KERALA STATE CIVIL SERVICE ACADEMY

Established under Centre for Continuing Education Kerala (CCEK)

MONTHLY CURRENT AFFAIRS MAGAZINE

MARCH 2026

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16TH FINANCE COMMISSION

16th Finance Commission pushes urbanisation agenda while tightening fiscal discipline for local bodies

About 16th Finance Commission:

- **Nature:** The Finance Commission is a **constitutional body established under Article 280** to define the financial relations between the Union and the States.
- **Composition:** It was **chaired by Dr. Arvind Panagariya**. The full-time members include Shri Ajay Narayan Jha, Smt. Annie George Mathew, and Dr. Niranjan Rajadhyaksha.
- **Mandate:** The 16th FC's mandate was to **recommend the vertical share of taxes for states and the horizontal formula to distribute those funds** among them for the five-year award period starting April 1, 2026.

- **Key recommendations of the 16th Finance Commission:**
  - **Vertical Devolution:** The Commission recommended **retaining the States' share of the divisible pool of central taxes at 41%,** which the Union Government has officially accepted.
  - **Horizontal Devolution Formula:** It introduced a major shift toward rewarding economic performance by **adding a 10% weight for "Contribution to GDP"** (replacing the previous tax effort criterion).
  - **Grants-in-Aid:** It recommended total grants of ₹9.47 lakh crore over five years, **specifically for local bodies** (₹8 lakh crore) **and disaster management** (₹2.04 lakh crore).
  - **Fiscal Roadmap:** It recommended the **Centre reduce its fiscal deficit to 3.5% of GDP by 2030–31.** It also recommended a ceiling of 3% of GSDP for state fiscal deficits and proposed a strict ban on off-budget borrowings by states.

Key challenges:

- **Stagnant Devolution Share:** The Commission **retained the states' share of central taxes at 41%, despite several states demanding an increase to 50%** to meet rising welfare and infrastructure costs.
- **Cesses and Surcharges:** A primary "bone of contention" is the **rising use** of cesses and surcharges by the Centre. These now account for nearly 20% of the Gross Tax Revenue but are not shared with states, effectively shrinking the divisible pool.
- **Declining Effective Transfers:** While the **statutory rate is 41%, the effective transfer ratio** (devolution plus grants) **is projected to decline to about 32.7%** in 2026–27.
- **New "Contribution to GDP" Weight:** Introducing a 10% weight for a state's contribution to GDP **favours industrialised, richer states** (e.g., Tamil Nadu, Karnataka). This has reduced the weight of Income Distance (from 45% to 42.5%), potentially hurting poorer states like Bihar and Uttar Pradesh.
- **Demographic Shifts: Southern states face a "demographic penalty"** as lower population growth—resulting from successful family planning—reduces their share under population-based criteria. There are also rising costs associated with an aging population in these states.

- **Way Forward:**
  - **The "Grand Bargain":** A primary proposal is for **states to accept the current 41% share in exchange for the Centre merging cesses and surcharges** into the shareable tax base.

- **Capping Levies:** Implementing a **statutory cap on cesses and surcharges**(e.g., at 10% of Gross Tax Revenue) to ensure they remain temporary and do not permanently erode the states' share.
- **Transparency:** Requiring **annual disclosure of CAG-certified data** on net tax proceeds to give states a clear view of the actual funds available for devolution.
- **Strict Deficit Management:** Enforcing a **3% GSDP fiscal deficit cap for states and a 3.5% GDP cap for the Centre** by 2030–31.

Eliminating Off-Budget Borrowing: Strictly discontinuing the practice of borrowing through state-owned entities **to hide true debt levels.**

- **Subsidy Rationalisation**: **Introducing sunset clauses and clear exclusion criteria** for unconditional cash transfers to ensure they target the truly needy without straining budgets.

JUDICIAL CORRUPTION

Judicial corruption refers to the abuse of judicial power for private gain, manifesting as bribery, nepotism, political interference, or the manipulation of court records.In the Indian context, it represents a significant threat to the **Rule of Law** and the public's faith in the impartiality of the third pillar of democracy.

Data Points on Judicial Corruption:

- **Massive Case Pendency (Catalyst):**
  - As per the National Judicial Data Grid (March 2026), total pending cases have crossed 5.2 crore.
  - Over 62% of cases are pending for more than one year, creating incentives for speed money to influence listings and hearings.
- **WJP Rule of Law Index (2025):**
  - In the World Justice Project Rule of Law Index 2025, India scores below the global median in the Absence of Corruption in the Judiciary indicator.
  - India's overall ranking remains around 77–79 out of 142 countries.
- **Transparency International Survey (2025):**
  - Around 20–25% of respondents interacting with district and sessions courts reported paying a bribe or using influence to process legal paperwork.
- **CVC Administrative Complaints (2025):**
  - The Central Vigilance Commission Annual Report 2025 recorded a 15% rise in complaints against court registry and clerical staff for illegal gratification related to filing and case numbering.
- **Bench Hunting Scam (2025)**
  - A High Court vigilance probe uncovered a racket where lawyers and registry officials manipulated case-listing systems to route cases to favorable benches.

Lower Judiciary Disciplinary Actions (2025):

- 12 judicial officers across three states were suspended or compulsorily retired following inquiries into disproportionate assets and questionable bail orders.

Constitutional Articles and Laws Associated
Constitutional Articles:

- **Article 124(4) & 217:** Provides the procedure for the **removal of judges** of the Supreme Court and High Courts on the grounds of proved misbehaviour or incapacity.
- **Article 235:** Grants the High Court administrative control over subordinate courts, including the power to take disciplinary action against judicial officers.
- **Article 50:** Directs the State to separate the judiciary from the executive, intended to prevent political corruption and ensure independence.
- **Article 227:** Power of superintendence over all courts by the High Court to ensure they function within the bounds of law and ethics.

Relevant Laws:

- **Judges (Inquiry) Act, 1968:** Regulates the procedure for the investigation and proof of misbehaviour of a judge of the Supreme Court or a High Court.

- **Prevention of Corruption Act, 1988:** Applies to judicial officers as public servants, though the Supreme Court's *Veeraswami case (1991)* mandated prior sanction from the Chief Justice of India before registering an FIR against a superior court judge.

Challenges Associated with Judicial Integrity:

- **The Opaque Collegium System:** Lack of transparency in the appointment of judges can lead to allegations of Uncle Judge syndrome or nepotism.

Example: In 2024-25, several petitions in the Supreme Court challenged the non-disclosure of internal deliberations regarding judicial elevations, citing a lack of meritocratic clarity.

- **Absence of an Internal Accountability Mechanism:** There is no statutory body to investigate complaints against superior judges, leaving a vacuum between internal peer review and the extreme step of impeachment.

Example: The long-pending **Judicial Standards and Accountability Bill** has not been enacted, leaving the 1997 Values of Judicial Life as mere voluntary guidelines.

- **Post-Retirement Appointments:** The quid pro quo fear where judges might favor the government in anticipation of lucrative administrative or political posts after retirement.

Example: Recent appointments of retired judges to **Rajya Sabha** or as **Governors** within months of retirement have sparked ethical debates regarding judicial independence.

- **Administrative Corruption in Registry:** Middlemen and court clerks often act as conduits for bribery to manipulate bench hunting or case listings.

Example: In late 2025, a High Court in North India suspended several registry staff members following an expose on money-for-listing scams.

- **Shield of Contempt of Court:** The threat of Contempt is often perceived as a barrier to honest criticism or whistleblowing regarding judicial misconduct.

Example: The **NCERT controversy itself** highlights how mentioning corruption in textbooks can be viewed as scandalizing the court, leading to a blanket ban on educational content.

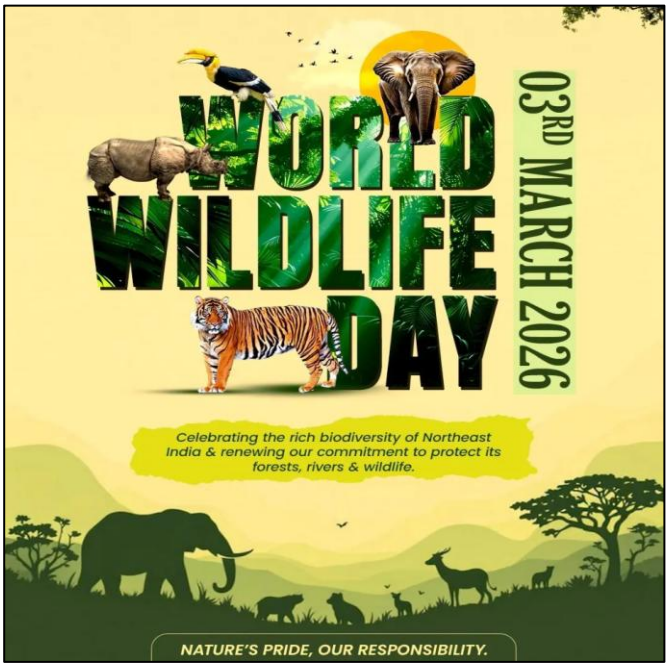
Way Ahead:

- **Enactment of Judicial Accountability Law:** Pass a robust Judicial Standards and Accountability Bill to create a permanent mechanism for investigating complaints against judges without undermining their independence.
- **Digitization (Phase III of E-Courts):** Fully automate case listing and filing through AI-driven systems to eliminate the human interface where bribery occurs in the registry.
- **National Judicial Appointments Commission (NJAC) 2.0:** Establish a transparent, bipartisan body for appointments that balances executive input with judicial primacy to end nepotism.
- **Cooling-off Period:** Mandate a **2-year cooling-off period** for retired judges before they can accept any government-appointed positions.
- **Transparent Assets Disclosure:** Legally mandate the annual public disclosure of assets and liabilities for all judges of the Subordinate, High, and Supreme Courts.

While the Supreme Court's ban on the NCERT textbook aims to preserve the Dignity of the Institution, the underlying challenge remains the gap between judicial immunity and institutional accountability. Addressing corruption through systemic reforms like **E-Courts**and a **Formal Accountability Bill** is essential to ensure that the temple of justice remains beyond reproach.

WORLD WILDLIFE DAY

The world observed World Wildlife Day on 3 March 2026 under the theme "**Medicinal and Aromatic Plants: Conserving Health, Heritage and Livelihoods."**



About Wildlife Conservation:
What it is?

- Wildlife conservation is the practice of protecting wild plant and animal species and their habitats to ensure that healthy native ecosystems are restored, protected, or maintained.
- It involves a multidisciplinary approach encompassing law enforcement, scientific research, and community participation to prevent species extinction and maintain biodiversity.

Data and Statistics on Wildlife in India:

- **Mega-Biodiversity Hub:** India is one of the 17 mega-biodiversity rich countries, harboring nearly **7-8% of the world's recorded species** while occupying only 2.4% of the global land area.
- **Medicinal Wealth:** India possesses approximately **15,000 medicinal plant species**, with about 8,000 species utilized in traditional Indian systems of medicine (AYUSH).
- **Protected Area Network:** As of 2026, India has a robust network of **1,000+ Protected Areas**, including National Parks, Wildlife Sanctuaries, and Conservation Reserves.

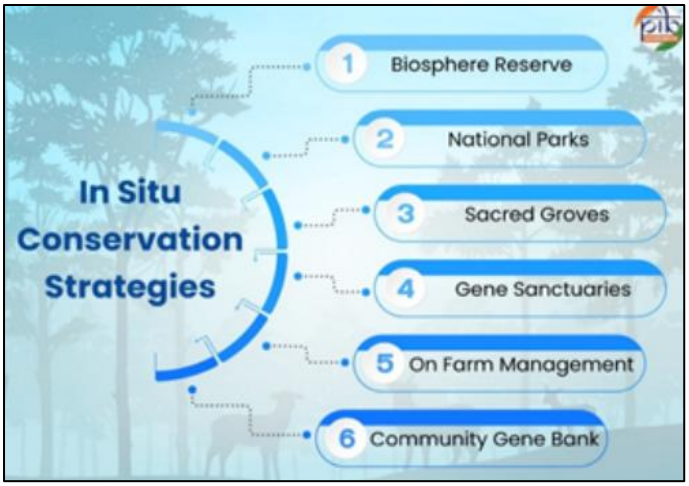
- **Economic Scale:** The annual domestic demand for medicinal plants in India is estimated at over **5,12,000 metric tonnes**, with 242 species traded in high volumes exceeding 100 MT per annum.
- **Global Export Share:** India is the **second-largest exporter of medicinal plants globally**, significantly contributing to the multi-billion dollar traditional medicine market.

Types of Conservation Methods:

1. **In-Situ Conservation (On-site)**

Protecting species within their natural habitats where they have evolved.

- **National Parks & Sanctuaries:** Areas with strict protection for flora and fauna (e.g., Corbett, Kaziranga).
- **Biosphere Reserves:** Large areas for ecosystem conservation and sustainable development (e.g., Nilgiri).
- **MPCDAs: Medicinal Plants Conservation and Development Areas** specifically designated for medicinal flora.
- **Sacred Groves:** Community-protected forest fragments based on religious and cultural beliefs.



2. **Ex-Situ Conservation (Off-site)**

Protecting species outside their natural habitats in controlled environments.

- **Gene Banks:** Long-term preservation of genetic material (e.g., **National Seed Gene Bank** at NBPGR).
- **Botanical Gardens & Zoos:** Providing breeding grounds and educational displays for rare species.
- **Cryopreservation:** Storage of seeds, pollen, or embryos at ultra-low temperatures to maintain viability.
- **Herbal Gardens:** Institutional or school gardens (e.g., Aushadhi Vantika) used for awareness and local supply.

Key Initiatives Taken So Far:

1. **Central Sector Scheme (NMPB):** A flagship scheme for the conservation and sustainable management of medicinal plants with an outlay of **₹322.41 crores (2021-2026)**.
2. **e-CHARAK Portal:** A digital platform and mobile app to enable information exchange and market access between farmers and herbal traders.
3. **National Ayush Mission (NAM):** Promotes the integration of medicinal plant cultivation with traditional farming to enhance farmer income.
4. **GI Tagging:** Protecting the heritage of specific plants like **Nagauri Ashwagandha** (registered Nov 2025) and **Kashmir Saffron** to ensure quality and origin.

Challenges Associated:

- **Overexploitation of Wild Stocks:** High market demand leads to unsustainable harvesting, threatening the survival of rare species in the wild.

Example: In 2025, the **Himalayan Trillium** faced severe depletion in the high-altitude zones due to illegal extraction for its high-value medicinal roots.

- **Habitat Fragmentation:** Infrastructure development and agricultural expansion continue to shrink the natural corridors required for species migration.

Example: The **Western Ghats** have seen localized extinctions of endemic aromatic plants in 2026 due to land-use changes for tourism and plantations.

- **Inadequate Standardisation:** Lack of uniform quality testing and certification makes it difficult for small farmers to access premium global markets.

Example: Recent rejections of **herbal raw drug exports** in late 2025 highlighted the gap in GACP (Good Agricultural and Collection Practices) compliance.

- **Climate Change Vulnerability:** Shifting rainfall patterns and rising temperatures are altering the chemical composition (potency) and flowering cycles of medicinal plants.

Example: The **Kashmir Saffron** yields in 2025-26 were affected by erratic snowfall, directly impacting the livelihoods of thousands of farmers.

Way Ahead:

- **Mainstreaming Cultivation:** Shifting the supply chain from wild-collection to **controlled cultivation** on private lands to reduce pressure on forests.
- **Blockchain in Supply Chain:** Implementing **Traceability Systems** on platforms like e-CHARAK to ensure that herbs are sourced sustainably and ethically.
- **R&D in Bio-Prospecting:** Investing in scientific research to unlock the modern pharmaceutical potential of the 15,000 identified species.
- **Community-Led Conservation:** Empowering **Biodiversity Management Committees (BMCs)** to ensure fair benefit-sharing and protection of traditional knowledge.

India's medicinal plant heritage is a unique confluence of ancient wisdom and modern economic potential. By bridging the gap between digital platforms like e-CHARAK and grassroots conservation in MPCDAs, India is securing its role as a global pharmacy. Protecting these green healers is not just an environmental duty, but a prerequisite for the health and prosperity of Viksit Bharat.

BUREAU OF INDIAN STANDARDS LAUNCHES STANDARDS FOR CLOUD COMPUTING

The Indian government, through the Bureau of Indian Standards (BIS), notified the nation's first-ever standards for cloud computing, data centre performance, and ethical AI deployment.

- The notification under the **BIS Rules, 2018**, establishes a voluntary but formal framework for digital infrastructure. It marks India's shift toward a globally aligned digital ecosystem, ensuring that as conglomerates invest in AI-ready infrastructure, they adhere to recognized performance and ethical benchmarks.

Key Features and Summary of Notification:

1. International Alignment: The standards are directly derived from the ISO (International Organization for Standardization) and IEC (International Electrotechnical Commission) frameworks.
2. Standardized Cloud Terminology: Establishes common definitions and foundational norms for cloud systems to be used across finance, healthcare, and government services.
3. Cooling Efficiency Ratio (CER): Formalizes a methodology to measure how efficiently data centres remove heat relative to electrical energy consumed.
4. Ethical AI Design: Embeds ethical considerations—such as transparency and bias mitigation—directly into the design and deployment phase of AI systems.

5. Global Metric Adoption: Confirms that India will continue to use global benchmarks like PUE (Power Usage Effectiveness), WUE (Water Usage Effectiveness), and CUE (Carbon Usage Effectiveness).
6. Voluntary Status: Currently, the standards are not mandatory; compliance will only become compulsory if the government issues a Quality Control Order (QCO).
7. Infrastructure Roadmap: Aligns with NITI Aayog's projection of growing India's data centre capacity from 1.5 GW in 2025 to 8–10 GW by 2030.

Need for Standards in Cloud and Ethical AI:

- **Interoperability in Critical Sectors:** Standardized cloud terminology ensures seamless data exchange between different platforms in vital sectors.

Example: The **Ayushman Bharat Digital Mission (ABDM)** requires standardized cloud frameworks to ensure patient records are accessible across diverse hospital cloud providers.

- **Energy and Thermal Management:** With AI workloads intensifying, data centres require massive power; standards prevent operational failures and environmental strain.

Example: The **Adani-EdgeConneX** and **Reliance** data centre expansions in 2025-26 necessitate strict cooling metrics to manage the heat generated by high-density AI chips.

- **Building Digital Trust:** Ethical AI standards prevent biased algorithms from affecting citizens, which is crucial for public acceptance of automated governance.

Example: As the **Indian Judiciary** explores AI for case summarization in 2026, ethical standards ensure that AI-judgments remain free from data-driven prejudices.

- **Attracting Global Investment:** Aligning with ISO-IEC makes India a trusted partner for global tech giants looking for standardized infrastructure.

Example: Nvidia and Google's recent partnerships with Indian firms for AI sovereign clouds rely on India having a regulatory environment compatible with international norms.

Challenges Associated

- **Pace of Technology vs. Regulation:** AI and cyber threats evolve faster than standard-setting bodies can update their documentation.

Example: The rise of **Sovereign AI** models in early 2026 has already challenged the initial definitions of cloud systems notified just months ago.

- **Compliance Costs for Startups:** High standards for data centres and AI ethics may increase the entry cost for smaller Indian startups.

Example: While conglomerates can afford **CER-compliant cooling**, smaller players in the **MeitY-backed AI startup hub** may struggle.

- **Security Integration Gap:** Standards currently focus on performance and ethics; however, deep-rooted cybersecurity from the start remains a distinct challenge.

Example: Recent **ransomware attacks on Indian healthcare grids** in late 2025 highlighted that performing data centres aren't always secure data centres.

- **Resource Intensity (Power and Water):** AI expansion is projected to raise data centres' share of India's electricity use from **0.8% to 3% by 2030**.

Example: In water-stressed regions like **Bengaluru and Chennai**, the high **WUE (Water Usage Effectiveness)** required for AI cooling is creating friction with local resource needs.

Way Ahead:

- **Issuance of QCOs:** The government should selectively issue **Quality Control Orders** for critical sectors (like finance and defense) to make these standards mandatory.
- **Incentivizing Green Cooling:** Provide subsidies for data centres that achieve high **Cooling Efficiency Ratios (CER)** through liquid cooling or renewable energy.
- **Continuous Review Cycle:** Establish a Living Standard mechanism where BIS reviews AI ethics annually to keep up with generative AI breakthroughs.
- **Capacity Building:** Launch nationwide training for IT auditors to certify firms against these new ISO-IEC-aligned Indian standards.
- **Focus on Security:** Transition from Governance to Secured Governance by adding a cybersecurity layer to the AI deployment framework.

India's notification of cloud and AI standards is a landmark step in transforming the nation from a consumer of tech to a **standard-setter in tech.** By balancing high-performance data centre metrics with ethical AI guardrails, the government is ensuring that the digital backbone of **Viksit Bharat** is both efficient and trustworthy. This formalization provides the necessary stability for India to achieve its 10 GW data centre target by 2030.

INDIA -CANADA RELATIONS

Bilateral relations between India and Canada have undergone a strategic reset following Prime Minister Mark Carney's visit to India and his high-level talks with Prime Minister of India.

About India-Canada Bilateral Relations:
What it is?

- India and Canada share a relationship built on a "Strategic Partnership" centered around shared democratic values, the rule of law, and strong people-to-people ties. The partnership spans several critical sectors including nuclear energy, trade, education, and maritime security in the Indo-Pacific.

History of India-Canada Relations:

- **Early Cooperation:** Traditionally, the two nations shared a cooperative bond, particularly in the nuclear field, until it was disrupted in the 1970s.
- **Economic Integration:** Over the last 25 years, Canada has made major investments in India, with approximately 600 Canadian companies now operating on Indian soil.
- **The Trudeau Strain:** Relations faced severe deterioration during Justin Trudeau's tenure due to allegations regarding the killing of Hardeep Singh Nijjar.
- **The Carney Transition:** Ties began to improve last year after Mark Carney assumed office, leading to the resumption of high-level visits and trade talks.
- **Modern Strategic Reset:** The relationship has now shifted toward a "Strategic Energy Partnership" and a focus on middle-power collaboration against global power hegemony.

Need for Reset:

1. **Energy Security:** India requires stable long-term partners to meet its massive and growing energy demands through nuclear and renewable sources.

Example: The new $2.6-billion, 10-year deal for Canadian uranium is essential for fueling Indian nuclear reactors.

1. **Economic Protectionism:** Both nations are seeking to defend their economies against the impact of great power hegemony and restrictive trade policies.

Example: Strengthening ties serves as a shield against the United States' current tariff policies affecting both countries.

1. **Trade Diversification:** There is an urgent need to expand bilateral trade to its full potential through a formal Economic Partnership Agreement.

Example: Leaders aim to double bilateral trade to $50 billion by 2030 to bolster already robust economic ties.

1. **Indo-Pacific Stability:** Regional security requires coordinated efforts between democratic middle powers to ensure maritime safety.

Example: A planned defense dialogue aims to support maritime security cooperation across the Indo-Pacific region.

1. **Diaspora Management:** The presence of a massive Indian community in Canada necessitates a stable diplomatic environment for their welfare.

Example: With 1.8 million Indo-Canadians and 400,000 Indian students in Canada, the reset ensures their safety and academic continuity.

Challenges Associated:

1. **Sovereignty and Security Allegations:** Past accusations regarding extrajudicial activities remain a sensitive "under-the-surface" issue for both governments.

Example: The severe strain caused by allegations in the Hardeep Singh Nijjar case highlights how security issues can paralyze diplomacy.

1. **Trade Barriers:** Navigating complex regulatory frameworks to finalize the Economic Partnership Agreement by year-end remains a hurdle.

Example: Restarting trade talks required overcoming months of total deadlock following the diplomatic fallout of 2024-25.

1. **Extremism and Diaspora Politics:** The activities of separatist elements within Canada continue to be a primary point of contention for New Delhi.

Example: India has consistently raised concerns about the safety of its diplomats in Canada amidst protests by Khalistan supporters.

1. **Nuclear Regulatory Hurdles:** Expanding nuclear cooperation to build large and small reactors requires navigating strict international and bilateral safeguards.

Example: The plan to use Canadian expertise for Indian reactors depends on the successful execution of the 10-year uranium deal.

1. **Global Power Dynamics:** External pressures from great power rivalries and shifting US trade stances could disrupt middle-power alignment.

Example: Both nations must balance their reset while simultaneously reacting to the unpredictable tariff shifts from the US.

Way Ahead:

- **Finalize CEPA:** Conclude the India-Canada Comprehensive Economic Partnership Agreement by the end of 2026 to provide a legal framework for trade.
- **Operationalize Energy Pact:** Rapidly implement the Strategic Energy Partnership covering nuclear, LNG, solar, and hydrogen energy.
- **Strengthen Security Ties:** Operationalize the planned defense dialogue to maintain a rules-based order in the Indo-Pacific.
- **Critical Minerals Collaboration:** Secure supply chains for critical minerals necessary for India's green energy transition and technological growth.
- **Enhance Student Welfare:** Streamline exchange programs and ensure a supportive environment for the 400,000 Indian students currently in Canada.

The strategic reset between India and Canada marks a transition from a period of deep mistrust to a pragmatism-driven partnership centered on energy and economic security. By moving past historical grievances, both nations are positioning themselves as collaborative middle powers capable of navigating global trade uncertainties. This renewed bond is essential for India's energy future and the prosperity of its vast diaspora living in Canada.

