role in shaping global geospatial policy and data ecosystems.

AIM:

- To maximize the social, economic, and environmental value of geospatial data through regional collaboration and innovation.

- To strengthen spatial data infrastructure (SDI), enhance policy frameworks, and facilitate data-driven decision-making for achieving the SDGs.

KEY FUNCTIONS:

- **Capacity Building:** Promotes knowledge exchange, training, and technical assistance among member states.
- **Regional Cooperation:** Facilitates cross-border geospatial initiatives and integration of national systems.
- **Policy Guidance:** Supports the formulation of geospatial governance standards and policy harmonization.
- **Sustainable Development Support:** Aligns geospatial information management with climate action, disaster management, and urban planning.
- **Partnership with ESCAP:** Since 2018, the UN-ESCAP Secretariat supports UN-GGIM-AP operations to strengthen institutional capacity and equitable dissemination of data.

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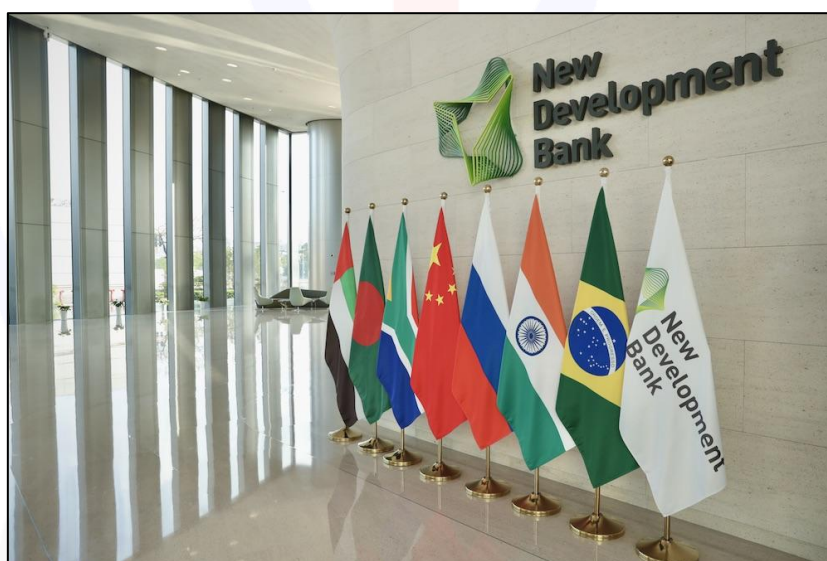
13

THE NEW DEVELOPMENT BANK (NDB)

The New Development Bank (NDB) — co-founded by BRICS nations in 2015 — marks its 10th anniversary, while Pakistan has formally sought China's support to join the institution to diversify from IMF and World Bank dependence amid its economic crisis.

NEW DEVELOPMENT BANK (NDB)

- **Full Name:** New Development Bank (NDB)
- **Also Known As:** BRICS Development Bank
- **Established:** July 15, 2014 (at the 6th BRICS Summit in Fortaleza, Brazil)
- **Headquarters:** Shanghai, China
- **Founding Members: BRICS countries** – Brazil, Russia, India, China, South Africa
- **Purpose:** To finance infrastructure and sustainable development projects in **emerging economies** and **developing countries**.



OBJECTIVES OF NDB

- **Infrastructure Financing:**
 - Provides loans for infrastructure projects, clean energy, transportation, urban development, and water management.
- **Sustainable Development:**
 - Supports projects aligned with **UN SDGs**.
- **Strengthening BRICS Cooperation:**

- Promotes economic growth and integration among BRICS nations and other emerging economies.
- **Counterbalance to Western-dominated financial institutions:**
 - Provides an alternative to institutions like **World Bank** and **IMF**.

MEMBERSHIP & CAPITAL

- **Initial Paid-in Capital:** USD 10 billion (divided equally among founding members)
- **Authorized Capital:** USD 100 billion
- **Current Membership:** Expanding beyond BRICS – includes countries like **Bangladesh, UAE, Egypt** (2023)
- **India's Share:** Equal founding member, 20% of initial capital

GOVERNANCE STRUCTURE

- **Board of Governors:** One governor per member country (usually finance ministers).
- **Board of Directors:** Responsible for project approval, policy guidance.
- **President:** Head of the bank, term of 5 years, rotational among members.
- **Voting Rights:** Weighted according to capital contribution.

FUNDING & OPERATIONS

- **Project Financing:** Infrastructure, renewable energy, transport, urban development, water, sanitation.
- **Loan Currency:** Loans in local currencies of member countries to reduce foreign exchange risk.
- **Sustainability Focus:** Encourages green projects, climate-resilient infrastructure.

INDIA AND NDB

- **India's Role:** Founding member, major recipient of loans for infrastructure projects.
- **Indian Projects Funded:**
 - Renewable energy projects (solar and wind)
 - Urban development initiatives

- Transportation infrastructure (metro rail and highways)
- **Headquarters Significance:** India does not host HQ but benefits from financial and technical support.

RECENT DEVELOPMENTS

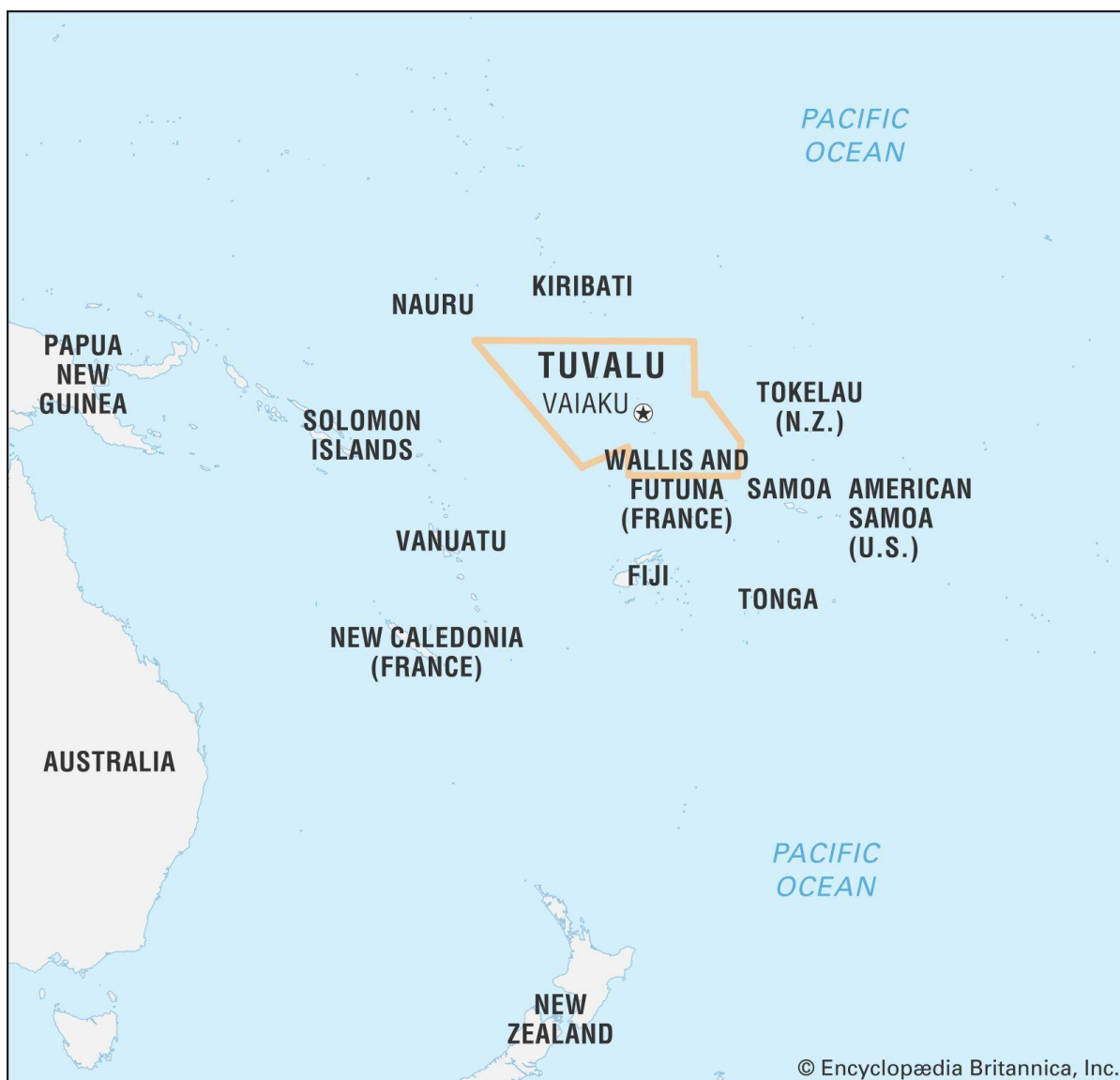
- Expansion to **non-BRICS members**: NDB allows more developing countries to join.
- Focus on **green finance**: Significant loans allocated for solar, wind, and sustainable urban transport.
- India hosted a NDB Board meeting in 2023 to discuss investment strategies in South Asia.

KEY FACTS / REVISION POINTS

- Founded in **2014**, HQ in **Shanghai**.
- Initial Capital: USD 10 billion, Authorized Capital: USD 100 billion.
- Founding Members: **Brazil, Russia, India, China, South Africa**.
- India is a **founding member** and major beneficiary.
- Focus Areas: **Infrastructure, Renewable Energy, Urban Development**.
- Expanding to **non-BRICS developing countries**.

14**TUVALU**

Tuvalu has officially become the 90th State Member of the International Union for Conservation of Nature (IUCN), strengthening its global commitment to biodiversity conservation and climate resilience.

**BASIC INFORMATION**

Aspect	Detail
Country Name	Tuvalu
Continent	Oceania / Pacific
Capital	Funafuti

Population	~12,000 (2023)
Area	26 km ² (one of the smallest countries in the world)
Official Languages	Tuvaluan, English
Currency	Tuvaluan dollar (alongside Australian dollar)
Government	Parliamentary democracy under a constitutional monarchy (King Charles III is the Head of State)
UN Membership	Since 2000
ISO Code	TV

GEOGRAPHY

- **Location:** Polynesian islands in the Pacific Ocean, halfway between Hawaii and Australia.
- **Composition:** 9 atolls, mostly low-lying coral islands.
- **Climate:** Tropical maritime climate – hot, humid, cyclones common.
- **Vulnerability:** Average elevation <5 meters above sea level → highly susceptible to **sea level rise**.
- **Natural Resources:** Limited; main resources are fish, coconut, and marine ecosystems.

ECONOMY

- **Size:** Smallest economy by GDP in the Pacific.
- **Main Sectors:**
 - **Fishing & Marine Resources** – major source of export revenue.
 - **Coconut & Copra** – traditional economic activity.
 - **Remittances** – significant contribution to GDP.
 - **.TV Domain** – Tuvalu earns from leasing its internet country code top-level domain (.tv) globally.
- **Tourism:** Limited due to remoteness.

POLITICS & GOVERNANCE

- **Government Type:** Parliamentary democracy under constitutional monarchy.

- **Head of State:** King Charles III (represented by Governor-General).
- **Head of Government:** Prime Minister elected by parliament.
- **Parliament:** Unicameral, 15 members.
- **Political Challenges:** Limited human and financial resources; small population
→ governance relies heavily on external aid.

CLIMATE CHANGE & INTERNATIONAL SIGNIFICANCE

- **Most Vulnerable to Climate Change:**
 - Rising sea levels threaten land, freshwater, agriculture, and human habitation.
 - Threatened with potential **displacement of population**.
- **Advocacy:**
 - Strong voice in **UN Climate Change Conferences (COP)**, advocating for:
 - Carbon emission reduction
 - Global support for small island developing states (SIDS)
 - Climate finance and adaptation programs
- **International Aid:** Receives assistance from **Australia, New Zealand, Japan, UNDP**, and **Green Climate Fund**.

INTERNATIONAL RELATIONS

- **UN & International Organizations:** Active in discussions on climate change, ocean protection, and SIDS.
- **Bilateral Relations:** Strong ties with Australia, New Zealand, Taiwan (recognition dispute with China), USA, Japan.
- **Membership:**
 - **Pacific Islands Forum**
 - **Commonwealth of Nations**
 - **United Nations**

CULTURAL & SOCIAL ASPECTS

- **Religion:** Predominantly Christian (Church of Tuvalu).
- **Society:** Small, close-knit communities; traditional governance by elders exists alongside parliamentary democracy.

- **Language & Identity:** Tuvaluan language, strong Polynesian cultural identity.

CHALLENGES

- **Climate Threats:** Rising sea levels, saltwater intrusion, natural disasters.
- **Economic Vulnerability:** Small population, limited resources, dependence on aid and remittances.
- **Infrastructure:** Limited healthcare, education, and transport facilities.
- **Population Migration:** Some migration to New Zealand and Australia due to environmental pressures.

QUICK FACTS / REVISION POINTS

- Tuvalu is **one of the smallest and least populated UN member states**.
- Average elevation **<5 meters**, making it highly vulnerable to **sea level rise**.
- Key source of revenue: **fishing, coconut, remittances, .tv domain**.
- Strong climate change advocate in **UNFCCC / COP forums**.
- Parliamentary democracy with **King as head of state**.
- Located in the **Polynesian region of the Pacific Ocean**.

IAS ORIGIN
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15

MERCOSUR (SOUTHERN COMMON MARKET)

India and the Southern Common Market (MERCOSUR) agreed to deepen their Preferential Trade Agreement (PTA) to boost trade and investment, with both sides aiming to conclude negotiations within one year.

- **Full Name:** Mercado Común del Sur (Spanish) / Mercosul (Portuguese) – **Southern Common Market**
- **Type:** Regional Economic Integration Organization / Customs Union
- **Founded:** 26 March 1991
- **Founding Members:** Argentina, Brazil, Paraguay, Uruguay
- **Headquarters:** Montevideo, Uruguay
- **Objective:** Promote free trade, economic integration, and cooperation among South American countries.



HISTORY & EVOLUTION

- **1985:** Brazil and Argentina initiated discussions to strengthen economic ties.
- **1988:** Treaty of Asunción signed by Argentina, Brazil, Paraguay, Uruguay – creation of Mercosur.
- **1991:** Officially came into force; aimed at establishing a common market.
- **1994:** Ouro Preto Protocol – granted Mercosur **legal personality**, created institutional structures.
- **1996–2000:** Chile, Bolivia, Colombia, Ecuador, Peru signed associate agreements (not full members).
- **2012:** Venezuela became a full member (later suspended).

OBJECTIVES

- **Economic Integration:** Remove tariffs, promote free trade of goods, services, and capital.
- **Customs Union:** Implement a **common external tariff (CET)** for non-member countries.
- **Policy Coordination:** Harmonize economic, fiscal, monetary, and social policies.
- **Political Cooperation:** Strengthen democracy and regional stability.
- **Infrastructure & Connectivity:** Promote regional transport, energy, and communication networks.

MEMBERSHIP

Type	Countries
Full Members	Argentina, Brazil, Paraguay, Uruguay
Suspended Member	Venezuela
Associate Members	Bolivia, Chile, Peru, Colombia, Ecuador, Guyana, Suriname
Observer States	New Zealand, Mexico, Egypt, etc.

INSTITUTIONAL STRUCTURE

- **Common Market Council (CMC):** Highest decision-making body; composed of foreign ministers/presidents.

- **Common Market Group (GMC):** Executive body; implements decisions of CMC.
- **Mercosur Parliament (Parlasur):** Legislative advisory body.
- **Sectoral Committees:** Focus on trade, agriculture, energy, transportation, social policies.

KEY FEATURES

- **Free Movement:** Of goods, services, capital, and labor among member countries.
- **Common External Tariff (CET):** Applies to imports from non-member countries.
- **Dispute Resolution:** Mechanisms to resolve trade and economic conflicts among members.
- **Integration Beyond Trade:** Includes cooperation in education, health, science & technology, and human rights.

CHALLENGES

- **Asymmetry:** Economic size differences (Brazil dominates trade, Paraguay and Uruguay smaller).
- **Trade Barriers:** Non-tariff barriers persist despite free trade agreement.
- **Political Instability:** Venezuela's suspension; differing national policies.
- **Global Competition:** Competition from other trade blocs (USMCA, EU, ASEAN).

MERCOSUR & INDIA

India has been seeking to **enhance trade ties** with MERCOSUR nations:

- **Free Trade Agreement (FTA) Negotiations:** Ongoing with Mercosur since 2004; aim to reduce tariffs on goods and enhance bilateral trade.
- **Key Trade Partners:** Brazil and Argentina – major suppliers of agricultural products and raw materials.
- **Strategic Importance:** Diversifies India's trade partners, complements **India's South-South cooperation strategy**.

QUICK FACTS / REVISION POINTS

- **Founded:** 1991 (Treaty of Asunción)
- **Founding Members:** Argentina, Brazil, Paraguay, Uruguay
- **Headquarters:** Montevideo, Uruguay

- **Type:** Customs Union / Regional Economic Bloc
- **Associate Members:** Bolivia, Chile, Peru, Colombia, Ecuador, Guyana, Suriname
- **India-MERCOSUR FTA:** Negotiations ongoing since 2004
- **Key Objective:** Economic integration & regional cooperation in South America

COMPARATIVE: MERCOSUR, ASEAN, EU, AU

Feature	MERCOSUR (Southern Common Market)	ASEAN (Association of Southeast Asian Nations)	EU (European Union)	AU (African Union)
Founded	1991 (Treaty of Asunción)	1967 (Bangkok Declaration)	1993 (Maastricht Treaty)	2002 (replaced OAU)
Headquarters	Montevideo, Uruguay	Jakarta, Indonesia	Brussels, Belgium	Addis Ababa, Ethiopia
Members	4 full members: Argentina, Brazil, Paraguay, Uruguay	10 countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam	27 EU countries	55 African countries
Type of Organization	Customs Union / Economic Bloc	Regional Political & Economic Bloc	Political & Economic Union	Continental Political & Development Union
Objective	Economic integration, free trade, common external tariff	Economic growth, regional stability, ASEAN Free Trade Area	Economic integration, political union, common market, EU currency	Political unity, economic development, peace, conflict resolution

Key Features	CET, free movement of goods/services/capital	Free trade, dialogue partnerships, security cooperation	Single market, EU Parliament, Euro currency, Schengen	African Continental Free Trade Area (AfCFTA), Pan-African Parliament
India Engagement	FTA negotiations ongoing since 2004	Dialogue partner, FTA signed (goods & services), strategic partnership	Strategic & economic cooperation, trade agreements	Trade & investment, India-Africa Forum Summit, development aid
Significance for India	Diversifies trade with Latin America, access to raw materials & agricultural markets	Southeast Asia trade, strategic maritime ties, Indo-Pacific	Investment, technology transfer, research, trade	Access to African markets, South-South cooperation, energy & infrastructure

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PROJECT TRINETRA: AI PREDICTIVE POLICING

Project Trinetra, launched by the Akola Police in Maharashtra, has drawn national attention for pioneering the use of artificial intelligence (AI) and data analytics in predictive policing.



Project Trinetra is an innovative initiative in India that leverages artificial intelligence (AI) and data analytics to enhance law enforcement capabilities.

The project aims to shift from traditional reactive policing to a more proactive approach by predicting and preventing crimes before they occur.

KEY FEATURES

- **AI-Driven Predictive Policing:** Utilizes machine learning algorithms to analyze historical crime data, identifying patterns and predicting potential hotspots for future crimes.
- **Real-Time Data Integration:** Integrates data from various sources, including surveillance systems, social media, and public reports, to provide real-time insights to law enforcement agencies.
- **Resource Optimization:** Helps in efficient allocation of police resources by identifying areas with high crime probabilities, ensuring timely interventions.
- **Community Engagement:** Involves the community by allowing citizens to report incidents and share information, fostering a collaborative approach to policing.

IMPLEMENTATION AND IMPACT

- **Pilot Projects:** Several states have initiated pilot projects under Project Trinetra, collaborating with tech companies to develop and deploy AI tools tailored to local needs.
- **Training Programs:** Law enforcement personnel are being trained to use AI tools effectively, ensuring that technology complements human judgment.
- **Ethical Considerations:** Emphasis is placed on maintaining privacy and preventing biases in AI algorithms to uphold civil liberties.