CENTRAL WAREHOUSING CORPORATION (CWC)

The Central Warehousing Corporation (CWC) celebrated its 70th Foundation Day on March 2, 2026, marking seven decades of contribution to India's food security.

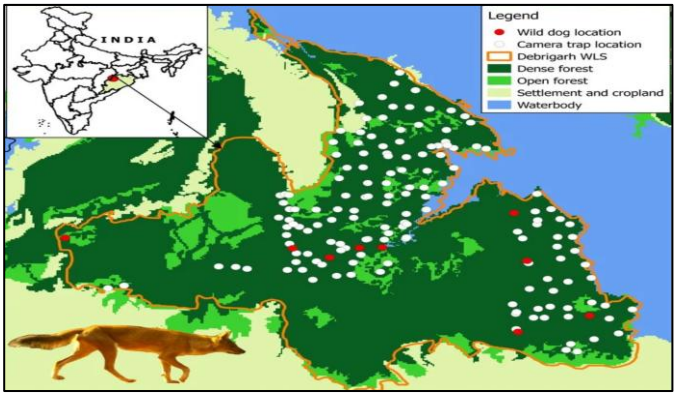
About Central Warehousing Corporation (CWC):

- **Nature:** The Central Warehousing Corporation (CWC) is a **Central Public Sector Enterprise (CPSE) under the Ministry of Consumer Affairs, Food & Public Distribution.**
- **Objective:** It serves as a premier logistics and warehousing organization **supporting India's food security, agricultural storage, and integrated supply chain management.**
- **Establishment:** It was established **in 1957 under the Warehousing Corporations Act, 1962** (later governed under Companies Act framework).

- **Evolution:** Its roots trace back to wartime food administration during World War II, when a separate Food Department was set up in 1942. Post-independence **restructuring of the Food Ministry (1947–1958) led to the transfer of warehousing functions to the central government.**
- **Scientific Storage:** Construction and management of warehouses and godowns **for foodgrains, sugar, fertilizers, and other commodities.**
- **Logistics & Supply Chain Services:** Inland container depots (ICDs), **container freight stations (CFSs), and integrated logistics hubs.**
- **Support to PDS & Food Security:** Assists **procurement, buffer stocking, and distribution** under the Public Distribution System (PDS).
- **Custom Bonded Warehousing:** Facilitates import-export trade by offering **bonded storage and customs clearance support.**
- **Infrastructure Development:** Acquisition and leasing of land **for warehousing expansion across states.**
- **Significance:** It plays a critical role in maintaining buffer stocks and ensuring smooth distribution of essential commodities nationwide. It also contributes to **India's goal of becoming a top global logistics performer** by improving storage efficiency and reducing supply chain bottlenecks.

DEBRIGARH WILDLIFE SANCTUARY

The Debrigarh Wildlife Sanctuary is set to host the second edition of the two-day 'Indian Bison Fest'.



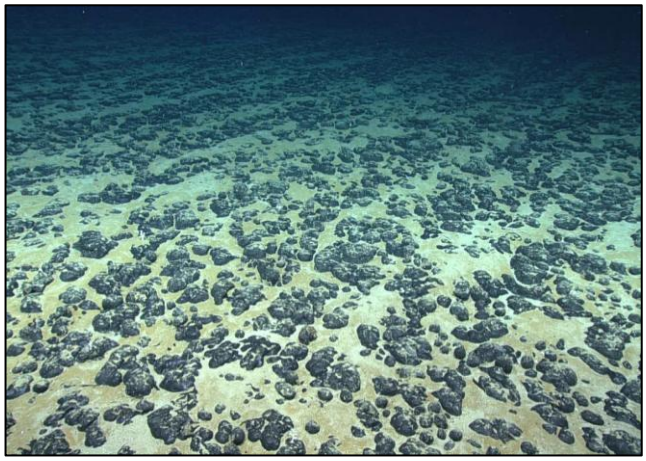
About Debrigarh Wildlife Sanctuary:

- **Location:** It is situated in the Bargarh district of **Odisha**.
- **Other names:** It is also known as the **"Land of Bisons"** due to its significant population of Indian Gaur.
- **Lifeline:** It is bounded on the east and north by the **Hirakud Reservoir (Mahanadi River)**, the world's longest earthen dam.

- **Terrain:** It is characterised as an amphi-terrestrial habitat, an **integrated landscape of forests, grasslands, and wetlands.**
    - **Status:** It was declared a **wildlife sanctuary in 1985**. It is also a designated Eco-Sensitive Zone (ESZ).
    - **Historical significance:** It finds a special mention because of noted **freedom fighter Veer Surendra Sai.** During his rebellion against the British, his base at Barapathara was located within the sanctuary.
- **Vegetation:** Most of the plant sanctuary is covered with **mixed and dry deciduous forest.**
    - **Flora:** Major trees found here are **Sal, Asana, Bija, Aanla, Dhaura**, etc.
    - **Fauna:** These include **Indian leopards, sloth bears, chousingha (four-horned antelope), sambar deer, gaurs (Indian bison),** wild boars, and Indian wild dogs (dholes) are among the notable animal residents.
- **Birds:** It is one of the most flocked wintering grounds of migratory birds that visit the sanctuary from far-off places. Some of the most prominent among them are the **crested serpent eagle, Flower Peckers, red-vented bulbul, tree pie, drongo, and white eye oriental.**
- **Eco-Tourism:** It is managed through a **community-driven model involving local Gond tribal women,** providing sustainable livelihoods through safaris and eco-cottages

DARK OXYGEN

Scientists exploring the deep Pacific Ocean have reported the discovery of what they describe as "dark oxygen", detected about 4,000 metres below the ocean surface where sunlight never reaches.



The finding challenges the long-standing scientific understanding that oxygen on Earth is primarily produced through photosynthesis, a process that requires sunlight.

The discovery was made during research on polymetallic nodules located on the Pacific Ocean floor and has sparked new discussions about oxygen production in extreme environments.

What Is 'Dark Oxygen'?

"Dark oxygen" refers to oxygen detected in deep-sea environments where sunlight is completely absent. Traditionally, oxygen production has been linked to photosynthesis, carried out by plants, algae, and certain bacteria that use light energy to convert water and carbon dioxide into oxygen.

However, researchers observed measurable oxygen levels in deep ocean regions where photosynthesis is impossible. The study, published in the journal "Nature Geoscience", found that oxygen concentrations near polymetallic nodules increased over time during experiments conducted in sealed conditions on the seafloor.

How Scientists Detected Oxygen In The Deep Sea

The research was conducted in the **Clarion–Clipperton Zone,** a vast region of the Pacific Ocean known for its mineral-rich seabed. Scientists used specialised instruments and benthic chambers to isolate small sections of the ocean floor and measure chemical changes over time.

Unexpectedly, oxygen levels inside these chambers increased rather than decreased. Normally, microbes and chemical reactions consume oxygen in deep-sea sediments.

Researchers believe polymetallic nodules (rich in metals like manganese, nickel, cobalt, and iron) act like natural batteries.

Process:

1. These nodules generate small electrical currents.
2. The current splits seawater molecules.
3. This electrolysis-like reaction separates water into hydrogen and oxygen.
4. Oxygen released this way is called dark oxygen because it forms without sunlight.

Scientific significance

- Challenges the idea that photosynthesis is the only major source of oxygen.
- Suggests deep-sea ecosystems may generate their own oxygen.

Astrobiology implications

- Oxygen could exist on planets without sunlight-based life, affecting how scientists search for life in space.

ALMA TELESCOPE

Recently, astronomers have captured the central region of our Milky Way in unprecedented detail with the help of the ALMA telescope.

About ALMA Telescope:

- **Full form:** ALMA stands for **Atacama Large Millimeter/submillimeter Array.**
  - **Location:** It is a radio telescope located in the **Atacama Desert in Chile.**
- **Objective:** It is a state-of-the-art radio-telescope that **studies celestial objects at millimetre and submillimetre wavelengths.**
- **Development:** It was designed, planned and constructed by the **US's National Radio Astronomy Observatory (NRAO), the National Astronomical Observatory of Japan (NAOJ) and the European Southern Observatory (ESO).**
- **Launch:** It has been fully **functional since 2013.**
  - **Expanse:** It consists of 66 high-precision antennas, spread over a distance of **up to 16 km in the Atacama Desert** of northern Chile. These antennas can be moved closer together or farther apart for different perspectives – like the zoom lens of a camera.
- **Sensitivity:** It also has extraordinary sensitivity, which allows it to **detect even extremely faint radio signals.**

Why Atacama Desert:

- **Low Humidity:** Millimetre waves are highly susceptible to absorption by atmospheric water vapour. The Atacama is the **driest place on Earth, minimizing signal loss.**
- **High Altitude: At 5,000+ metres,** the atmosphere is thin, providing a **clearer "window" to the universe.**
  - **International Partnership:** ALMA is not an Indian project; it is a **global collaboration** involving:

Europe: European Southern Observatory **(ESO).**

North America: U.S. National Science Foundation **(NSF) and National Research Council of Canada.**

East Asia: National Institutes of Natural Sciences **(NINS) of Japan, South Korea, and Taiwan.**
Host Country: Republic of **Chile**

- **Major discoveries:**
  - **Black Hole Imaging:** Part of the Event Horizon Telescope (EHT) project that captured the **first image of the supermassive black hole (Sagittarius A*)** at the center of the Milky Way.
  - **Protoplanetary Disks:** Captured detailed images of **the disk around the star HL Tauri,** revolutionizing theories on how planets form.
  - **Einstein Ring:** Observed the **bending of light from distant galaxies** in unprecedented detail.

SAINT TIRUMANKAI ALVAR

The Ashmolean Museum (Oxford) is set to return a 16th-century bronze idol of Saint Tirumankai Alvar, after research indicated it was photographed in 1957 at the Soundarrajaperumal temple, Thadikombu (Tamil Nadu) and later replaced by a replica.

●Alvars: Tamil Vaishnavite saints who composed devotional hymns to Vishnu.

●Major Alvar texts compiled in Nalayira Divya Prabandham.

●Idol repatriation often occurs through provenance research and diplomatic negotiations.

About Thirumangai Alvar One of the **12 Alvars**, the Tamil poet-saints devoted to **Lord Vishnu**.Associated with the **Bhakti movement in South India**.His hymns are part of the **Divya Prabandham**, an important Vaishnavite devotional text.

GOLESTAN PALACE

The Golestan Palace, a UNESCO World Heritage Site in Tehran, reportedly suffered damage due to shockwaves and debris from nearby airstrikes amid escalating US–Israel–Iran tensions in 2026.

- Golestan Palace is a historic royal complex that served as the official residence of the Qajar dynasty and is one of the oldest historic monuments in Tehran.

- The palace complex, comprising multiple buildings, halls, and museums, reflects a unique blend of Persian architecture and European artistic influences.

Located in: Tehran (Iran)
Status: UNESCO World Heritage Site (inscribed in 2013)
History:

- The origins of the site date back to the **Safavid era (16th century)** when Tehran's royal citadel was developed.

- The complex gained prominence when the **Qajar dynasty (1794–1925)** made Tehran the capital and adopted Golestan Palace as the royal residence.
- Major reconstruction occurred during the reign of **Naser al-Din Shah in the 19th century**, giving the palace its current form.
- During the **Pahlavi era (1925–1979)**, it was mainly used for formal state ceremonies, including royal coronations.
- Today, the complex functions as a **museum and cultural heritage site**.

Key Features:

1. **Architectural Complex:** The palace consists of **17 structures**, including palaces, museums, halls, and gardens built largely during the Qajar period.
2. **Blend of Architectural Styles:** Combines traditional **Persian architectural design with European decorative elements**, reflecting Iran's interaction with the West in the 19th century.
3. **Major Structures:** Important buildings include Marble Throne (Takht-e Marmar), Mirror Hall, Brilliant Hall, Salam Hall, Diamond Hall, and the Edifice of the Sun (Shams-ol-Emareh).
4. **Cultural Archives:** The complex houses photographic archives, manuscript libraries, and historical documents, representing early photography in Iran.
5. **Royal Ceremonial Site:** Historically used for coronations, royal receptions, and diplomatic ceremonies.

Significance:

- Symbolises the political and cultural history of the Qajar dynasty and Iran's transformation into a modern state.
- Represents a rare fusion of Persian and European artistic traditions.

MEGALITHIC ROCK CUT CHAMBERS

These are subterranean burial structures carved directly into laterite rock. They represent a unique funerary architecture where the dead were interred with grave goods, reflecting the Megalithic culture's complex beliefs about the afterlife.

Various Names:

Locally, these structures are known by several evocative names in Kerala and surrounding regions:

- Muniyara (Hermit's cell)
- Pandava Cave (Linked to the mythological Pandavas)
- Peeranki Cave (Cannon cave)
- Nidhikuzhi (Treasure pit)
- Kalppathayam (Stone box/granary)

Origin and Period:

- **Era:** These structures are generally linked to the Iron Age/Megalithic period in South India, dating back roughly **2,000 to 2,500 years**.
- **Region:** Predominantly found in the laterite-rich belts of Kerala and parts of coastal Karnataka.

Purpose:

- The primary purpose was **secondary burial**.
- Megalithic communities practiced elaborate rituals where the bones of the deceased were collected and placed inside these chambers, often accompanied by pottery, iron tools, and beads to assist the soul in the journey beyond.

Key Characteristics:

- **Architecture:** Carved out of laterite rock with a **circular inner chamber**.
- **Entrance:** Usually features a narrow **shaft** leading down to the chamber, with the opening sealed by a heavy stone slab.
- **Top Aperture:** Often contains a small circular hole (around 5 cm in the recent find) at the top, possibly for ritualistic offerings or as a passage for the spirit.
- **Associated Monuments:** Frequently found near other Megalithic structures like **Umbrella Stones (Kudakkallu)** or Cap stones (Toppikallu).

Significance:

- They shed light on the socio-religious practices and ritualistic beliefs (Megalithism) of ancient South Indian societies.
- Demonstrates the early mastery of iron tools used to carve intricate spaces into hard laterite rock.
- Provides physical evidence for dating the transition from the Neolithic to the Iron Age in the Western Ghats region.

DUSKY EAGLE-OWL

The elusive Dusky Eagle-owl (*Ketupa coromanda*) has been sighted in the Phato tourism zone of Uttarakhand's Terai West forest division after a 15-year hiatus.

What it is?

- The Dusky Eagle-owl is a large, powerful bird of prey belonging to the family Strigidae. Unlike many other owls, it is notably **partly diurnal**, meaning it can be active and hunt during the day, especially in cloudy or overcast weather.

Habitat and Distribution:

- **General Range:** Found across South and Southeast Asia, including India, Nepal, Bangladesh, and Pakistan.
- **Specific Environment:** It favors lowland riparian forests (forests near water bodies), plantations, and old-growth woodlands.
- **Elevation:** Typically resides in flat, open habitats at elevations ranging from 0 to 250 meters.

IUCN Status: Least Concern.
Key Characteristics:

- **Physical:**
- A large, grayish-brown owl (48–58 cm long) with striking yellow eyes.
- It features long, prominent **ear tufts** (feathers used for camouflage and communication), fine barring on its underparts, and white patches on its shoulders.
- **Biological/Dietary:** An apex predator with a highly diverse diet. It hunts birds (crows, parakeets, herons), mammals (rats, hares, squirrels, porcupines), fish, reptiles, and insects.

Social/Breeding: It rarely builds its own nest, preferring to repurpose old stick nests made by kites, vultures, or eagles. A female typically lays **1 to 3 eggs**.

- **Vocalization:** Its call consists of low, guttural notes that increase in speed and volume before trailing off.

Significance:

- Known as a litmus test species, its presence indicates a healthy, undisturbed ecosystem with a robust prey base.
- Its elusive nature and superior camouflage make it a master of disguise, rarely seen by humans even in known habitats.
- The sighting in the Corbett landscape reflects the success of habitat management and the restoration of natural corridors in Uttarakhand.

OPERATION SANKALP

Operation Sankalp (Sanskrit for **Commitment**) is the Indian Navy's proactive maritime security initiative launched to ensure the safety of Indian-flagged merchant vessels and maintain regional stability in the Indian Ocean Region(IOR).

Launched in: The operation was officially launched on **June 19, 2019**, following escalating security concerns and attacks on commercial shipping in the Gulf of Oman and the Strait of Hormuz.

Organizations Involved: The mission is executed through meticulous coordination between the **Indian Navy** and several key ministries.

Aim:

- To guarantee the secure passage of Indian commercial vessels through the Strait of Hormuz, Gulf of Aden, and Gulf of Oman.
- To combat the growing threat of piracy in the IOR.
- To safeguard India's substantial maritime trade, particularly oil imports, from unconventional threats.

Key Features:

- **Continuous Presence:** Maintains a steady deployment of frigates and destroyers in the Gulf of Aden and the Gulf of Oman.
- **First Responder Status:** Positions the Indian Navy as the Preferred Security Partner in the region, providing immediate assistance during maritime emergencies.
- **Anti-Piracy Legislation:** Supported by the **Maritime Anti-Piracy Act 2022**, which provides the legal framework to criminalize and prosecute piracy.
- **Comprehensive Surveillance:** Utilizes maritime surveillance aircraft and Special Forces (MARCOS) for 24/7 monitoring of sea lanes.
- **Escort Missions:** Since its inception, the Navy has safely escorted hundreds of merchant vessels carrying millions of tonnes of cargo.

Significance:

- Protects trade routes vital for India's energy security; nearly 62% of India's oil imports originate from the Persian Gulf.
- Demonstrates India's capability as a blue-water navy to project power and protect national interests independently.

STATEMENT OF INTENT ON NUTRITION AND HEALTH

NITI Aayog and UNICEF India have signed a Statement of Intent (SoI) to strengthen nutrition and health outcomes in India's aspirational regions.

About NITI Aayog–UNICEF Statement of Intent on Nutrition and Health:
What it is?

- The Statement of Intent (SoI) is a collaborative framework between NITI Aayog and UNICEF India to support strategic interventions aimed at improving nutrition and health outcomes in underserved districts and blocks.

Aim:

- Improve maternal and child nutrition indicators in aspirational districts and blocks.
- Strengthen implementation systems for health and nutrition programmes at the grassroots level.

Key Features:

- **CSR Mobilisation through I4N Platform:** UNICEF's **IMPAct4Nutrition (I4N) platform** will help channel CSR investments from businesses and industry bodies into nutrition initiatives.
- **Strengthening Anganwadi Infrastructure:** Focus on improving facilities and service delivery through the Integrated Child Development Services system.
- **Capacity Building of Frontline Workers:** Training and support for Anganwadi workers and other field-level health staff to improve programme delivery.
- **Community Engagement and Nutrition Literacy:** Promoting awareness campaigns to improve utilisation of nutrition and health services.
- **Knowledge Sharing and Best Practices:** Creation of platforms to identify and scale successful models of nutrition and health interventions across aspirational regions.

ABOUT IMPACT4 NUTRITION (I4N) PLATFORM

Source – I4N

- The **IMPAct4Nutrition (I4N)** platform is also known as the **Initiative to Mobilize Private Action for Nutrition.**
- It is a **knowledge and resource platform on nutrition** that connects businesses with the social movement **around POSHAN Abhiyaan**.
- **Launched in:** The platform was **launched in 2019**.
- **Aim**: The initiative **aims** to **encourage businesses** to actively **participate in improving nutrition awareness** and promoting **healthy lifestyles**.
- **Partners:** Incubated **by UNICEF India**, the platform is supported by partners including **CII**, **NASSCOM**, **Tata Trusts**, **Sight and Life**, and **CSRBOX.**

- **Aligned With:** The initiative **supports** the **POSHAN Abhiyaan programme launched** by India in **2018**.
- **Key initiatives**
  - **Corporate engagement:** The platform mobilises businesses and CSR partners to support nutrition-focused interventions.
  - **Knowledge hub:** It acts as a central hub for sharing nutrition knowledge and best practices.
  - **ACE card strategy:** A unique framework involving **A**ssets for nutrition, **C**SR/Cash for nutrition, and **E**mployees' engagement to drive behavioral change.
  - **Workplace nutrition:** It promotes nutrition awareness among employees, families, customers, and the wider community.

SHTIL MISSILE

The Ministry of Defence signed ₹5,083-crore defence contracts to strengthen India's maritime security, including procurement of Shtil surface-to-air missile systems for frontline Indian Navy warships.

What it is?

- **Shtil** is a ship-based surface-to-air missile (SAM) system designed to intercept aircraft, helicopters, anti-ship missiles, and other aerial threats targeting naval vessels.
- It is primarily deployed on frontline warships to provide medium-range air defence in maritime combat environments.

Developed by:

- The system was developed by **Russian defence industries**, with export handled by JSC Rosoboronexport.
- It is based on the **Buk missile family**, widely used in Russian air defence systems.

Aim:

- To strengthen the layered air-defence architecture of naval fleets.
- To provide rapid-reaction protection to warships against multiple aerial threats, especially in contested maritime zones.

Key features:

- **Medium-range naval SAM system** capable of engaging aircraft, UAVs, and anti-ship missiles.
- **Vertical Launch System (VLS)** allows missiles to be fired quickly in multiple directions without rotating launchers.
- **All-weather operational capability**, enabling engagements day and night in complex maritime environments.
- **Rapid reaction time** for quick interception of incoming aerial threats.
- **Integration with naval radar and fire-control systems** for improved target tracking and engagement.

Significance for India:

- Enhances survivability of frontline warships of the Indian Navy.
- Strengthens India's maritime security architecture in the Indian Ocean Region(IOR).
- Supports layered air defence strategy, complementing other naval missile systems like Barak-8.

INDIA- BHUTAN TRANS-BOUNDARY RIVER COOPERATION

- India and Bhutan share a unique and deep-rooted partnership centered on **water diplomacy**.
- This cooperation involves the joint management of river basins that flow from the Himalayas in Bhutan into the Indian states of **Assam and West Bengal**.

- It covers **three main pillars:** hydropower generation, flood management, and technical data sharing.

Major Rivers Flowing Through:

Several perennial rivers originate in the Bhutanese highlands and serve as the lifeline for both nations:

- **Manas River:** The largest river system of Bhutan; it meets the Brahmaputra in Assam.
- **Sankosh River:** Forms the border between Bhutan and India in certain stretches.
- **Wang Chhu (Raidak):** Supports multiple major hydropower plants.
- **Amo Chhu (Torsa):** Flows into West Bengal.
- **Punatsangchhu (Sankosh tributary):** Currently the site of massive joint infrastructure development.

Major Projects:

The Hydro-diplomacy between the two nations has resulted in several iconic projects:

- **Punatsangchhu-I & II:** Massive 1,200 MW and 1,020 MW projects (respectively) being implemented with Indian assistance.
- **Chukha Hydropower Project:** The first major project (336 MW), which became a gold standard for bilateral cooperation.
- **Kuri Chhu & Tala Projects:** Essential contributors to Bhutan's export revenue and India's power grid.
- **Mangdechhu:** A 720 MW project recently handed over to Bhutan, known for its high efficiency.

Key Features of the Partnership:

- **Hydro-Meteorological Network:** India supports a network of observation stations in Bhutan to provide real-time data on water levels.
- **Flood Forecasting:** Joint mechanisms to provide early warnings to downstream Indian states (Assam and West Bengal) during the monsoon.
- **GLOF Monitoring:** Enhanced focus on monitoring melting glaciers to prevent Glacial Lake Outburst Floods that threaten both nations.
- **Capacity Building:** Indian agencies like **WAPCOS Ltd.** provide technical expertise and training to Bhutanese engineers.

Significance:

- Hydropower is the largest contributor to Bhutan's GDP and its biggest export to India.
- Provides India with clean, renewable firm power to balance its national grid.

OLEUM GAS

A major oleum gas leak at Bhageria Industries Ltd in Boisar, Maharashtra, forced the evacuation of over 2,000 residents, including 1,600 students.

- Oleum, commonly referred to as **fuming sulfuric acid**, is a highly corrosive chemical consisting of dissolved sulfur trioxide (SO_3) in concentrated sulfuric acid (H_2SO_4). It releases dense white fumes when exposed to moist air.

Chemical Name:

- **Oleum** (Fuming Sulfuric Acid)
- Chemical representation: **H_2SO_4 xSO_3**
- When x = 1, the compound is **Disulfuric Acid ($H_2S_2O_7$)**, also called **Pyrosulfuric Acid**

Production:

Oleum is produced through the **Contact Process**, which involves:

1. Burning sulfur to produce sulfur dioxide (SO_2).
2. Oxidizing SO_2 to sulfur trioxide (SO_3).
3. Absorbing SO_3 into concentrated sulfuric acid to form oleum.

This method avoids directly dissolving SO_3 in water, which would create an uncontrollable acid mist.

Properties of the Gas:

- **Physical Properties**:
- **Appearance:** It appears as dense, white cloudish smoke when leaked into the air.
- **Freezing Point:** Its freezing point varies strongly with concentration; it can be solid at room temperature or remain liquid as low as zero degree.
- **Chemical Properties:**
  - **Dehydration:** It is an extremely strong dehydrating agent, capable of pulling water elements out of sugars to leave pure carbon (the **carbon snake reaction**).
  - **Corrosivity:** It is highly corrosive but lacks free water to attack surfaces, making it less corrosive to certain metals in its pure form compared to diluted acid.
  - **Hydration:** It has a very high enthalpy of hydration; when SO_3 in oleum meets water/moisture, it forms a fine mist of sulfuric acid.