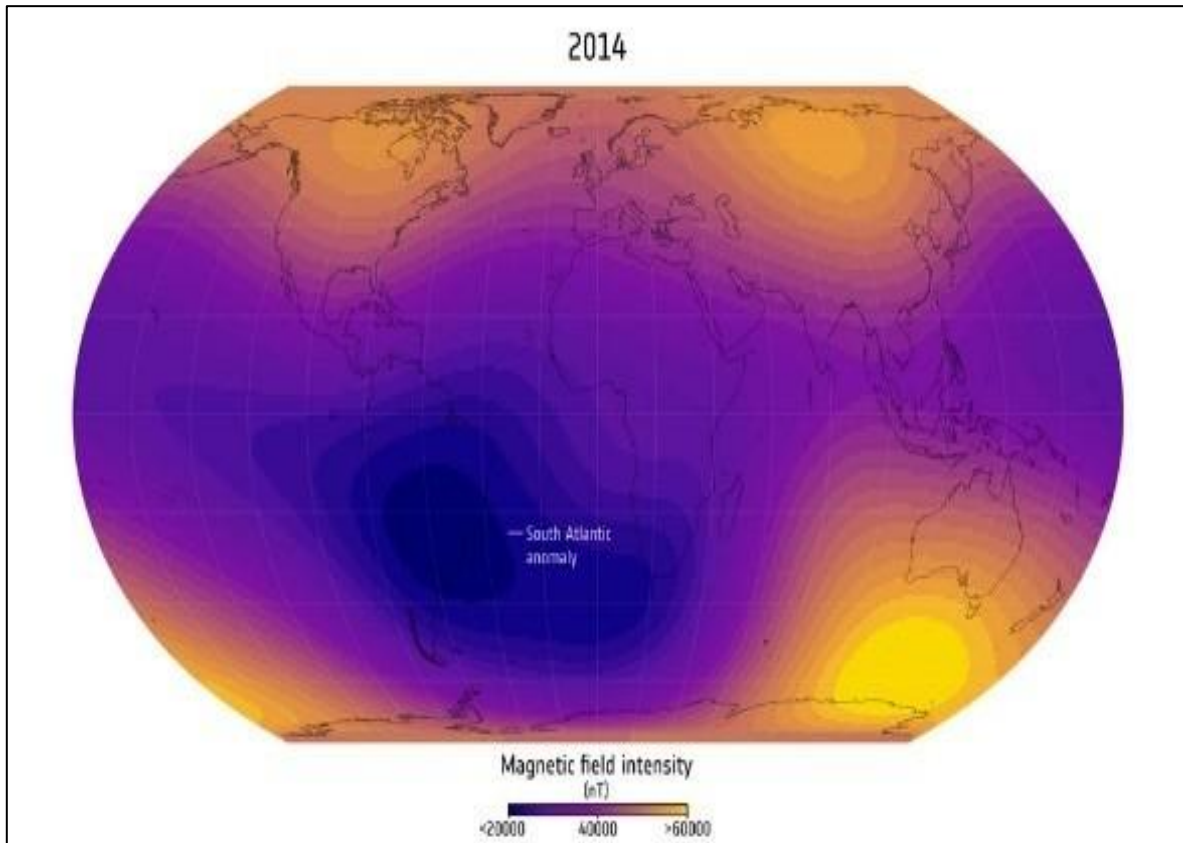
CHALLENGES AND CONSIDERATIONS

- **Data Privacy:** Ensuring the protection of citizens' personal data is paramount, requiring robust cybersecurity measures.
- **Algorithmic Bias:** Continuous monitoring and auditing of AI systems are necessary to prevent biases that could lead to unfair targeting of specific communities.
- **Infrastructure:** Adequate technological infrastructure is essential for the successful implementation of AI-driven policing.

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17**SOUTH ATLANTIC ANOMALY (SAA) – MAGNETIC WEAK SPOTS**

Recent findings from the European Space Agency's (ESA) Swarm mission reveal that the South Atlantic Anomaly (SAA) — the region of weakest intensity in Earth's magnetic field — has expanded by nearly 0.9% since 2014.



Definition: The **South Atlantic Anomaly (SAA)** is a region over the South Atlantic Ocean where the **Earth's magnetic field is unusually weak** compared to other areas at similar latitudes.

Significance: It represents a **magnetic “weak spot”** in the planet's magnetosphere, affecting satellites, spacecraft, and other space-based technologies.

LOCATION & EXTENT

- **Geographical Coverage:** Off the coast of **Brazil and parts of South America**, extending over the South Atlantic Ocean.
- **Coordinates:** Roughly between **5°N to 40°S latitude** and **0° to 70°W longitude**.
- **Altitude:** Effects are more prominent at **low Earth orbit (LEO) altitudes** (~200–1,000 km).

CAUSES OF SAA

- **Earth's Magnetic Field Variation:**
 - The Earth's magnetic field is generated by the **movement of molten iron in the outer core** (geodynamo).
 - The field is **not perfectly aligned** with the planet's rotation axis, creating areas of weaker intensity.
- **Offset of Magnetic & Geographic Poles:**
 - The **magnetic dipole** is tilted and displaced from the Earth's rotational axis.
 - This displacement causes the **magnetic field to be weaker over the South Atlantic**.
- **Secular Variation:**
 - The SAA is **gradually drifting westward and growing in size** over time due to changes in the Earth's core dynamics.

IMPACTS OF THE SOUTH ATLANTIC ANOMALY

- **Satellites & Spacecraft:**
 - Increased **cosmic radiation and energetic particles** can damage electronics and sensors.
 - Satellites may experience **temporary malfunctions or "single-event upsets."**
 - Example: Hubble Space Telescope and ISS have to sometimes **suspend observations** while passing through the SAA.
- **Astronaut Safety:**
 - Increased radiation exposure for astronauts in **low Earth orbit**.
- **Geomagnetic Studies:**
 - Provides insights into **Earth's changing magnetic field**, core dynamics, and potential **magnetic pole reversal**.
- **Monitoring & Mitigation**
- **Agencies Involved:** NASA, ESA, ISRO, and other space agencies constantly monitor SAA using satellites.
- **Precautionary Measures:**
 - Switch off sensitive electronics in satellites temporarily.

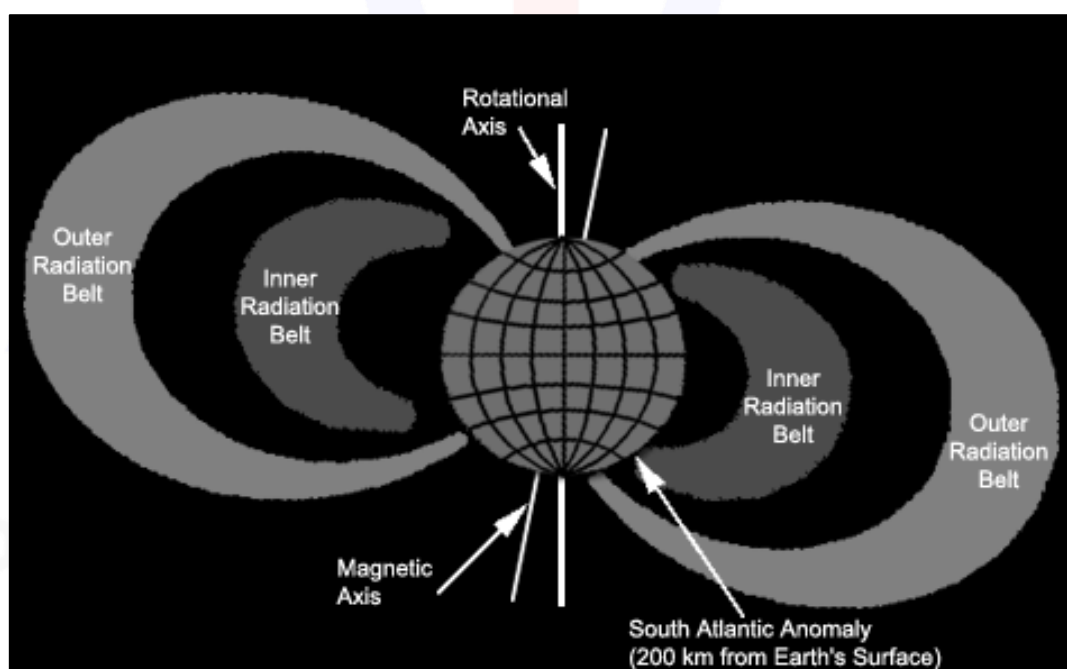
- Alter spacecraft orbits to minimize prolonged exposure.

WHAT ARE MAGNETIC WEAK SPOTS?

Magnetic weak spots are localized regions of diminished geomagnetic intensity on Earth's surface caused by uneven distribution of magnetic flux within the planet's outer core.

WHY THEY FORM?

- **Uneven Core Flow:** The molten metals in Earth's outer core do not circulate uniformly, causing some regions to produce weaker magnetic fields.
- **Reverse Magnetic Flux:** In certain zones like the SAA, magnetic field lines loop backward into the core, lowering the surface magnetic strength.
- **Core Dynamics:** Constant fluid motion, convection currents, and thermal variations in the liquid outer core led to periodic reorganization of magnetic strength zones.



IMPACTS OF MAGNETIC WEAK SPOTS

- **Satellite & Spacecraft Vulnerability:** Satellites passing through the SAA encounter increased radiation exposure, risking hardware damage, data corruption, or blackouts in instruments.
- **Navigation Challenges:** Variations in field strength can affect magnetic navigation and calibration systems, especially in low-Earth orbits.

- **Space Weather Sensitivity:** The weakened shield allows charged solar particles to dip closer to Earth's surface, heightening space weather hazards.
- **Regional Variation Effects:** The SAA's westward drift and expansion increase the risk zone for orbiting satellites, especially Earth-observing and communication systems.

KEY FACTS / REVISION POINTS

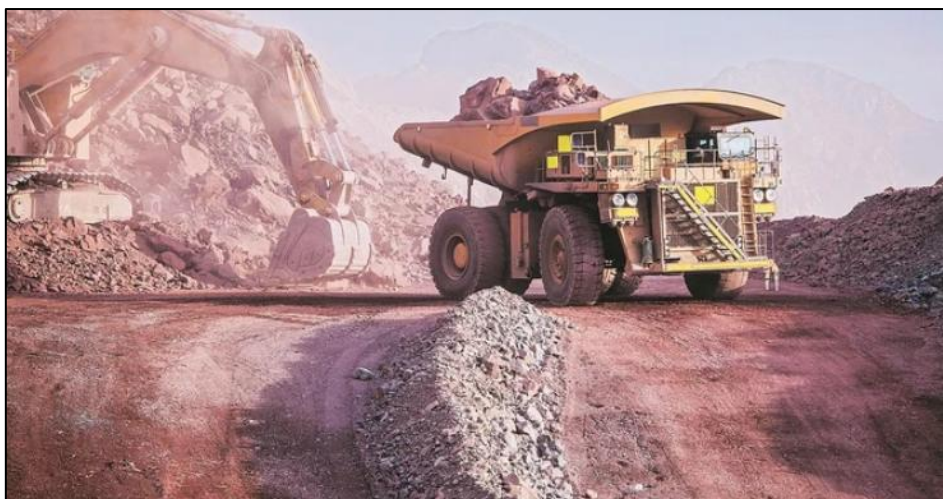
- **Definition:** Magnetic weak spot over South Atlantic Ocean.
- **Causes:** Tilted & offset magnetic dipole, core dynamics.
- **Location:** South Atlantic, off Brazil.
- **Effect:** Affects satellites, ISS, spacecraft, astronaut safety.
- **Trend:** Slowly **moving westward** and increasing in size.
- **Significance:** Indicator of **geomagnetic changes** and potential **magnetic pole reversal**.

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STATE MINING READINESS INDEX (SMRI)

The Ministry of Mines released the first-ever State Mining Readiness Index (SMRI) and State Rankings (2025) to benchmark State performance in mining reforms, fulfilling a key announcement of the Union Budget 2025–26.



ABOUT STATE MINING READINESS INDEX (SMRI):

The State Mining Readiness Index (SMRI) is a performance benchmarking framework that evaluates and ranks Indian States based on their efficiency, reform readiness, and sustainability in the mining sector, particularly for non-coal minerals.

RELEASED BY THE MINISTRY OF MINES.

AIM:

- To encourage healthy competition among States in mining sector governance.
- To enhance transparency and efficiency in mineral exploration and mine operationalization.
- To promote sustainable and responsible mining practices aligned with India's environmental and economic priorities.

CRITERIA USED: FOUR KEY INDICATORS

- **Auction Performance:** Effectiveness and transparency in mineral block auctions.
- **Early Mine Operationalization:** Speed of converting auctioned blocks into functional mines.

- **Exploration Thrust:** Investment and initiatives for geological exploration and discovery of new resources.
- **Sustainable Mining Practices:** Adoption of environmentally sound and socially responsible mining models.

KEY FEATURES:

- **Categorized Evaluation:** States are grouped into three categories based on mineral endowment to ensure fair comparison.
 - **Category A:** Mineral-rich States
 - **Category B:** Moderately endowed States
 - **Category C:** Low-endowment States
- **Focus on Non-Coal Minerals:** Encourages diversification beyond coal, focusing on critical and strategic minerals.
- **Reform Benchmarking Tool:** Designed to drive policy alignment with ease of doing business, investment promotion, and sustainable resource management.
- **Supports Federal Reform Model:** Acts as a cooperative federalism instrument to motivate lagging States to improve their mining ecosystem.

STATE RANKINGS 2025:

Category	Top 3 States (2025)
A (Mineral-Rich)	1. Madhya Pradesh 2. Rajasthan 3. Gujarat
B (Moderate Resources)	1. Goa 2. Uttar Pradesh 3. Assam
C (Low Endowment)	1. Punjab 2. Uttarakhand 3. Tripura

19

THE SCHEME FOR INNOVATION & TECHNOLOGY ASSOCIATION WITH AADHAAR (SITAA)

The Unique Identification Authority of India (UIDAI) has launched the Scheme for Innovation and Technology Association with Aadhaar (SITAA) to boost Aadhaar authentication security and counter deepfakes, spoofing, and biometric fraud.



SITAA (INNOVATION AND TECHNOLOGY FOR AADHAAR)

SITAA is an innovation-driven collaboration program by UIDAI that brings together startups, academia, and industry partners to develop cutting-edge technologies to secure and strengthen Aadhaar-based authentication systems against emerging digital threats.

The scheme was launched by the Unique Identification Authority of India (UIDAI).

AIM:

- To fortify India's digital identity ecosystem against deepfake and presentation attacks.
- To foster indigenous R&D in biometric, AI, and cybersecurity technologies.
- To align Aadhaar innovation with the vision of Atmanirbhar Bharat and global data security standards.

KEY FEATURES:

- **Collaborative Framework:** Integrates efforts of startups, research institutes, and industries to co-develop scalable Aadhaar solutions.
- **Three Innovation Challenges:**

- **Face Liveness Detection:** AI-driven software development kit (SDK) SDKs to detect spoofing via photos, videos, or masks.
- **Presentation Attack Detection (PAD):** AI/ML-based tools for real-time detection of fake biometric inputs.
- **Contactless Fingerprint Authentication:** SDKs enabling secure fingerprint recognition through smartphones or low-cost devices.

FUNCTIONS OF SITAA:

- **Foster Innovation:** Encourages startups, academia, and industry to co-develop advanced biometric and AI-based solutions for Aadhaar authentication.
- **Enhance Security:** Develops technologies to detect and prevent deepfakes, spoofing, and presentation attacks, ensuring robust identity verification.
- **Promote Collaboration:** Builds a national innovation ecosystem by linking UIDAI with MeitY Startup Hub and NASSCOM for mentorship, funding, and global outreach.
- **Strengthen Digital Infrastructure:** Supports creation of indigenous, scalable, and privacy-compliant authentication systems, reinforcing India's digital public infrastructure.

SIGNIFICANCE:

- Strengthens Aadhaar's defence against cyber and biometric fraud, including deepfakes and spoofing.
- Promotes innovation-led public security, advancing India's digital public infrastructure.

20

CHINA FILES WTO COMPLAINT AGAINST INDIA

China Files WTO Complaint against India Over Unfair EV and Battery Subsidies.

CONTEXT AND BACKGROUND

- **Date:** 15 October 2025.
- **Event:** China formally filed a complaint with the **World Trade Organization (WTO)** against India.
- **Sector:** Focus on **electric vehicles (EVs)** and **battery manufacturing**.
- **Reason:** China alleges that India's **Production Linked Incentive (PLI)** schemes for EVs, automobiles, and **Advanced Chemistry Cell (ACC)** batteries violate WTO rules.

WHAT ARE PLI SCHEMES?

- **Definition:** Production Linked Incentive (PLI) schemes are **government initiatives** that provide financial incentives to manufacturers based on the **increment in production or sales of goods**.
- **Objective in India:**
 - Promote **domestic manufacturing**
 - Reduce **import dependence**
 - Boost **EVs and battery production** to meet India's **Net Zero/Climate Goals**
- **PLI for EVs & Batteries:** Incentives are often **linked to domestic content**, meaning **products or components must be sourced from India** to qualify.

CHINA'S ALLEGATION

- India's PLI conditions **favor domestic products**, which allegedly **discriminate against Chinese imports**.
- This, according to China, **violates WTO rules**, as it imposes a trade restriction and gives an unfair **competitive advantage to Indian companies**.

WTO AGREEMENTS INVOKED

China cited three WTO agreements:

- **Agreement on Subsidies and Countervailing Measures (SCM)**
 - Deals with **subsidies that distort trade**.

- **Prohibited subsidies** include those linked to **export performance or domestic content**.
- UPSC relevance: PLI subsidies based on domestic content may be viewed as **actionable subsidy** under SCM.
- **General Agreement on Tariffs and Trade (GATT 1994)**
 - Ensures **non-discrimination in trade**.
 - **National Treatment principle**: Imported goods should not be treated **less favorably than domestic goods**.
 - PLI conditions can be interpreted as violating **GATT's Article III (National Treatment)**.
- **Trade-Related Investment Measures (TRIMs) Agreement**
 - Prohibits **investment measures that distort trade**, like **local content requirements**.
 - PLI requiring domestic sourcing could potentially breach TRIMs rules.

ROLE OF WTO

- **WTO (World Trade Organization):**
 - **Headquarters**: Geneva, Switzerland
 - **Purpose**: Regulates **international trade**, resolves **trade disputes**, ensures **free and fair trade**.
 - **Dispute Settlement Mechanism (DSM)**:
 - Consultation stage (bilateral negotiation)
 - Panel formation (if unresolved)
 - Appellate Body review
 - Implementation of recommendations
- In this case, **WTO will examine** whether India's PLI scheme violates international rules.

IMPLICATIONS FOR INDIA

- **Trade Relations:**
 - Escalates **India-China trade tensions**.
 - China is India's **largest trading partner**, so this dispute is significant.
- **Domestic Policy Impact:**

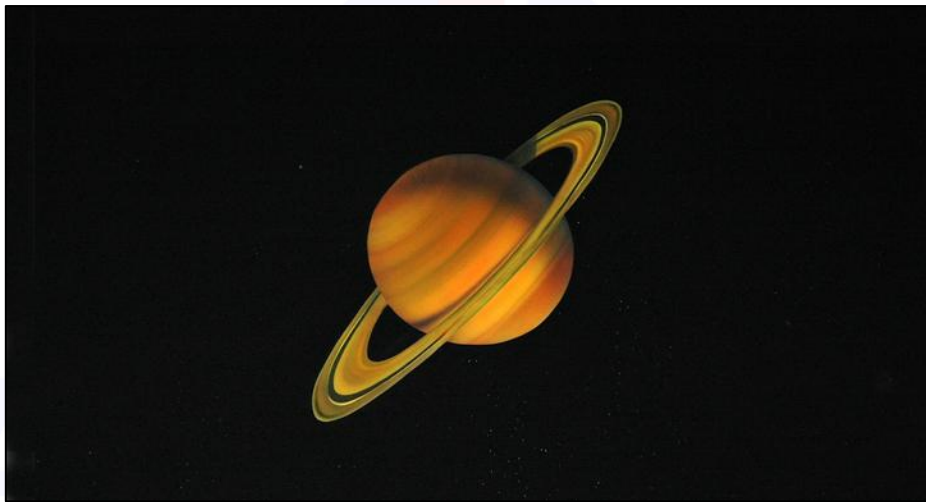
- India's **Atmanirbhar Bharat and EV policy** may require **revision** to comply with WTO rules.
- Balancing **domestic industrial promotion** with **international obligations** is crucial.
- **Green Technology Sector:**
 - EVs and batteries are **strategic and emerging sectors**.
 - WTO complaints could **affect investment decisions** and **global supply chain participation**.
- **Diplomatic Significance:**
 - Highlights **geo-economic rivalry** between India and China.
 - Shows **trade as a tool of strategic competition**.



21**CELESTIAL BODY – CHIRON**

Astronomers have, for the first time, observed ring formation around the icy celestial body Chiron, a minor planet orbiting between Saturn and Uranus, marking a historic discovery of a ring system evolving in real time.

- **Name:** Chiron (designated **2060 Chiron**)
- **Type:** Minor planet / centaur (hybrid between an asteroid and a comet)
- **Orbit:** Between **Saturn and Uranus**
- **Discovery:** 1977 by **Charles Kowal**
- **Size:** ~233 km in diameter
- **Composition:** Likely a mixture of **rock and ice**, similar to comets

**CLASSIFICATION: CENTAUR**

- **Definition:** Centaurs are **small celestial bodies** with orbits between Jupiter and Neptune.
- **Characteristics:**
 - Share properties of **asteroids and comets**
 - Often **unstable orbits** due to gravitational perturbations by giant planets
- Chiron was the **first discovered centaur** in the Solar System.

ORBIT AND MOTION

- **Orbital Period:** ~50.7 Earth years
- **Orbit Type:** Highly eccentric (elliptical), crossing the paths of **Saturn and Uranus**

- **Inclination:** ~6.9° to the ecliptic plane

COMET-LIKE ACTIVITY

- Observations have shown **Coma and tail activity**, especially when near perihelion (closest to the Sun).
- Considered a **“hybrid” body**: asteroid-like orbit, but comet-like activity.

RECENT DISCOVERIES

Ring System Discovery (2020s):

- Astronomers have detected a **ring system around Chiron**, similar to the rings of **Chariklo**, another centaur.
- This is the **first real-time observation of ring formation** around a minor icy body.
- Suggests **dynamically evolving small celestial objects**.

MYTHOLOGICAL BACKGROUND

- **Chiron in Greek Mythology:**
 - Wise centaur, teacher of **Achilles, Asclepius, and Hercules**
 - Known for **healing, wisdom, and astronomy knowledge**
- **Naming Significance:**
 - Reflects Chiron’s **dual nature**: part human (knowledge), part beast (wildness) → analogous to the celestial Chiron’s **asteroid-comet hybrid nature**

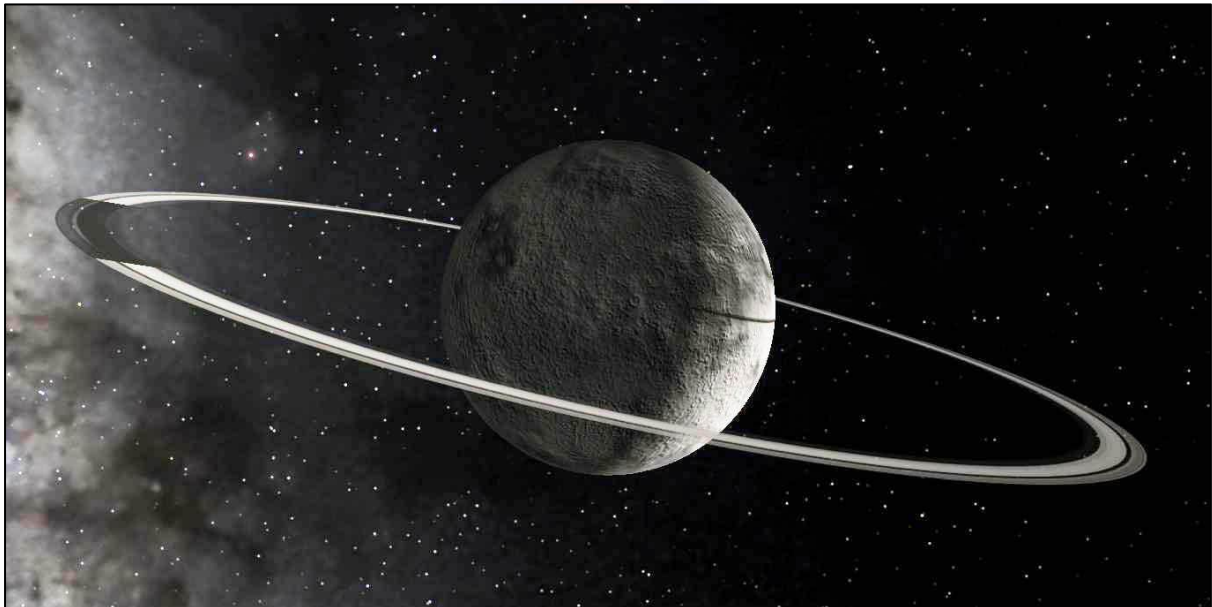
IMPORTANCE FOR ASTRONOMY

- **Bridge Object:** Helps study the **evolution of comets from the Kuiper Belt**.
- **Orbital Dynamics:** Understanding Chiron gives insights into **planetary perturbations and minor planet stability**.
- **Ring Formation:** Offers clues about **small body ring formation mechanisms** outside major planets.

KEY FACTS

Feature	Details
Designation	2060 Chiron

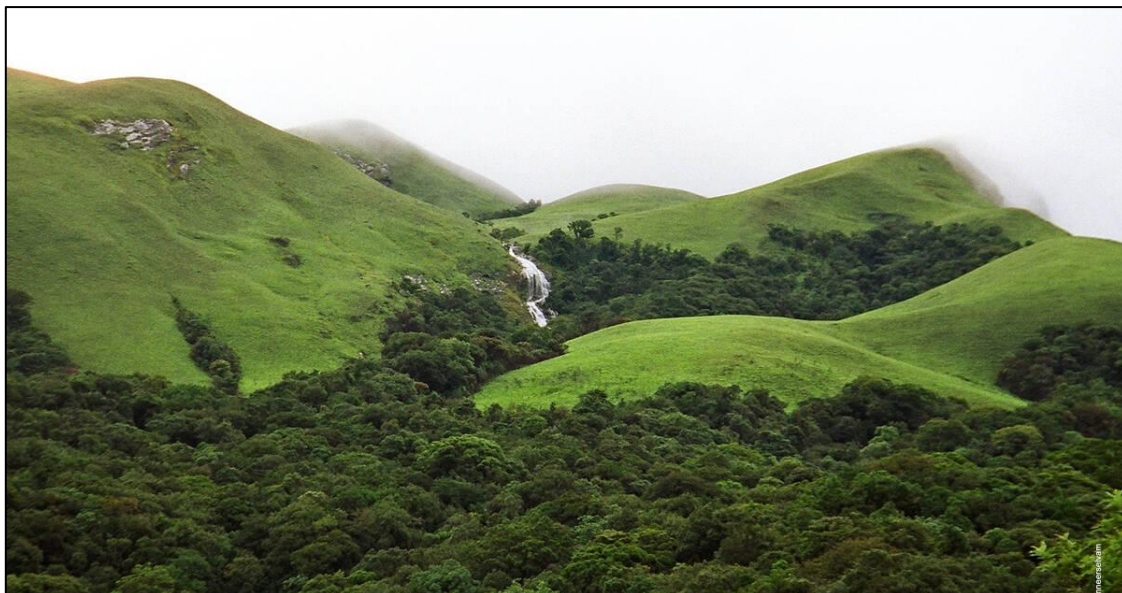
Type	Centaur (asteroid-comet hybrid)
Orbit	Between Saturn & Uranus
Orbital Period	~50.7 years
Diameter	~233 km
Discovery	1977, Charles Kowal
Special Features	Comet-like activity, ring system
Mythology	Named after Greek centaur Chiron, teacher of heroes



22

IUCN FLAGS WESTERN GHATS, MANAS, AND SUNDARBANS AS 'SIGNIFICANT CONCERN' SITES

International Union for Conservation of Nature (IUCN) in its World Heritage Outlook 4 (2025) report placed Western Ghats, Manas National Park, and Sundarbans National Park under the “Significant Concern” category.



SIGNIFICANT CONCERN' SITES

- **‘Significant Concern’ Sites** are **World Heritage Sites** or ecologically important areas that the **IUCN (International Union for Conservation of Nature)** identifies as **facing serious threats**, which could compromise their **outstanding universal value (OUV)** if urgent conservation measures are not implemented.
- They are **not yet in critical danger**, but the **trends indicate worsening conditions**.

IUCN & WORLD HERITAGE OUTLOOK

- **IUCN (International Union for Conservation of Nature):**
 - Headquarters: **Gland, Switzerland**
 - Functions: Assesses the **conservation status of species and ecosystems**, provides guidance on **sustainable management**, and evaluates **World Heritage Sites**.
- **World Heritage Outlook:**
 - Periodic IUCN report that **assesses the conservation status** of natural World Heritage Sites globally.

○ **Categories:**

- **Good** – Well-preserved with effective management.
- **Significant Concern** – Threats identified that may undermine site values.
- **Critical** – Sites facing severe threats requiring immediate intervention.

CRITERIA FOR 'SIGNIFICANT CONCERN'

- **Environmental Threats:** Climate change, sea-level rise, deforestation, water stress.
- **Human Activities:** Urbanization, tourism pressure, mining, poaching, unsustainable agriculture.
- **Management Gaps:** Weak governance, insufficient resources, lack of monitoring.
- **Biodiversity Impacts:** Decline in endemic species, invasive species spread, habitat fragmentation.

INDIAN SITES FLAGGED AS 'SIGNIFICANT CONCERN' (IUCN 2025 REPORT)

Site	Location	Key Threats
Western Ghats	Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu	Urbanization, infrastructure, climate change, invasive species
Manas National Park	Assam, bordering Bhutan	Poaching, floods, invasive species, climate change
Sundarbans National Park	West Bengal, India & Bangladesh	Sea-level rise, erosion, invasive species, climate change

WESTERN GHATS

- **Location:** Spanning Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
- **Significance:** Designated as a UNESCO World Heritage Site in 2012, the Western Ghats are recognized for their exceptional biodiversity, housing numerous endemic species.
- **Key Threats:**

- **Climate Change:** Altered rainfall patterns and temperature fluctuations affecting species distribution.
- **Urbanization:** Expansion of cities leading to habitat loss.
- **Tourism:** Unregulated tourism causing ecological degradation.
- **Infrastructure Projects:** Construction of roads and dams fragmenting habitats.
- **Invasive Species:** Introduction of non-native species disrupting local ecosystems.
- **Conservation Status:** The IUCN report highlights the need for urgent conservation measures to address these escalating threats.

MANAS NATIONAL PARK

- **Location:** Assam, India, bordering Bhutan.
- **Significance:** A UNESCO World Heritage Site, Manas is known for its unique biodiversity, including the endangered one-horned rhinoceros.
- **Key Threats:**
 - **Climate Change:** Increased flooding and temperature variations impacting habitats.
 - **Poaching:** Illegal hunting affecting vulnerable species.
 - **Invasive Species:** Non-native species outcompeting indigenous flora and fauna.
 - **Flood Damage:** Erratic flooding patterns causing habitat destruction.
- **Conservation Status:** The IUCN report emphasizes the need for enhanced protection and management strategies to mitigate these threats.

SUNDARBANS NATIONAL PARK

- **Location:** West Bengal, India, and Bangladesh.
- **Significance:** The Sundarbans are the largest mangrove forest in the world, serving as a critical habitat for the Bengal tiger and numerous other species.
- **Key Threats:**
 - **Climate Change:** Rising sea levels and increased salinity affecting mangrove ecosystems.
 - **Erosion:** Coastal erosion leading to habitat loss.
 - **Tourism Pressure:** Unregulated tourism impacting biodiversity.

- **Invasive Species:** Spread of non-native species disrupting local ecosystems.
- **Conservation Status:** The IUCN report underscores the urgency of implementing effective conservation measures to address these challenges.

COMPARATIVE OVERVIEW

Site	Location	Key Threats	Conservation Status
Western Ghats	Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu	Climate change, urbanization, tourism, infrastructure projects, invasive species	Significant Concern
Manas National Park	Assam, India, bordering Bhutan	Climate change, poaching, invasive species, flood damage	Significant Concern
Sundarbans National Park	West Bengal, India, and Bangladesh	Climate change, erosion, tourism pressure, invasive species	Significant Concern

IMPLICATIONS OF 'SIGNIFICANT CONCERN' STATUS

- **Policy Action:** Triggers governments to **strengthen management, conservation plans, and monitoring.**
- **Funding & Support:** Helps attract **national and international funding** for ecosystem restoration.
- **Public Awareness:** Increases awareness about the **importance and fragility of these ecosystems.**

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PRADHAN MANTRI JAN AROGYA YOJANA (PM-JAY)

At the National Health Authority (NHA) Conclave 2025 held in Bhopal, Chhattisgarh was awarded as the best-performing state in implementing the Pradhan Mantri Jan Arogya Yojana (PM-JAY) for achieving near-zero claim pendency.

The infographic features a green header with the PM-JAY logo on the left and the National Health Agency logo on the right. The title 'PRADHAN MANTRI JAN AROGYA YOJANA' is in large green letters. Below the title, a green box contains the text: 'Prime Minister Narendra Modi launched the Ayushman Scheme - Pradhan Mantri Jan Arogya Yojana. Apex body implementing it would be National Health Agency.' The 'KEY FEATURES' section follows, with a portrait of PM Narendra Modi in the center. Eight features are listed in two columns, each with an icon: 1. Cashless & paperless access (ID card icon), 2. 10.74 Crore rural & urban individuals covered (group of people icon), 3. Medical insurance up to 5 lakhs (family icon), 4. 85% and 60% beneficiaries identified (house icon), 5. 8,735 hospitals empanelled (hospital icon), 6. No cap on family size or age (family icon), 7. Implementation in 3 ways (temple icon), 8. Anti-fraud cells and IT tools (lock icon).

PRADHAN MANTRI JAN AROGYA YOJANA

Prime Minister Narendra Modi launched the Ayushman Scheme - Pradhan Mantri Jan Arogya Yojana. Apex body implementing it would be National Health Agency.

KEY FEATURES

- The scheme is to provide cashless & paperless access to health care services in all empanelled hospitals.
- Over 8,735 hospitals, both public & private, have been empanelled for the scheme. 31 states & union territories have signed MoUs.
- It will cover 10.74 Crore rural & urban individuals as identified in SECC 2011.
- There is no cap on family size or age to avail the scheme.
- All applicants will be able to attain a medical insurance scheme that amounts to 5 lakhs for a financial year.
- States will be able to implement the PM Jan Arogya Yojana in 3 ways - Mixed mode, Insurance Mode & Trust Mode.
- About 85% and 60% beneficiaries have been identified from rural & urban settlements.
- Anti-fraud cells to be established at the national & state level; strong IT tools will be deployed to prevent fraud.

PM-JAY, a component of **Ayushman Bharat**, is the **world's largest government-funded health assurance scheme**, providing free secondary and tertiary healthcare to India's poorest families.

Launch: Launched on **23rd September 2018** in Ranchi, Jharkhand.

2025 Best State Implementation: Chhattisgarh topped national rankings with 97% empanelled hospitals active, 32,000+ audits for fraud control.

AIM:

To provide **cashless and paperless access** to quality healthcare for **12 crore vulnerable families (≈55 crore people)** covering the bottom 40% of the Indian population, and to **prevent catastrophic medical expenditure** that pushes millions into poverty annually.

KEY FEATURES:

- ₹5 lakh annual health cover per family on a **family floater basis** (no limit on family size, age, or gender).
- **Cashless treatment** across public and private empaneled hospitals nationwide.
- Covers **1,929 medical procedures**, including diagnostics, surgery, implants, ICU, and medicines.
- Includes **3 days of pre-hospitalization and 15 days of post-hospitalization care**.
- **Portability:** Benefits can be availed in any empaneled hospital across India.
- **Pre-existing diseases** covered from day one.
- Fully funded by Government — cost shared between **Centre and States**.

PM-JAY BENEFICIARIES:

- Eligibility under **PM-JAY** is primarily based on **SECC-2011 data**, expanded to include **senior citizens aged 70+ years**.

24

LIMESTONE CLASSIFIED AS A MAJOR MINERAL

The Ministry of Mines has issued a notification, classifying limestone entirely as a major mineral, removing its dual classification as both a major and minor mineral.



DEFINITION AND CLASSIFICATION

- **Limestone:** A sedimentary rock mainly composed of **calcium carbonate** (CaCO_3).
- **Major Mineral:** Under **Section 3(d) of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**, major minerals are **minerals of national importance or economic significance**, whose extraction is regulated by the **Central Government**.
- **Minor Mineral:** Minerals regulated by **State Governments** (e.g., building stones, sand, gravel).

CLASSIFICATION:

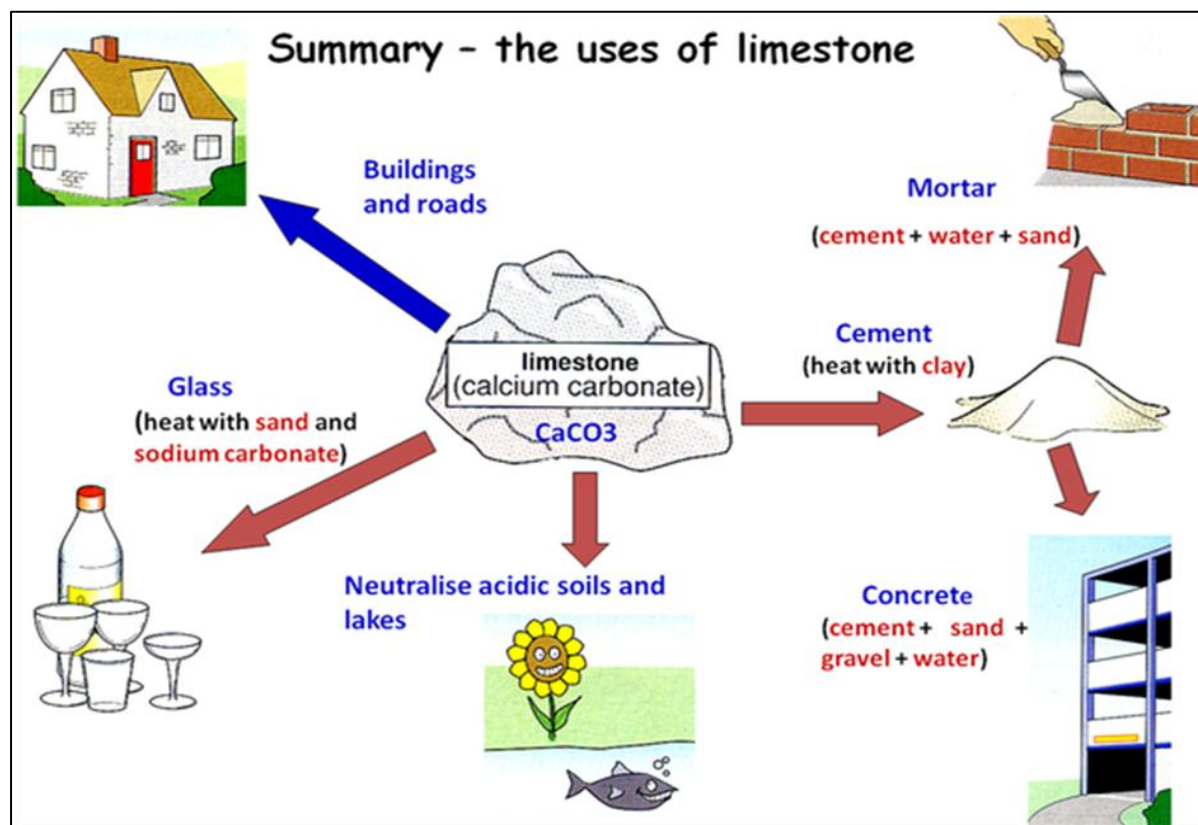
Limestone is classified as a **major mineral** because:

- **Economic Importance:** Essential for **cement, steel, sugar, and chemical industries**.

- **Strategic Significance:** Plays a role in **infrastructure and industrial development**.
- **Revenue Generation:** Contributes substantially to **state and national mineral revenues**.
- **Source:** MMDR Amendment Act 2015 & Ministry of Mines

USES OF LIMESTONE

Sector	Use
Cement Industry	Main raw material for Portland cement production
Steel Industry	Used as a flux in blast furnaces
Sugar Industry	Used in clarification of sugar juice
Chemical Industry	Production of lime, calcium carbide, soda ash
Agriculture	Soil conditioning and pH control
Construction	Roads, buildings, and as aggregate in concrete



GEOLOGICAL DISTRIBUTION IN INDIA

Region/State	Key Limestone Areas
Rajasthan	Jodhpur, Udaipur, Kota, Banswara
Madhya Pradesh	Satna, Katni, Jabalpur
Gujarat	Jamnagar, Kutch
Andhra Pradesh	Guntur, Prakasam
Telangana	Karimnagar, Adilabad
Chhattisgarh	Raipur, Bastar
Jharkhand	Giridih, Hazaribagh
Maharashtra	Nagpur, Chandrapur

Note: Rajasthan contributes ~35–40% of India's total limestone production.