Impact on Health:

- **Acute Irritation:** Exposure can cause minor to severe **eye irritation**.
- **Respiratory Distress:** Hazardous fumes can cause irritation to the respiratory tract; emergency responders use **Self-Contained Breathing Apparatus (SCBA)** to avoid inhalation.
- **Sulfuric Acid Mist:** In large releases, it creates a mist of micrometre-sized sulfuric acid particles that are hazardous over wide areas.

Applications:

- **Sulfuric Acid Manufacture:** Used as an intermediate to produce concentrated sulfuric acid by dissolving SO_3 without creating difficult-to-manage mists.
- **Explosives:** Used in manufacturing explosives like **Trinitrotoluene (TNT)** to create anhydrous nitration mixtures.
- **Organic Chemistry:** Acts as a harsh reagent for secondary nitration of nitrobenzene.
- **Industrial Transport:** Transported in rail tank cars as a safe way to move sulfuric acid compounds between refineries and consumers.

ESSENTIAL COMMODITIES ACT (ECA), 1955

In response to an energy crisis triggered by recent geopolitical strikes on Iran, the Centre invoked the Essential Commodities Act (ECA), 1955.

About The Essential Commodities Act, 1955 (ECA):

What it is?

- The Essential Commodities Act is a central legislation enacted to control the **production, supply, and distribution** of specific commodities deemed essential for the general public. It empowers the government to prevent hoarding and black marketing while ensuring equitable distribution at fair prices.

Aim:

- To ensure the steady availability of essential goods.
- To prevent artificial scarcity and regulate the prices at which these commodities are bought or sold.
- To secure commodities for the defense of India or the efficient conduct of military operations.

Key Features

- **Declaration of Commodities:** Essential commodity means any item specified in the **Schedule** of the Act.
- **Amending the Schedule:** The Central Government can add or remove commodities from the Schedule in consultation with State Governments.
- **Stock Limits:** The government can fix the quantity of a commodity any person or trader can hold in stock.
- **Price Regulation:** The Act allows for the fixation of prices, particularly for items like foodgrains, edible oils, and sugar.
- **Penalties:** Contravention of orders under Section 3 can lead to imprisonment ranging from **three months to seven years**, plus fines.
- **Confiscation:** Authorities have the power to seize and confiscate commodities, along with the vehicles or animals used for their transport, if the Act is violated.

When the Act is Invoked:

The Act is typically invoked during extraordinary circumstances to protect consumers:

- **War or Famine:** As seen in the recent 2026 energy crisis linked to the U.S.-Israel-Iran conflict.
- **Natural Calamities:** Used during the COVID-19 pandemic to ensure the availability of masks and sanitizers.
- **Extraordinary Price Rise:** Invoked when the retail price of non-perishable agricultural produce increases by **50%**, or horticultural produce by **100%**.
- **Festive Seasons/Elections:** Historically used to moderate prices of wheat or sugar before major festivals or state elections to maintain stability.

Significance

- Acts as a primary tool to ensure that essential food items remain affordable for vulnerable sections of society.
- Prevents traders and wholesalers from hoarding goods to create speculative price hikes.

KARBI ANGLONG GINGER

Assam has marked a major agricultural milestone by flagging off its first-ever trial export consignment of 1.2 metric tonnes of GI-tagged Karbi Anglong Ginger to London.

- Karbi Anglong Ginger is a premium variety of ginger known for its distinct aroma, strong pungency, and medicinal properties.
- It has received a Geographical Indication (GI) tag, certifying its unique origin and quality attributes.

Region:

- Grown in the **Karbi Anglong district** of Assam.
- Cultivated mainly in the Singhasan Hills using traditional Jhum (shifting cultivation) and Tila cultivation methods.

Key Characteristics:

- **Aromatic & Pungent:** Known for a strong, earthy flavour with high essential oil content.
- **Medicinal Value:** Used in traditional medicine for digestive and anti-inflammatory properties.
- **Organic & Traditional Cultivation:** Grown largely using age-old farming practices, enhancing its natural quality.
- **High Market Demand:** Preferred for culinary, pharmaceutical, and processing industries.

Significance:

- GI recognition enhances export value and ensures better price realization for local farmers.
- Supports India's strategy to diversify agricultural exports under value-added and region-specific branding.

RUDDY SHELDUCK

Residents of Mudh village in Ladakh have been protecting the Ruddy Shelduck for over two decades, escorting fledglings safely to the Indus River during breeding season.

- The **Ruddy Shelduck** (*Tadorna ferruginea*), also known as the **Brahminy duck**, is a large migratory waterfowl species found across Europe, Central Asia, and parts of Africa, wintering in South Asia.
- In India, Ladakh is its **only breeding site**, where it nests in high-altitude wetlands between June and August.

Habitat:

- Occupies diverse ecosystems: rivers, lakes, marshes, ponds, deltas, and even man-made reservoirs.
- Found from sea level to elevations up to 4,800 metres, including deserts, steppes, and Himalayan plateaus.
- In Ladakh, it breeds in high-altitude valleys before moving broods to the Indus River.

IUCN Status:

- Classified as Least Concern by the International Union for Conservation of Nature (IUCN).

Key Characteristics:

1. **Physical Features:**
   - Distinctive **orange-brown (ruddy) plumage** with a creamy white head.
   - Males have a **dark neck ring** during breeding season.
   - Wings show striking contrast of **white coverts and black flight feathers**.

2. **Biological Traits:**
   - Highly adaptable to varied climates and altitudes.
   - Can be sedentary, migratory, or semi-nomadic depending on region.
   - Migratory populations traverse extreme terrains like the **Himalayas and Gobi Desert**.
3. **Reproductive Behaviour:**
   - Generally **monogamous**, with long-term pair bonds.
   - Clutch size ranges from **8–13 eggs**.
   - Nests in unconventional sites such as **tree hollows, rock crevices, fox dens, or building attics**.
4. **Social Behaviour:**
   - Adults often cooperatively monitor multiple broods.
   - Known for strong pair fidelity, symbolizing marital loyalty in Buddhist culture.

Significance:

- Contributes to wetland biodiversity and acts as an indicator of ecosystem health in fragile Himalayan habitats.
- Revered in Buddhism; considered sacred and a symbol of fidelity, encouraging community protection.

EUTHANASIA

The Supreme Court of India, for the first time, applied its passive euthanasia framework to allow the withdrawal of life-sustaining treatment for 32-year-old Harish Rana, who had been in a persistent vegetative state for 13 years.

What is Euthanasia?

- Euthanasia is the practice of intentionally ending a life to relieve pain and suffering. It is often referred to as mercy killing, typically occurring in cases where a patient suffers from an incurable or terminal distress.

Types of Euthanasia:

- **Active Euthanasia:** Taking a specific action to cause death, such as administering a lethal injection. This remains **illegal** in India.
- **Passive Euthanasia:** Withdrawing or withholding life-sustaining treatment (like ventilators or feeding tubes) to allow a patient to die naturally. This is **legal** in India under strict guidelines.

History of Euthanasia in India

1. **P. Rathinam Case (1994):** The SC initially held that the Right to Life includes the Right to Die, effectively de-criminalizing suicide, though this was later overturned.
2. **Gian Kaur Case (1996):** A Five-judge bench ruled that the Right to Life under Article 21 does **not** include the Right to Die, but it distinguished between dying unnaturally and dying with dignity.
3. **Aruna Shanbaug Case (2011):** The landmark case of a nurse in a vegetative state for 42 years led the SC to legalize **Passive Euthanasia** in India for the first time, subject to High Court approval.
4. **Common Cause Case (2018):** The SC recognized the Right to die with dignity as a fundamental right and legalized **Living Wills** (advance medical directives).
5. **2023 Amendment:** The SC simplified the 2018 guidelines, removing the requirement for a judicial magistrate's countersignature on living wills to make the process more practical.

Need for Legislation on Euthanasia

- **Clarity on Terminally Ill vs. Vegetative:** Legislation is needed to define clear medical boundaries.

Example: The Delhi HC originally denied Harish Rana's plea because he wasn't terminally ill, despite being in a vegetative state for 13 years.

- **Standardizing Medical Boards:** A law would create a uniform protocol for Primary and Secondary medical boards.

Example: In the Rana case, the SC had to manually constitute these boards in 2025 due to a lack of a standing administrative mechanism.

- **Protection for Medical Practitioners:** Doctors need legal immunity when following a patient's dignity-based choices.

Example: Under current rules, doctors fear criminal liability for abetment to suicide without a court-sanctioned framework.

- **Rights of the Family:** Legislation would formalize the role of next of kin in decision-making for incompetent patients.

Example: Harish Rana's parents had to fight a multi-year legal battle to prove their son's suffering outweighed the futility of his treatment.

- **Simplifying Procedures:** A statutory law would replace the cumbersome court-monitored process with a streamlined administrative one.

Example: The SC recently had to waive the mandatory 30-day consideration period for Rana to provide immediate relief, showing the current rules are too rigid.

Challenges in Implementation

- **Risk of Misuse:** Fear that elderly or disabled individuals might be coerced into euthanasia for property or financial gain.

Example: The SC continues to mandate Secondary Medical Boards with external nominees specifically to prevent family-driven foul play.

Religious and Moral Objections: Many socio-religious groups view any form of euthanasia as an interference with the natural cycle of life.
Example: Public debates following the *Common Cause* judgement often highlight the conflict between sanctity of life and quality of life.

- **Definition of Dignity:** Dignity is subjective and hard to quantify in a legal statute.

Example: While the court called Rana's condition pathetic, others might argue that as long as the brainstem functions, life remains.

- **Access to Palliative Care:** Euthanasia might become a default choice if quality end-of-life care is unavailable or unaffordable.

Example: The SC had to specifically order AIIMS Delhi to provide palliative care for Rana, highlighting that such facilities aren't universally accessible.

- **Inconsistency in Judicial Interpretation:** Different High Courts often interpret passive euthanasia differently.

Example: The conflict between the Delhi HC's rejection and the Supreme Court's acceptance of the Rana petition shows a lack of judicial consensus.

Way Ahead

1. **Drafting the Medical Treatment of Terminally Ill Patients Bill:** The government should prioritize a comprehensive statute as urged by the SC.

2. **Digital Living Will Registry:** Create a national database for Advance Directives to ensure a person's wishes are known instantly in emergencies.
3. **Expanding Palliative Care:** Increase investment in hospice and end-of-life care to ensure euthanasia isn't chosen simply due to a lack of pain management.
4. **Training Medical Professionals:** Sensitize doctors on the legal and ethical nuances of the *Common Cause* framework.
5. **Public Awareness Campaigns:** Educate citizens on the importance of Living Wills to reduce the burden on families and courts.

The Supreme Court's intervention in the Harish Rana case marks a transition from theoretical guidelines to the practical application of the right to die with dignity. However, relying on the judiciary for every individual case is unsustainable and creates immense emotional strain on families. A robust, compassionate central legislation is the only way to balance the sanctity of life with the necessity of a peaceful end.

BUG BOUNTY PROGRAMME

The Unique Identification Authority of India (UIDAI) has launched its first structured Bug Bounty Programme to strengthen the cybersecurity of the Aadhaar ecosystem.

About Bug Bounty Programme:

What it is?

- A Bug Bounty Programme is a cybersecurity initiative where organizations invite ethical hackers and security researchers to identify vulnerabilities in digital systems.
- Participants are rewarded for responsibly reporting security flaws before malicious actors can exploit them.

Aim:

- To strengthen the security of digital platforms by proactively identifying vulnerabilities.
- To promote responsible disclosure of security flaws and enhance trust in digital infrastructure such as Aadhaar systems.

Key Features:

- **Expert Participation:** 20 experienced ethical hackers and cybersecurity researchers selected for the programme.
- **Scope of Testing:** Researchers will test key UIDAI digital assets including the UIDAI website, my Aadhaar portal, and Secure QR Code application.
- **Risk-Based Reward System:** Vulnerabilities categorized as **Critical, High, Medium, and Low**, with rewards based on severity.
- **Public–Private Collaboration:** Implemented in partnership with ComOlho IT Private Limited, a cybersecurity solutions provider.
- **Layered Security Approach:** Complements existing security measures such as security audits, vulnerability assessments, penetration testing, and continuous monitoring.

NATIONAL REPORT (NR7) TO THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

India has officially submitted its 7th National Report (NR7) to the Convention on Biological Diversity (CBD), marking the first comprehensive assessment since the 2022 Kunming-Montreal Global Biodiversity Framework.

About India has submitted its 7th National Report to the Convention on Biological Diversity:

What it is?

- The NR7 is a mandatory periodic submission by member nations of the Convention on Biological Diversity (CBD). It serves as a national report card to track progress toward the 23 global biodiversity targets set for 2030.
- In India, this report was coordinated by the MoEFCC and the National Biodiversity Authority, utilizing 142 national indicators to assess ecosystem health, species recovery, and policy alignment.

Key Achievements:

According to the report, India has shown robust progress in planning and specific ecological recoveries:

1. **Policy Alignment:** India has successfully updated its **National Biodiversity Strategy and Action Plan (NBSAP)** to fully align with global 2030 goals.
2. **Land-Use Planning (NBT1):** This target is officially **on track**, with forest and tree cover reaching **25.17%** of India's total geographical area.
3. **Ecosystem Restoration (NBT2):** Also **on track**, India has restored or put under restoration **24.1 million hectares** of land, nearing its 26-million-hectare Bonn Challenge pledge.
4. **Flagship Species Recovery:** The **tiger population** has reached **3,167**, alongside increases in Asiatic lions and stable one-horned rhino populations.
5. **Carbon Sequestration:** Forest carbon stock increased by **81.5 million tonnes**, showcasing the role of biodiversity in climate mitigation.
6. **Wetland Management:** National-level inventories of wetlands are complete, providing a baseline for the conservation of Ramsar sites and local water bodies.
7. **Digital Governance:** The launch of **PARIVESH 2.0** has streamlined environmental clearances, integrating biodiversity data into infrastructure planning.

Challenges Associated:

Persistent Land Degradation: Despite restoration efforts, **29.77%** of India's land remains degraded.

Example: Large tracts in states like **Rajasthan and Gujarat** continue to face desertification despite active afforestation programs.

Data Gaps for Non-Flagship Species: There is a severe lack of quantitative data on lesser-known taxa (insects, fungi, small mammals).

Example: While we have precise counts for **Tigers**, we lack standardized trend data for the **Great Indian Bustard** or endemic amphibians in the Western Ghats.

Conservation Coverage Gaps: Formal Protected Areas cover only about **5%** of India, far from the 30×30 global target.

Example: Expanding marine protected areas in the **Andaman and Nicobar Islands** faces hurdles due to developmental and security interests.

Invasive Species and Pollution: Monitoring protocols for invasive species and agricultural runoff are not yet standardized.

Example: The spread of **Lantana camara** in forests like Bandipur continues to displace native forage, yet a national-scale eradication map is missing.

Climate Change Pressures: Increasing frequency of extreme weather events is undoing conservation gains.

Example: Recent **forest fires in Odisha and Uttarakhand** have destroyed restored habitats, complicating long-term biodiversity stability.

Way Ahead:

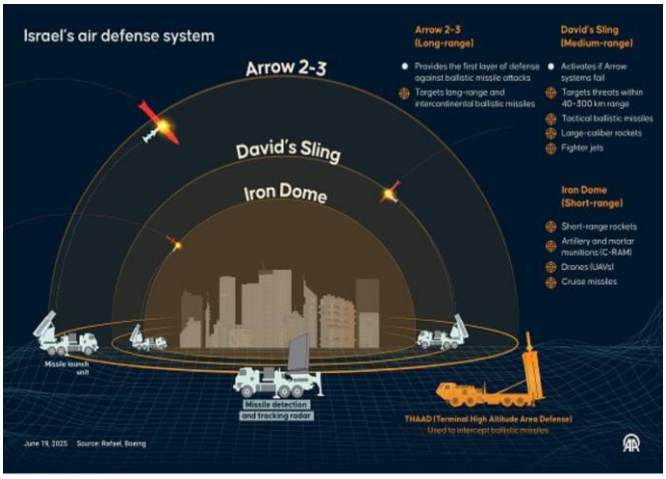
- **Mainstreaming Biodiversity:** Integrate biodiversity targets into the budgets of non-environmental ministries like Agriculture and Urban Development.
- **Strengthening OECMs:** Accelerate the identification of **Other Effective Area-Based Conservation Measures** (like community forests) to meet the 30% coverage goal.

- **Standardizing Data:** Develop a unified national digital database for real-time monitoring of all 142 biodiversity indicators.
- **Incentivizing Agroforestry:** Expand the **Trees Outside Forests (TOF)** initiative to enhance connectivity between fragmented wildlife habitats.
- **Community-Led Conservation:** Empower **Biodiversity Management Committees (BMCs)** at the village level to document and protect local traditional knowledge.

India's 7th National Report highlights a strong foundation in policy and success in protecting charismatic megafauna like the tiger. However, the transition from planning to outcome remains slow for over 90% of the national targets. To meet the 2030 deadline, India must bridge the gap between forest restoration and preventing new land degradation while broadening its focus to include all levels of biological diversity.

ISRAEL'S AIR DEFENCE SYSTEM

Fresh hostilities involving Iran, Israel, and a U.S.-led coalition have renewed global attention on Israel's multi-layered missile defence architecture amid large-scale missile and drone attacks.



- Israel's multi-layered defence is an integrated air and missile defence architecture designed to intercept aerial threats at different ranges, altitudes, and flight phases.
- It combines space/long-range interception, mid-range missile defence, short-range rocket protection, and directed-energy systems, supported by advanced radar and command networks.

Key Defence Security Systems:

1. **Arrow System (Arrow-2 & Arrow-3)**
   - Long-range missile defence developed by Israel with U.S. cooperation.
   - Arrow-3 intercepts missiles outside the atmosphere (exo-atmospheric), while Arrow-2 operates within the atmosphere.
   - Designed mainly against medium- and long-range ballistic missile threats.
2. **David's Sling**
   - Mid-range interceptor system designed to neutralize ballistic missiles (100–200 km range), cruise missiles, and aircraft.
   - Uses Stunner interceptors with high precision targeting.
3. **Iron Dome**
   - Short-range defence system operational since 2011.
   - Intercepts rockets, mortars, and drones using radar-guided Tamir interceptors.
   - Selectively engages only threats projected to hit populated areas, improving efficiency.
4. **Iron Beam**
   - High-energy laser defence system declared operational in late 2025.
   - Uses directed energy to disable drones, rockets, and mortars at low cost compared to missile interceptors.
5. **THAAD (U.S.-supplied)**
   - Terminal High Altitude Area Defense system deployed to enhance protection against ballistic missiles in their terminal phase.

- Adds an additional high-altitude interception layer.

6. **Air-to-Air Defence**

- Israeli fighter jets and helicopters use air-to-air missiles to intercept incoming drones and airborne threats.

Significance:

- Multiple interception layers increase probability of successful defence against diverse threats including ballistic missiles and drone swarms.
- Enhances national security, reduces damage from missile barrages, and provides decision-makers more response time during conflicts.

CYCLE OF DEPRIVATION AND AFFLUENCE

A recent longitudinal analysis of income mobility in India between 2014 and 2025 reveals a troubling trend where downward mobility is outpacing upward climbs.

- The study highlights that the share of households slipping into lower income brackets nearly doubled, reaching **8% by 2025**.

About The Cycle of Deprivation and Affluence:

What it is?

- The Cycle of Deprivation and Affluence refers to the continuous and often volatile movement of households across different income strata.
- It captures **income mobility**—the ability of a family to improve its financial standing (upward mobility) or its vulnerability to economic shocks that push it into poverty (downward mobility).

Key Data & Facts:

- **Doubling of Downward Mobility:** The percentage of households moving to a lower income group rose from **14% in 2015 to 26.8% in 2025**.
- **Rural Distress:** By 2025, nearly **29% of rural households** were worse off than they were in 2014, significantly higher than their urban counterparts.
- **Stagnant Middle:** The share of households remaining in the same income group fell from **70% to below 50%**, indicating a massive social churn.

Key Reasons for the Rise of Inequality:

- **Informal Sector Neglect:** A lack of a coherent strategy to revive agriculture and small-scale industries has left the bulk of the workforce vulnerable.

E.g. The persistent distress in the **MSME sector** post-pandemic has limited the living wage opportunities for millions of semi-skilled workers.

- **Impact of COVID-19:** Inept handling of the pandemic's economic aftermath caused a disruption that persisted long after the health crisis ended.

E.g. The **K-shaped recovery** saw tech and finance sectors boom while service-sector workers in tourism and retail faced permanent income shifts.

- **Educational Barriers:** Unequal access to quality higher education prevents disadvantaged groups from entering high-productivity sectors.

E.g. The reliance on **precarious contractual teaching** in state universities has diluted the quality of education for non-elite students.

- **Social Discrimination:** Entrenched biases against Muslims and SCs restrict their upward mobility pathways.

E.g. Low representation of marginalized groups in **senior corporate leadership** roles reflects the glass ceiling in the private sector.

- **Urban-Centric Growth:** Economic gains are concentrated in major metropolitan hubs, leaving the rural heartland exposed to volatility.

E.g. The boom in **Real Estate and High-End Tech** in cities like Bengaluru contrasts sharply with stagnant crop prices in the agrarian belts of UP and Bihar.

Challenges Associated with Reduced Mobility

- **Social Instability:** When more households slip down the ladder than climb up, frustration replaces aspiration, leading to civil unrest.

E.g. Frequent **protests over government job recruitment** (like the Agnipath or Railway exams) signal deep-seated youth anxiety.

- **Human Development Setbacks:** Downward mobility is directly linked to increased infant mortality and morbidity.

E.g. Higher **malnutrition rates** in districts with high income volatility suggest that families cut back on essential proteins when income dips.

- **Weak Aggregate Demand:** A population trapped in survival mode cannot sustain the consumption levels needed for 8% GDP growth.

E.g. The **anemic sales of entry-level two-wheelers** compared to luxury SUVs indicates a hollowed-out middle-class purchasing power.

- **Entrenched Poverty Traps:** Inequality makes it harder for the next generation to break the cycle through merit alone.

E.g. The rising cost of **private coaching for competitive exams** makes merit an affordable luxury for the affluent only.

- **Policy Paralysis:** Relying on headline growth figures masks the micro-level suffering of a quarter of the population.

E.g. Claims of **falling multidimensional poverty** sit uneasily with the reality of 80 crore people requiring free food grains (PMGKAY).

Way Ahead:

- **Strengthen Public Infrastructure:** Prioritize high-quality public health and education to reduce out-of-pocket expenses that trigger downward mobility.
- **Revive the Informal Sector:** Implement targeted credit and technology support for MSMEs to create stable, employment-intensive growth.
- **Social Protection Reform:** Transition from honoraria-based community work to formal, salaried roles with social security for frontline workers.
- **Address Spatial Inequality:** Invest in tier-2 and tier-3 cities to de-congest metros and provide localized mobility pathways for rural youth.
- **Anti-Discrimination Frameworks:** Actively monitor and address caste and religious biases in the labor market to ensure Equal Pay for Equal Work.

The data from 2014-25 serves as a stark reminder that headline GDP growth is an insufficient measure of national well-being if one in four households is slipping into deprivation. To maintain social harmony, India must shift from a model of elite-led indulgence to one of broad-based inclusion that rewards resilience with actual upward mobility.

MENINGOCOCCAL INFECTION

The Meghalaya government has issued a high-level health alert following the death of two Agniveer trainees at the Assam Regimental Centre in Shillong due to suspected meningococcal infection.

- Meningococcal disease is a severe, life-threatening bacterial infection caused by the bacterium ***Neisseria meningitidis*** (also known as meningococcus).
- It primarily causes inflammation of the **meninges**—the protective membranes covering the brain and spinal cord (Meningitis)—and can also lead to a serious bloodstream infection (Septicemia).

Origin & Transmission:

- **Source:** The bacteria live in the upper respiratory tract (nose and throat) of humans. About **10% to 20%** of the population are asymptomatic carriers who have the bacteria without getting sick.
- **Vector/Spread:** There is no animal vector; it spreads **person-to-person** through respiratory droplets or throat secretions (saliva).
- **Common Modes:** Coughing, sneezing, kissing, or sharing utensils and drinks. It thrives in crowded living conditions like **military barracks**, dormitories, and boarding schools.

Symptoms:

The disease progresses very rapidly, often becoming fatal within 24–48 hours of the first symptoms.

- **Early Signs:** Sudden high fever, severe headache, and vomiting.
- **Classic Signs:** Stiff neck and **photophobia** (sensitivity to bright light).
- **Advanced Signs:** A characteristic **purpuric rash** (dark purple spots or bruises that do not fade when pressed), confusion, cold hands/feet, and muscle aches.