LEGAL AND ADMINISTRATIVE ASPECTS

- **Governing Law:** Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)
- **Regulatory Authority:**
 - **Central Government:** For major minerals, including limestone.
 - **State Governments:** Grant **mining leases** and oversee operational matters.
- **Recent Amendments:**
 - **MMDR Amendment 2015:** Introduced **auction-based allocation** of mineral resources to enhance transparency.
 - **Mineral Concession Rules, 1960:** Define procedures for **exploration and extraction**.

ECONOMIC SIGNIFICANCE

- **Cement Production:** India's cement industry is heavily dependent on limestone; **~90% of cement raw material is limestone**.
- **Employment Generation:** Mining and allied industries provide **jobs in rural and semi-urban areas**.

- **Revenue Contribution:** Mining leases contribute to **state royalties and central taxes**.
- **Industrial Growth:** Limestone availability supports **steel plants, power projects, and construction sectors**.

CHALLENGES IN LIMESTONE MINING

- **Environmental Concerns:** Dust, deforestation, water pollution, and habitat destruction.
- **Regulatory Issues:** Delay in **lease allocation** and compliance with environmental norms.
- **Resource Depletion:** Over-extraction in some regions, necessitating **sustainable mining practices**.
- **Conflicts:** Local communities sometimes oppose mining due to **land displacement or ecological impact**.

MAJOR MINERALS OF INDIA

Mineral	Classification	Key Uses / Industrial Importance	Major Producing States / Regions	UPSC Notes / Significance
Limestone	Major Mineral	Cement industry (primary raw material) Steel industry (flux) Sugar industry (clarification) Chemicals (lime, calcium carbide, soda ash) Agriculture (soil conditioning) Construction (aggregate, concrete)	Rajasthan (Jodhpur, Kota), MP (Satna, Katni), Gujarat (Jamnagar), Telangana, Andhra Pradesh, Chhattisgarh, Maharashtra	Major mineral under MMDR Act . Essential for industrial growth and infrastructure . UPSC relevance: GS3 – mineral resources, industry, GS2 – governance.
Bauxite	Major Mineral	Aluminium extraction (primary source of Al) Abrasives, cement,	Odisha (Koraput, Damanjodi), Gujarat, Maharashtra (Kolhapur,	Strategic mineral for aluminium production , industrial and export importance. UPSC

		refractory industry	Chandrapur), Jharkhand (Lohardaga), Madhya Pradesh	relevance: GS3 – mineral resources, industry.
Iron Ore	Major Mineral	Steel production, Pig iron, ferroalloys	Odisha (Keonjhar, Sundargarh), Chhattisgarh (Bastar, Dalli-Rajhara), Jharkhand (Noamundi, Singhbhum), Karnataka (Bellary, Hospet), Goa	Backbone of steel industry and infrastructure . UPSC relevance: GS3 – industrial development, infrastructure, minerals.
Manganese	Major Mineral	Steel industry (alloying element) Battery industry (MnO_2 in dry cell)	Odisha (Balaghat, Kendujhar), Karnataka (Shimoga, Ballari), Maharashtra (Nagpur, Chandrapur), Madhya Pradesh	Essential for steel and battery industry . UPSC relevance: GS3 – minerals, industry, technological use.
Coal	Major Mineral	Thermal power plants Steel (coking coal) Cement and sponge iron industry Domestic fuel	Jharkhand (Jharia, Bokaro), Odisha (Talcher, Ib Valley), Chhattisgarh (Korba), West Bengal (Raniganj), Madhya Pradesh (Singrauli)	

DIFFERENCE BETWEEN MAJOR AND MINOR MINERALS

Feature	Major Minerals	Minor Minerals
Definition	Minerals of national importance or economic significance regulated by the Central Government under MMDR Act.	Minerals of local or regional importance , regulated by the State Government .
Legal Basis	Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)	MMDR Act & State minor mineral rules

Examples	Coal, Iron Ore, Bauxite, Limestone, Manganese, Copper, Gold	Sand, Gravel, Stone, Ordinary Clay, Building Stones
Regulatory Authority	Central Government regulates: auction, allocation, policy, export.	State Government regulates: mining leases, royalty, and local use.
Purpose/Importance	Strategic, industrial, economic development, infrastructure, energy	Construction, local industry, daily use, small-scale industries
Export/Trade Control	Controlled by Central Government; can be exported with clearance	Controlled by State Government; usually for domestic/local use
Mining Approval	Requires central-level approvals for allocation or auction	State-level approvals suffice
Revenue Generation	Significant contribution to national and state revenue	Revenue mostly benefits state/local government

KEY POINTS

- **Major minerals** are essential for **industrial growth, infrastructure, and energy security**, while **minor minerals** mostly cater to **local construction and small industries**.
- **Central Government** manages **policy, regulation, and auction** of major minerals, whereas **State Governments** manage minor minerals.
- **Examples of Major Minerals in India:** Coal, Iron Ore, Bauxite, Limestone, Manganese, Copper, Gold, etc.
- **Examples of Minor Minerals in India:** Sand, Gravel, Ordinary Clay, Stone, Marble, Granite, Silica, etc.
- **UPSC Relevance:**
 - GS Paper 3 – Mineral Resources, Industrial Policy, Sustainable Mining, Environmental Impact.
 - Important for **prelims MCQs** (classification, examples, state-wise distribution).

QUICK REVISION

Aspect	Major Minerals	Minor Minerals
Importance	National/strategic	Local/regional

Governing Authority	Central Government	State Government
Examples	Coal, Iron Ore, Bauxite, Limestone	Sand, Stone, Gravel
Revenue	High, industrial & state contribution	Moderate, mostly state/local
Export Control	Central Government clearance required	Usually local use, state-controlled
Approval for Mining	Central & state approval	State-level approval



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INDIA ELECTED FOR UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

India has been elected unopposed to the United Nations Human Rights Council (UNHRC) for the 2026–2028 term, marking its seventh tenure on the global body.



OVERVIEW

- **Event:** India elected **unopposed** to the **United Nations Human Rights Council (UNHRC)**.
- **Term:** **2026–2028**
- **Significance:** This marks India's **seventh tenure** in the UNHRC.

ABOUT UNHRC

- **Full Name:** United Nations Human Rights Council
- **Established:** 2006 (replacing the UN Commission on Human Rights)
- **Headquarters:** Geneva, Switzerland
- **Parent Organization:** United Nations General Assembly (UNGA)
- **Purpose:**
 - Promote **universal respect for human rights**.
 - Address **human rights violations**.
 - Provide **advisory, investigative, and reporting functions**.

- **Composition:**
 - **47 member states** elected by **UNGA**.
 - Membership is for **3-year terms**, renewable once.
 - Seats are allocated **geographically**: Africa, Asia-Pacific, Latin America, Western Europe, and Eastern Europe.

INDIA'S MEMBERSHIP

- **Previous Tenures:** India has been elected **six times** previously.
- **Region Represented:** **Asia-Pacific Group**
- **Election Method:** Elected **unopposed**, showing **diplomatic support** and recognition of India's role in human rights issues.

SIGNIFICANCE FOR INDIA

- **International Recognition:** Highlights India's **active role in global human rights discourse**.
- **Diplomatic Influence:**
 - Opportunity to **shape international human rights policies**.
 - Platform to **present India's perspective** on human rights challenges.
- **Strategic Advantage:**
 - Strengthens India's **soft power** and credibility at multilateral forums.
- **Policy Platform:**
 - India can advocate for issues like **human development, gender equality, minority rights, and combating discrimination**.

KEY FUNCTIONS OF UNHRC

Function	Description
Promotion of Human Rights	Encourages adoption of international human rights norms.
Monitoring & Reporting	Investigates violations, crises, and conflicts globally.

Advisory Role	Recommends policies to UNGA, ECOSOC, and member states.
Special Procedures	Appoints independent experts on specific themes or countries.
Resolution & Dialogue	Adopts resolutions on human rights issues , promotes dialogue among states.

INDIA'S APPROACH AT UNHRC

India focuses on:

- **Human development as a human right** (education, health, social welfare).
- **Right to equality and non-discrimination.**
- **International cooperation for sustainable development goals (SDGs).**
- **Combating racism, xenophobia, and intolerance globally.**

UN BODIES

UN Body / Organization	Headquarters	Year Established	Functions / Role	Relevance to India
United Nations General Assembly (UNGA)	New York, USA	1945	- Deliberative organ of UN - Approves budget, admits new members - Elects non-permanent Security Council members	India is a founding member , uses UNGA for multilateral diplomacy ;
United Nations Security Council (UNSC)	New York, USA	1945	- Maintains international peace and security - Can impose sanctions, authorize military action	India is not a permanent member , advocates for UNSC reform ;

United Nations Human Rights Council (UNHRC)	Geneva, Switzerland	2006	- Promote & protect human rights - Investigate violations - Appoint independent experts	India elected 7th time (2026–28) ;
United Nations Development Programme (UNDP)	New York, USA	1965	- Global development network - Poverty reduction, SDGs, capacity building	India partners for SDG implementation, human development projects ;
United Nations Environment Programme (UNEP)	Nairobi, Kenya	1972	- Environmental protection - Climate change, biodiversity, sustainable development	India coordinates for climate action, biodiversity, pollution control ;
World Health Organization (WHO)	Geneva, Switzerland	1948	- Global health leadership - Disease control, health standards, emergency response	India collaborates on pandemic response, vaccination, health policies ;
United Nations Educational, Scientific and Cultural Organization (UNESCO)	Paris, France	1945	- Promote education, culture, science, heritage protection	India leverages for World Heritage Sites, cultural programs, education ;

International Labour Organization (ILO)	Geneva, Switzerland	1919	- Promote social justice, labor rights, employment standards	India engages for labor law reform, workers' rights, international standards;
World Bank (IBRD) & IMF	Washington D.C., USA	1944	- Development finance, economic stability, loans & grants	India uses loans, technical assistance for infrastructure & poverty alleviation;
Food and Agriculture Organization (FAO)	Rome, Italy	1945	- Food security, agriculture, rural development	India partners for agriculture policy, food security programs;

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VISVA-BHARATI UNIVERSITY

Visva-Bharati University, founded by Rabindranath Tagore, is facing a deep institutional crisis as National Education Policy (NEP) 2020 reforms trigger funding cuts, faculty unrest, and allegations of administrative overreach.



VISVA-BHARATI UNIVERSITY:

- Visva-Bharati is a **Central University of national importance** known for its unique blend of Indian tradition and global learning. It serves as a model of **holistic education integrating arts, science, and humanities**.
- **Established in:** Founded in **1921** by Rabindranath Tagore.
- Shantiniketan was established in 1901.
- A 'world university' was established at Santiniketan in 1921, recognizing the unity of humanity or "Visva Bharati".
- **Located in:** Situated at **Santiniketan**, in Birbhum district, West Bengal.

HISTORY:

- Began as an **ashramic school** emphasizing simplicity, self-reliance, and learning in nature.
- In **1951**, it became a **Central University through an Act of Parliament**, gaining status as an institution of national importance.
- Over the decades, it evolved into a **centre of global exchange**, fostering art, literature, music, and rural reconstruction.

KEY FEATURES:

- Promotes **interdisciplinary education** rooted in Indian ethos and global outlook.
- Encourages **artistic and rural engagement**, with schools like Kala Bhavana (Fine Arts) and Sriniketan (Rural Development).
- Operates under Tagore's principle of **freedom in learning** promoting creativity over rote learning.



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EPF NEW WITHDRAWAL RULES 2025

The Employees' Provident Fund Organization (EPFO) has announced major reforms simplifying withdrawal rules under EPFO 3.0.



EPF NEW WITHDRAWAL RULES 2025:

The revised EPF withdrawal framework simplifies and modernises the provident fund system to provide greater flexibility, ease of access, and faster digital claim settlement for over 30 crore subscribers.

AIM:

To streamline withdrawal procedures, enable members to meet urgent financial needs without lengthy documentation, and balance short-term liquidity with long-term retirement security.

NEW FEATURES:

- **Simplified Categories:** 13 withdrawal purposes merged into **three core types** — Essential Needs (illness, education, marriage), Housing Needs, and Special Circumstances.
- **Enhanced Limits:** Up to **10 withdrawals for education** and **5 for marriage** during service, compared to the previous combined limit of 3.
- **Minimum Balance Rule:** Members must retain **25% of their EPF corpus** to preserve compounding benefits and ensure retirement savings.

- **Service Tenure Relaxed:** Minimum service period reduced to **12 months for housing** and **7 years for marriage or education**, enhancing accessibility.
- **Full Withdrawal Option:** Members can now withdraw up to **100% of the eligible balance**, including employer and employee shares.
- **Digital Transformation (EPFO 3.0):** Automated, **document-free settlements**, cloud-based core banking integration, and multilingual self-service portals introduced for faster processing.
- **Vishwas Scheme for Dispute Resolution:** Rationalised penal damages and simplified compliance to reduce litigation for delayed PF remittances.

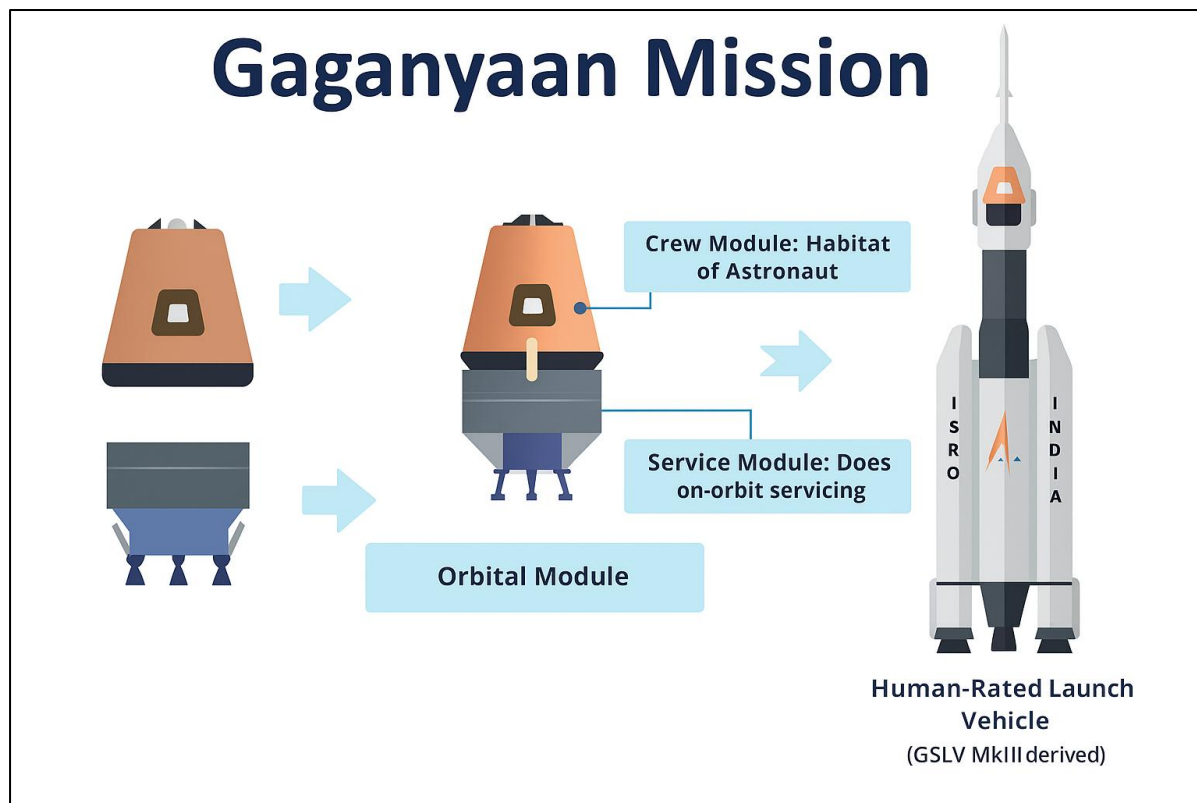
SIGNIFICANCE:

- Promotes financial inclusivity and empowers workers to access funds during emergencies.
- Enhances ease of living by reducing bureaucratic hurdles and promoting real-time online claims.
- Encourages a digitally secure and paperless provident fund ecosystem aligned with India's fintech vision.

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28**CREW ESCAPE SYSTEM (CES)**

The Indian Space Research Organization (ISRO) has highlighted the working of the Crew Escape System (CES) a critical safety mechanism of the Gaganyaan Mission.

**OVERVIEW**

- **Mission: Gaganyaan** – India's first **manned spaceflight mission** by ISRO.
- **Crew Escape System (CES):** A **safety mechanism** designed to **rescue astronauts in case of an emergency during launch**.
- **Purpose:** Protect crew in case of **launch vehicle malfunction or abort scenario**, ensuring **safe escape from the rocket**.

STRUCTURE OF THE CREW ESCAPE SYSTEM

- **Launch Abort Tower (LAT) / Crew Escape Tower:**
 - Mounted on top of the crew module.
 - Contains **solid rocket motors** that pull the crew module **away from the rocket** during emergencies.
- **Crew Module (CM):**
 - Capsule that houses **astronauts**, life support, and **navigation systems**.

- Designed to **safely detach and descend** with parachutes.
- **Parachute System:**
 - Includes **main and drogue parachutes** to ensure **controlled descent**.
 - Equipped with **redundancy** for safety.

WORKING MECHANISM

Phase	Description
Detection of Emergency	Sensors detect anomalies in rocket performance (engine failure, trajectory deviation, etc.).
Activation	CES rockets fire instantly , separating the crew module from the launch vehicle.
Propulsion & Distance	Solid motors pull the module to a safe distance , avoiding explosion risk.
Descent	Drogue parachutes stabilize the module , then main parachutes deploy for soft landing .
Landing	Crew module lands in pre-determined splashdown zone or land zone, where recovery teams await.



IMPORTANCE OF CES

- **Astronaut Safety:**
 - Ensures **high probability of survival** even if the launch fails.
- **Mission Reliability:**
 - Adds **confidence to manned spaceflight**, critical for **international credibility**.
- **Technological Achievement:**
 - Demonstrates India's **advanced rocketry, sensor, and life support integration**.
- **Global Standards:**
 - Aligns with **NASA and Roscosmos safety norms**, enabling **future collaborations**.

CES IN GLOBAL CONTEXT

- **NASA:** Crew Escape System used in **Apollo, Mercury, and Orion programs**.
- **Russia:** Soyuz spacecraft uses **launch abort systems** for astronaut safety.
- **China:** Shenzhou spacecraft employs **escape tower mechanism** similar to CES.

29**IUCN CLASSIFIES INDIAN WOLF AS POTENTIAL DISTINCT SPECIES**

The International Union for Conservation of Nature (IUCN) has, for the first time, evaluated the Indian wolf (*Canis lupus pallipes*) as a potential distinct species, listing it as 'Vulnerable' on the Red List with only about 3,000 individuals left in the wild.

**OVERVIEW**

- **Event:** The International Union for Conservation of Nature (IUCN) has classified the **Indian wolf (*Canis lupus pallipes*)** as a **potential distinct species**, based on **genetic, morphological, and ecological studies**.
- **Significance:** Recognition as a distinct species has **conservation and policy implications**, highlighting the need for **focused protection measures**.
- **Source:** IUCN Red List, 2025

ABOUT INDIAN WOLF

Feature	Description
Scientific Name	<i>Canis lupus pallipes</i>
Distribution	India, Pakistan, Nepal, Iran, and Middle East; primarily peninsular India and western India
Habitat	Grasslands, scrublands, semi-arid regions; avoids dense forests

Diet	Herbivorous prey: blackbuck, chinkara, hares; sometimes livestock
Social Structure	Lives in packs , smaller than Eurasian gray wolves
Population	Estimated 2,500–4,000 in India , fragmented and declining

REASONS FOR CLASSIFICATION AS POTENTIAL DISTINCT SPECIES

- **Genetic Evidence:**
 - DNA studies suggest the Indian wolf **diverged early** from other gray wolf populations.
- **Morphological Differences:**
 - Smaller size, **distinct skull and dentition structure**, adapted to **semi-arid habitats**.
- **Ecological Niche:**
 - Adapted to **dry grasslands and scrublands**, unlike Himalayan or Eurasian gray wolves.
- **Conservation Priority:**
 - Distinct species status can help **prioritize conservation efforts** and **secure legal protection** under wildlife acts.

CONSERVATION STATUS

- **IUCN Red List:** Currently **Endangered**, threatened by:
 - Habitat loss due to agriculture and urbanization
 - Human-wildlife conflict (livestock predation)
 - Depletion of prey species
- **Legal Protection in India:**
 - Listed under **Schedule I of the Wildlife Protection Act, 1972** → **highest legal protection**
 - Inclusion in **Protected Areas** and wildlife corridors is recommended

ECOLOGICAL IMPORTANCE

- **Apex Predator:** Controls populations of herbivores and maintains **grassland ecosystem balance**.
- **Biodiversity Indicator:** Presence indicates **healthy semi-arid and grassland ecosystems**.