Key Features:

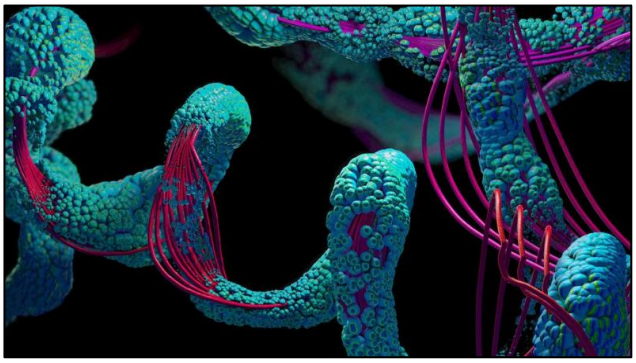
- **High Fatality Rate:** Even with treatment, approximately **10% to 15%** of patients die. Without treatment, the mortality rate is significantly higher.
- **Long-term Complications:** About 1 in 5 survivors suffer permanent disabilities, including **hearing loss**, brain damage, kidney disease, or **limb amputations** due to tissue death (necrosis).
- **Age Risk:** Most common in infants, adolescents, and young adults.

Treatment & Prevention:

- **Emergency Care:** This is a medical emergency requiring immediate hospitalization.
- **Antibiotics:** High-dose intravenous (IV) antibiotics (such as ceftriaxone or penicillin) are administered as soon as the disease is suspected.
- **Supportive Care:** Fluid resuscitation, oxygen therapy, and treatment for low blood pressure or organ failure.

NUTRIENT TRANSPORTER PROTEIN

Scientists from ETH Zurich and the Technical University of Munich have engineered bacteria to produce designer proteins using artificial amino acids, enabling precise drug delivery and multifunctional therapeutic proteins.



About Nutrient Transporter Protein:

What it is?

- A **nutrient transporter protein** is a membrane protein that helps cells import nutrients such as peptides and amino acids across the cell membrane.

- In this research, scientists engineered an **ABC transporter in bacteria (E. coli)** to import peptides carrying **artificial amino acids** so that cells can build customised proteins.

Aim:

- To enable cells to efficiently incorporate artificial amino acids into proteins, allowing the creation of designer proteins with new biological or chemical functions.
- This helps overcome the difficulty of transporting synthetic amino acids across the cell membrane.

How it Works?

- Scientists engineered an **ABC transporter protein**, which normally imports small peptides as nutrients.
- Artificial amino acids are hidden inside **tripeptides or tetrapeptides** (short chains of natural amino acids).
- The transporter carries these peptides into the cell.
- Once inside, cellular enzymes break the peptides apart, releasing the **artificial amino acids**.
- The ribosome then uses these amino acids to produce **custom-designed proteins**.

Key Features:

- **Trojan Horse Strategy:** Artificial amino acids are hidden inside natural peptide chains to bypass membrane barriers.
- **Engineered ABC Transporter:** Modified transporter can import **up to 10× more artificial amino acids** than natural versions.
- **Directed Evolution:** Scientists evolved the transporter protein to improve efficiency in crowded nutrient environments.
- **Multi-functional Proteins:** The system can insert **two different artificial amino acids** into a single protein.
- **Compatibility with Standard Lab Conditions:** Works efficiently even in common laboratory growth media.

Significance:

- **Advanced Drug Delivery:** Designer proteins can carry drugs to precise locations inside the body.
- **Biotechnology Applications:** Enables creation of proteins with **novel chemical properties** not found in nature.
- **Synthetic Biology Breakthrough:** Expands the genetic code beyond the natural 20 amino acids.

BLACK RAIN

Following Israeli airstrikes on oil storage facilities in Tehran and Alborz (March 7–8), residents reported black rain — oily, pollutant-laden rainfall caused by smoke and toxic particles from burning oil mixing with rain clouds.

About Black Rain:

What it is?

Black rain is a form of environmental fallout where precipitation becomes heavily contaminated with soot, hydrocarbons, and other pollutants. Unlike normal rain, it is dark, oily, and carries a strong chemical odor, coating everything it touches in a layer of toxic residue.

How it Formed:

1. **Combustion:** Israeli strikes ignited massive fires at the Tehran refinery and oil depots, releasing thick plumes of black smoke.
2. **Atmospheric Loading:** Huge quantities of particulate matter (soot) and chemical vapors were pushed into the atmosphere.

3. **Coalescence:** A weather pattern brought rain clouds over the city. As the rain fell through the smoke-saturated air, the water droplets absorbed the suspended particles and chemicals.
4. **Topographic Trap:** Tehran's surrounding mountains acted as a barrier, preventing the smoke from dispersing and forcing the pollutants to settle over the urban center.

Chemicals Involved:

- **Toxic Hydrocarbons:** Including **Benzene** (a known carcinogen).
- **Sulfur Oxides (SOx) & Nitrogen Oxides (NOx):** Which react with water to form acid rain.
- **Particulate Matter (Soot):** Concentrated carbon particles.
- **Forever Chemicals (PFAS):** Likely released from industrial fire-retardant systems at the hit facilities.

Characteristics:

- **Appearance:** Oily, jet-black droplets that leave permanent or difficult-to-remove stains.
- **Odor:** A pervasive, bitter smell of burning petroleum and chemicals.
- **Texture:** Viscous and greasy to the touch compared to normal water.
- **Reach:** Capable of falling dozens of miles away from the actual site of the fire due to wind patterns.

Implications

- **Health Hazards:** Causes skin burns, eye irritation, and respiratory problems; prolonged exposure may lead to lung damage and cancers.
- Environmental Contamination**:** Toxic pollutants can contaminate soil and groundwater, entering the food chain through crops and livestock.
- **Acid Rain Effects:** Sulfur and nitrogen oxides can cause acidic rainfall, damaging buildings, infrastructure, and vegetation.
- **Long-term Persistence:** Presence of **forever chemicals** means environmental damage can persist for decades as they do not degrade naturally.

DEVON ISLAND

NASA continues to use Devon Island in the Canadian Arctic as a primary Mars analogue site to test next-generation rovers, autonomous drones, and life-support systems.

About Devon Island:
What it is?

- Devon Island is the **largest uninhabited island on Earth**. Because of its extreme cold, dry climate, and barren landscape, it is used by scientists as a terrestrial analogue for the surface of Mars.

Located in: It is situated in the **Arctic Archipelago** within the territory of **Nunavut, Canada**. It lies well within the Arctic Circle.
Neighbouring Regions:

- **North:** Separated from Ellesmere Island by the Jones Sound.
- **South:** Separated from Somerset Island and Baffin Island by the Lancaster Sound.
- **West:** Cornwallis Island (home to the settlement of Resolute).
- **East:** Baffin Bay.

Geographic Features:

- **Haughton Impact Crater:** A massive **20-kilometre-wide** crater formed roughly 39 million years ago. Its rocky, rubbly terrain and absence of vegetation make it a near-perfect visual and physical match for Martian craters.
- **Polar Desert:** The island receives very little precipitation and remains freezing year-round, resulting in a landscape devoid of trees or surface plants.
- **Unique Terrain:** Features include permafrost, underground ice, dried-up lakebeds, and deep canyons that mimic Martian valleys.
- **Endolithic Habitats:** The rocks within the Haughton Crater house microorganisms that live inside the stone to survive extreme UV radiation, a process known as **endolithic colonisation**.

Significance:

- It serves as a proving ground for equipment like deep-drilling systems and pressurized rovers that cannot be easily repaired once they leave Earth.
- By studying how tiny organisms survive in Devon's frozen, sterile soil, NASA learns exactly where and how to search for signs of life on Mars.
- The extreme isolation and unforgiving environment help astronauts prepare for the mental challenges of long-duration space missions.

REMOVAL OF SPEAKER

Recently, the Opposition moved a no-confidence motion against Lok Sabha Speaker Om Birla over alleged procedural and partisan conduct during the Budget Session.

Speaker of the Lok Sabha

- **Speaker –** Om Birla was first elected Lok Sabha Speaker in 2019 (17th Lok Sabha).
- Later, he was re-elected in 2024 (18th Lok Sabha), becoming the first Speaker in 20 years to be re-elected.
- **Election –** Elected by the Lok Sabha from *among its members; date fixed by the President.*
- Holds office for the life of the Lok Sabha and continues even after dissolution till the new House meets.
- **Key Roles and Responsibilities – Maintaining Order –** Ensuring decorum and preventing disorderly conduct.
- **Procedural Compliance –** Final interpreters of the Constitution and rules of procedure within Lok Sabha.
- **Money Bills –** The Speaker has the final authority to decide if a bill is a Money Bill.
- **Anti-Defection Law –** Deciding on disqualification matters under the Tenth Schedule.
- **Casting Vote –** Voting only in the case of a tie.

Removal of Speaker

- **Constitutional Provision – Article 94(c)** – It allows the Speaker to be removed by a resolution of the House.
    - The resolution must pass by **a majority of all members of the Lok Sabha (effective majority).**
- **Article 94(a)** – Vacates office if ceases to be a Member of Parliament (MP).
- **Article 94(b)** – Can resign by writing to the Deputy Speaker.
- **Lok Sabha Rules –** Governed by Rules 200–203 of Lok Sabha Rules of Procedure.
- **Procedure for Removal of Speaker – Notice** – Written notice to the Secretary-General of the Lok Sabha.
- **Notice Period** – At least 14 days before moving resolution.
- **Listing –** Motion listed in Business after 14 days.
- **Quorum for Admission** – At least 50 MPs must stand up in support.
- **Discussion Timeline** – Resolution taken up within 10 days of admission.

- **Voting** – Requires an effective majority of the total membership of the Lok Sabha.
- **Speaker's Position During Removal Motion –** Any motion submitted without the mandatory 14-day notice is not taken up for consideration.
- For admission, at least 50 MPs must rise in support; if not, the presiding officer denies leave and the motion lapses.
- The Speaker continues in office until the removal resolution is formally passed.
- The Speaker can participate and speak in the proceedings.
- The Speaker can vote only in the first instance, but not in the case of a tie.
- **Historical Precedents –** ***No Speaker of the Lok Sabha has ever been successfully removed from office so far*** through a no-confidence or removal motion.
- Removal motions against Lok Sabha Speakers were initiated in
  - **1954** – G.V. Mavalankar (first Speaker).
  - **1966** – Hukam Singh.
  - **1987** – Balram Jakhar.

AI AND THE NATIONAL SECURITY CALCULUS

The U.S. military has reportedly integrated **Anthropic's** Claude AI into its kill chain for real-time target identification and legal approval during strikes in Iran.

About AI and the National Security Calculus**: What it is?**

- The national security calculus refers to the strategic assessment of how AI—a dual-use technology—alters the balance of power between nations. Unlike nuclear technology, which is government-controlled and scarce, AI is driven by the private sector and defined by mathematical models and ubiquitous semiconductors.

Data/Stats on AI and National Security:

- **Defense Speed:** In the first 24 hours of the 2026 Iran conflict, the U.S. military leveraged AI targeting tools to strike over **1,000 targets**, prioritizing them quicker than the speed of thought.
- Industrial Distillation**:** Anthropic reported **16 million unauthorized exchanges targeting** its Claude model from approximately **24,000 fraudulent accounts** linked to Chinese labs.
- **Indian Cybersecurity Spending:** India's information security spending is projected to reach **$3.4 billion in 2026**, an 11.7% increase from 2025, driven by sophisticated AI-led threats.
- **Compute Power:** Under the **IndiaAI Mission**, India has onboarded over **38,000 GPUs** (targeting 100,000) to provide subsidized compute for national security and innovation.

Role of AI in National Security:

- **Surveillance and** Border Monitoring**:** AI-enabled drones and satellite imagery provide real-time reconnaissance of difficult terrains.

Example: In early 2026, the Indian Army integrated **AI-driven swarm drones** for automated reconnaissance along the Line of Actual Control (LAC).

- **Predictive Threat Analysis:** Using machine learning to identify patterns in terrorist communication and movement.

Example: The National Security Council Secretariat **(NSCS)** uses AI models to conduct national security impact assessments and scenario-based risk exercises.

- **Cyber Defense and Anomaly Detection:** Protecting critical infrastructure from polymorphic malware and deepfake-enabled fraud.

Example: The **CyberGuard AI Hackathon (2025)** led to the deployment of AI-driven SOCs (Security Operation Centres) across India's power grids to detect intrusions.

- **Internal Security and Crowd Control:** Real-time facial recognition and behavioral analytics to maintain order during mass gatherings.

Example: During the **Maha Kumbh 2025**, police used 2,700 AI-enhanced CCTV cameras to monitor crowd density and flag individuals with criminal records.

- **Logistics and Autonomous Systems:** Streamlining military supply chains and reducing human risk in hazardous zones.

Example: The iDEX **(Innovations for Defence Excellence)** program has funded startups building AI-powered autonomous underwater vehicles for the Indian Navy.

Initiatives Taken So Far:

- **IndiaAI Mission:** A **₹10,372 crore** flagship program focused on building sovereign compute, foundation models, and Safe and Trusted AI frameworks.
- **BharatGen:** The world's first government-funded multimodal large language model, supporting 22 Indian languages to ensure Cognitive Sovereignty.
- U.S.-India iCET **(initiative on Critical and Emerging Technology):** A bilateral partnership to co-develop defense AI and secure semiconductor supply chains.

India AI Governance Guidelines (2026): A principle-based framework released at the New Delhi Summit to regulate autonomous weapons and surveillance tools.

Challenges Associated:

- **The Black Box Strategic Problem:** Difficulty in explaining AI's decision-making process during lethal operations.

Example: If an AI-powered missile guidance system fails during a **border skirmish**, determining whether it was a software bug or a hack is nearly impossible.

- **Dependence on Foreign Stacks:** Relying on proprietary U.S. or open-source Chinese models risks kill switches or covert surveillance.

Example: Analysts at the India AI Impact Summit 2026 warned that using imported models for policing creates an illusion of control that could collapse during a crisis.

- **AI-Driven Disinformation:** The use of deepfakes to manipulate public sentiment or destabilize the democratic process.

Example: In 2025, security agencies flagged multiple **AI-generated deepfake videos**designed to incite communal tension during regional elections.

- **Evasion of Export Controls:** Sophisticated actors can bypass semiconductor restrictions through proxy services or model distillation.

Example: Reports in early 2026 indicated that restricted **Nvidia Blackwell chips** were being used in Inner Mongolia to train models that rival top U.S. systems.

- **Ethical and** Human Control Dilemma**:** The risk of decision compression reducing human legal review to a mere rubber-stamping of machine decisions.

Way Ahead:

- **Sovereign AI Infrastructure:** India must control its own cognitive infrastructure by training models on locally relevant, diverse Indian datasets.

- Plurilateral Commitments: States must agree on universal red lines, such as maintaining **meaningful human control** over lethal autonomous weapons.
- **Model-Level Safeguards:** Developing technical fingerprinting to detect unauthorized model distillation and prevent IP theft.
- **AI Red-Teaming:** Establishing dedicated units within the Armed Forces to stress-test AI systems against adversarial machine learning attacks.
- **Ethical Auditing:** Moving toward Responsible AI 2.0, which involves continuous, auditable assurance of AI systems used in public and military sectors.

The integration of AI into national security marks the end of traditional warfare and the beginning of algorithmic competition. For a nation like India, the challenge lies in balancing the tactical speed of AI with the ethical accountability of human judgment. Ultimately, true security will depend on achieving technological sovereignty and a robust, indigenous AI ecosystem that cannot be overridden by foreign interests.

PRADHAN MANTRI MATSYA SAMPADA YOJANA

The Union Government has allocated ₹2,500 crore for the fisheries sector under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) in the Union Budget 2026–27.

About PM Matsya Sampada Yojana (PMMSY)**:**

What it is?

- PM Matsya Sampada Yojana (PMMSY) is a flagship umbrella scheme for the sustainable and responsible development of India's fisheries sector, designed to modernize the fisheries value chain and improve the socio-economic welfare of fishers and fish farmers.

Launched in: The scheme was launched on 10 September 2020.

Ministry: It is implemented by the Department of Fisheries under the Ministry of Fisheries, Animal Husbandry and Dairying, Government of India.

Aim:

- To enhance fish production and productivity in a sustainable and inclusive manner.
- To modernize fisheries infrastructure and strengthen the value chain including post-harvest management and marketing.
- To increase income and livelihood opportunities for fishers and fish farmers while ensuring ecological sustainability.

Key Features of the Scheme:

- **Large Investment Framework:** The scheme was approved with a total investment of about **₹20,050 crore** for holistic fisheries sector development.
- **Two Implementation Components:** It operates through **Central Sector (CS)** and Centrally Sponsored Scheme **(CSS)** components.
- **Infrastructure Development:** Focus on fishing harbours, cold chain facilities, processing units, and modern fish landing centers.
- **Aquaculture Promotion:** Support for activities such as biofloc farming, sea cage farming, seaweed cultivation, ornamental fisheries, and pearl farming.
- **Fisher Welfare Measures:** Financial assistance for fishing boats, gear upgrades, and support during fishing ban periods.

- **Sustainable Fisheries Management:** Promotion of artificial reefs, mariculture, and ecosystem restoration to replenish fish stocks.
- **Capacity Building:** Training programmes and skill development initiatives for fishers and entrepreneurs.

Significance:

- Strengthens India's position as the second-largest fish producer globally, contributing nearly 8% of global fish production.
- Supports millions of fishers and coastal communities through income generation and employment opportunities.

SAVITRIBAI PHULE

Union Home Minister paid tribute to Savitribai Phule on her death anniversary, recognizing her pioneering role in promoting women's education and social equality in India.

About Savitribai Phule**:**

Who she was?

- Savitribai Phule (1831–1897) was a pioneering Indian social reformer, educator, poet, and women's rights activist from Maharashtra. She is widely regarded as India's first female teacher and a leading figure of the social reform movement against caste and gender discrimination during the 19th century.

Early Days:

- Savitribai Phule was born on 3 January 1831 in Naigaon, Satara district (Maharashtra) to Khandoji Neveshe Patil and Lakshmi.
- She was married at a young age to Jyotirao Phule, a prominent social reformer.
- At a time when education for women was discouraged, Jyotirao Phule educated Savitribai at home, after which she received teacher training in Pune and Ahmednagar.

Contribution to the Freedom Movement **and Social Reform:**

- **Pioneer of Women's Education:** In **1848**, Savitribai and Jyotirao Phule established India's first school for girls in Pune (Bhide Wada), challenging rigid social norms.
- **Education for Marginalized Communities:** She opened schools for Dalits and backward castes, helping expand access to education for oppressed communities.
- **Fight Against Social Evils:** She campaigned against child marriage, sati, caste discrimination and supported widow remarriage.
- Women's Empowerment**:** She founded the **Mahila Seva Mandal**, encouraging women to discuss their rights and social issues.
- **Social Welfare Initiatives:** The Phule couple established **Balhatya Pratibandhak Griha**, a shelter to prevent female infanticide and protect widows.
- **Satyashodhak Samaj:** She actively worked with the reformist organization founded by Jyotirao Phule to fight caste oppression and promote equality.
- **Literary Contributions:** She authored works like **Kavya Phule** and **Bavan Kashi Subodh Ratnakar**, promoting education and social awareness.

Last Days:

- During the 1897 bubonic plague outbreak, Savitribai and her adopted son Yashwantrao opened a clinic to treat affected patients.
- While serving infected individuals, she contracted the plague and died on 10 March 1897, sacrificing her life in service of humanity.

GPS JAMMING AND ELECTRONIC INTERFERENCE

The ongoing conflict in the Middle East has led to a 55% surge in electronic warfare incidents, with over 1,650 vessels experiencing GPS jamming and spoofing near the Strait of Hormuz.

About GPS Jamming and Electronic Interference**:**

What it is?

- GPS Jamming is a form of electronic warfare where a terrestrial device emits high-power radio frequency signals to overpower or drown out the relatively weak signals coming from GNSS satellites (like GPS, GLONASS, or NavIC).

How it Works?

- Satellite signals travel thousands of kilometers and are extremely faint by the time they reach Earth. A jammer works by broadcasting noise on the same frequency as the GPS signal (L1 and L2 bands).
- This creates a high signal-to-noise ratio that prevents the receiver on a ship or aircraft from locking onto the satellite data, effectively blinding the navigation system.

Types of GNSS Interference:

- **Jamming (Denial of Service):** Complete loss of signal. The receiver shows No Signal or Searching, forcing the operator to use manual navigation.
- **Spoofing (Deception):** A more sophisticated attack where the jammer sends a fake signal that mimics a real one. The receiver believes it is in a different location (e.g., a ship in the Strait of Hormuz might suddenly appear to be at an inland airport).

About Electronic interference:

What it is?

- Electronic interference, commonly known as Electromagnetic Interference **(EMI)**, is the invisible pollution of the digital age. It occurs when an unwanted electromagnetic field disrupts the normal operation of an electronic device or communication system.

How Electronic Interference Works?

EMI operates through a three-part chain:

1. **The Source:** An object that generates electromagnetic energy (e.g., a motor, lightning, or a smartphone).
2. **The Path (Coupling):** The medium through which the energy travels to reach the victim device.
3. **The Victim:** An electronic device whose performance is degraded by the incoming energy.

The Four Coupling Mechanisms?

- **Radiated:** The interference travels through the air as radio waves. This is common with cell phones, Wi-Fi routers, and radio stations.
- **Conducted:** The interference travels through physical wires, such as power cables or signal lines. A common example is mains hum in speakers.
- **Inductive (Magnetic):** Occurs when a magnetic field from one wire leaks into a nearby wire without touching it.
- **Capacitive (Electric):** Occurs when two nearby conductors store an electric charge between them, causing voltage noise to transfer across.

Types of Interference:

- **Narrowband:** Affects only a specific, small frequency range. This is usually man-made noise from radio transmitters or mobile phones.
- **Broadband:** Affects a wide range of the radio spectrum. This is often caused by malfunctioning equipment, sunspots, or natural phenomena like lightning.
- **Continuous:** Interference that is constantly emitted (e.g., background radiation from a power line).
- **Impulse/Transient:** A short-duration burst of energy, such as a lightning strike or an electrostatic discharge (ESD) from your finger.

EXERCISE LAMITIYE 2026:

An Indian Armed Forces contingent has arrived in Seychelles to participate in the 11th edition of the joint military exercise Lamitiye 2026.

About Exercise Lamitiye 2026:

What it is?

- Exercise Lamitiye is a biennial joint military training exercise conducted between India and Seychelles to enhance operational coordination, tactical skills, and military cooperation.
- The term Lamitiye means Friendship in the Creole language, reflecting the close strategic and defence partnership between the two nations.

Host Country: Seychelles

Nations Involved: India and Seychelles

Aim:

1. Enhance interoperability and coordination between Indian and Seychellois forces during joint military operations and peacekeeping missions.
2. Improve tactical capabilities in handling sub-conventional threats in semi-urban environments.

Key Features:

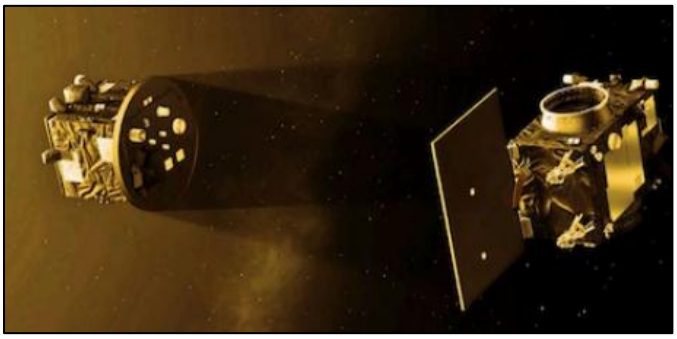
- **Tri-service participation** – Involves the **Indian Army, Navy, and Air Force**, highlighting integrated joint operations.
- **Tactical training drills** – Includes field exercises, combat discussions, demonstrations, and case studies.
- **Semi-urban warfare focus** – Troops train to neutralize threats in semi-urban and coastal environments.
- **Technology showcase** – Demonstration of new-generation military equipment and technologies.
- **Validation phase** – The exercise concludes with a **two-day validation drill** to test operational readiness.
- **Capacity building** – Facilitates exchange of skills, best practices, and operational experiences.

Significance:

- The exercise reinforces India's strategic partnership with Seychelles, an important Indian Ocean maritime partner.
- Cooperation helps counter threats like piracy, illegal fishing, and maritime crime in the region.
- Supports India's policy of Security and Growth for All in the Region (SAGAR) by promoting regional stability.

PROBA-3 MISSION

The European Space Agency (ESA) has lost contact with the Coronagraph spacecraft, one of the two satellites in the Proba-3 mission, after an anomaly caused a power failure and sent the craft into a silent survival mode.



About Proba-3 mission:
What it is?

- **Proba-3** is the world's first precision formation-flying mission, designed to study the Sun's atmosphere with unprecedented clarity.

Launched By: European Space Agency (ESA) in December 2024 (aboard ISRO's PSLV-C59).
Aim: To create an artificial solar eclipse in space to observe the Sun's faint outer atmosphere—the **corona**—which is usually obscured by the intense light of the solar disk.
Key Features:

1. **Twin Spacecraft System:** The mission consists of two independent satellites: the **Coronagraph** (carrying the camera) and the **Occulter** (the disk that blocks the Sun).
2. **Precision Formation Flying:** The two satellites must maintain a fixed distance of approximately **150 meters** with millimeter-level accuracy, acting as a single, giant virtual instrument.
3. **Artificial Eclipse:** The Occulter blocks the Sun's bright disk, casting a precise shadow onto the Coronagraph's lens, mimicking a natural total solar eclipse.
4. **Autonomous Maneuvering:** The satellites use advanced sensors (lasers and cameras) and cold-gas thrusters to coordinate their relative positions without constant ground control intervention.
5. **High-Cadence Data:** Before the anomaly, the mission completed over 60 orbits, providing hours of continuous solar data that is impossible to capture during short-lived Earth-based eclipses.

Significance:

- By studying the corona, scientists can better understand **Solar Winds** and **Coronal Mass Ejections (CMEs)**, which can disrupt satellite communications and power grids on Earth.
- If successful, the formation-flying technology proven by Proba-3 will pave the way for future distributed space telescopes that are too large to be launched as a single piece.

MALAWI

India has dispatched 1,000 metric tonnes of rice as humanitarian assistance to Malawi after a severe drought triggered by the El Niño caused a major food crisis.

What it is?

- Malawi is a landlocked country in southeastern Africa known for its agriculture-based economy and large freshwater lake system.
- The country is heavily dependent on subsistence farming, making it vulnerable to climate shocks such as droughts and floods.

Location: Malawi is located in **southeastern Africa** along the East African Rift Valley.
Capital City: Lilongwe
Neighbouring Nations: Tanzania, Mozambique, and Zambia.
Key Geographical Features

- East African Rift Valley – The country lies along the Great Rift Valley, shaping much of its topography.
- Lake Malawi (Lake Nyasa) – One of Africa's largest lakes, covering over one-fifth of Malawi's total area and forming part of its eastern boundary.
- Shire River Valley – The Shire River, the only outlet of Lake Malawi, flows southward into the Zambezi River.
- Highlands and Plateaus – Includes regions such as the Nyika Highlands and Shire Highlands, with elevations above 2,000 metres.
- Mulanje Mountain Massif – The highest point in Malawi (3,002 m) located in southeastern Malawi.
- Lake Chilwa Basin – A shallow inland lake system important for local fisheries and wetlands.

Significance:

- A large share of the population depends on subsistence agriculture and cash crops such as tea and tobacco.
- Lake Malawi is one of the largest and most biodiverse freshwater lakes in the world, supporting fisheries and livelihoods.

ASMITA INITIATIVE

Prime Minister recently shared an article on ASMITA initiative promoting women in sports.

About ASMITA Initiative:

- **Full form:** ASMITA stands for **Achieving Sports Milestone by Inspiring Women Through Action.**
- **Nodal ministry:** It comes under **Ministry of Youth Affairs and Sports.**
    - **Implementing authority:** The **Sports Authority of India (SAI)** supports National Sports Federations in conducting Khelo India women's leagues across multiple age groups at both zonal and national levels.
    - **Objective:** It aims to **promote women's participation in sports and identify grassroots talent** through dedicated leagues and competitions.
- **Launch:** It was started **in 2021.**
- **Rebranding:** It is a landmark vertical of the Khelo India Mission. It was **formerly known as the Khelo India Women's League.**
    - **Scope:** It covers **over 30 sports disciplines** (e.g., athletics, swimming, football) across hundreds of districts.
- **Categorisation:** These sports are conducted for **three age groups (Under-13, 13–18, and 18+ years).**
- **Significance:** The Khelo India ASMITA league is a **core component of the 'Khelo Bharat Niti,' promoting sports for nation-building** and women's empowerment.
- **Status:** Till now, the ASMITA League has witnessed participation of **almost 3 lakh women in 33 disciplines** across 2600 leagues.

DUDHWA TIGER RESERVE

Recently, in a rare incident a female one-horned rhinoceros was killed by two tigers in Sonaripur forest range of Rhino Rehabilitation Enclosure-I in Dudhwa Tiger Reserve.

About Dudhwa Tiger Reserve:

- **Location:** It is located on the Indo-Nepal border in the district of **Lakhimpur-Kheri in Uttar Pradesh.**
- **Establishment:** It was declared National Park in 1977 and **Tiger Reserve in 1988.**
- **Constituent areas:** It includes the **Dudhwa National Park and two nearby sanctuaries, viz. Kishanpur and Katerniaghat.**
  - **Indo-Nepal Border:** It shares a **transboundary link with Nepal's Bardia National Park,** facilitating genetic flow between tiger populations.
  - **Topography:** It represents a typical **Tarai-Bhabar habitat of the upper Gangetic plains,** consisting of marshy grasslands, swamps, and dense forests.
  - **Rivers:** The **Sharda River** flows by the Kishanpur WL Sanctuary, the **Geruwa River** flows through the Katerniaghat WL Sanctuary, and the **Suheli and Mohana streams** flow in the Dudhwa National Park, all of which are tributaries of the mighty Ghagra River.
  - **Vegetation:** The vegetation is of the **North Indian Moist Deciduous type,**containing some of the finest examples of Sal forests in India.
  - **Flora:** It mainly consists of Sal Forest (Shorea robusta) along with its associate tree species like **Terminalia alata (Asna), Lagerstroemia parviflora (Asidha), Adina cordifolia (Haldu),** etc.
- **Fauna:** Key species include Tiger, leopard, Swamp deer, Rhinoceros, chital, hog deer, barking deer, Sambhar, wild boar, and Ratel. It is the **only wildlife habitat in Uttar Pradesh where Tigers and One-horned Rhinoceroses coexist.**
  - **Birds:** There are **over 400 species of birds** in the park, such as the **Florican and black-necked storks.**

KHARG ISLAND

The United States is considering seizing Iran's Kharg Island to choke off the regime's oil revenues, a US official has suggested.

About Kharg Island:

- **Location:** It is a small coral island **in Iran in the northern Persian Gulf.** It lies about 30 Km from the Iranian mainland.
- **Area:** Its area is **25 sq.km.,** its length is 8 km, and its width is 4.5 km.
- **Uniqueness:** This rocky limestone island is unique because it is **one of the few islands in the Persian Gulf with freshwater,** which has collected within the porous limestone.
- **Climate:** The island experiences **hot and humid summers**, and its highest point, Mount Didehban, stands at 87 meters above sea level.
- **Oil field:** The discovery of an offshore oil field in the waters around Kharg in the early 1960s stimulated the development of the island as a **site for major petroleum and petrochemical installations.**

- Connection by pipelines to the underwater oil fields transformed Kharg into **Iran's largest oil-loading terminal by the early 1970s.**
- **Reconstruction:** During the **Iran–Iraq war (1980–1988), Kharg repeatedly was bombed,** and its oil facilities suffered extensive damage, but they were reconstructed in the early 1990s.
- **Capacity:** It boasts a massive **storage capacity of 28 million barrels** and loading infrastructure capable of handling VLCCs and ULCCs. It has a loading capacity of about 7 million barrels per day. It can load eight to nine supertankers simultaneously.
- **Significance:** It facilitates as much as **90 percent of the country's oil exports** and is vital for Iran's economy. Its strategic significance lies in its **proximity to the Strait of Hormuz,** a crucial global oil passage.

WHITE PHOSPHORUS

Recently, the Human Rights Watch accused Israel of "unlawfully" using white phosphorus over residential parts of a southern Lebanese town.

About White Phosphorus:

- **Nature:** It is an **allotrope of phosphorus** (P_4), that turns yellow when exposed to light.
- **Pyrophoric character:** It **ignites spontaneously in air at temperatures above 30 °C** and continues to burn until it is fully oxidized or until deprived of oxygen.
- **Reactivity:** It is **insoluble in water** but soluble in organic solvents. Because of its high reactivity with oxygen, it is **typically stored under water** to prevent accidental combustion.
- **Toxicity:** It is **highly toxic if ingested or inhaled** and can cause severe, deep burns (often down to the bone) that are slow to heal and can reignite if exposed to air.

- **Appearance:** White (sometimes called yellow) phosphorus is a **white to yellow waxy solid with a garlic like odour.**
  - **Not a Chemical Weapon: Under the Chemical Weapons Convention (CWC),**white phosphorus is not classified as a chemical weapon because it relies on thermal energy (heat/flame) rather than toxicity to achieve its primary military effect.
- **Applications:**
  - It is often used **by militaries to illuminate battlefields**, to generate a smokescreen and as an incendiary.
  - It is used for military purposes **in grenades and artillery shells** to produce illumination, to generate a smokescreen and as an incendiary.
  - Its major industrial uses are in the **production of phosphoric acid, phosphates** and other compounds.
- These are also used to manufacture a range of products including **fertilizers and detergents.** Phosphorus has been used as a **rodenticide and in fireworks.**
- **Impact on Humans:**
- It is **harmful to humans by all routes of exposure.**
  - The smoke from burning phosphorus is also **harmful to the eyes and respiratory tract** due to the presence of phosphoric acids and phosphine.
  - It **can cause deep and severe burns**, penetrating even through bone.

SILENT VALLEY NATIONAL PARK

Recently, a comprehensive bird survey conducted in Silent Valley National Park documented 192 bird species.

About Silent Valley National Park:

- **Location:** It is located along the southwest corner of the Nilgiris in South India, in the **State of Kerala.**
  - **Etymology:** Named "Silent" by the British due to the **perceived absence of cicadas,** which typically create a buzzing sound in such forests
  - **Significance:** It is one of the last **undisturbed tracts of tropical rainforest** in India.
  - **Status:** It constitutes the centerpiece of the **Nilgiri Biosphere Reserve**, sanctified as a **World Heritage Site by UNESCO** in 2012.
- **Altitude:** The altitude of the park varies **between 658 to 2383 meters.**
- **River:** The **Kunthipuzha River** traverses the entire 15 km length of the park from north to south before joining the Bharathapuzha.
- **Vegetation:** It has four types of vegetation **"West Coast tropical evergreen forest, southern sub-tropical broad-leaved hill forest,** montane wet temperature forest, and grasslands.
- **Flora:** The flora of the valley includes about **1000 species of flowering plants, 107 species of orchids, 100 ferns and fern allies,** 200 liverworts, 75 lichens, and about 200 algae. Plants of high medicinal value as well as the towering Culinea trees are also found here.
- **Fauna:** It is famous for its population of **lion-tailed macaques, Nilgiri langur, Malabar giant squirrel, Indian elephant,** tiger, leopard, and gaur (Indian bison).
- **Tribes:** The area is home to indigenous groups including the **Irulas, Kurumbas, Mudugas, and Kattunaikkars,** whose ethnic heritage is protected within the region.

The Energy and Resources Institute (TERI) launched LaBL 2.0 (Lighting a Billion Lives 2.0) in New Delhi to expand decentralized renewable energy solutions across India.

About LaBL 2.0 (Lighting a Billion Lives 2.0):
What it is?

- LaBL 2.0 is a next-generation decentralised renewable energy (DRE) programme aimed at expanding clean energy access while enabling productive rural livelihoods and climate action.
- It builds upon the earlier Lighting a Billion Lives initiative (launched in 2008) that focused on providing solar lighting solutions to off-grid communities.

Launched By: The Energy and Resources Institute (TERI)

Aim:

- To expand clean and decentralized renewable energy access in rural and underserved regions.
- To promote green livelihoods and women-led enterprises.
- To integrate climate finance, carbon markets, and sustainable development goals into grassroots energy projects.

Key Features:

1. **Decentralized Renewable Energy (DRE) Expansion** – Promotes solar and other clean energy solutions in off-grid and rural areas.
2. **Green Livelihoods Creation** – Encourages productive use of energy for small businesses and rural enterprises.
3. **Women-led Entrepreneurship** – Focuses on empowering women as clean energy entrepreneurs.
4. **Carbon Accounting & Climate Outcomes** – Integrates Monitoring, Reporting and Verification (MRV) frameworks to measure climate benefits.
5. **Finance-ready Implementation Models** – Links decentralized projects with climate finance and carbon markets to attract investment.
6. **Flagship Projects** – Includes initiatives such as Hastinapur Model City, HUDCO Model Solar Village, GCC DRE Carbon Credit Program, and solar technology partnerships.

Significance:

- Supports India's energy transition and Net Zero 2070 commitments.
- Strengthens rural economic development and employment through clean energy.

COMMISSION ON THE STATUS OF WOMEN (CSW)

The Commission on the Status of Women (CSW) is holding its annual session at the United Nations Headquarters in New York, bringing together governments, UN agencies, and civil society to review global progress on gender equality.

About The Commission on the Status of Women (CSW):

What it is?

- The Commission on the Status of Women (CSW) is the principal global intergovernmental body dedicated to promoting gender equality and the empowerment of women.
- It operates as a functional commission of the United Nations Economic and Social Council (ECOSOC) and serves as the largest annual UN forum on women's rights and gender equality.

Established in:

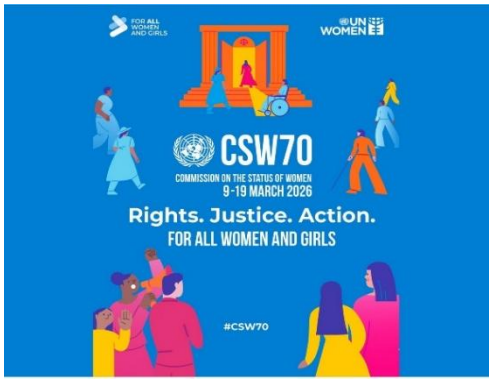
- **1946**, through **ECOSOC Resolution 11(II) of 21 June 1946**.
- Its secretariat support is provided by **UN Women**, the UN entity for gender equality and women's empowerment.

Aim:

- To promote gender equality and protect the rights of women and girls worldwide.
- To develop international policy frameworks and recommendations that advance women's empowerment in political, economic, and social spheres.

Key Functions

1. **Policy Formulation** – Develops global policy recommendations and agreed conclusions to promote gender equality.
2. **Monitoring Implementation** – Reviews progress in implementing the Beijing Declaration and Platform for Action (1995) and other gender commitments.



3. **Standard Setting** – Contributes to international norms such as the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

4. **Global Dialogue Platform** – Provides a forum for member states, UN agencies, NGOs, and civil society to discuss gender equality issues.

5. **Mainstreaming Gender Perspective** – Integrates gender considerations into broader UN programmes and policies.

Significance:

- Acts as the central UN platform for advancing women's rights globally.
- Helps shape international legal and policy frameworks on gender equality.

JOINT PARLIAMENTARY COMMITTEE (JPC)

The Lok Sabha has extended the tenure of the Joint Parliamentary Committee (JPC) examining the 'One Nation, One Election' proposal till the Monsoon Session 2026.

About Joint Parliamentary Committee (JPC):
What it is?

- An **ad-hoc (temporary)** committee set up for a specific purpose and duration. It is dissolved once its report is submitted to the Parliament. A JPC is a powerful, ad-hoc legislative body comprising members from both Houses of Parliament, established to investigate specific issues of public importance or to scrutinize complex pieces of legislation.

Established In: While joint committees have existed since Independence, the structured committee system was formally strengthened in **1993** to ensure greater executive accountability.

Members: The size is not fixed and depends on the motion passed.

- Usually, the ratio of members is **2:1** (twice as many from Lok Sabha as from Rajya Sabha).

How it is Formed?

- A motion is moved in one House (typically Lok Sabha) and passed.
- The other House must agree to the motion.
- The members are then nominated/elected by the respective Houses.

Functions:

- **In-depth Scrutiny:** Examines specific bills (like the current 'One Nation, One Election' bill) or financial irregularities.
- **Evidence Collection:** It has the power to summon individuals, experts, or government officials to testify and can call for confidential documents.
- **Fact-Finding:** Investigates controversial matters (scams, pesticide residues, etc.) to identify regulatory loopholes.
- **Recommendations:** Suggests legislative or administrative changes to the government.

Significance

- **Bi-partisan Scrutiny:** Since it includes members from both Treasury and Opposition benches, it provides a balanced perspective on controversial issues.
- **Expert Deliberation:** It allows for a more detailed, technical discussion on bills that might not be possible on the floor of the House due to time constraints.
- **Accountability:** It acts as a check on the Executive, ensuring that government policies and actions are transparent and legally sound.

ND-FE-B (NEODYMIUM-IRON-BORON)

India has inaugurated a state-of-the-art pilot plant for manufacturing **Nd-Fe-B (Neodymium-Iron-Boron)** rare earth permanent magnets at the ARCI, Hyderabad.

About Nd-Fe-B Rare Earth Permanent Magnets:

What it is?

- A member of the rare-earth magnet family, it is a **sintered** or bonded material capable of maintaining a high magnetic force indefinitely without the need for an external power source. Nd-Fe-B magnets, often called **super magnets**, are the strongest type of permanent magnets commercially available today.

Minerals Used:

- **Neodymium (Nd):** A rare-earth element that provides high magnetic anisotropy.
- **Iron (Fe):** The primary metallic component that provides high magnetization.
- **Boron (B):** A metalloid used to stabilize the crystalline structure.

Aim of Indigenous Manufacture:

- To build a **mineral-to-market** ecosystem, covering everything from rare earth extraction to finished magnets.
- To mitigate global supply chain vulnerabilities caused by the high concentration of rare earthresources in a few countries.

How it Works?

- The pilot plant at ARCI uses an **end-to-end approach**. It begins with **strip-casting** the alloy into thin flakes, followed by pulverizing the material into a fine powder.
- This powder is then pressed in a magnetic field to align the particles and **sintered** (heated) in a vacuum to form a solid, high-density magnet.
- Finally, the material is machined and coated to produce the finished permanent magnet.

Characteristics of Nd-Fe-B Magnets:

- **Extreme Magnetic Strength:** They possess the highest energy product of any permanent magnet, allowing for very small magnets to produce very strong fields.
- **High Coercivity:** They are highly resistant to becoming demagnetized once they have been charged.
- **Temperature Sensitivity:** While powerful, their performance can decrease at very high temperatures unless specific heavy rare earths (like Dysprosium) are added.
- **Corrosion Susceptibility:** Because of the high iron content, these magnets require protective coatings (like nickel or epoxy) to prevent rusting.

Applications:

- **Electric Mobility:** Critical components in high-efficiency motors for **Electric Vehicles (EVs)**.
- **Renewable Energy:** Used in the generators of large-scale **wind turbines**.
- **Electronics:** Found in hard disk drives, smartphones, loudspeakers, and headphones.
- **Advanced Manufacturing:** Essential for robotics, industrial automation, and high-precision sensors.
- **Medical Technology:** Used in Magnetic Resonance Imaging (**MRI**) machines and other diagnostic tools.

THE INDIA BIOECONOMY REPORT (IBER) 2026

Union Minister unveiled the India BioEconomy Report (IBER) 2026 during the 14th Foundation Day of BIRAC in New Delhi.

- The report highlights that India's bioeconomy reached a record **$195.3 billion**in 2025, now contributing nearly **5% to the national GDP**.

About The India BioEconomy Report (IBER) 2026:

What it is?

- The IBER 2026 is a comprehensive annual document developed by the **Association of Biotechnology Led Enterprises (ABLE)**. It serves as the primary benchmark for measuring the growth, sectoral contributions, and startup ecosystem of India's biotechnology sector, tracking the country's progress toward its long-term economic goals.

Key Summary Points of the Report:

- **Record Market Size:** India's BioEconomy grew by **$29.6 billion** in 2025 to reach a total of **$195.3 billion**.
- **Highest Growth Rate:** The sector witnessed an **18% growth** in 2025, the highest rate recorded in recent years.
- **GDP Contribution:** The BioEconomy's share of the national GDP rose to **4.8%**, up from 4.2–4.3% in previous years.
- **Sectoral Leader:** The **BioIndustrial** segment was the largest contributor, valued at **$90.2 billion**.
- **BioPharma Strength:** This segment reached **$64.5 billion**, with significant growth expected in biosimilars and peptide manufacturing as global patents expire.
- **BioServices and Agri:** BioServices contributed **$26 billion**, while BioAgri accounted for **$14.6 billion** of the total economy.
- **GCC Expansion:** India now hosts over **150 healthcare and life sciences Global Capability Centres (GCCs)**, employing 300,000+ professionals.
- **Startup Surge:** The number of registered biotech startups rose to **11,855**, with **1,780 new startups** established in 2025 alone.

Key Opportunities in India's Bioeconomy:

- **Biosimilar and Peptide Manufacturing:** Expiry of major drug patents (e.g., GLP-1 therapies) gives India a chance to produce affordable biosimilars and dominate global pharma markets.
- **Global Capability Centres (GCCs) Expansion:** India can move from backend roles to advanced R&D, bioinformatics, and digital health innovation, enhancing value addition and global leadership.
- **BioIndustrial and BioServices Growth:** Emerging sectors like bio-manufacturing and contract research are entering a scale-up phase, enabling large industrial applications and exports.
- **Start-up Ecosystem Scaling:** With ~12,000 biotech startups and steady growth, India can convert scientific research into market-ready products and deep-tech innovations.
- **Domestic Market Contribution:** Rising GDP share (~4.8%) offers scope to integrate biotechnology across agriculture, healthcare, and industry for holistic economic growth.

Initiatives Taken So Far:

- **BIRAC Support:** The Biotechnology Industry Research Assistance Council (BIRAC) provides the necessary interface to nurture and scale biotech startups.
- **SIGHT Program:** Financial incentives for green hydrogen and electrolyzer manufacturing to bolster the BioIndustrial segment.
- **National Bio-Pharma Mission:** An industry-academia collaborative mission for accelerating biopharmaceutical development.
- **Bio-E3 Policy:** (Biotechnology for Economy, Environment, and Employment) Focusing on high-performance biomanufacturing to achieve a $1 trillion target by 2047.

Challenges Associated:

- **Intellectual Property (IP) Barriers:** While GLP-1 patents are expiring, navigating complex biosimilar litigation remains a hurdle for Indian firms.
- **Global Work Distribution:** Multinational companies are distributing research across global networks, which can lead to brain drain if domestic high-end roles aren't created.
- **High Capital Intensity:** Biotech startups require long-term funding; while 1,780 new ones launched in 2025, sustaining them through clinical trials is difficult.
- **Regulatory Complexity:** Expanding analytics and regulatory functions in GCCs requires a highly specialized workforce that keeps pace with changing global standards.
- **Sectoral Imbalance:** The BioAgri segment ($14.6B) is significantly smaller than the BioIndustrial segment ($90.2B), showing a lag in agricultural biotech adoption.

Way Ahead:

- **Collaborative Ecosystem:** Strengthen the Sustained collaboration between government, academia, and industry to translate lab research into market-ready technology.
- **Biosimilar Leadership:** Leverage the upcoming patent cliff to establish India as a global hub for peptide and biosimilar manufacturing.
- **Expanding GCC Functions:** Transition GCCs from support roles to core hubs for data analytics, bioinformatics, and digital health platforms.
- **Incentivizing Startups:** Provide targeted fiscal support to the nearly 12,000 registered startups to move beyond the establishment phase.
- **Focus on 2047 Vision:** Align all sectoral policies toward the long-term goal of building a **$1 trillion BioEconomy** by 2047.

India's BioEconomy has entered a transformative phase, shifting from a niche sector to a primary driver of national GDP at nearly 5%. With a robust startup ecosystem and leadership in BioPharma, the nation is well-positioned to meet its ambitious $1 trillion goal. Sustaining this 18% growth through strategic collaboration will be essential to cement India's status as a global biotechnology leader.

PROJECT INSIGHT (PI) INITIATIVE

Context: India's use of Artificial Intelligence (AI) in tax governance, particularly through the Project Insight (PI) initiative, has gained attention for improving compliance and revenue mobilisation.

About Project Insight (PI) initiative:
What it is?

- Project Insight is an AI-driven tax administration system that uses big data analytics to track financial transactions and detect tax evasion.

Organisation:

- Implemented by the **Income Tax Department (ITD),** Ministry of Finance, Government of India.

Aim:

- **Enhance voluntary tax compliance:** Encourage taxpayers to report accurate income through data-based nudges.
- **Strengthen tax enforcement:** Identify high-risk cases of tax evasion using AI and analytics.

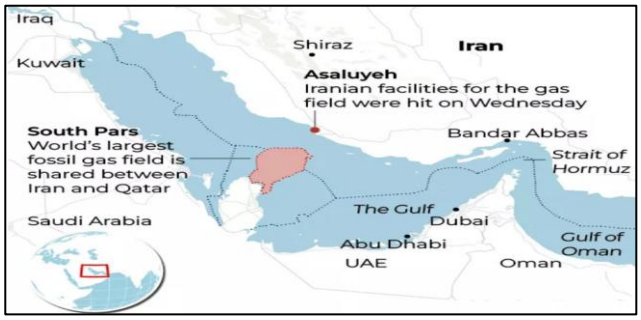
Key Features

- **INTRAC (Analytics Engine):** Uses AI to create a 360° financial profile of taxpayers from multiple data sources.

- **NUDGE Strategy:** Sends non-intrusive reminders (SMS/email) to correct discrepancies in tax returns.
- **Automated Risk Assessment:** Prioritises cases based on risk level and scale of evasion, improving efficiency.

RAS LAFFAN AND SOUTH PARS

The West Asian conflict has escalated significantly following Israeli strikes on Iran's South Pars gas field and retaliatory Iranian missile attacks on Qatar's Ras Laffan LNG facilities.



About Ras Laffan Industrial City:
What it is?

- Ras Laffan is the world's largest Liquefied Natural Gas (LNG) export hub, housing major liquefaction plants and export terminals.