- **Human-Wildlife Coexistence:** Managing livestock predation promotes **conflict mitigation and sustainable conservation.**

OTHER SPECIES AND THEIR UPDATED IUCN STATUS (2025)

- **Hooded Seal** – Upgraded to Endangered
- **Bearded Seal** – Now classified as Near Threatened
- **Harp Seal** – Now classified as Near Threatened
- **Green Turtle** – Now classified as Vulnerable (Downgraded)



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THE INTERNATIONAL COMMITTEE OF THE RED CROSS (ICRC)

Context: The International Committee of the Red Cross (ICRC) has been playing a key role in the Israel– Hamas hostage and prisoner exchanges (2023–2025).



THE INTERNATIONAL COMMITTEE OF THE RED CROSS (ICRC):

- A global humanitarian network of over 80 million members and volunteers, dedicated to protecting human life and dignity during war, disaster, and crisis.
- Established In: 1863, by Henry Dunant, a Swiss humanitarian, after witnessing the horrors of the Battle of Solferino (1859).
- **Aim:** To provide neutral, impartial, and independent humanitarian assistance to those affected by armed conflict and natural disasters, ensuring adherence to International Humanitarian Law (IHL).

HISTORICAL BACKGROUND:

- Founded as the International Committee of the Red Cross (ICRC) in Geneva, Switzerland, it marked the start of organized humanitarian response in wartime.
- The idea evolved into a global movement, leading to the establishment of the Red Cross and Red Crescent emblems as symbols of protection and neutrality.
- In 2005, the Red Crystal emblem was added for use by countries not using the cross or crescent for cultural or political reasons.

STRUCTURE AND KEY COMPONENTS

Component	Role and Function
ICRC (International Committee of the Red Cross)	Coordinates relief in conflict zones, ensures respect for IHL, protects detainees, assists refugees, and facilitates humanitarian access.
IFRC (International Federation of Red Cross and Red Crescent Societies)	Umbrella organization for 191 National Societies , managing global disaster response and promoting community resilience.
National Red Cross and Red Crescent Societies	Operate within their own countries, assist governments in humanitarian efforts, and support both domestic and international relief missions.

FUNCTIONS AND SIGNIFICANCE:

- **Humanitarian Protection:** Safeguards civilians, detainees, and displaced persons in conflict zones.
- **Medical and Relief Aid:** Provides healthcare, shelter, and emergency supplies in war and disaster situations.
- **Restoring Family Links:** Reunites families separated by conflict or disaster through tracing services.
- **Promotion of International Humanitarian Law (IHL):** Advocates for compliance with the **Geneva Conventions** and humane treatment of war victims.
- **Neutral Mediation:** Acts as a trusted intermediary in hostage exchanges and ceasefire arrangements, as seen in **Gaza 2025**.

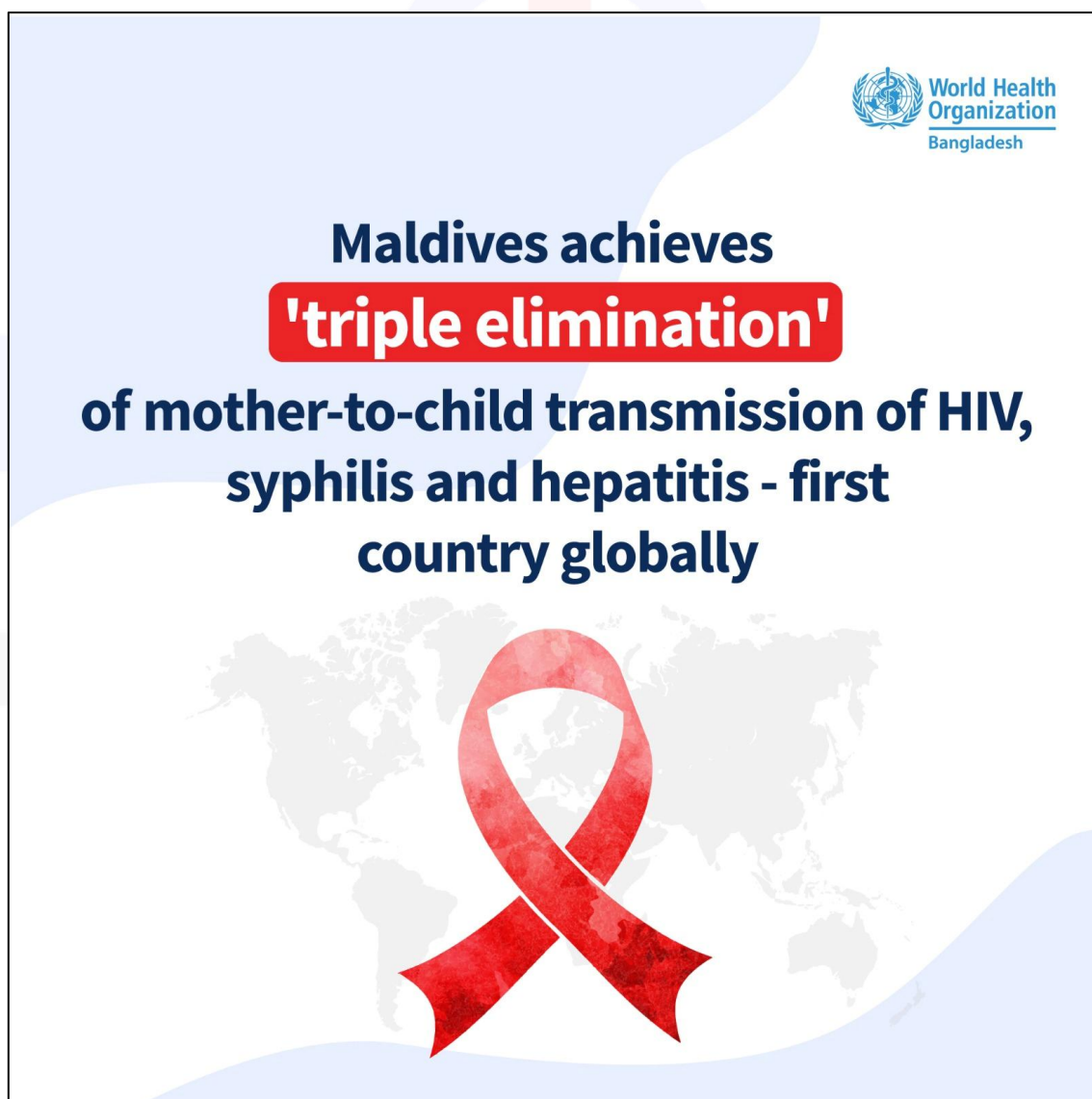
31

MALDIVES ACHIEVES TRIPLE ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION (MTCT)

The World Health Organization (WHO) has validated the Maldives as the first country in the world to achieve “triple elimination” — stopping mother-to-child transmission of HIV, syphilis, and hepatitis B, marking a historic global public health milestone

OVERVIEW

- **Event:** The **World Health Organization (WHO)** certified that **Maldives has achieved triple elimination of mother-to-child transmission (MTCT)** of HIV, syphilis, and hepatitis B.
- **Significance:** First country in the **South-East Asia Region** to achieve this milestone.



WHAT IS TRIPLE ELIMINATION OF MTCT?

Mother-to-Child Transmission (MTCT): Transmission of infections from a pregnant mother to her baby **during pregnancy, labor, delivery, or breastfeeding.**

Triple Elimination refers to the elimination of MTCT of:

- **HIV** – Human Immunodeficiency Virus
- **Syphilis** – Sexually transmitted bacterial infection
- **Hepatitis B** – Viral infection affecting the liver

WHO CRITERIA FOR ELIMINATION:

- **HIV:** Transmission rate <2% in non-breastfeeding populations and <5% in breastfeeding populations.
- **Syphilis & Hepatitis B:** Transmission rates <2%.
- **Sustained high coverage:** ≥95% of pregnant women screened and treated.

MEASURES TAKEN BY MALDIVES

- **Universal Screening:**
 - All pregnant women screened for **HIV, syphilis, and hepatitis B.**
- **Treatment & Prevention:**
 - **Antiretroviral therapy (ART)** for HIV-positive mothers.
 - **Antibiotic therapy** for syphilis-infected mothers.
 - **Hepatitis B vaccination** for newborns within 24 hours of birth.
- **Awareness & Education:**
 - Community programs to **reduce stigma**, encourage testing, and **ensure adherence to treatment.**
- **Health System Strengthening:**
 - Strong **maternal and child health infrastructure**, reliable supply chains, and **trained health workforce.**

SIGNIFICANCE

- **Global Health Milestone:**
 - Demonstrates the effectiveness of **integrated maternal and child health programs.**

- **Public Health Model:**
 - Shows that **small nations with focused policy and strong health systems** can achieve major public health goals.
- **UN SDG Alignment:**
 - Contributes to **SDG 3.3** – ending epidemics of HIV, tuberculosis, malaria, and **maternal-to-child transmission of HIV, hepatitis, and syphilis**.
- **Regional Implications:**
 - Encourages other **South-East Asian countries** to replicate successful strategies.



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LOGISTICS EXCELLENCE, ADVANCEMENT, AND PERFORMANCE SHIELD (LEAPS) 2025

Union Minister for Commerce and Industry launched the Logistics Excellence, Advancement, and Performance Shield (LEAPS) 2025 at Bharat Mandapam, New Delhi, marking the 4th Anniversary of PM GatiShakti.

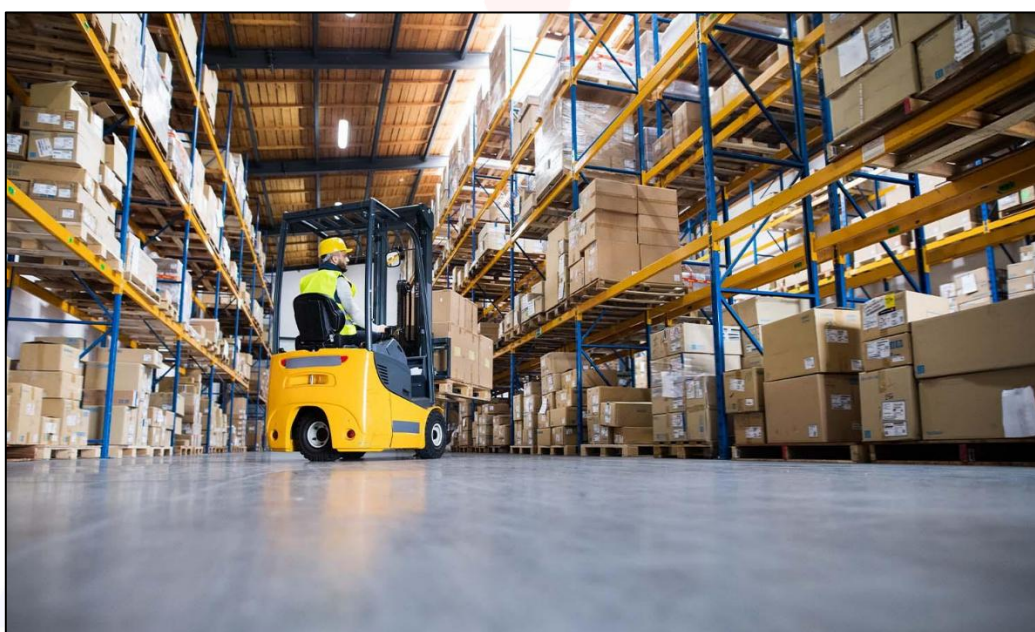


LEAPS 2025 is a national benchmarking initiative designed to recognize excellence, innovation, and leadership across India's logistics sector, enhancing its global competitiveness.

- **Launched in:** October 2025, during the 4th Anniversary of PM GatiShakti celebrations in New Delhi.
- **Published by:** Department for Promotion of Industry and Internal Trade (DPIIT), under the Ministry of Commerce and Industry, Government of India.
- **Aim:** To benchmark logistics performance, celebrate sectoral innovation, and align industry practices with the National Logistics Policy (2022) and PM GatiShakti's vision of integrated, sustainable, and resilient infrastructure.
- **Criteria:** Applications are invited under 13 categories covering air, rail, road, and maritime freight operators; warehousing (industrial and agricultural); MSMEs, Startups, academic institutions, and e-commerce logistics providers, promoting diversity and inclusion in logistics excellence.

FEATURES:

- Promotes **ESG compliance, green logistics, and sustainability goals.**
- Encourages **collaboration between Government, Industry, and Academia.**
- Serves as a **national recognition platform** for logistics innovation, efficiency, and technology adoption.
- Strengthens India's efforts toward **Make in India, Atmanirbhar Bharat, and Viksit Bharat 2047.**
- Registration open on the **Rashtriya Puraskar Portal (awards.gov.in).**

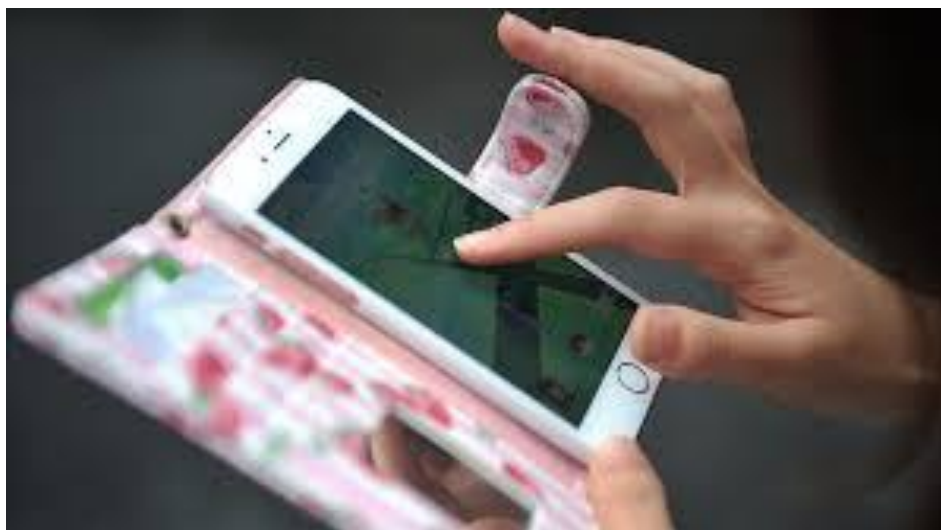


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TOYOAKE'S SCREEN TIME ORDINANCE

The Japanese city of Toyoake, near Nagoya, has enacted a local ordinance limiting residents' screen time to two hours a day, becoming one of the first cities globally to officially encourage reduced smartphone dependence.



TOYOAKE'S SCREEN TIME ORDINANCE

A municipal guideline introduced in **October 2025**, recommending citizens both adults and children to restrict recreational screen use (phones, laptops, tablets) to **two hours daily**.

AIM:

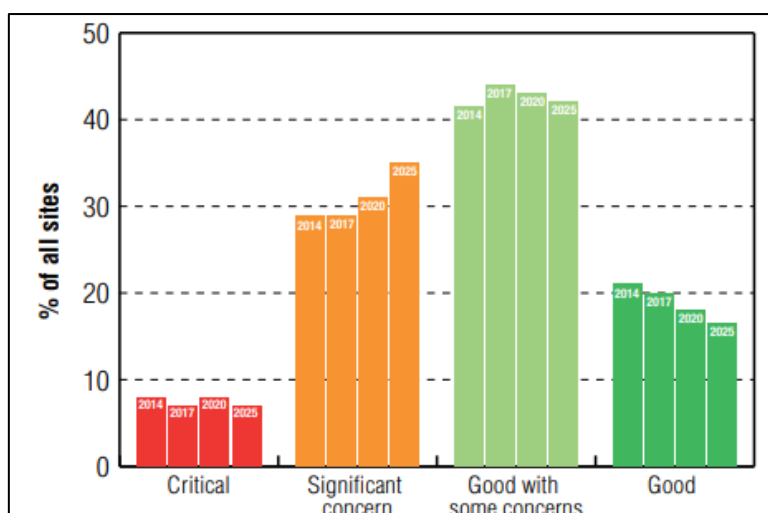
To promote **mental well-being**, **real-world social interaction**, and reduce the “digital isolation” caused by excessive smartphone use.

KEY FEATURES:

- **Voluntary and non-punitive** no fines or penalties for exceeding limits.
- **Applies to all residents**, excluding work and study hours.
- **Approved by city council (12–7 vote)** after public consultations.
- Encourages **self-regulation** and awareness of digital addiction.
- Seeks to restore **face-to-face communication** and community engagement.

34**IUCN WORLD HERITAGE OUTLOOK 2025**

The IUCN World Heritage Outlook 4 is launched at the IUCN World Conservation Congress in Abu Dhabi in October 2025, assessing the conservation status of all natural and mixed UNESCO World Heritage Sites.

**KEY GLOBAL FINDINGS**

- **Positive Conservation Outlook:** Approximately **65% of assessed sites** exhibit stable or improving conditions since 2020, reflecting enhanced management and restoration efforts.
- **Climate Change Threats:** Over **80% of sites** face significant climate-related challenges, including coral bleaching, glacier melt, and increased wildfire frequency. Notably, **43% of sites** are now assessed as highly threatened by climate change, up from 33% in 2020.
- **Biodiversity Pressures:** Around **60% of sites** are impacted by invasive species, habitat loss, and overexploitation, particularly in tropical ecosystems.
- **Technological Advancements:** The adoption of **AI-based monitoring**, satellite mapping, and environmental DNA sampling has improved conservation forecasting accuracy. For instance, the UNESCO–IUCN AI pilot in the Okavango Delta enhances wildlife migration tracking.
- **Socio-Economic Contributions:** Natural World Heritage sites support livelihoods, disaster resilience, and carbon storage, contributing approximately **10% of the global terrestrial carbon**.
- **Sites in Danger:** Fifteen sites have been added to the **World Heritage in Danger** list due to conflicts and pollution.

INDIA-SPECIFIC INSIGHTS

- **Total Sites:** India has **7 natural and mixed World Heritage sites**, encompassing diverse ecosystems from Himalayan peaks to coastal wetlands.
- **Improved Sites:** **Kaziranga** and **Manas National Parks** have shown enhanced ecological health through anti-poaching patrols, habitat restoration, and eco-tourism regulation, supported by local community involvement.
- **At-Risk Sites:**
 - **Sundarbans:** Facing declining mangrove health due to cyclones, salinity changes, and sea-level rise.
 - **Western Ghats:** Threatened by mining and land-use conflicts.
 - **Nanda Devi and Great Himalayan National Park:** Experiencing glacial retreat and invasive species, impacting river systems.
- **Policy Integration:** India's **LiFE Mission** (Lifestyle for Environment) and the **Wildlife (Protection) Amendment Act, 2022** align with the **Kunming–Montreal Global Biodiversity Framework (2030)**, promoting sustainable development and biodiversity conservation.
- **Funding Gaps:** Protected areas require **30–40% more recurring funds**, especially in marine and border zones, to ensure effective conservation.



MAJOR CHALLENGES IDENTIFIED

- **Climate Change:** Rapid glacier melt, coral loss, and desertification.
- **Unsustainable Development:** Mining, tourism, and hydropower near protected zones.
- **Funding Shortfall:** 40% of sites lack adequate financial and human resources.
- **Weak Governance:** Poor coordination and enforcement.
- **Data Gaps:** Outdated biodiversity data limits adaptive management.

RECOMMENDATIONS FOR ACTION

- **Climate-Resilient Planning:** Integrate site protection into climate strategies, exemplified by India's LiFE Mission and Adaptation Fund.
- **Green Financing:** Utilize biodiversity funds, carbon credits, and public–private models, such as the UNDP–GEF Biofin Initiative.
- **Community Participation:** Empower local and Indigenous communities, as seen in eco-development committees in Manas and Periyar.
- **Technology Use:** Employ AI, drones, and satellites for mapping and monitoring.
- **Global Collaboration:** Enhance cross-border conservation efforts, exemplified by the India–Nepal Terai Arc Landscape.

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35**CHOWNA BUKU CHULU**

Scientists have identified a new Begonia species, Chowna Buku Chulu, in the Leparada district of Arunachal Pradesh. The discovery adds to India's rich floral diversity, particularly in the Eastern Himalayas — a globally recognised biodiversity hotspot.

CHOWNA BUKU CHULU

- **Species Name:** *Chowna Buku Chulu*
- **Family:** Begoniaceae
- **Location:** Leparada district, Arunachal Pradesh
- **Distinctive Feature:** Bright ruby-red leaves, giving it strong **ornamental potential**.
- **Etymology:** The name translates to “**Noble Red**” (Aryarakta) and honours **Chowna Mein**, Deputy Chief Minister of Arunachal Pradesh, for his contributions to the region's development and conservation.