Located in: Northeastern **Qatar**, along the **Persian Gulf coast**
Origin:

- Ras in Arabic means headland or cape, indicating its coastal geographic position
- Developed as a strategic LNG export hub by QatarEnergy

Key Features:

1. Global LNG hub: Accounts for nearly 20% of global LNG supply.
2. Integrated infrastructure: Houses liquefaction plants, storage tanks, export terminals.
3. QatarEnergy base: Core operational center for Qatar's LNG exports.
4. High export capacity: Over 77–80 million tonnes per annum LNG production.

Importance:

- Critical supplier of LNG to countries like **India, Japan, Europe**.
- Key node in **global gas supply chains**.
- Supplies **~40% of India's LNG imports**.

About South Pars Gas Field:

- The **world's largest natural gas field**, shared between Iran (South Pars) and Qatar (North Field).

Located in:

- Beneath the **Persian Gulf**, shared by:
  - Iran (South Pars)
  - Qatar (North Field)

Origin:

- South Pars refers to the southern portion of the larger gas reservoir located in Iranian territory
- Pars is derived from Persia (ancient Iran)

Key Features:

1. Largest gas reserve: Holds one of the world's biggest proven natural gas reserves.
2. Shared resource: Divided between Iran (South Pars) and Qatar (North Field).
3. Offshore extraction: Consists of multiple offshore platforms and processing units.
4. Energy backbone: Central to Qatar's LNG dominance and Iran's gas economy.

UN COMMISSION ON THE STATUS OF WOMEN (CSW)

The UN Commission on the Status of Women (CSW) concluded its 70th session on March 19, 2026, where 190 member states adopted historic Agreed Conclusions.

About the UN Commission on the Status of Women:

What it is?

- A functional commission of the Economic and Social Council (ECOSOC)and the primary organ for global policy-making on women's rights.
- The CSW is the principal global intergovernmental body exclusively dedicated to the promotion of gender equality and the empowerment of women.

Established In: June **1946**, shortly after the founding of the United Nations.

Aim: To promote women's rights in political, economic, civil, social, and educational fields and to ensure that gender equality is integrated into all UN activities and national policies.

Key Functions:

1. Setting Global Standards: It formulates policies, standards, and norms that define the rights of women and girls globally, such as the landmark Beijing Declaration (1995).
2. Monitoring Progress: It reviews the implementation of international agreements by member states and monitors the progress of the 2030 Agenda for Sustainable Development (specifically SDG 5).
3. Thematic Policy Development: Each year, the commission focuses on a priority theme to create actionable strategies for member states.
4. Advocacy and Awareness: It provides a high-level platform for heads of state, NGOs, and civil society to highlight emerging issues affecting women, such as digital exclusion or climate impact.
5. Addressing Crisis Contexts: The commission brings global attention to the highest price paid by women in conflict zones, from Afghanistan and Gaza to Ukraine and Sudan.
6. Coordination and Accountability: It supports the work of UN Women in coordinating the UN system's gender-related activities and ensuring institutional accountability.

Key Outcomes of the Agreed Conclusions:

1. **Mandatory Reform of** Discriminatory Laws**:** States must amend laws on marriage, property, and family to eliminate gender bias, ensuring women achieve equal legal rights and protection.
2. **Formal Recognition of Community Justice:** Paralegals and community justice workers are formally integrated into legal systems to improve access for rural women.
3. **Digital Justice and** AI Governance**:** Promotes use of technology for justice delivery while regulating AI biases and tackling tech-enabled gender violence.
4. **Survivor-Centered Justice in Crisis Contexts:** Ensures trauma-informed, accessible justice systems for victims of violence, especially in conflict and humanitarian situations.
5. **Universal Access to** Sexual and Reproductive Health**:** Reaffirms women's rights to healthcare and reproductive autonomy as essential for dignity, equality, and justice.

BHARAT AUDYOGIK VIKAS YOJNA

The Union Cabinet has approved the Bharat Audyogik Vikas Yojna (BHAVYA) with an outlay of ₹33,660 crore to develop 100 plug-and-play industrial parks across India.

About Bharat Audyogik Vikas Yojna (BHAVYA):

What it is?

- BHAVYA is a centrally approved industrial infrastructure scheme aimed at developing 100 world-class plug-and-play industrial parks with ready-to-use facilities, enabling industries to start operations quickly without procedural delays.

Nodal Ministry: Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry

Implementing Agency: National Industrial Corridor Development Corporation (NICDC)

Aim:

- To accelerate manufacturing-led economic growth.
- To enhance ease of doing business through pre-approved infrastructure.
- To promote cluster-based industrial development and strengthen domestic supply chains.
- To generate large-scale employment and attract investments.

Key Features:

1. **Plug-and-play infrastructure:** Pre-approved land, utilities, and clearances enable industries to move from intent to production rapidly.
2. **Large-scale industrial parks:** Development of parks ranging from **100–1000 acres** across all States and UTs.
3. **Financial support:**
    - Up to **₹1 crore per acre** for core, value-added, and social infrastructure
    - Up to **25% support for external connectivity infrastructure**
4. **Integrated infrastructure ecosystem:**
    - Core: roads, drainage, underground utilities, ICT systems
    - Value-added: factory sheds, testing labs, warehousing
    - Social: worker housing and amenities
5. **Ease of doing business reforms:**
    - Single-window clearance systems
    - State-led investor-friendly reforms
6. **Challenge-based project selection:** Ensures only investment-ready and reform-oriented proposals are approved.
7. **Alignment with PM GatiShakti:** Enables multimodal connectivity and efficient logistics integration.
8. **Sustainable industrial development:**
    - Green energy integration
    - Underground utility corridors (no-dig model)

Significance:

- Strengthens India's position as a global manufacturing hub.
- Creates lakhs of direct and indirect jobs across industries and services.
- Reduces entry barriers, making India more attractive to domestic and global investors.

RISA: TIMELESS TRIBAL

The Ministry of Tribal Affairs has launched RISA: Timeless Tribal, a premium signature brand to promote tribal crafts and textiles.

About RISA: Timeless Tribal:

What it is?

- RISA: Timeless Tribal is a premium national brand for tribal textiles, embroidery, and handicrafts, designed to showcase India's indigenous craftsmanship in domestic and global premium markets while preserving cultural heritage.

Nodal Ministry: Ministry of Tribal Affairs

Implementing Agency: TRIFED (Tribal Cooperative Marketing Development Federation of India)

Aim:

- To preserve and promote tribal weaves, embroidery, and crafts.
- To support Vocal for Local and Atmanirbhar Bharat through value addition.

Key Features:

- **Premium branding approach:** Positions tribal products in high-end domestic and international markets.
- **Cluster-based development:** First phase covers **10 clusters** including weaves, embroidery, and crafts across states.
- **Design intervention:** Introduction of **modern designs and product innovation** while retaining traditional essence.
- **Capacity building:** Skill training and upskilling of artisans to produce high-value, export-ready products.
- Infrastructure support: Development of weaving clusters and stitching unitsfor integrated production.
- Sustainable packaging: Eco-friendly premium packaging developed by NID for global market appeal.
- Strategic designer partnerships: Collaboration with leading designers to bridge tradition with contemporary fashion.

The first phase of the RISA launch features a curated selection of some of India's most iconic weaves and crafts.

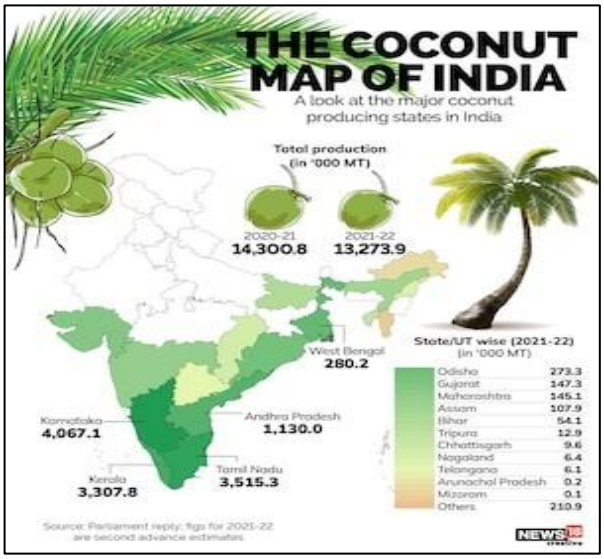
S. No.	Weaves/ embroidery	Communities Involved	State/UT
1.	Eri silk	Bodo	Assam
2.	Santal cotton	Santal	Jharkhand
3.	Changpa Pashmina	Changpa	Ladakh
4.	Kotpad cotton	Mirgan	Odisha
5.	Muga silk	Miri (Mising)	Assam
6.	Dongria embroidery	Dongria Kondh	Odisha
7.	Toda embroidery	Toda	Tamil Nadu

- **Diverse craft inclusion:** Covers iconic tribal products like:
    1. Eri silk (Assam)
    2. Pashmina (Ladakh)
    3. Dokhra art (Chhattisgarh)
    4. Toda embroidery (Tamil Nadu)

Significance:

- Enhances income and livelihood security of tribal artisans, especially women.
- Safeguards endangered tribal art forms and traditional knowledge systems.
- Bridges the gap between local craftsmanship and global demand.

COCONUT PROMOTION SCHEME



The Government of India highlighted India's position as the **largest global coconut producer** (30.37%).

Simultaneously, the **Coconut Promotion Scheme** announced in Union Budget 2026–27 is currently under formulation to enhance productivity and competitiveness.

About Coconut Promotion Scheme:

What it is?

- A central sector initiative aimed at enhancing coconut productivity, quality, and value addition across major coconut-growing regions.

Announced in:

- Union Budget 2026–27, under a broader ₹350 crore allocation for high-value crops (coconut, cashew, cocoa).

Aim:

- To increase production and productivity while improving farmers' income and global competitiveness.

Key Features:

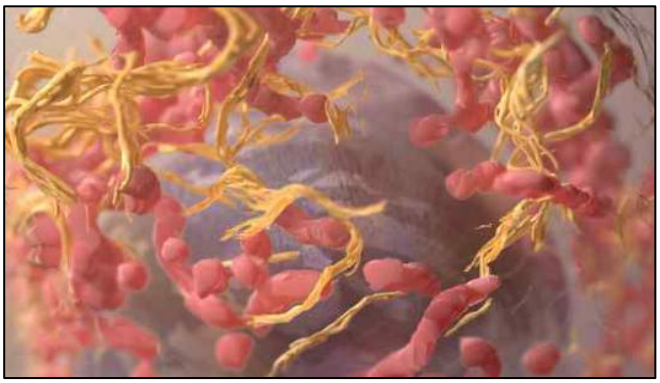
- **Replantation & Rejuvenation:** Replacement of old, senile, and low-yielding coconut trees with high-yielding varieties.
- **Improved Varieties:** Promotion of **disease-resistant and climate-resilient coconut cultivars**.
- **Productivity Enhancement:** Focus on better agronomic practices, irrigation, and nutrient management.
- **Value Addition:** Encouragement for processing, branding, and export of coconut-based products.
- **Farmer Support:** Strengthening livelihoods of coconut farmers through targeted interventions.
- **Scheme Status:** Currently **under formulation**; State/UT-wise fund allocation yet to be finalized.

India and coconut production stats:

Parameter	Data
Global Rank	1st (Largest producer globally)
Share in Global Production	30.37%
Area under Cultivation (India)	2165.20 thousand hectares
Global Area	~12390 thousand hectares
Annual Production	21373.62 million nuts
Average Productivity	9871 nuts/hectare
Livelihood Dependence	~30 million people (including ~10 million farmers)

CHOLESTEROL INCREASES RISK OF CANCER

A recent study by the U.S. National Institutes of Health discovered that high cholesterol levels in the nuclear envelope make the cell nucleus squishy, facilitating the spread of melanoma.



About High Cholesterol Helps Cancer Spread:

What is happening?

- It stores DNA and directs all cell activities, like a command hub.
- The nucleus is surrounded by a delicate membrane acting like a flexible shell.
- Excess cholesterol makes this shell softer and more deformable (squishy).

How does this help cancer spread?

- **Easier movement:** Softer nucleus allows cancer cells to squeeze through tight tissue gaps easily.
- **Weak outer layer:** High cholesterol makes the nuclear membrane fragile and prone to damage.
- **DNA damage:** Tears in the membrane expose DNA, causing mutations that worsen cancer.

Role of LBR (Lamin B Receptor):

- **LBR protein location:** It sits in the nuclear membrane and connects DNA to the nucleus wall.
- **Dual function:** It helps both in DNA attachment and cholesterol production inside the cell.

In cancer cells:

- **Excess LBR production:** Cancer cells overproduce LBR, increasing cholesterol inside the nucleus.
- **Structural impact:** This makes the nucleus softer and weaker, aiding cancer spread.
- **Clinical link:** Higher LBR levels are associated with more aggressive and severe cancers.

What happens in such cancer cells?

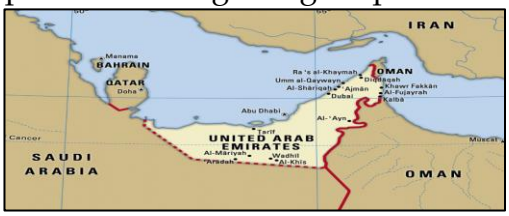
- **Rapid growth:** Cells divide uncontrollably due to accumulated genetic changes.
- **Survival advantage:** They adapt better to low nutrients and stressful environments.
- **Enhanced spread:** Softer structure helps them invade nearby tissues and distant organs.
- **Frequent damage:** Fragile nuclei tear often, increasing mutation rates further.

Treatment & Future Possibilities

- **Targeting LBR:** Blocking LBR may reduce cholesterol buildup and slow metastasis.
- **Lowering cholesterol:** Reduced cholesterol strengthens the nucleus and limits invasiveness.
- **Statins effect:** Cholesterol-lowering drugs are linked with slower cancer progression.

FUJAIRAH PORT AND THE SHAH GAS FIELD

Recent missile/drone attacks on Fujairah port and the Shah gas field in the UAE have disrupted oil loading and gas operations.



About Port of Fujairah:

What it is?

- A major deep-water, multipurpose port and global oil storage/bunkering hub serving as a critical export outlet for UAE's hydrocarbons.

Located in: Fujairah Emirate, United Arab Emirates (UAE) on the eastern coast.

Sea Open to:

- Directly opens into the **Gulf of Oman / Arabian Sea**, bypassing the Strait of Hormuz.

History:

- Construction began in **1978**; became operational in 1983 as part of UAE's economic diversification strategy.
- Gradually expanded into one of the largest oil storage and bunkering hubs globally.

Key Features:

- **Strategic Bypass Route:** Linked to Abu Dhabi via **ADCOP pipeline**, enabling crude export without passing through Hormuz.
- **Massive Storage Capacity:** Oil storage expanded from 0.55 million cbm (1994) to ~18 million cbm.
- **Bunkering Hub:** Among the top 3 global bunkering hubs, serving international shipping.
- **Advanced Infrastructure:** Over 9.5 km quay length, modern terminals for crude, refined products, and container cargo.
- **High Maritime Activity:** Around 12,000 vessels annually; ~174 anchorage positions.

- **Integrated Industrial Zone:** Hosts **Fujairah Oil Industrial Zone (FOIZ)** and multiple global oil companies.

Significance:

- Provides UAE an alternative export route outside Hormuz choke point.
- Connects Middle East energy flows to Asia, Africa, and global markets.

EXERCISE SEA DRAGON

The Indian Navy has deployed a P-8I maritime patrol aircraft to Guam to participate in the Exercise Sea Dragon.

About Exercise Sea Dragon:

What it is?

- Exercise Sea Dragon is a US-led multinational anti-submarine warfare (ASW) exercise conducted in the Western Pacific Ocean near Guam.

Established in:

- Initiated by the **United States Navy** as an **annual multinational ASW training exercise** to strengthen Indo-Pacific maritime security cooperation.

Aim:

- Enhance anti-submarine warfare proficiency among participating navies.
- Improve interoperability and coordination between maritime patrol aircraft.
- Strengthen cooperation to ensure a free, open, and secure Indo-Pacific maritime domain.

Member Nations:

Participants typically include maritime forces from key Indo-Pacific partners:

- Indian Navy
- United States Navy
- Japan Maritime Self-Defense Force
- Royal Australian Air Force
- Royal New Zealand Air Force

Key Features:

- **Anti-Submarine Warfare Training:** Participants conduct tracking and detection of simulated and live submarines, strengthening underwater surveillance capabilities.
- **Maritime Patrol Aircraft Operations:** The exercise primarily uses long-range maritime patrol aircraft such as the P-8 Poseidon and P-1 aircraft equipped with advanced sensors and data-link systems.
- **Integrated Tactical Planning:** Aircrews conduct tabletop planning sessions and coordinated missions to develop joint ASW tactics.
- **Performance Evaluation:** Participating teams are assessed on speed, accuracy, and operational coordination, with the best-performing team awarded the Dragon Belt.
- **Extensive Flight Training:** The exercise includes **over 200 hours of cumulative in-flight training**, improving operational readiness.

Significance:

- Strengthens Indo-Pacific maritime security cooperation among allied nations.
- Enhances the Indian Navy's submarine detection and surveillance capabilities in the Indian Ocean Region.

FIRST NATIONAL REPORT (NR1) ON THE IMPLEMENTATION OF THE NAGOYA PROTOCOL

India has submitted its First National Report (NR1) on the implementation of the Nagoya Protocol to the Convention on Biological Diversity Secretariat.

Convention on Biological Diversity

About India's First National Report on Implementation of the Nagoya Protocol:

What it is?

- India's First National Report (NR1) is an official submission to the Convention on Biological Diversity (CBD) detailing the country's implementation of the Nagoya Protocol on Access and Benefit Sharing (ABS).
- The report was prepared by **the Ministry of Environment, Forest and Climate Change** in collaboration with the National Biodiversity Authority.

Key Summary:

- **Reporting Period:** The report covers the period from 1 November 2017 to 31 December 2025.
- **Community Participation:**
    - **2,76,653 Biodiversity Management Committees** have been established across India.
- ABS Approvals:
    - **12,830 approvals** issued during 2017–2025.
        - **5,913 approvals** by NBA (research, commercial use, IPR etc.).
        - **6,917 approvals** by SBBs/UTBCs for commercial utilisation.
- **Benefit Sharing:**
    - **₹216.31 crore mobilised** through NBA approvals.
    - **₹139.69 crore distributed** to local communities, farmers and traditional knowledge holders.

About Nagoya Protocol:

What it is?

- The Nagoya Protocol is a supplementary agreement to the Convention on Biological Diversity (CBD).
- It provides a legal framework for access to genetic resources and fair sharing of benefits arising from their use.

Launched / Adopted in:

- Adopted: 29 October 2010 in Nagoya
- Entered into force: 12 October 2014

Aim:

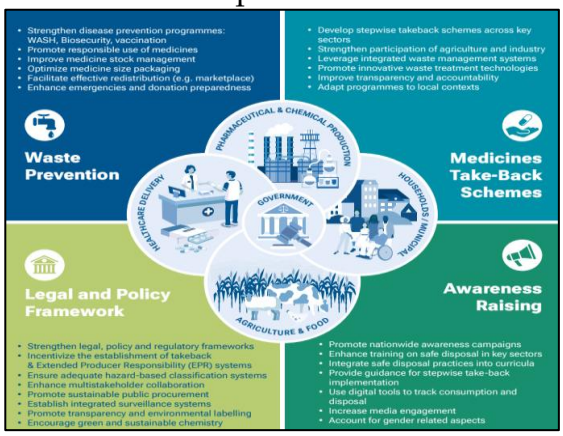
- Ensure fair and equitable sharing of benefits arising from genetic resources.
- Promote biodiversity conservation and sustainable use.
- Protect traditional knowledge associated with genetic resources.

Key Features:

- **Access to Genetic Resources:** Countries must establish **clear rules and procedures** for accessing genetic resources.
- **Prior Informed Consent (PIC):** Users must obtain **prior informed consent** from the provider country before using genetic resources.
- **Mutually Agreed Terms (MAT):** Benefit-sharing must occur based on **mutually agreed contractual terms**.
- **Benefit Sharing Mechanism:** Benefits may be monetary (royalties, payments) or non-monetary (technology transfer, research collaboration).
- **Compliance Mechanisms:** Countries must monitor the utilisation of genetic resources across the research and commercialization chain.
- **Protection of Traditional Knowledge:** Ensures indigenous and local communities receive benefits when their knowledge is used.

SAFE DISPOSAL OF UNUSED MEDICINES

The United Nations Environment Programme (UNEP) has released a new report, *Safe Disposal of Unused Medicines*, highlighting that improper disposal poses grave risks to environmental and public health.



About UNEP Safe Disposal of Unused Medicines Report:

What it is?

- This 2026 publication provides a comprehensive, multisectoral framework using a **One Health approach** to strengthen national systems for the safe disposal of human and veterinary medicines.
- It focuses on integrating waste prevention, take-back schemes, legal frameworks, and awareness-raising across the healthcare, agriculture, and household sectors.

Key Findings in the Report:

- **Environmental Risks:** Improper disposal is a major driver of antimicrobial resistance (AMR), endocrine disruption, and toxicity in ecosystems.
- **High Wastage Rates:** Globally, it is estimated that up to 50% of household medications eventually become waste.
- **Economic Impact:** The unused medicine management market is projected to reach **US$2.54 billion by 2032** due to rising healthcare expenditures and drug use.
- **Ineffective Treatment:** Current wastewater treatment plants are generally ineffective at fully removing pharmaceutical pollutants.
- **Health Threats:** Bacterial AMR was directly responsible for **1.27 million deaths globally** in 2019.
- **Prevention Efficiency:** In the Netherlands, it is estimated that 40% of unused medicine generation could be averted through better prevention.
- **Hazardous Composition:** Unused medicines account for approximately 3% of hazardous healthcare waste globally.
- **Redistribution Potential:** About 19% of unused medicines in certain contexts could potentially be redistributed if they meet strict quality criteria.

Methods for Disposal of Medical Waste:

- **High-Temperature Incineration:** The optimal method for hazardous waste, involving combustion at temperatures between 800-1200°C with flue gas cleaning.
- **Waste Immobilization:** Processes like **encapsulation** or inertization that entrap hazardous waste in a solid mass to prevent leaching into the environment.
- **Engineered Landfills:** Final disposal sites that use engineered systems to ensure the long-term confinement and control of hazardous residues.
- **Co-processing:** Utilizing high-temperature industrial processes, such as cement kilns, to destroy pharmaceutical waste effectively.

Challenges Associated with Disposal of Medical Waste:

- **Lack of Public Awareness:** Many consumers are unaware of the environmental harm caused by improper disposal.

Example: A study in Indonesia found that **53.1% of respondents** did not know improper disposal could harm health and the environment.

- **Infrastructure Gaps:** Rural and remote areas often lack the necessary facilities for treating hazardous waste.

Example: In Indonesia, compliance is difficult because rural regions lack adequate incineration facilities.

- **Inadequate Regulations and Enforcement:** Global systems are fragmented, with many countries lacking dedicated legal mandates for take-back schemes.

Example: Germany has no nationally mandated scheme, relying instead on voluntary local pharmacy collections.

- **Financial and Resource Constraints:** High costs of advanced treatment technologies hinder implementation in lower-income settings.

Example: Advanced oxidation processes for wastewater are efficient but remain expensive for many countries.

- **Risks During Emergencies:** Humanitarian crises lead to accumulations of unneeded or short-expiry donated drugs.

Example: Quantities of waste grow due to **mismatched donations** and excess supplies beyond local needs during emergencies.

UNEP Recommendations:

- **Strengthen Disease Prevention:** Improve WASH, biosecurity, and vaccination programs to reduce the initial need for medicines.
- **Implement Stepwise Take-Back Schemes:** Develop national programs for households and farms to return unused drugs for safe treatment.
- **Enact Legal Frameworks:** Establish Extended Producer Responsibility (EPR) to shift the financial burden of waste management to producers.
- **Promote Appropriate Use:** Use unit-dose packaging and better diagnostics to prevent over-prescription and patient stockpiling.
- **Enhance Transparency and Monitoring:** Use digital tools and integrated surveillance systems to track medicine consumption and disposal outcomes.

The UNEP report underscores that safely managing unused medicines requires a collaborative **One Health** effort to prevent chemical and AMR pollution at the source. By combining robust legal frameworks like EPR with nationwide awareness and accessible take-back schemes, countries can significantly mitigate the environmental and public health risks of pharmaceutical waste.

GLACIER MELTING

A new ISRO study published in NPJ Natural Hazards reveals that the August 2025 Dharali flash flood in Uttarakhand was triggered by the collapse of an exposed ice patch on the Srikanta Glacier.

- The findings shift the focus of disaster monitoring from large glacial lakes to smaller, overlooked instabilities in the cryosphere caused by rapid deglaciation.

About Melting Glaciers Greater Threat:
What it is?

- Glacier melting (deglaciation) refers to the reduction in the volume and mass of a glacier's ice due to ablation (melting and sublimation) outstripping the accumulation of new snow. As temperatures rise, the protective layer of seasonal snow and firn (intermediate ice) thins, exposing older, unstable ice patches to the elements.

Data and Facts on Glacier Melting:

- **Accelerated Rate:** Himalayan glaciers have been losing ice at an average rate of nearly 0.5 meters of vertical height per year since 2000.