**GENUS BEGONIA**

- **Global Diversity:** Around **2,000 known Begonia species**, making it one of the largest genera of flowering plants.
- **Habitat:** Moist tropical and subtropical forests, thriving under shaded, humid conditions.
- **Unique Adaptation:**

- Asymmetrical leaves with red undersides reflect light upward, improving photosynthesis under low light.
- Some species produce **oxalic acid** to deter herbivores.
- **Distribution:** Pantropical — found in **South America, Africa, and South and Southeast Asia**. India has particularly high Begonia diversity in the Eastern Himalayas and Northeast.
- **Uses:**
 - **Ornamental:** Bright leaves make it popular in horticulture.
 - **Medicinal:** Known for antioxidant, antibacterial, and anti-inflammatory properties.
 - **Natural Dyes:** Used traditionally for pigments and dyes.

SIGNIFICANCE OF THE DISCOVERY

- **Biodiversity Conservation:** Highlights the rich but vulnerable Eastern Himalayan ecosystem.
- **Economic Potential:** Its ornamental value could boost local horticulture and sustainable floriculture markets.
- **Scientific Value:** Adds to taxonomic and genetic knowledge of Begoniaceae, aiding future research.
- **Cultural Importance:** Naming after a local leader fosters community participation in conservation.

36**INDIA TO HOST UNTCC 2025**

India will host the United Nations Troop Contributing Countries' (UNTCC) Chiefs' Conclave 2025 in New Delhi from October 14–16, 2025. The event, organized by the Indian Army in collaboration with the UN Department of Peace Operations (UNDPO), will bring together senior military leaders from 32 nations contributing troops to UN Peacekeeping missions worldwide.

UNTCC Conclave

The **United Nations Troop Contributing Countries (UNTCC) Conclave** serves as a global platform to:

- Facilitate dialogue among nations contributing troops and police personnel to UN peacekeeping.
- Discuss **operational challenges**, such as logistics, technology, and safety in mission areas.
- Enhance **interoperability** among multinational contingents.
- Promote **inclusivity and transparency** in UN peace operations' decision-making processes.

India: Pillar of Global Peacekeeping

UNTCC 2025 – New Delhi | Oct 14–16, 2025



32 Nations
Global Dialogue
for Peacekeeping

India's Contribution:



2,70,000+
troops

50 missions
First all-women
contingent
(South Sudan)

70+ peacekeepers
martyred in service

Themes
Interoperability
Safety
Inclusivity
Reform

Hosted by:



INDIAN ARMY × **UNITED NATION
DEPARTMENT OF
PEACE OPERATIONS**

INDIA'S LEADERSHIP IN UN PEACEKEEPING

- **Legacy of Service:** Since the first UN mission in 1948, **India has been one of the largest and most consistent contributors** to UN peacekeeping.
- **Contribution Scale:** Over **2,70,000 Indian troops** have served in **50 UN missions** across continents.
- **High-Risk Deployments:** Indian forces have operated in some of the most volatile conflict zones—**Congo, Lebanon, Sudan, and Somalia**, among others.
- **Humanitarian and Gender Leadership:**
- India deployed the **first all-women peacekeeping contingent** to **South Sudan** in 2023, setting a global example for gender equality in peace operations.
- Indian peacekeepers are widely recognized for their **discipline, compassion, and commitment** to protecting civilians and supporting local communities.

SIGNIFICANCE OF HOSTING UNTCC 2025

- **Strategic Diplomacy:** Reinforces India's image as a **responsible global stakeholder** and a **credible voice for the Global South** in UN affairs.
- **Operational Influence:** Enables India to shape **future UN peacekeeping reforms**, including discussions on technology, training, and equitable burden-sharing.
- **Soft Power Projection:** Highlights India's **values of peace, cooperation, and inclusivity**, aligning with its commitment to "**Vasudhaiva Kutumbakam – One Earth, One Family, One Future.**"

WAY FORWARD

India advocates for:

- Greater representation of **troop-contributing nations in UN decision-making**.
- Enhanced **safety, technology integration, and gender balance** in peacekeeping missions.
- Continued focus on **capacity-building and training** through platforms like the **Centre for UN Peacekeeping (CUNPK), New Delhi**.

37**GREENHOUSE GAS EMISSION INTENSITY (GEI)
TARGET RULES, 2025**

The Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025, establishing India's first legally binding framework for industrial emission reductions. This marks a major policy step towards achieving India's climate commitments under the Paris Agreement.

**GEI TARGET RULES**

GEI Target Rules, 2025 set mandatory reduction targets for greenhouse gas (GHG) emissions per unit of industrial output, introducing accountability within India's carbon-intensive sectors.

KEY FEATURES

- **Scope:** The rules apply to **282 industrial units** across four sectors — **Aluminium, Cement, Pulp & Paper, and Chlor-alkali**.
- **Definition:** *Greenhouse Gas Emission Intensity (GEI)* refers to the **amount of GHG emitted per unit of output**, measured in tonnes of CO₂ equivalent (tCO_{2e}).
- **Compliance Cycle:** The **first compliance phase** covers **FY 2025–26 and FY 2026–27**, with **sector-specific targets** based on **FY 2023–24** as the baseline year.

INTEGRATION WITH THE CARBON CREDIT TRADING SCHEME (CCTS)

The GEI Target Rules operationalize the **compliance mechanism** under the **Carbon Credit Trading Scheme (CCTS), 2023**, linking industrial performance directly to carbon trading.

COMPLIANCE MECHANISM

- Industries achieving their emission reduction targets will **earn tradable carbon credits**.
- Non-compliant industries must **buy credits** or **pay environmental compensation**, fixed at **twice the average market trading price** of carbon credits.

INSTITUTIONAL OVERSIGHT

- The **Bureau of Energy Efficiency (BEE)** will **issue credits** to compliant entities.
- The **Central Pollution Control Board (CPCB)** will **monitor, verify, and enforce** compliance, with penalties to be finalized within **90 days** of violation.

SIGNIFICANCE OF THE GEI TARGET RULES, 2025

- **Fulfilling Climate Commitments:** Helps India meet its **Paris Agreement target** of reducing the **emission intensity of GDP by 45% from 2005 levels by 2030**.
- **Strengthening Carbon Markets:** Implements the **compliance segment** of the **CCTS**, ensuring a transparent and accountable carbon trading ecosystem.
- **Encouraging Technological Upgradation:** Promotes **energy-efficient and low-carbon technologies**, encouraging industries to invest in **cleaner production methods**.
- **Enhancing Global Competitiveness:** Prepares Indian industries for emerging international mechanisms like the **EU's Carbon Border Adjustment Mechanism (CBAM)**, which taxes carbon-intensive imports.
- **Institutional Accountability:** By assigning defined roles to **BEE** and **CPCB**, the rules establish a clear regulatory framework for emission monitoring and enforcement of compliance.

The **GEI Target Rules, 2025** mark a paradigm shift in India's climate governance -from voluntary pledges to **legally enforceable emission standards**.

By coupling compliance with **carbon market incentives**, the policy not only strengthens India's domestic climate architecture but also enhances its global credibility in sustainable industrial transition.

38**MASS SURRENDER**

210 Maoists surrendered in **Dandakaranya region of Chhattisgarh**, following a similar event in Maharashtra, as a part of a broader strategy by the Union and state governments to **abandon violence and embrace rehabilitation**.

**MAOISM, OR LEFT-WING EXTREMISM (LWE)**

- It was rooted in radical communist ideology, advocating **armed struggle** to **overthrow the state and establish a classless society**.
- **LWE in India** traces its roots to the **Naxalbari uprising of 1967 in West Bengal**, inspired by **Mao Zedong's revolutionary tactics**.
- The movement gained momentum through the formation of groups like the **Communist Party of India (Marxist-Leninist)** and later the **CPI (Maoist)**, which rejected electoral politics and embraced violent revolution.

REASONS FOR MAOISM, OR LEFT-WING EXTREMISM (LWE) IN INDIA

- **Socio-Economic Inequality:** LWE has historically thrived in regions marked by poverty, illiteracy, and lack of basic services. Many tribal communities have faced:
 - Land alienation due to mining and industrial projects;
 - Displacement without adequate rehabilitation;
 - Limited access to education, healthcare, and employment;

- **Governance Deficit:** Remote districts often suffer from weak administrative presence and poor delivery of public services. This vacuum allowed Maoist groups to:
 - Establish parallel governance structures;
 - Exploit local grievances;
 - Gain legitimacy among disenfranchised populations;
- **Tribal Discontent:** Tribal populations, especially in forested regions have long felt excluded from mainstream development.
 - Maoists have capitalized on this alienation by aligning with local struggles and offering protection from perceived state exploitation.

DECLINE IN INFLUENCE

- Once widespread across the '**Red Corridor**', Maoist influence has significantly declined due to sustained government action.
- According to the MHA, the number of **LWE-affected districts** has dropped from **126 in 2010 to just 11 in 2025**, with **only three districts—Bijapur, Sukma, and Narayanpur in Chhattisgarh—**marked as '**most affected**'.
 - 81% reduction in violent incidents and an 85% drop in fatalities between 2010 and 2024.

GOVERNMENT STRATEGY TO TACKLE LWE

- The **National Policy and Action Plan (2015)** to address **LWE** outlines a holistic approach:
 - Enhancing security infrastructure and personnel;
 - Promoting road connectivity and telecom access;
 - Ensuring rights and entitlements of tribal communities;
 - Coordinating development schemes across ministries.
- MHA has reaffirmed the government's resolve **to eliminate LWE by March 31, 2026**, urging Maoists **to abandon violence and join the mainstream**.
 - Recent mass surrenders reflect growing disillusionment within the movement. Rehabilitation programs offer financial aid, vocational training, and housing to help former insurgents reintegrate into society.
- **Security Measures:**
 - Deployment of Central Armed Police Forces (CAPFs) and specialized **anti-Naxal units**.

- Use of technology and intelligence, including drones and surveillance systems.
- Establishment of **Forward Operating Bases (FOBs)** to maintain presence in remote areas.
- **Development Initiatives:**
 - Road connectivity projects in remote tribal areas to improve access and mobility.
 - Expansion of telecom networks, electricity, and banking services.
 - Focus on education, healthcare, and livelihood programs to address socio-economic grievances.
 - Transformation of **'Red Zones'** into **Growth Corridors** through targeted investment.
- **Ideological Countermeasures:** The government is actively confronting Maoist propaganda through community engagement and awareness campaigns.
 - Seminars like **'Bharat Manthan 2025 – Naxal Mukta Bharat'** aim to build consensus and share best practices across states.

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39**BATHOU RELIGION**

The Bathou religion of the Bodo community in Assam has been officially granted a separate code in the upcoming national census.

BATHOU RELIGION

- **Region:** Practised primarily in **Assam**, India, among the **Bodo (Borokachari)** ethnic community.
- **Nature:** An **indigenous animistic religion** that worships natural forces and ancestors.
- **Meaning of “Bathou”:**
 - “Ba” = five, “Thou” = deep philosophy/divine principle → **“Philosophy of Five Elements.”**
 - These elements are: **air, earth, fire, water, and ether** — the foundations of existence.

**HISTORICAL BACKGROUND**

- **Origins:** Bathouism predates organized Hindu influence among Bodos; it evolved as a **folk faith** centered on nature and moral life.
- **Relation with Other Faiths:**
 - Shares similarities with other **nature-based tribal religions** of Northeast India (like Donyi-Polo and Sanamahi).
 - Over time, **syncretism with Hinduism** occurred — especially worship of Shiva and Parvati as Bathou Borai (Supreme God) and Mainao (Goddess of wealth).

- **Revival Movement:**
 - The **All Bathou Mahasabha (est. 1992)** works to **standardize and protect Bathou rituals** from dilution and ensure official recognition.

CORE BELIEFS AND PHILOSOPHY

Aspect	Description
Supreme Deity	Bathoubwrai (Lord of the Five Elements) — creator and protector of the universe.
Spiritual Symbol	Sijou plant (Euphorbia splendens) — planted in every Bathou home or courtyard as the symbol of Bathoubwrai .
Concept of Divinity	Belief in multiple deities representing nature, morality, and ancestors.
Human Conduct	Emphasis on truth, respect for nature, non-violence, hospitality, and community harmony.
Life & Death	Souls are believed to be reborn; ancestral spirits guide the living.

MAJOR DEITIES IN BATHOISM

Deity	Domain / Role
Bathoubwrai	Supreme god; creator of the universe; symbolized by the Sijou plant.
Mainao	Goddess of wealth, prosperity, and fertility.
Aijwrai	Goddess who guards family and home.
Khala	God of destruction and protection against evil.
Rajkhandra	Guardian spirit of forests and wildlife.
Mwdwi	Water goddess — regulates rainfall and fertility.

RITUALS AND WORSHIP PRACTICES

- **Sijou Plant Worship (Sijou Bwrai):**
 - Planted in an altar fenced with **18 bamboo sticks**, representing life principles.
 - Daily offerings of **rice beer (zou)**, flowers, and fruits are made.
- **Rational & Non-Idolatrous Nature:**
 - No temples or idols — worship is conducted under open sky or near the sijou tree.

- The **priest (Douri)** and **female priest (Doudini)** perform prayers and rituals.
- **Family and Community Ceremonies:**
 - **Naming (Hapsa), Marriage (Sanjai), Death (Dourai)** ceremonies follow Bathou customs with symbolic offerings to nature.

MAJOR FESTIVALS

Festival	Description
Bwisagu (April)	Harvest and New Year festival; similar to Bihu; involves dancing, drumming, and worship of Bathoubwrai.
Domashi / Khwranai	Post-harvest thanksgiving to deities and ancestors.
Garja Puja	Conducted to purify the village and ensure prosperity.
Kherai Puja	Most important religious festival; large community worship with singing and dancing led by a Doudini (female priestess).

SYMBOLS AND SACRED OBJECTS

- **Sijou Plant:** Central to every household; symbolizes Bathoubwrai.
- **Bamboo Fence (Seventeen + One):**
 - 17 represents **human stages of life**;
 - The 18th symbolizes **spiritual enlightenment**.
- **Zou (Rice Beer):** Used as a sacred offering, not merely as alcohol.
- **Douri & Doudini:** Religious functionaries symbolizing **gender balance** in spiritual leadership.

SOCIAL AND ETHICAL TEACHINGS

- Respect nature as a divine creation.
- Maintain peace, honesty, and brotherhood within society.
- Uphold purity of mind, speech, and action.
- Reject greed, arrogance, and unnecessary violence.
- Perform duties (karma) selflessly.

MODERN DEVELOPMENTS & RECOGNITION

- **Bathouism Census Status:**
 - Many followers earlier recorded as **Hindu** in Census data.
 - The **All Bathou Mahasabha** campaigns for recognition of Bathou as a **distinct religion** under the Indian Census.
- **Government Initiatives:**
 - In **Bodoland Territorial Region (BTR)**, cultural and educational institutions promote Bathou heritage.
 - **Bathou temples (Bathou Thans)** are being built to symbolize community unity, though the faith traditionally avoided idol worship.

COMPARISON WITH OTHER TRIBAL RELIGIONS

Aspect	Bathou (Bodo)	Donyi-Polo (Arunachal)	Sanamahi (Meitei, Manipur)
Supreme Power	Bathoubwrai (Five Elements)	Donyi (Sun) & Polo (Moon)	Lainingthou Sanamahi
Sacred Symbol	Sijou Plant	Sun & Moon symbols	Hearth Shrine
Nature-based	Yes	Yes	Yes
Syncretic with Hinduism	Partially	Partially	Strongly
Revival Movements	All Bathou Mahasabha	Donyi-Polo Yelam Kebang	Sanamahi Revival Council

40**UPOV CONVENTION**

A new report by GRAIN warns of **growing corporate control over seeds via free trade agreements**.

ABOUT

- Powerful economies — including the US, EU, Japan and the UAE — **are pushing harsh IP rules on plant varieties**.
- The UAE emerged as a new player promoting **UPOV 1991 standards** in trade deals with Asia and Africa.
- Farmers' rights to save, exchange and reuse seeds are being undermined globally.

**UPOV CONVENTION**

The **UPOV Convention** stands for the **International Union for the Protection of New Varieties of Plants**, established in **1961** in **Paris**.

- It provides an international framework to **protect plant breeders' rights (PBRs)** — ensuring that developers of new plant varieties can control their commercial use.
- It is administered by the **World Intellectual Property Organization (WIPO)**, Geneva.

BACKGROUND & EVOLUTION

Year	Development
1961	UPOV Convention adopted in Paris.
1972, 1978, 1991	Amendments made to strengthen breeder rights.

1991 (latest version)

Became more restrictive toward farmers' traditional rights.

There are **currently 79 member countries (as of 2025)** that are party to the Convention.

OBJECTIVES

- To **encourage plant breeding** by ensuring breeders' intellectual property protection.
- To **promote innovation** in agriculture through the development of improved plant varieties.
- To **harmonize international rules** on plant variety protection (PVP).



KEY PROVISIONS

PROTECTION CRITERIA

For a plant variety to be protected under UPOV, it must be:

- **Novel** – Not sold or distributed before a certain time period.
- **Distinct** – Clearly distinguishable from any existing variety.
- **Uniform** – Sufficiently uniform in characteristics.
- **Stable** – Characteristics remain unchanged after repeated propagation.

BREEDERS' RIGHTS

Breeders are granted exclusive rights to:

- Produce and sell propagating material (seeds, cuttings, etc.)
- Authorize others to produce or sell the variety
- Receive royalties for commercial use

DURATION OF PROTECTION

- **At least 20 years** (25 years for trees and vines).

FARMERS' RIGHTS VS BREEDERS' RIGHTS

Aspect	UPOV (1991)	India's PPV&FR Act, 2001
Farmers' Rights	Very limited — farmers cannot freely save, reuse, or exchange protected seeds.	Farmers can save, use, exchange, or sell farm-saved seeds (except branded seeds).
Breeders' Rights	Strong protection; exclusive commercial rights for breeders.	Balanced protection between breeders and farmers.
Focus	Protects commercial breeders.	Protects both farmers and breeders , aligned with TRIPS .

INDIA'S STAND

- India is **not a member of UPOV**.
- Instead, India enacted its own **Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001**, which:
 - Complies with **TRIPS Agreement (WTO)** obligations under **Article 27.3(b)**.
 - Recognizes **farmers as cultivators, breeders, and conservers of traditional varieties**.
 - Establishes a **National Gene Fund** for benefit-sharing.
- India's model is considered **farmer-friendly** and **sustainable for biodiversity conservation**, unlike UPOV-1991, which is criticized for **favoring multinational seed companies**.

UPOV AND WTO–TRIPS CONNECTION

- The **TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights)** under **WTO** requires member countries to provide **some form of protection** for new plant varieties.
- However, it gives flexibility: countries can choose **patents, an effective sui generis system, or a combination** — hence India chose **PPV&FR Act** instead of joining UPOV.

CRITICISMS OF UPOV

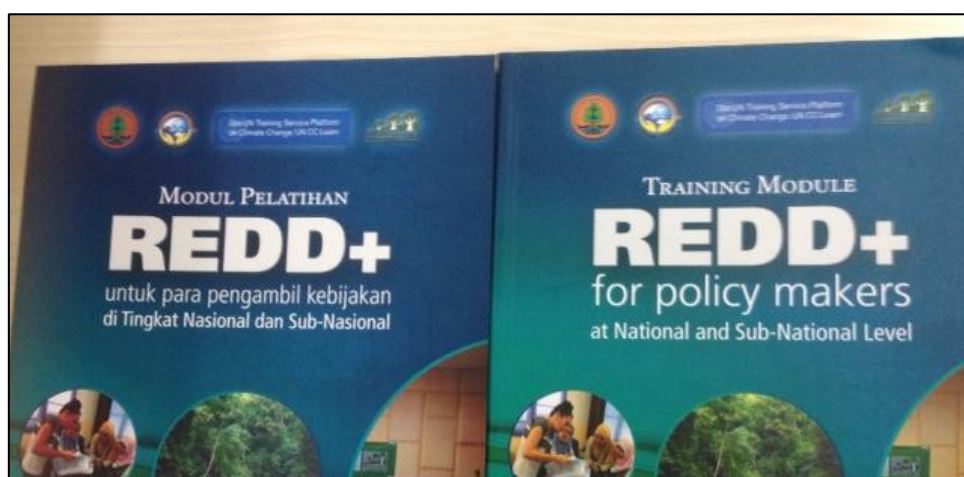
- **Restricts traditional farming practices** — limits farmers' ability to save and exchange seeds.
- **Favours multinational seed companies** — leading to dependence on commercial seed markets.
- **Threat to agrobiodiversity** — discourages cultivation of traditional or local varieties.
- **Conflict with FAO's International Treaty on Plant Genetic Resources (ITPGRFA) and CBD (Convention on Biological Diversity) principles.**

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REDD+ PROGRAMME

According to a study, only a small number of tropical forests carbon offset projects have achieved significant cuts in deforestation, with just **19% meeting their reported targets**. These offset projects are a part of the **REDD+ programme**, standing for Reducing Emissions from Deforestation and Degradation Plus.



WHAT IS REDD+?

- **REDD+** is a **climate change mitigation solution** developed by **Parties to the United Nations Framework Convention on Climate Change (UNFCCC)**.
 - The Paris Climate Agreement recognizes REDD+ and the **central role of forests**.
- It was first introduced in 2005 during the UNFCCC Conference of the Parties (COP 11) in Montreal.
 - The “+” was added later at **COP 13 in Bali, 2007** to include broader forest-related activities.
- **It offers economic incentives** to developing countries to preserve forests, enhance carbon stocks and promote human well-being.
- **REDD+ reduces deforestation** through the conservation and sustainable management of forests and supporting developing countries in turning their political commitments, as represented in their **Nationally Determined Contributions**.
- **REDD+ projects** pay governments, organisations, communities, and individuals in forest landscapes for activities that preserve forests and avoid forest-related greenhouse gas emissions (GHG).

42**BRAHMOS**

Defence Minister Rajnath Singh and Chief Minister of Uttar Pradesh Yogi Adityanath flagged off the first batch of BrahMos missiles manufactured at the BrahMos Aerospace unit in Lucknow, Uttar Pradesh.

ABOUT BRAHMOS MISSILE

- **Joint Venture:** Between **DRDO (India)** and **NPO Mashinostroyeniya (Russia)**.
- **Name Origin:** Derived from the **Brahmaputra (India)** and **Moskva (Russia)** rivers.
- **First Test:** Conducted on **June 12, 2001**.
 - **Induction Timeline:** Navy (2005), Army (2007) and IAF (2017).
- **Type:** “*Fire and forget*” supersonic cruise missile — can be launched from **land, sea, or air** in all-weather conditions, and is nearly **impossible to intercept**.
- **Combat Use:** Reportedly used for the first time during **Operation Sindoor**.
- **Speed:**
 - Current: Mach 2.8 (Supersonic)
 - Future: Mach 5+ (Hypersonic version under development)
- **Range:**
 - Initially 290 km (under MTCR limit)
 - Extended to **400 km**, with a **600+ km** variant under development.
- **Stages:** BrahMos is a **two-stage missile** with a solid propellant booster engine.
 - Its first stage brings the missile to supersonic speed and then gets separated.
 - The liquid ramjet or the second stage then takes the missile closer to three times the speed of sound in the cruise phase.

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MOTION 042

The International Union for Conservation of Nature (IUCN) has adopted Motion 042.

MOTION 042

- It was passed at the **IUCN World Conservation Congress**.
- It calls for a global phase-out of coal, oil, and gas, a halt to new extraction projects, and a just transition for affected workers and communities.
- It is backed by civil society, Indigenous groups, and organisations like WWF and BirdLife International.
- It urges the exploration of international mechanisms such as a Fossil Fuel Non-Proliferation Treaty.



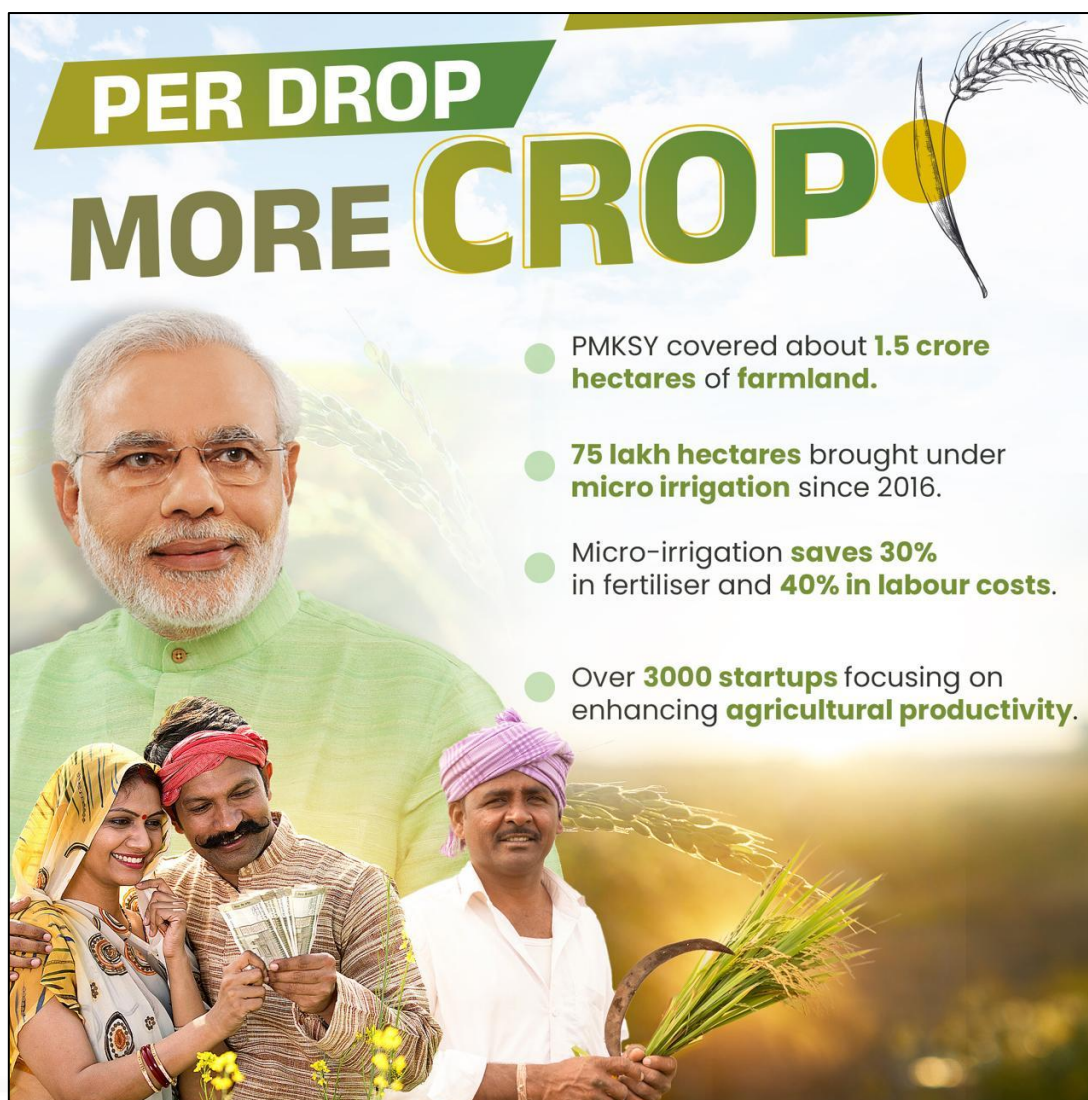
RELEVANCE

- IUCN became the first multilateral body to explicitly recognise fossil fuel production as a threat to nature.
- It signals a unified call ahead of COP30 to integrate climate and biodiversity goals by confronting fossil fuels as a root cause of environmental degradation.
- Indigenous leaders and environmentalists hailed the move as long-overdue recognition of their realities, positioning the IUCN's stance as a turning point for global conservation and climate justice.

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PER DROP MORE CROP (PDMC) SCHEME

The Government has introduced new flexibility under the Per Drop More Crop (PDMC) scheme to promote efficient water use and boost farmer income.



PER DROP MORE CROP (PDMC) SCHEME

- The **Per Drop More Crop (PDMC)** scheme is a **Central Sector component** of the **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**, launched in **2015–16**.
- It aims to enhance **water-use efficiency** in agriculture by promoting **micro-irrigation technologies** such as **drip and sprinkler systems**.
- The motto of PMKSY — **“Har Khet Ko Pani” (Water to Every Field)** — reflects the commitment to **‘more crop per drop’**, i.e., **higher productivity with minimal water use**.

ADMINISTRATIVE STRUCTURE

Aspect	Details
Nodal Ministry	Ministry of Agriculture & Farmers Welfare
Implemented by	Department of Agriculture & Farmers Welfare (DA&FW)
Type	Central Sector Scheme (since 2022–23)
Funding Pattern	100% central assistance to states/UTs
Earlier Type	Centrally Sponsored Scheme under PMKSY with 60:40 (Centre:State) sharing
Launched Year	2015–16 (as part of PMKSY)

OBJECTIVES

- **Enhance water-use efficiency** in agriculture through micro-irrigation.
- **Reduce input cost** (fertilizer, energy, and labour).
- **Increase productivity and profitability** for farmers.
- **Promote sustainable agriculture** by conserving water and reducing groundwater extraction.
- **Encourage crop diversification** toward high-value crops such as fruits, vegetables, and spices.

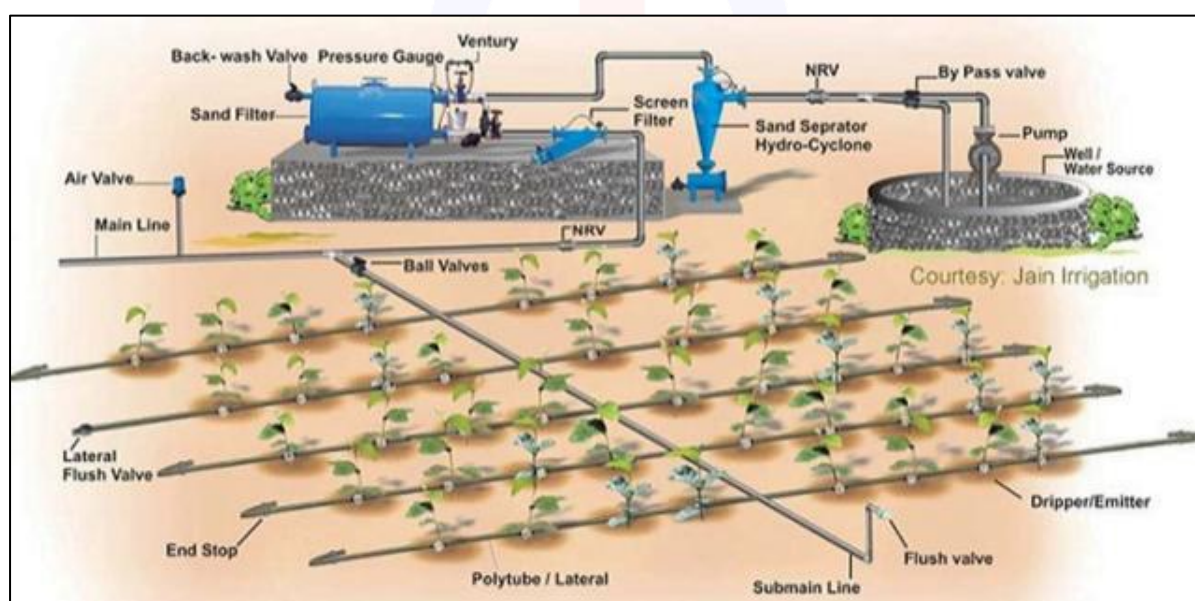
KEY COMPONENTS

Component	Description
Micro-irrigation	Installation of drip/sprinkler irrigation systems for water-efficient crop production.
On-farm development	Construction of field channels, land leveling, and water conveyance infrastructure.
Water conveyance & distribution	Ensures efficient transport of water from source to crop.
Capacity building	Training farmers and officials in micro-irrigation techniques.
Technology support	Use of remote sensing, IoT-based soil moisture sensors , and automation systems.

LINKAGE WITH PMKSY

PDMC is one of the **four components** of **PMKSY**:

PMKSY Component	Implementing Ministry	Objective
Accelerated Irrigation Benefit Programme (AIBP)	Ministry of Jal Shakti	Completion of major/medium irrigation projects
Har Khet Ko Pani (HKKP)	Ministry of Jal Shakti	Minor irrigation and water source development
Watershed Development	Department of Land Resources	Soil and water conservation
Per Drop More Crop (PDMC)	Ministry of Agriculture & Farmers Welfare	On-farm water-use efficiency via micro-irrigation



ACHIEVEMENTS (AS OF 2025)

Indicator	Status/Update
Total area covered under micro-irrigation	Over 86 lakh hectares (as of March 2025)
Target for 2026	Cover 1 crore hectares under micro-irrigation
Top-performing states	Tamil Nadu, Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Rajasthan
Increase in water-use efficiency	Up to 40–60% saving in water compared to flood irrigation

Increase in crop productivity	Average 20–30% increase reported in major crops like cotton, sugarcane, fruits, and vegetables
Digital initiatives	National Micro Irrigation Portal (NMIP) for real-time monitoring of implementation

RECENT DEVELOPMENTS (2024–2025)

- **National Micro Irrigation Fund (NMIF)**
 - Corpus: ₹5,000 crore under NABARD.
 - Supports states in expanding micro-irrigation coverage through low-interest loans.
- **Digital Agriculture Mission (DAM) Integration**
 - PDMC is now linked with **GIS-based mapping** and **IoT soil moisture monitoring systems**.
 - Promotes precision irrigation practices.
- **Convergence with Other Schemes**
 - Linked with **Atal Bhujal Yojana** (for groundwater management) and **Pradhan Mantri Fasal Bima Yojana (PMFBY)** for climate resilience.
 - Also synergized with **National Mission for Sustainable Agriculture (NMSA)**.

45**CAPE VERDE**

Cape Verde made history by becoming the second-smallest country (after Iceland in 2018) to qualify for the FIFA World Cup. In contrast, India suffered a humiliating loss to world-ranked 158th Singapore in Goa, failing to qualify for the 2027 Asian Cup.

CABO VERDE

- It is an archipelago of 10 islands in the Atlantic Ocean.
- It is an island nation located about 620 km off the west coast of Africa, named after the nearby Cape Verde in Senegal.
- It has a service-driven economy focused on trade, transport, tourism, and remittances, transitioning toward a market economy since the mid-1990s.
- Culturally, it blends Portuguese and African influences, evident in its arts and music. Mindelo, on São Vicente, hosts the largest port with a historic deepwater harbor.



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PRIME MINISTER INTERNSHIP SCHEME (PMIS)

The Union Minister of Finance and Corporate Affairs, Nirmala Sitharaman, interacted with interns of the Prime Minister Internship Scheme (PMIS) at Hampi, Karnataka.

WHAT IS PMIS?

- The Prime Minister Internship Scheme (PMIS) was **announced in the Union Budget 2024-25** as a national effort to provide internship opportunities to youth across India.
- It is a **12-month paid internship programme** aimed at bridging the gap between academia and industry for young people aged 21-24.
- The scheme is being piloted initially, with an ambitious long-term target of **10 million (1 crore) internships over five years** across top companies in India.
- The Ministry of Corporate Affairs (MCA) is the nodal ministry.

The infographic features a blue background with a white smartphone on the left displaying the PMIS app interface. The app screen shows the 'PM Internship' logo, the Ministry of Corporate Affairs logo, and a list of partner companies including Glenmark, PwC, and HP. Below the app screen, six key features are listed in numbered yellow circles:

- 1 Simple, clean interface for easy use
- 2 Quick Registration Using Aadhar Face Authentication
- 3 Effortless navigation—browse internship opportunities by location and more.
- 4 Personalized dashboard to track applications and updates.
- 5 Dedicated support team for assistance.
- 6 Real-time alerts to stay updated on new opportunities.

The top right corner of the infographic features the 'pib RESEARCH UNIT' logo. The title 'Key Features of the PMIS App' is prominently displayed in white text.

OBJECTIVES

- Provide **hands-on experience** in leading companies for youth who are neither in full-time employment nor full-time education.
- Enhance **employability**, real-world job-skills and exposure to industry.
- Leverage Corporate Social Responsibility (CSR) funds of companies in creating meaningful internships.
- Support the “Skill Capital of the World” vision for India and link youth to the corporate sector.

KEY FEATURES / DESIGN OF THE SCHEME

- **Duration:** 12 months internship, with at least 6 months of actual work-experience.
- **Stipend/Assistance:**
 - Monthly financial assistance: ₹5,000/month. Of this, participating company pays ₹500, Government pays ₹4,500 via DBT.
 - One-time grant of ₹6,000 when the intern joins the programme.
 - Insurance cover: Interns are covered under Government-insurance schemes (e.g., PM JJBY, PM Suraksha Bima) while on internship.
- **Eligibility:**
 - Indian citizen aged 21-24 years (as on last date of application)
 - Must have completed SSC/HSC or ITI certificate or diploma/polytechnic/graduate degree.
 - Should **not be engaged in full-time employment** or full-time education (distance/online courses allowed).
- **Ineligibility:**
 - Candidates with higher qualifications: Master’s degree, professional degrees (CA, CMA, CS, MBBS, BDS, MBA) cannot apply.
 - Candidates from families with annual income over ₹8 lakh (FY 2023-24) and if any family member is a regular government employee/PSU.
- **Companies / Internship Hosts:**
 - Top 500 companies (by CSR spend) are targeted for participation. These firms post internship slots across sectors and across India (700+ districts).
- **Application Process & Portal:**

- Online portal: [pminternship.mca.gov.in](https://pinternship.mca.gov.in) launched.
- Mobile app launched (March 2025) to facilitate registration and tracking.

IMPLEMENTATION / CURRENT STATUS

- Pilot Phase 1 launched on **3 October 2024**, with about 1.25 lakh internships targeted.
- Round 2: More than 1 lakh internship opportunities across 730+ districts announced in February 2025.
- Deadline extensions: Application deadlines were extended (e.g., to March 31, 2025).

SIGNIFICANCE & LINKAGES

- **Youth Employment & Skill Development:** The scheme is important in the context of India's large youth population and employment challenges.
- **Industry-Academia Linkage:** Encourages companies to absorb fresh talent and gives students exposure to real work environment.
- **CSR Utilisation:** Encourages channeling of CSR funds toward internships / youth skilling.
- **National Vision:** Aligns with "Skill India", "Make in India", "Viksit Bharat 2047" etc.
- **Prelims & Mains Relevance:**
 - GS Paper 2: Government schemes, youth policies.
 - GS Paper 3: Skill development, employment, industry-linkages.

CHALLENGES & ISSUES

- **Low Conversion/Uptake:** Despite large internship postings, actual uptake has been low. For example: less than 10 % of offers converted in some cases
- **Quality / Relevance of Internships:** Some concerns raised about match-between interns' qualifications/aspirations and offered roles.
- **Geographical / Sectoral Imbalance:** Ensuring spread across rural / semi-urban districts and sectors is difficult.
- **Career Linkage:** No guaranteed job offer after internship; perception gap among youth expecting employment.
- **Awareness & Accessibility:** Reaching students in remote areas, ensuring online registration, etc.

- **Monitoring & Evaluation:** Need for stronger mechanisms to track outcomes, skill vs hire conversion, and intern satisfaction.

KEY FACTS

- **Target:** 10 million internships over five years.
- **Monthly stipend:** ₹5,000 (₹4,500 from Government, ₹500 from company).
- **One-time grant:** ₹6,000.
- **Age eligibility:** 21-24 years.
- **Duration:** 12 months, with at least 6 months practical work.
- **Portal:** pminternship.mca.gov.in; mobile app launched March 2025.



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47**IMPACT OF DOPAMINE OVERLOAD IN THE DIGITAL AGE**

Modern lifestyles, driven by technology and constant instant gratification, have led to a collective “dopamine overdose” that is fundamentally rewiring our brains.

INTRODUCTION

- **Dopamine** is a *neurotransmitter* that plays a key role in **motivation, reward, pleasure, and learning**.
- In the **digital age**, excessive stimulation from **smartphones, social media, video streaming, gaming, and instant gratification apps** has created what experts call “*dopamine overload*” or “*digital addiction*.”
- This phenomenon is increasingly seen as a **public health and behavioural challenge**, influencing productivity, mental health, and social interactions.

WHAT IS DOPAMINE?

Function	Description
Reward & Pleasure	Released when we experience something enjoyable (food, success, social validation).
Motivation	Drives goal-directed behaviour (“reward-seeking chemical”).
Learning & Memory	Helps in associating rewards with specific actions.
Regulation	Balanced dopamine levels are crucial — both excess and deficiency are harmful.

DOPAMINE OVERLOAD IN THE DIGITAL ERA

- **Continuous Stimuli:**
 - Every notification, like, or scroll gives a *small dopamine hit*.
 - Apps are designed using *behavioural psychology* to trigger “variable rewards” — same principle used in gambling.

- **Instant Gratification Loop:**
 - Frequent micro-rewards make the brain *expect instant pleasure* instead of long-term satisfaction.
 - Reduces patience, attention span, and ability to delay gratification.
- **Neurochemical Fatigue:**
 - Constant stimulation causes the brain to *down-regulate dopamine receptors*, meaning more stimulation is needed to feel the same pleasure — a hallmark of **addiction**.
- **Digital Dependency:**
 - Studies (APA, WHO 2023) show that excessive screen time correlates with **anxiety, insomnia, depression**, and **reduced academic and work productivity**.