- **Global Warming Impact:** The Hindu Kush Himalaya (HKH) region is warming at a rate higher than the global average, leading to a projected loss of up to 75% of glacier volume by 2100.
- **Water Insecurity:** Over 1.3 billion people depend on the 10 major rivers originating from the Himalayas; melting glaciers initially increase flow but lead to long-term water scarcity.
- **Increased Hazard Frequency:** The frequency of Glacial Lake Outburst Floods (GLOFs) and ice-patch collapses has tripled in the last two decades.

Factors Contributing to Glacier Melting:

- **Rising Atmospheric Temperatures:** Global warming reduces the insulating snow cover, exposing the darker ice beneath.

Example: The **Srikanta Glacier** saw its firn cover thin significantly before the 2025 flood due to record summer temperatures.

- **Black Carbon Deposition:** Pollutants from biomass burning and vehicle emissions settle on glaciers, absorbing sunlight and accelerating melt.

Example: High levels of black carbon have been recorded near the **Gangotri Glacier**, leading to faster recession than in neighboring regions.

- **Changes in Precipitation Patterns:** Shift from snowfall to rainfall at high altitudes prevents the recharging of glaciers.

Example: Reduced winter snowfall in **Ladakh** has led to the drying up of several small peripheral glaciers that local farmers rely on.

- **Infrastructural Development:** Tunnelling and road construction in fragile eco-zones create localized heat islands and vibrations.

Example: The **Char Dham road project** in Uttarakhand has faced criticism for increasing slope instability near glaciated zones.

- **Nivation and Geomorphic Changes:** Alternate freezing and thawing erode the ground beneath snowbanks, creating nivation hollows that eventually collapse.

Example: The **Dharali flash flood** was specifically linked to the collapse of an ice patch within such a hollow on steep northeast-facing slopes.

Initiatives Taken:

- **National Mission for Sustaining the Himalayan Ecosystem (NMSHE):** A part of India's Climate Change Action Plan focused on monitoring forest cover and glacier health.
- **ISRO Satellite Monitoring:** Use of high-resolution imagery (like RISAT and Cartosat) to map over 9,500 Himalayan glaciers and track GLOF risks.
- **Indo-Swiss Collaboration:** Joint research programs (CAPH) aimed at improving climate resilience and glaciology expertise in the Indian Himalayas.
- **Early Warning Systems (EWS):** Installation of sensor-based EWS in high-risk zones like the Rishiganga and Dhauliganga valleys following the 2021 disaster.

Challenges Associated:

- **Remote and Rugged Terrain:** Difficulty in installing and maintaining ground-based monitoring equipment at high altitudes.

Example: Reaching the **Srikanta peak** for manual data verification is hazardous due to its avalanche-prone 6,133 m height.

- **Lack of Historical Data:** Incomplete records make it difficult to predict black swan events like ice-patch collapses.

Example: Until the **2025 Dharali event**, ice-patch collapse was an under-recognized hazard compared to GLOFs.

- **Transboundary Management:** Glaciers span borders (India, China, Pakistan), making data sharing and coordinated disaster response difficult.

Example: Tensions along the **LAC** often limit the ability of scientists to conduct comprehensive field studies on transboundary glaciers.

- **Socio-Economic Vulnerability:** Communities live in narrow valleys where even a small flood can be catastrophic.

Example: Dharali village is split by the Khir Gad stream, making its residents highly vulnerable to sudden surges from the glacier above.

- **Unpredictable Micro-Climates:** High-altitude weather can change in minutes, bypassing regional forecasts.

Example: The **2021 Chamoli rock-ice avalanche** occurred on a clear day, catching authorities off-guard as there was no heavy rain to signal danger.

Way Ahead:

1. **Integrated Monitoring:** Combine satellite data with ground-based sensors to monitor smaller nivation hollows and ice patches.
2. **Community-Led Warning:** Train local populations in high-altitude villages to recognize landscape signals, such as the sudden exposure of dark ice.
3. **Climate-Resilient Infrastructure:** Enforce strict environmental audits for all construction projects within 50 km of the glaciated line.
4. **Regional Cooperation:** Establish a Himalayan Council for real-time data sharing on glacier health across neighboring countries.
5. **Nivation Mapping:** Systematically identify and monitor north-facing steep slopes as geomorphologically sensitive zones.

The Dharali disaster proves that Himalayan hazards are evolving beyond traditional glacial lake outbursts to more subtle cryospheric collapses. As deglaciation exposes unstable ice patches, the ridge-to-valley monitoring approach must become the new standard for disaster risk reduction. Protecting these fragile ecosystems is no longer just an environmental goal but a critical necessity for the safety of millions living downstream.

PINAKA MULTI-BARREL ROCKET LAUNCHER (MBRL) SYSTEM

The Indian Army has operationalized its seventh Pinaka regiment and is currently raising an eighth, with plans to reach ten regiments by next year.

About The Pinaka Multi-Barrel Rocket Launcher (MBRL) System:

What it is?

- Pinaka is an indigenous, multi-barrel rocket launcher (MBRL) system capable of firing a salvo of 12 rockets in under 44 seconds. It is a high-volume, area-saturation weapon designed to neutralize enemy troop concentrations and infrastructure over large areas.

Developed By: the Armament Research and Development Establishment (ARDE).

Aim:

- The primary objective of the Pinaka system is to provide the Indian Army with deep-strike capability, allowing it to destroy enemy communication hubs, logistics depots, and artillery gun positions well behind the front lines.

Key Features of the System:

- **Rapid Fire Capability:** A single battery of six launchers can fire 72 rockets in just 44 seconds, covering an area of roughly 1,000 by 800 meters.
- **Range Variants:** The system is versatile, featuring Mk-I (38 km), Mk-II ExtendedRange (60 km), and Guided variants (75–90 km).
- **High Precision:** Guided Pinaka rockets utilize an Integrated Navigation System (INS) combined with GPS/NavIC for pinpoint accuracy.

- **Mobility:** The launchers are mounted on high-mobility Tatra trucks, allowing for shoot-and-scoot tactics to avoid enemy counter-fire.
- **Automation:** Equipped with an Automated Gun Aiming and Positioning System (AGAPS) and a computerized fire control system for quick deployment.
- **Extreme Weather Resilience:** The system is designed to operate in diverse Indian terrains, from the high-altitude cold of Ladakh to the intense heat of the Thar Desert.

Significance:

- The Pinaka system is strategically vital as it reduces India's dependence on Russian Smerch and Grad systems.
- With the development of the Long-Range Guided Rocket (LRGR), which recently hit targets at 120 km, India is building a formidable Rocket Force capable of matching the integrated artillery networks of the PLA along the Line of Actual Control (LAC).

SUJAL GAON ID

The Union Ministry of Jal Shakti has launched Sujal Gaon ID, a unique digital identifier for mapping rural piped water supply schemes across India.

About Sujal Gaon ID:

What it is?

- Sujal Gaon ID is a scheme-based unique digital identifier assigned to each rural piped drinking water supply scheme in India.
- It enables digital mapping of rural water supply assets and service areas, integrating them into a unified national water management platform.

Launched Under:

- It has been introduced under **Jal Jeevan Mission 2.0**, the flagship programme aimed at providing Functional Household Tap Connections (FHTCs) to all rural households.

Aim:

- To digitally map and monitor rural drinking water infrastructure across India.
- To strengthen transparency, service delivery, and evidence-based decision making in rural water governance.

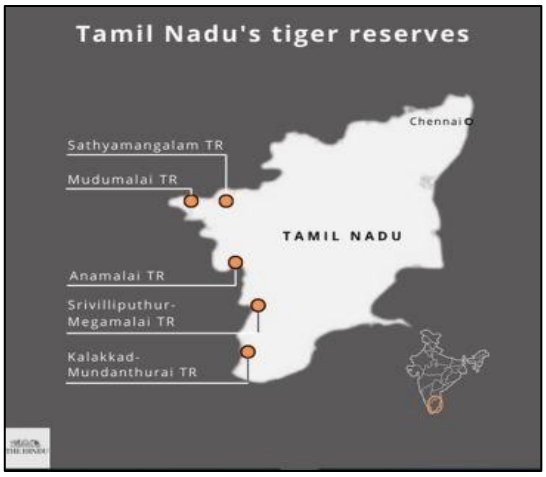
Key Features:

- **Unique Digital Identification** – Every rural drinking water scheme is assigned a **distinct Sujal Gaon ID**, ensuring traceability of assets and services.
- **Integration with Sujalam Bharat Platform** – The ID is linked with **Sujalam Bharat IDs**, combining infrastructure ID and service-area ID for complete mapping of water supply systems.
- **National Digital Architecture** – Creates a **source-to-tap digital monitoring system** for rural water supply schemes across the country.
- **Real-time Monitoring and Data Governance** – Enables governments to track scheme performance, infrastructure status, and service delivery outcomes in real time.
- **Wide Coverage** – Around **1.64 lakh Sujal Gaon IDs across 31 States and UTs**have already been generated and linked with **67,000 Sujalam Bharat IDs**.

Significance:

- Digital mapping reduces leakages and improves monitoring of rural water infrastructure.
- Data-driven tracking helps policymakers plan maintenance, expansion, and water security strategies.
- Ensures efficient operation and maintenance of piped water supply systems.

MEGAMALAI WILDLIFE SANCTUARY



The Zoological Survey of India (ZSI) recently documented nine new species, including jumping spiders and damselflies, at the Megamalai Wildlife Sanctuary.

About Megamalai Wildlife Sanctuary:

What it is?

- Megamalai Wildlife Sanctuary is a protected landscape in Tamil Nadu, often referred to as the High Wavy Mountains. Since 2021, it has been a core component of the **Srivilliputhur–Megamalai Tiger Reserve (SMTR)**, which is India's 51st tiger reserve.

Established In: The sanctuary was formally part of the SMTR notification in **2021**, though its Eco-Sensitive Zone was previously gazetted in **2018**.

Habitat:

The sanctuary is a mosaic of diverse ecosystems, including:

- Montane Shola Forests and high-altitude grasslands.
- Tropical Wet Evergreen Forests.
- Tea and Cardamom Plantations interspersed with natural vegetation.

Rivers Flowing Through:

The landscape acts as a critical watershed for southern Tamil Nadu. Key rivers include:

- **Vaigai:** The lifeline of several southern districts.
- **Suruliyaru and Shanmuganathi:** Major tributaries that converge at the Vaigai Dam.
- **Ephemeral Streams:** Includes Arjuna Nadhi, Mudangiar, and Gundar, which support local agriculture and drinking water needs.

Key Features:

- **Strategic Location:** It forms a continuous elephant and tiger corridor connecting the Periyar Tiger Reserve in Kerala with the Grizzled Giant Squirrel Sanctuary in Srivilliputhur.
- **Bio-Indicators:** The presence of specific mayflies and amphibians serves as a natural gauge for water quality and habitat stability.
- **Eco-Sensitive Zone (ESZ):** The sanctuary maintains a protective buffer (ESZ) ranging from 0 km to 1.70 km to minimize human-wildlife conflict.

Species Identified:

The ZSI survey documented **977 species**, with the following nine being entirely new to science:

- **Jumping Spider:** Stenaelurillus megamalai.
- **Mayflies:**Edmundsula meghamalaiensis.
- **Damselfly:** Thraulus vellimalaiensis – Protosticta sholai (endemic to the region).
- **Bark Lice & Cockroaches:** Allacta vellimalai and Lachesilla vellimalai.
- **Other Notable Fauna:** Megamalai rock gecko (Hemidactylus vanam), and historical records of the Critically Endangered Malabar Civet.

STOCKHOLM WATER PRIZE

Recently, Kaveh Madani has been named the 2026 recipient of the Stockholm Water Prize.

bout Stockholm Water Prize:

- **Establishment:** The prize was established **in 1991 by the Stockholm Water Foundation**.

- **Other names:** It is widely regarded as the **"Nobel Prize of Water".**
  - **Objective:** It **honours individuals and organizations for extraordinary water-related achievements** that contribute to the conservation and protection of water resources.
- **Organizing Body:** It is awarded by the **Stockholm International Water Institute (SIWI) in cooperation with the Royal Swedish Academy of Sciences.**
  - **Award Ceremony:** The announcement occurs on **World Water Day (March 22),**and the ceremony is held during World Water Week in Stockholm every August.

Prize Value: Laureates receive a **cash award of SEK 1 million and a specially designed Orrefors crystal sculpture.**

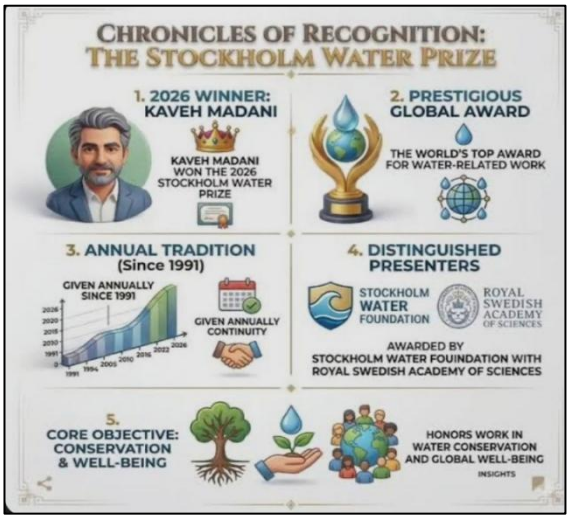
Scope: Recognition spans multiple disciplines, including **science, engineering, policy, and environmental advocacy.**

Recent winners:

- **2026: Kaveh Madani (Iran),** recognized for linking water science with policy and diplomacy. He is the youngest recipient (age 44) and the first UN official to be honoured.
- **2025: Gunter Bloschl (Austria),** for his pioneering research on flood risks and climate change impacts.
- **2024: Taikan Oki (Japan),** for contributions to studying global water balance and virtual water flows.

Indian winners:

- **Rajendra Singh (2015):** Known as the **"Waterman of India,"** he was honored for **reviving traditional rainwater harvesting techniques (Johads) in Rajasthan** through his NGO, Tarun Bharat Sangh.

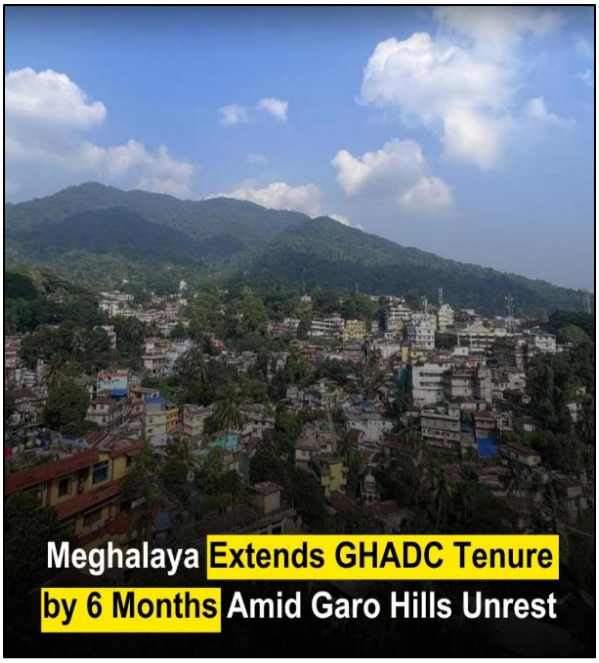


- **Dr. Bindeshwar Pathak (2009): Founder of Sulabh International**, recognized for his massive impact on sanitation and human rights.

- **Centre for Science and Environment (2005):** The New Delhi-based NGO (led by Sunita Narain) was awarded **for community-based sustainable resource management.**
- **Madhav Atmaram Chitale (1993):** Honoured for his **work in water conservation and public education programs.**

GARO HILLS AUTONOMOUS DISTRICT COUNCIL

Recently, the Meghalaya State Government has extended the term of the Garo Hills Autonomous District Council (GHADC) for a period of six months.



About Autonomous District Council:

- **Constitutional Basis:** ADCs are established under **Article 244(2) and Article 275(1) of the Indian Constitution.**
- **State Coverage:** They are operational in **four states: Assam, Meghalaya, Tripura, and Mizoram.**
  - **Members:** Each ADC typically consists of **30 members.** 26 members are directly elected on the basis of adult franchise. 4 members are nominated by the Governor.
  - **Tenure: Elected members serve a term of five years,** while nominated members hold office at the Governor's pleasure.
  - **Bodoland Exception:** The Bodoland Territorial Council (BTC) in Assam is an exception, **with 46 members** (40 elected, 6 nominated).
  - **Legislative Power:** ADCs can make **laws on specific subjects like land management, management of non-reserved forests, water channels,** agriculture, village councils, and social customs (marriage, divorce, inheritance).

Governor's Assent: All laws made by the ADCs **require the assent of the Governor to become effective.**

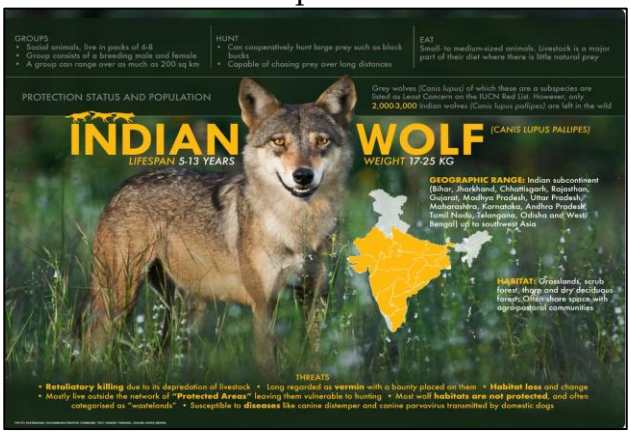
  - **Judicial Authority:** They can **constitute Village Councils or Courts to trial suits and cases between tribal parties.** They cannot, however, decide cases involving offences punishable by death or imprisonment for 5+ years.
  - **Executive Control:** ADCs manage **local services such as primary schools, dispensaries, markets, ferries,** fisheries, and roads.
  - **Financial Autonomy:** They have the power to **levy taxes, fees, and tolls on land, buildings, professions, and vehicles,** and receive grants-in-aid from the Consolidated Fund of India.
  - **Boundary Management:** The **Governor has the power to organize or reorganize autonomous districts**—including increasing, decreasing, or defining their boundaries and changing their names.
- **Autonomous Regions: If there are different tribes** in one autonomous district, the **Governor can divide the district into several autonomous regions.**
- **Application of Rules: Acts of Parliament or State Legislatures** do not automatically apply to these areas. The **Governor (for Assam) or the President (for others) can specify** if and how such laws apply.
- **Total Councils:** There are currently **10 ADCs in the Northeast** (3 in Assam, 3 in Meghalaya, 3 in Mizoram, and 1 in Tripura).
- **Difference with Fifth Schedule:** Unlike the Fifth Schedule (where the Union has more executive authority), the **Sixth Schedule provides significantly greater legislative and judicial autonomy** to the tribal areas.

INDIAN WOLF

Recently, an Indian wolf named Geeta at Pilikula Biological Park gave birth to seven pups.

About Indian Wolf:

- **Taxonomy:** The Indian Wolf **(Canis lupus pallipes),** often referred to as the Peninsular Wolf, is a genetically **distinct lineage of the grey wolf.**
    - **Genetically Basal:** Within the grey wolf family, the Indian plains wolf is considered genetically basal **to almost all other extant grey wolves**, except for the even older Himalayan wolf.
    - **Size:** It is **smaller and leaner than the European or Himalayan wolf**, representing an adaptation to hot, arid landscapes.



    - **Coat Adaptation:** Unlike its northern counterparts, it **lacks a thick undercoat and possesses shorter fur,** which helps it survive high temperatures.
    - **Pack Dynamics:** They **live in relatively small packs**, typically consisting of 6–8 individuals.
    - **Vocalisation:** They are known to be **less vocal and rarely howl** compared to other grey wolf subspecies.
    - **Nocturnal Hunter:** They are primarily nocturnal, **hunting from dusk to dawn** to avoid daytime heat.
    - **Ecological Niche:** They are the **apex predators of grasslands, scrublands, and semi-arid agro-ecosystems**, which are often misclassified as "wastelands" in policy.
    - **Core Range:** They are found across multiple Indian states, with major populations **concentrated in Rajasthan, Gujarat, Maharashtra, and Karnataka.**
        - **Outside Protected Areas:** Notably, **nearly 87% of their range lies outside the protected area network**, forcing them to coexist in human-dominated landscapes.
        - **Legal Protection:** They are listed under **Schedule I of the Wildlife (Protection) Act, 1972,** granting it the highest level of legal protection in India.
    - **International Status:** They are classified as **Vulnerable on the IUCN Red List** and listed in **Appendix I of CITES.**
    - **Major Threats:** The species faces severe pressure from **habitat fragmentation** due to industrial projects, **hybridisation with feral dogs,** and **retaliatory killings by pastoralists.**

PRAMBANAN TEMPLE COMPLEX

India and Indonesia have partnered for the restoration of the Prambanan Temple complex in the Special Region of Yogyakarta in southern Java.

About Prambanan Temple:

- **Location:** It is located in **Central Java, Indonesia,** near Yogyakarta.
- **Designation:** It was designated a **UNESCO World Heritage Site** in 1991.

Construction: It was built in the **9th century CE** (around 850 CE) during the reign of the **Sanjaya Dynasty of the Mataram Kingdom.**

- **Architectural Purpose:** Its construction was likely a **political and religious response to the nearby Buddhist Borobudur temple,** marking the return of Hindu Sanjaya rule in Java.
- **Deity:** It is **dedicated to the Trimurti**—the three forms of the Supreme God in Hinduism: Brahma (the Creator), Vishnu (the Preserver), and Shiva (the Destroyer/Transformer).

- **Vahana Temples:** Opposite the three main shrines are three smaller temples dedicated to the deities' vehicles (vahanas): **Nandi (Shiva's bull), Garuda (Vishnu's eagle), and Hamsa (Brahma's swan).**
  - **Garbhagriha Statues:** The main Shiva temple houses four chambers containing statues of **Shiva, Ganesha** (Western chamber), **Agastya** (Southern chamber), **and Durga Mahisasuramardini** (Northern chamber).
  - **Shiva-grha:** According to the **Shivagrha inscription (856 CE),** the **temple's original name was Shiva-grha** (House of Shiva) or Shiva-laya (Realm of Shiva).
- **Architectural Style:** it is characterized by tall, pointed spires typical of Hindu architecture, it reflects a **blend of indigenous Javanese traditions and South Indian Pallava-style influences.**
  - **Vertical Significance:** The central Shiva temple stands 47 metres tall, **symbolising Mount Meru, the cosmic center of the universe** in Hindu mythology.
  - **Scale of Complex:** Originally, the compound consisted of 240 structures, including the **8 main temples and 224 Perwara (ancillary) shrines** arranged in concentric rows.
  - **Concentric Layout:** The temple plan follows a **Mandala layout**, a sacred geometric configuration representing the Hindu universe.
  - **Ramayana Reliefs:** The **inner walls of the balustrades are adorned with extensive** bas-reliefs depicting the **epic Ramayana**. Visitors follow these scenes by performing pradakshina (circumambulation).
  - **Technique:** The temple was constructed **using andesite stone with an interlocking (dry stone) method** without the use of cement.
  - **Abandonment & Rediscovery:** It was **abandoned in the 10th century due to volcanic eruptions** (Mount Merapi) or political shifts. It was formally **"rediscovered" in 1811 by Colin Mackenzie,** a surveyor for Sir Thomas Stamford Raffles.

- **Cultural Diplomacy:** In recent years, the Archaeological Survey of India (ASI) has been involved in restoration efforts, **highlighting India's soft power and deep-rooted cultural ties with Southeast Asia.**

SAHITYA AKADEMI

Recently, the Sahitya Akademi has announced its annual Sahitya Akademi Awards in 24 Indian languages recognised by it.

About Sahitya Akademi Award:

- **Establishment:** It was formally inaugurated by the Government of India **on March 12, 1954,** and registered as an autonomous society in 1956.

Nodal Ministry: It functions under the **Ministry of Culture.**

- **Headquarters:** It is located at Rabindra Bhawan, **New Delhi.**
- **Languages:** Awards are conferred annually for outstanding works in **24 languages (22 languages listed in the 8th Schedule** of the Indian Constitution **and 2 additional recognized languages: English and Rajasthani).**
- **Award Components:** Winners receive an **engraved copper plaque, a shawl, and a cash prize of ₹1,00,000.**
- **Plaque Design:** The famous **Indian filmmaker Satyajit Ray** designed the Akademi's plaque.
- **Nationality:** The author must be an **Indian national.**
- **Eligible Works:** Books must be **first published during the five years prior to the award year.** Posthumous awards are eligible only if the author died within this five-year window.
- **ISBN Requirement:** Starting **from January 1, 2025**, an ISBN is mandatory for all eligible books.
- **Selection Process:** It is a multi-stage process involving experts, a **10-member Preliminary Panel, and finally a 3-member Jury** for each language.