GLOBAL RESEARCH & STATISTICS

- **WHO (2022):** Recognized “Gaming Disorder” as a mental health condition.
- **American Psychological Association (APA, 2024):** Found that 60% of young adults experience “*digital fatigue*” symptoms.
- **India-specific:**
 - As per **IAMAI Report 2025**, India has over **820 million internet users**, with an average daily screen time of **7.3 hours**.
 - Mental health experts note rising cases of **digital burnout** among students and professionals.

IMPACT ON SOCIETY

COGNITIVE & PSYCHOLOGICAL IMPACT

- Shorter attention span, poor focus (average human attention span dropped to 8 seconds).
- Decline in deep work and analytical skills.
- Heightened anxiety and “FOMO” (Fear of Missing Out).
- Increased loneliness despite hyper-connectivity.

SOCIAL & BEHAVIOURAL IMPACT

- Overreliance on *virtual validation* (likes, followers).
- Reduced in-person communication skills.

- Sleep disruption due to blue light exposure and late-night scrolling.

ECONOMIC & PRODUCTIVITY IMPACT

- Decline in workplace concentration and innovation.
- Employers report a 15–20% drop in focus due to smartphone distraction.
- “Notification economy” reduces efficiency and long-term skill development.

YOUTH & EDUCATION

- Students face **dopamine desensitization**, leading to reduced motivation to study.
- Preference for “easy rewards” (videos, memes) over effortful learning.

POLICY & GOVERNANCE PERSPECTIVE

- **Public Health Concern:**
 - Digital addiction is emerging as a **non-communicable behavioural disorder**.
 - Mental health programs must integrate *digital hygiene awareness*.
- **Digital Detox & Regulation:**
 - Some nations have introduced “**screen time ordinances**” (e.g., Japan’s Toyoake ordinance limiting minors’ screen exposure).
 - India could consider similar frameworks through **Digital Wellbeing Missions**.



- **Education Sector:**

- NEP 2020 promotes *balanced use of technology*.
- Need for digital literacy and mindfulness programs in schools and colleges.

- **Ethics & Governance:**

- Ethical design of technology: Tech companies should ensure algorithms don't exploit human attention.
- **NITI Aayog's "IndiaAI Mission"** could integrate digital wellness guidelines.

SOLUTIONS & RECOMMENDATIONS

Domain	Measures
Personal Level	Scheduled digital detox (no-screen hours), mindfulness, meditation, hobby cultivation.
Family Level	Screen-free meals, outdoor activities, parental control tools.
Educational Level	Introduce "Digital Well-being Curriculum."
Government Policy	Awareness campaigns like "Mental Health India" and collaboration with WHO & UNESCO.
Corporate Policy	"Focus hours," no-notification zones, and tech detox programs.

48**PUNCH SPACE MISSION**

PUNCH Space Mission, launched by the **National Aeronautics and Space Administration (NASA)** has observed the solar winds.

OVERVIEW

- The PUNCH mission stands for *Polarimeter to Unify the Corona and Heliosphere*.
- It is a mission by NASA, under its Small Explorer (SMEX) programme.
- Launch date: 11 March 2025 aboard a SpaceX Falcon 9 rocket from Vandenberg Space Force Base, California.
- Mission type: Constellation of four small satellites (each ~ 140 lb / ~63–64 kg).
- **Main aim:** To produce global, 3-D observations of the Sun's outer atmosphere (the corona) and how that atmosphere becomes the solar wind and evolves through the inner heliosphere.

MISSION DESIGN & INSTRUMENTS

- The four satellites will fly in a polar, Sun-synchronous low Earth orbit, arranged along the terminator line (the boundary between Earth's Day and night) so they nearly always stay in sunlight and have an unobstructed view of the Sun.
- **Instrument configuration:**
 - Three of the satellites carry **Wide Field Imagers (WFI)**, which image the outer corona and inner heliosphere.
 - One satellite carries a **Narrow Field Imager (NFI) / coronagraph** to observe regions very close to the Sun (somewhat like an artificial eclipse to block bright sunlight).
- Unique technique: Use of **polarised light** (polarimetry) to infer 3-D structure of coronal and solar wind features (instead of just 2-D images).

SIGNIFICANCE & APPLICATIONS

- **Space Weather Prediction:** Better understanding of CMEs and solar wind means improved forecasting of space weather events which can affect satellites, communications, GPS, power grids, astronaut safety.
- **Heliospheric Science:** Connecting observations of the corona (Sun's outer atmosphere) to how the solar wind evolves — bridging the gap in understanding between Sun and Earth space environment.

- **Technological Demonstration:** Use of small-sat constellation (cost-effective), deployment of polarimeters, new imaging techniques, democratization of solar science data (open data policy).

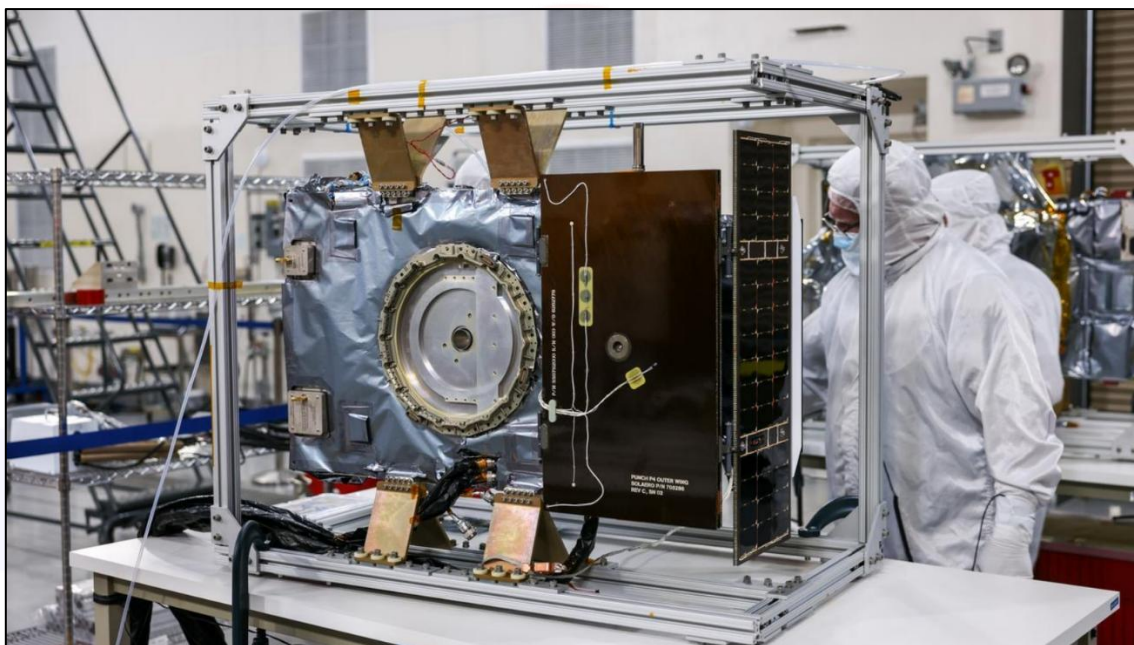


STATUS & CURRENT UPDATES

- As of August 2025, the four PUNCH spacecraft have successfully reached their science orbits and started releasing data.
- First images: The mission captured “first light” images of the solar corona and zodiacal light (dust in the solar system) showing the mission’s instrument capabilities. Space
- The mission is scheduled for a baseline science period of at least 2 years after a 90-day commissioning phase.

RELEVANCE FOR INDIA & GLOBAL CONTEXT

- **India's interest:** Understanding the Sun-Earth connection, solar storms, and their potential impact on Earth's technological systems (telecom, satellite, power) is globally important.
- **Space collaboration:** Although PUNCH is a NASA mission, its findings contribute to global heliophysics and may benefit international space agencies (including ISRO and others) working on solar and space weather science.
- **For UPSC:** Highlights the growing importance of small satellite missions, international cooperation in space science, the strategic significance of space weather, and the link between space science and practical applications (infrastructure, communications, disaster mitigation).



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49**SU-57 FIGHTER JETS**

The Indian Air Force (IAF) is now considering a proposal from Russia to procure the **Su-57 fifth-generation fighter jets**, which may also involve manufacturing them locally in India.

ABOUT THE SU-57:

- Developed by Russia's **Sukhoi Company**, the Su-57, also called Felon, is a **twin-engine, single-seat, fifth-generation stealth multirole fighter**.
- **Role:** Air superiority and strike missions; capable of engaging both **aerial and ground targets**.
- **First flight:** 2010.
- **Top speed:** Mach 2 (~2,136 km/h).
- **Combat range:** ~1,900 km.
- **Maximum takeoff weight:** ~35 metric tons.
- **Stealth & survivability:** Low radar cross-section, reduced infrared and electro-optical signatures; designed for covert operations.

**DO YOU KNOW?**

- Among friendly countries, only the **US and Russia** currently operate **fifth-generation fighter aircraft**.

- The **US F-35**, though more advanced and stealthier, is **not offered under the Make in India route**.
- The **Su-57** is significantly cheaper, with an estimated unit cost of **\$35–40 million**, less than half the price of an F-35.



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SEVENTH NATIONAL SECURITY GUARD (NSG) HUB TO COME UP IN AYODHYA

Union Home Minister Amit Shah announced that a **new NSG hub will be set up in Ayodhya, Uttar Pradesh.**

This will be the seventh NSG hub, joining existing ones in Mumbai, Chennai, Kolkata, Hyderabad, Ahmedabad, and Jammu.



NATIONAL SECURITY GUARD (NSG)

- The National Security Guard (NSG) was established in 1986 as a Federal Contingency Force to combat terrorism, following a Cabinet decision in 1984.
- It is modeled on the UK's SAS and Germany's GSG-9, its philosophy emphasizes swift strikes and rapid withdrawal.
- It comprises **two units**: the **Special Action Group (Army)** and **Special Ranger Groups (CAPFs/State Police)**, tasked with handling all forms of terrorism nationwide.
- It was established to create a Federal Contingency Force composed of highly motivated, specially equipped, and well-trained personnel to combat terrorism.

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EXERCISE SAMUDRA SHAKTI 2025

The Indian Navy is hosting the fifth edition of the Indo-Indonesian Joint Bilateral Maritime Exercise, ‘**Samudra Shakti – 2025**’ at Visakhapatnam.



ABOUT

- Exercise ‘**Samudra Shakti**’ is a key bilateral engagement aimed at enhancing interoperability, strengthening mutual understanding, and sharing best practices between the two navies.
 - The exercise was first conducted in **2018**.
- **Exercise Phases:**
 - **Harbour Phase:** Aimed at building camaraderie and professional understanding.
 - **Sea Phase:** Focused on complex operational coordination. Includes Helicopter Operations, Air Defence Exercises, Weapon Firing Drills, and Visit, Board, Search and Seizure (VBSS) exercises.

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DR. APJ ABDUL KALAM

Birth anniversary of former **President Dr. A.P.J. Abdul Kalam (1931–2015)** was observed recently.



ABOUT

- Born on 15 October in Rameswaram, Tamil Nadu, he was a renowned aeronautical engineer and scientist, widely known as the “Missile Man of India.”
- As Project Director at ISRO, he led the development of **India’s first Satellite Launch Vehicle (SLV-III)**, successfully **launching the Rohini satellite** in 1980.
- Later, at **DRDO**, he spearheaded the **Integrated Guided Missile Development Programme (IGMDP)**, overseeing the development of the **AGNI and PRITHVI** missiles and India’s nuclear capabilities, including the **Pokhran-II nuclear tests**.
- He served as the **11th President of India** (2002–2007) and is fondly remembered as the ‘People’s President.’
- His literary works include **Wings of Fire, India 2020, My Journey, and Ignited Minds**.
- He was awarded the **Padma Bhushan** (1981), **Padma Vibhushan** (1990), and the highest civilian honour, **Bharat Ratna** (1997).

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CANADIAN FM VISIT TO INDIA

The Canadian Foreign Minister paid a state visit to India where both sides agreed to **restore relations, including relaunching the energy dialogue.**

KEY FACTS

- **Dates & Visit:** The Canadian Foreign Minister visited India from **12–14 October 2025.**
- **Purpose:** This was the first visit by a Canadian foreign minister after a period of strained relations between India and Canada.
- **Outcome:** India and Canada issued a joint statement holding out a **“New Roadmap”** for bilateral ties, including the relaunch of the Canada-India Ministerial Energy Dialogue (CIMED).
- **Other Domains:** The discussions covered trade, investment, critical minerals, clean energy, civil nuclear cooperation, science & technology, people-to-people linkages.



WHY THIS VISIT MATTERS?

- **Repairing Relations:**
 - Bilateral ties had been severely strained since 2023 when Canada alleged Indian involvement in the killing of a Sikh separatist on Canadian soil; India denied the allegations.
 - The visit signals both countries' interest in moving from confrontation to cooperation.

- **Strategic Imperatives:**
 - India and Canada recognise the value of each other in the Indo-Pacific context: Canada seeking to diversify its trade beyond the US; India seeking allies in areas of critical minerals, energy, technology.
 - The energy dimension is particularly strategic: with India's energy transition goals and Canada's strengths in clean energy, critical minerals and oil/gas.
- **Energy & Clean Tech Cooperation:**
 - The relaunch of the energy dialogue covers LNG/LPG trade, oil & gas exploration, green hydrogen, biofuels, carbon capture, electric mobility.
 - Also includes a Critical Minerals Dialogue scheduled for March 2026 in Toronto.
- **Trade & Investment Push:**
 - The countries decided to resume ministerial-level trade & investment talks, restart the Canada-India CEO Forum (early 2026), focusing on infrastructure, agri-food, digital innovation.
- **Science & Technology, People-to-People:**
 - Cooperation in AI, digital infrastructure, joint S&T committee, higher education.
 - Strong diaspora and people-to-people links: Canada has a large Indian origin community, which makes the relationship sensitive to both economic and diaspora issues.

INDIA-CANADA RELATIONS

- **Historical Relations:** India and Canada established diplomatic relations in **1947**.
 - Shared democratic values and Commonwealth membership have underpinned ties.
 - Relations were historically strained after India's nuclear tests in 1974 and 1998, due to Canada's non-proliferation stance.
- **Economic Cooperation:** In 2024, India was Canada's seventh-largest goods and services trading partner, with two-way trade coming to \$33.9 billion while Canada's merchandise exports to India totalled \$5.3 billion.
- **Civil Nuclear Cooperation:** Nuclear Cooperation Agreement (NCA) was signed in 2010, operational since 2013.

- A Joint Committee oversees implementation of the 2010 Agreement on “Cooperation in Peaceful Uses of Nuclear Energy”.
- **Space Cooperation:** MoUs were signed in 1996 and 2003 between ISRO and Canadian Space Agency (CSA).
 - Cooperation includes satellite tracking, space astronomy, and commercial satellite launches.
 - ISRO’s commercial arm ANTRIX has launched multiple Canadian nanosatellites.
- **Science and Technology:** Department of Earth Science and Polar Canada have started a programme for exchange of knowledge and scientific research on Cold Climate (Arctic) Studies.
 - A Memorandum of Cooperation between National Centre for Polar and Ocean Research (NCPOR) and POLAR Canada was signed in 2020.



- **People-to-People Links:** There are around 1.8 million Indo-Canadians and one million non-resident Indians in Canada, making up over **3% of its population**.
 - **India is the largest source of international students** in Canada, with Indians making up around 40% of that group.
 - Strong cultural exchanges and vibrant diaspora influence bilateral perceptions.
- **Multilateral Cooperation:** Both countries cooperate in forums like the G20, Commonwealth, United Nations, and International Solar Alliance.

AREAS OF DIFFERENCES

- **Khalistani Extremism:** India has repeatedly raised concerns over pro-Khalistan activities, including hate speech, violence, and attacks on Indian diplomatic missions.
- **Trade and Investment Uncertainty:** Ongoing talks on the Early Progress Trade Agreement (EPTA) were paused in 2023 amid political tensions.
 - Despite strong business interest, political issues slow down economic engagement.
- **Differing Geopolitical Outlooks:** India seeks stronger Indo-Pacific cooperation, but Canada's approach is often seen as inconsistent and influenced by domestic politics.

CONCLUSION

- India–Canada relations have strong foundations and significant potential, especially in trade, education, and clean energy. However, bilateral ties remain fragile, with political and security concerns acting as key irritants.
- The chill in bilateral relations now appears to be in the past, the future of the relationship depends on how both countries manage these differences while leveraging shared interests.

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RHODAMINE B

Scientists at the Raman Research Institute (RRI) in India have developed an effective and sensitive method to detect toxic molecules like **Rhodamine B** using the **coffee-ring effect** combined with nanotechnology.

COFFEE-STAIN EFFECT MECHANISM

The coffee-ring effect is a natural phenomenon where, as a droplet of liquid evaporates, capillary flow moves suspended particles from the center to the edge of the droplet, resulting in a characteristic ring-shaped pattern of particle deposition.

The infographic is divided into two main sections. The left section features a large pink cotton candy with the text 'NOT HEALTHY' and 'What is food colouring made up of? Synthetic dyes (chemicals) or natural sources like plant extracts'. Below this, it mentions 'FSSAI stand' and 'Issues with coloured cotton candy'. The right section shows a petal-shaped dish of red powder with the text 'What is Rhodamine B?' and 'Harmful effects on human body'. It lists several points about the chemical's use and health risks.

NOT HEALTHY

What is food colouring made up of?
Synthetic dyes (chemicals) or natural sources like plant extracts

FSSAI stand
Regulations permit use of both natural and synthetic food colours, but only in certain amounts and for specific purposes

Issues with coloured cotton candy
Food analysis lab found the presence of Rhodamine B and another "unidentified" chemical

What is Rhodamine B?
Rhodamine B or RhB, is a chemical compound used in the leather and textile industry, diagnostic centres and chemical labs to impart colour

Harmful effects on human body
Rhodamine, which usually enters the body when mixed with food, tampers with the balance between the production of oxygen and antioxidant defences on cells and tissue
Prolonged consumption of RhB-contaminated food can cause kidney or liver damage, besides cancer
It can also damage or kill cells in the cerebellum and brainstem tissue
Its presence in excess can cause toxicity and increase the risk of cancer

ABOUT RHODAMINE B

- Rhodamine B is a **water-soluble synthetic dye** known for its bright pink fluorescent color.
- It is widely used in scientific research including fluorescence microscopy, flow cytometry, and biochemical assays such as ELISA.
- Rhodamine B is **toxic and has carcinogenic potential**; it can cause damage to skin, eyes, and the respiratory system.



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55**SEALS AND BIRDS UNDER THREAT IN IUCN'S NEW RED LIST**

Arctic seals and global bird populations are facing severe threats from climate change and human activities, as highlighted in the latest IUCN Red List of Threatened Species released at the World Conservation Congress in Abu Dhabi.

**KEY FINDINGS OF THE REPORT**

- **Status of Arctic Seals:** The IUCN Red List now includes **172,620 species**, of which **48,646** are threatened with extinction.
- **The hooded seal** has been moved from Vulnerable to **Endangered status**.
 - **Bearded and harp seals** are now classified as **Near Threatened**.
- **Status of global bird populations:** **61%** of bird species are experiencing population decline, up from 44% in 2016.
 - Out of 11,185 bird species, 1,256 (11.5%) are globally threatened.
- **The green sea turtle** has been downlisted from endangered to least concern after its population rose by **28%** since the 1970s.

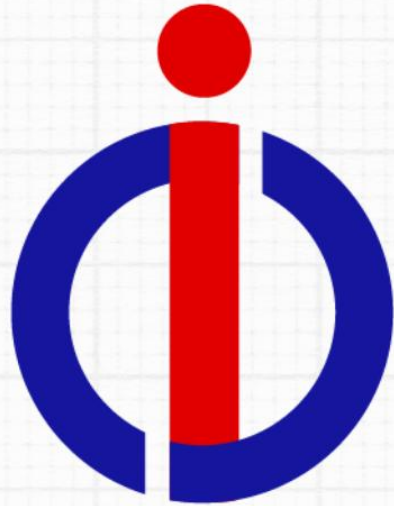
CAUSES OF DECLINE

- **Climate Change:** The Arctic is warming four times faster than the global average, rapidly melting sea ice essential for ice-dependent seals.

- **Human Activities:** Maritime traffic, industrial fishing, oil extraction, and mining have increased risks to marine species.
- **Logging and agricultural expansion** are leading to large-scale tropical forest destruction, threatening bird populations, especially in regions like **Madagascar, West Africa, and Central America.**



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