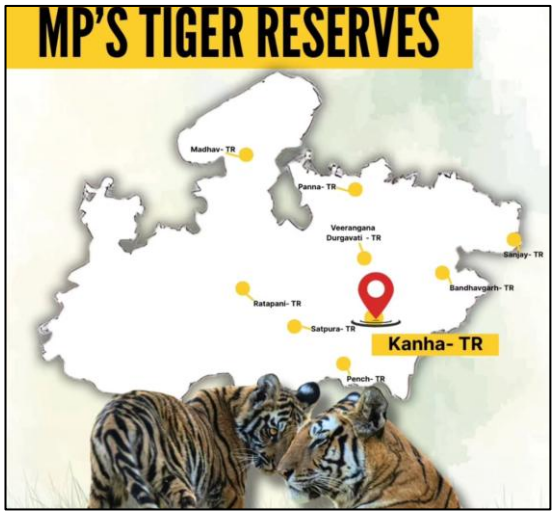
- **Recent Notable Winners (2025):**
  - **English: Navtej Sarna** for the novel Crimson Spring.
  - **Hindi: Mamta Kalia** for the memoir Jeete Jee Allahabad.

KANHA TIGER RESERVE (KTR)

Recently, Kaziranga National Park and Tiger Reserve cleared all formalities to translocate 50 wild Asiatic water buffaloes from the park to the Kanha Tiger Reserve.

About Kanha Tiger Reserve (KTR):

- **Location:** It is situated in the Maikal range of the Satpuras, spanning the Mandla and Balaghat districts of **Madhya Pradesh.**
- **Historical Timeline:** Originally a reserve forest (1879), it was declared a **wildlife sanctuary in 1933, a National Park in 1955**, and became one of the first nine reserves **under Project Tiger in 1973-74.**
- **Drainage System:** The reserve is part of the Narmada Catchment area, with the **Banjar, Halon, and Surpan rivers** forming its primary drainage.



Terrain: It features a diverse landscape of **plateaus (locally called dadars), steep upper slopes, and undulating valleys.**

Corridors: KTR maintains vital wildlife corridors **connecting it to Pench Tiger Reserve (MP) and Achanakmar Tiger Reserve (Chhattisgarh).**

- **Vegetation Types:** The park is dominated by **Tropical Moist Deciduous forests,** specifically evergreen Sal (Shorea robusta) and **mixed deciduous trees** like Tendu, Jamun, and Arjun.
- **The "Jewel of Kanha":** It is the exclusive home of the **Hard Ground Barasingha** (Rucervus duvaucelii branderi), **the state animal of MP,** which was saved from near-extinction here.
- **Flagship Species:** It hosts a high density of **Royal Bengal Tigers,** along with Leopards, Sloth Bears, and Indian Wild Dogs (Dholes).

Avian Diversity: Over 300 bird species inhabit the park, including the **Crested Serpent Eagle and the Indian Paradise Flycatcher.**

- **First Mascot:** Kanha is the **first tiger reserve in India to introduce an official mascot,** "Bhoorsingh the Barasingha".

- **Literary Inspiration:** The dense forests of Kanha are widely believed to be the **inspiration for Rudyard Kipling's The Jungle Book.**
- **Tribal Heritage:** The region was originally inhabited by the **Gond and Baiga tribes**, who were later relocated from the core area to protect the tiger habitat.
- **Sunset Point: Bamni Dadar** is a famous plateau within the reserve known for its panoramic sunset views and herbivore sightings.
- **Conservation Success:** KTR's management is a **"gold standard" for predator-prey balance and successful reintroduction programs** (e.g., translocating Barasingha to Satpura).
- **Documentary Fame:** The **National Geographic documentary Land of the Tigers (1980)** was filmed here, showcasing its biodiversity to a global audience.

FORCE MAJEURE

Highway developers in India have urged from NHAI to classify the ongoing West Asia conflict as a force majeure event for road projects, citing supply disruptions

About Force Majeure:

- **Definition:** It refers to extraordinary events or **circumstances beyond human control** that make it impossible or **impractical for parties to fulfil their contractual obligations.**
- **Etymology:** The phrase comes from French and literally means **'superior force'.**
  - **Nature of Events:** Typically includes **"Acts of God" (natural calamities like earthquakes or floods) and man-made events (war, riots,** or government-imposed lockdowns).
  - **Predictability:** To qualify, an event must be **unforeseeable, external to the parties**, and its consequences must be unpreventable.
  - **Variation:** The application of force majeure can **vary across legal systems**, with some jurisdictions requiring a more stringent definition than others.
  - **Legal Framework in India:** In India, the doctrine of force majeure is governed by **section 56 of the Indian Contract Act, 1872**. It provides that a contract becomes void if an act to be performed under the contract becomes impossible after the contract is made, or, by reason of some event, which the promisor could not prevent.

Judicial Interpretations:

- **Energy Watchdog v. CERC (2017):** The Supreme Court held that if a contract already contains a force majeure clause, **relief must be sought under that clause (Section 32) rather than general frustration (Section 56).**
- **Satyabrata Ghose v. Mugneeram Bangur (1954):** Clarified that **"impossible" in Section 56 does not just mean physical impossibility but also practical futility** where the very foundation of the contract is shaken.

- **Commercial Hardship:** Courts have consistently ruled that **mere economic unprofitability, price hikes, or increased difficulty do not constitute force majeure.**

Recent Government Notifications:

- **COVID-19 as Force Majeure:** In February 2020, the Ministry of Finance (Department of Expenditure) issued an Office Memorandum **declaring the pandemic a "natural calamity" and a valid ground for invoking force majeure**in government procurement contracts.
- **Railways and MNRE:** Both the Ministry of Railways and the Ministry of New & Renewable Energy (MNRE) **issued similar notifications** to provide relief to contractors during the national lockdown.
- **Contract Extensions:** The government provided blanket **extensions of 3 to 6 months for completion of contractual obligations** without penalties for projects affected by the pandemic.

UNDERSTANDING LPG AND LNG

India is facing a significant energy crisis as the West Asia war has disrupted 54% of its LPG and 30% of its LNG supplies through the Strait of Hormuz.

About Understanding LPG and LNG:

What is LPG?

- **Liquefied Petroleum Gas (LPG)** is a flammable mixture of hydrocarbon gases, primarily **propane and butane**. It is produced as a byproduct of crude oil refining and natural gas processing. It turns into a liquid under moderate pressure, making it highly portable in cylinders.

What is LNG?

- **Liquefied Natural Gas (LNG)** is primarily **methane** that has been cooled to extremely low temperatures (below -160°C) through a cryogenic process. It is liquefied mainly for long-distance transport across oceans where pipelines are not feasible, as its liquid volume is 600 times smaller than its gaseous form.

Difference Between LPG and LNG:

Feature	LPG (Liquefied Petroleum Gas)	LNG (Liquefied Natural Gas)
Composition	Primarily Propane and Butane.	Primarily Methane.
Production	Derived from oil refining & gas stripping.	Purified natural gas cooled cryogenically.
Storage	Stored in pressurized cylinders at room temp.	Stored in specialized **cryogenic tanks**.
Density	**Heavier than air** (sinks to the ground).	**Lighter than air** (disperses quickly).
Transport	Mostly by road/trucks in cylinders/tankers.	Mostly by specialized cryogenic ships.
Safety	Higher risk of fire if leaked (accumulates).	Generally safer (evaporates into the air).

Applications of LPG

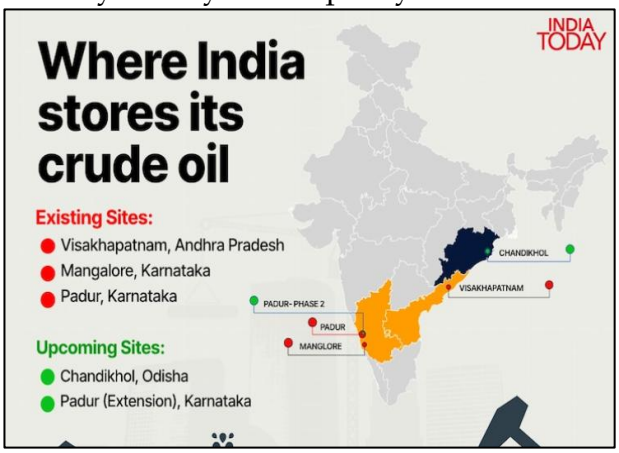
- **Domestic:** Used extensively as cooking fuel in households (cylinders).
- **Heating:** Used for space heating and water heating in areas without gas grids.
- **Industrial:** Used for high-heat processes like metal cutting, welding, and food processing.
- **Autogas:** Used as a cleaner alternative to petrol/diesel in specially converted vehicles.

Applications of LNG:

- **Energy Transport:** The primary bridge to move natural gas from producing countries to consuming countries.
- **Power Generation:** Once regasified, it fuels gas-based power plants.
- **Industrial Feedstock:** Used in manufacturing fertilizers, petrochemicals, and steel.
- **Heavy Transport:** Emerging as a fuel for long-haul trucks, ships (as bunker fuel), and locomotives.
- **City Gas:** Converted back to gas for **PNG** (households) and **CNG** (transport).

INDIA'S STRATEGIC PETROLEUM RESERVES (SPRS)

The Ministry of Petroleum and Natural Gas informed the Rajya Sabha that India's Strategic Petroleum Reserves (SPRs) are currently at only 64% capacity.



About Strategic Petroleum Reserves (SPRs):
What it is?

- Strategic Petroleum Reserves are massive stockpiles of crude oil stored in **underground rock caverns**. They serve as a specialized insurance policy to protect the nation against unplanned supply disruptions caused by geopolitical wars, natural disasters, or global price shocks.

Established In:

- The concept was mooted after the **1973 oil crisis**.
- **Indian Strategic Petroleum Reserve Limited (ISPRL)**, the Special Purpose Vehicle (SPV) managing them, was created in **2004** under the Oil Industry Development Board (OIDB).

Initiative is Part of:

- India's broader **Energy Security Strategy** and its commitment as an **Associate Member of the International Energy Agency (IEA)**, which recommends maintaining a 90-day reserve of net oil imports.

Located In (Phase-I):

1. Visakhapatnam, Andhra Pradesh.
2. Mangaluru, Karnataka.
3. Padur, Karnataka.

Phase-II expansion is planned for Chandikhol, Odisha, and further expansion in Padur.

Aim:

- To ensure **energy sovereignty** by providing a short-term buffer (currently covering approximately 9.5 days of India's requirement) during emergencies, effectively shielding the domestic economy from volatile global oil markets.

Key Features:

- **Underground Storage:** Oil is stored in unlined underground rock caverns, which is safer and more cost-effective than above-ground tanks.
- **Hydrostatic Containment:** These caverns use the pressure of surrounding groundwater to keep the oil trapped inside, preventing leaks.
- **Strategic-cum-Commercial Model:** The government allows foreign National Oil Companies (like **ADNOC** of UAE) to lease space, reducing the government's storage costs while ensuring the oil remains in India for emergencies.
- **Dynamic Stocking:** ISPRL manages the inventory by buying crude when international prices are low (downcycle) to save on the exchequer's bill.
- **Refiner Integration:** The SPRs are strategically located near the coast and existing refineries to ensure quick mobilization of crude during a crisis.

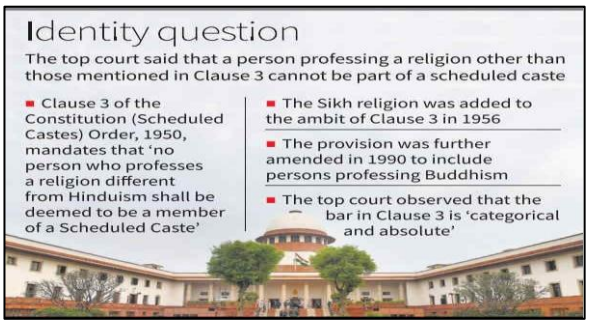
Significance:

- Protects India—the world's third-largest oil consumer—which imports over **88%** of its crude requirement.
- Prevents sudden spikes in petrol and diesel prices at the pump, which can trigger inflation across the entire supply chain.

CONSTITUTION (SCHEDULED CASTES) ORDER, 1950

The Supreme Court reaffirmed that Scheduled Caste (SC) status is strictly limited to individuals professing Hinduism, Sikhism, or Buddhism.

- The court ruled that conversion to any other religion, such as Christianity or Islam, results in the immediate and complete loss of SC benefits and legal protections.



About The Constitution (Scheduled Castes) Order, 1950:

What it is?

- The **Constitution (Scheduled Castes) Order, 1950** is a Presidential Order issued under **Article 341(1)** of the Indian Constitution. It specifies which castes, races, or tribes are deemed Scheduled Castes for the purpose of various constitutional and statutory benefits.

Aim: The primary objective of the Order is to identify specific communities that have historically suffered from the social evil of **untouchability** and extreme social backwardness within the Hindu fold, ensuring they receive affirmative action (reservations) and legal protection.

Key Features:

- **Article 341 Authority:** The Order was promulgated by the President of India after consultation with State Governors to provide a definitive list of Scheduled Castes.
- **Religious Limitation (Paragraph 3):** Originally, the Order stated that only those professing **Hinduism** could be deemed members of a Scheduled Caste.
- **Historical Amendments:**
  - **1956:** The Order was amended to include followers of the **Sikh** religion.
  - **1990:** It was further amended to include followers of **Buddhism** (Neo-Buddhists).
- **Geographic Specificity:** Communities are recognized as Scheduled Castes only in relation to specific States or Union Territories where they are resident and identified in the Schedule.
- **The Profess Clause:** The legal status is tied to the outward manifestation and public practice of the religion, not just private belief.

Recent Supreme Court Judgment Summary:

- **Immediate Loss of Status:** Conversion to a religion other than Hinduism, Sikhism, or Buddhism (such as Christianity or Islam) leads to an absolute and immediate loss of SC status.
- **Loss of Statutory Protection:** A convert cannot claim protection under the **SC/ST (Prevention of Atrocities) Act, 1989**, as the court held that the theological foundations of religions like Christianity do not recognize the institution of caste.
- **Strict Re-conversion Criteria:** To regain SC status through re-conversion, an individual must conclusively prove:
  - Their original caste identity.
  - *Bona fide* re-conversion to the original religion.
  - **Social Acceptance:** Proof that the original caste community has accepted and assimilated the individual back into their fold.

INDIA'S CARBON CREDIT PLAN

Union Budget 2026 announced a ₹20,000 crore carbon credit program based on the DST's CCUS roadmap.

- This has created confusion between its focus on industrial decarbonisation and the parallel narrative of farmer income through soil-based carbon credits.

About Blur Over India's Carbon Credit Plan:
CCUS vs Carbon Farming Debate:
What CCUS Targets?

- The Carbon Capture, Utilization, and Storage (CCUS) initiative specifically targets **hard-to-abate industries** where emissions are concentrated and technically difficult to eliminate through renewable energy The primary sectors identified for the large-scale deployment of these technologies include:
- Power and Refineries.
- Steel and Cement.
- Chemicals.

Why Agriculture is Not Included in CCUS?

- **Diffuse Emission Sources:** Unlike industrial point-source emissions from factory flues, agricultural emissions are spread across vast landscapes.
- **Biological Mediation:** Emissions in agriculture (primarily methane and nitrous oxide) are biologically mediated, making them unsuitable for mechanical capture technology.
- **Technological Mismatch:** CCUS is defined by capturing CO2 from concentrated gas streams, whereas agricultural solutions focus on drawing down existing atmospheric CO2.
- **Strategic Distinction:** The DST roadmap draws a clear line between **preventing new industrial emissions** (CCUS) and **Carbon Dioxide Removal**(CDR) through nature-based solutions like soil sequestration.

Key Opportunities:

- **Industrial Decarbonization:** CCUS provides a critical pillar for cleaning up sectors responsible for a quarter of India's emissions.

Example: The ₹20,000 crore investment aims to capture CO2 from factories and either use it industrially or store it underground.

- **New Rural Income Streams:** Creating a trusted domestic carbon market for agriculture could unlock significant economic benefits for farmers.

Example: Farmers can earn credits by adopting regenerative practices that turn farms into climate solutions.

- **Enhanced Soil Carbon Sequestration:** India's vast agricultural lands hold immense potential to act as a carbon sink.

Example: Practices such as agroforestry and biochar application can effectively draw down atmospheric CO2.

- **Growth of Voluntary Carbon Markets:** There is a rising global and domestic demand for nature-based carbon credits.

Example: Private sector initiatives are already piloting models that compensate farmers for enhancing soil organic carbon.

- **Climate Resilient Farming:** Transitioning to carbon-friendly practices aligns with long-term goals for soil health.

Example: The Agriculture Ministry has been exploring climate-resilient farming as a logical next step to traditional soil management.

Challenges Associated:

- **Communication Gaps:** The use of the familiar term carbon credit in the Budget has blurred the lines between distinct industrial and agricultural concepts.

Example: Conflicting reports have led the public to expect a funded farmer scheme from an outlay actually earmarked for heavy industry.

- **High Implementation Costs:** CCUS is a tech-heavy and expensive initiative that requires massive capital investment.

Example: The government has bet ₹20,000 crore over five years just to begin large-scale industrial deployment.

- **Monitoring and Verification:** Agricultural emissions are difficult to measure accurately compared to concentrated industrial sources.

Example: The soil narrative requires a robust institutional framework to be credible, which is currently distinct from the industrial roadmap.

- **Policy Conflation:** Existing frameworks do not clearly demarcate between preventing new emissions and removing existing atmospheric CO2.

Example: Critics argue that a structured carbon farming program would need entirely separate funding and policy from the CCUS initiative.

- **Managing Stakeholder Expectations:** There is a risk of public disappointment if farmers realize the current Budget outlay does not directly fund their carbon projects.

Example: The government must now work to clarify that the ₹20,000 crore is a bet on industrial decarbonization specifically.

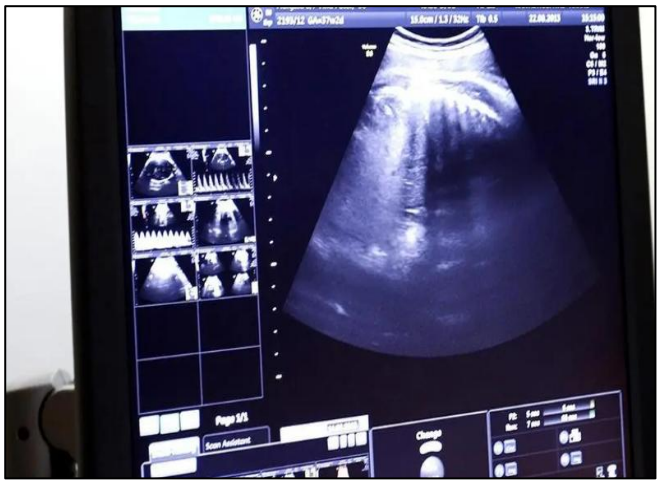
Way Ahead:

- **Clear Policy Demarcation:** The government must explicitly separate smokestack (industrial) and soil (agricultural) initiatives to manage public and investor expectations.
- **Dedicated Carbon Farming Framework:** Develop a separate, well-funded policy and institutional framework specifically for agricultural carbon sequestration.
- **Strengthen Communication:** Close the communication gap by using precise terminology that distinguishes between CCUS technologies and voluntary carbon markets.
- **Scale Industrial Deployment:** Ensure the successful execution of the DST roadmap for hard-to-abate sectors to meet national net-zero goals.
- **Promote Multi-Sectoral Ambition:** Advance both industrial and agricultural fronts with equal vigor to forge a comprehensive and sustainable climate strategy.

India's climate strategy currently stands at a crossroads, balancing a heavy financial bet on industrial CCUS with a growing demand for nature-based carbon markets. While the ₹20,000 crore Budget outlay is strictly industrial, the intense interest in carbon farming signals a massive opportunity for a parallel agricultural policy.

ABORTION LAW IN INDIA

The Supreme Court of India delivered a landmark judgment permitting a woman to terminate her **30-week pregnancy**, prioritizing **reproductive autonomy** over fetal viability.



- The ruling, led by Justice B.V. Nagarathna, sets a significant precedent by allowing termination well beyond the 24-week statutory limit for a woman who was a minor at the time of conception.

About Abortion Law in India:

What it is?

- Abortion in India is not an absolute right but a qualified legal right governed by the Medical Termination of Pregnancy (MTP) Act, 1971, and its subsequent amendments. It was enacted to provide a legal exception to the Indian Penal Code (IPC), which otherwise criminalizes voluntary termination of pregnancy.

Key Data & Facts

- **MTP Amendment Act 2021:** This major update increased the upper gestation limit from 20 to **24 weeks** for special categories of women.
- **Maternal Mortality:** Unsafe abortions remain a leading cause of maternal deaths in India; the MTP Act was originally designed as a public health measure to provide safe, regulated services.

- **Judicial Overreach:** Since 2021, over **1,100 cases** have reached High Courts and the Supreme Court as women seek permission for abortions beyond the statutory limits.
- **30-Week Milestone:** The 2026 judgment is one of the highest gestational ages (30 weeks) ever permitted for termination by the Indian apex court.
- **Marital Status:** In 2022 (*X v. Principal Secretary, Delhi*), the SC ruled that **unmarried women** are equally eligible for abortions up to 24 weeks, ending a long-standing legal discrimination.

Features of Abortion Law in India:

- **Tiered Gestational Limits:** Up to **20 weeks**: Requires the opinion of one Registered Medical Practitioner (RMP).
    - **20–24 weeks**: Requires the opinion of two RMPs for specific categories (rape survivors, minors, disabled women, etc.).
- **No Limit for Abnormalities:** The 24-week ceiling does not apply if a state-level **Medical Board** diagnoses substantial fetal abnormalities.
- **Ground of Mental Health:** The law uniquely recognizes that a pregnancy causing grave injury to mental health (including contraceptive failure) is a valid ground for termination.
- **Confidentiality:** The Act mandates that the identity and details of the woman must remain strictly confidential, with penalties for disclosure.
- **Consent Framework:** For adults (18+), **only the woman's consent** is required. Spousal or parental consent is not legally necessary for adult women.

Challenges Associated with Current Law:

- **Fetal Viability vs. Autonomy:** The 2023 *X v. Union of India* case highlighted the conflict where courts refuse termination at 26 weeks if the fetus is viable, even if the mother's mental health is at risk.
- **Third-Party Gatekeeping:** Despite the law requiring only the woman's consent, many hospitals still insist on **husband/partner consent**, as seen in various 2024 rural healthcare audits.
- **Access for Minors:** Under POCSO, doctors must report sexual activity of minors to police, which often deters young girls from seeking safe abortions for fear of legal proceedings.
- **Medical Board Delays:** The requirement for a Medical Board for late-term cases often leads to **bureaucratic delays**; for instance, in the 2026 case, the woman's pregnancy progressed by several weeks while waiting for court/board decisions.
- **Inconsistent Jurisprudence:** Different benches of the Supreme Court have issued **conflicting orders** (the Doctrinal Puzzle between 2023 and 2024/2026), leaving lower courts confused about whether fetal life or maternal autonomy takes precedence.

Way Ahead:

- **Standardizing Viability Guidelines:** The Supreme Court or Ministry of Health should issue clear protocols on how to handle born-alive risks in late-term terminations.
- **Decentralizing Medical Boards:** Establishing boards at the district level, rather than just state capitals, to reduce travel time and procedural delays for vulnerable women.

- **Sensitizing Healthcare Providers:** Massive training for RMPs to ensure they do not demand extra-legal requirements like spouse consent or police FIRs for adult women.
- **Rights-Based Approach:** Moving the law from a medical necessity framework to a rights-based framework where a woman's choice is the primary decider.
- **Expanding Provider Base:** Training mid-level healthcare providers (like auxiliary nurses) to perform early-term medical abortions to reduce the burden on specialists.

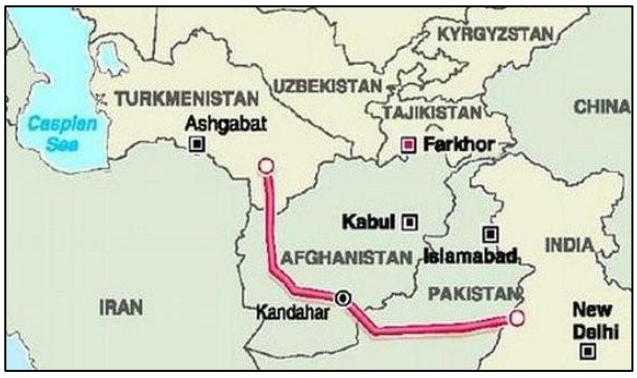
Conclusion:

The 2026 Supreme Court judgment marks a definitive shift toward recognizing **reproductive autonomy as a fundamental right** under Article 21. While the MTP Act has evolved significantly since 1971, the tension between statutory limits and constitutional rights remains a challenge for the judiciary. Ultimately, the law must ensure that a woman's body is not treated as a vessel of the state, ensuring dignity and choice at every stage of pregnancy.

IRAN–PAKISTAN–INDIA (IPI) & TURKMENISTAN–AFGHANISTAN–PAKISTAN–INDIA (TAPI)

The ongoing **West Asia crisis** has disrupted energy supplies, exposing India's heavy dependence on imported gas.

- This has revived discussion on past pipeline projects like the **Iran–Pakistan–India (IPI)** and **Turkmenistan–Afghanistan–Pakistan–India (TAPI)**



About The Iran-Pakistan-India (IPI) Pipeline:

What it is?

- A proposed **2,775 km** natural gas pipeline designed to transport gas from Iran's South Pars field to Pakistan and India. Often referred to as the **Peace Pipeline,** this project was intended to link the energy-rich Persian Gulf with the energy-starved South Asian economies.

Established In: Conceptually originated in the **1990s**; gained significant diplomatic momentum between 2004 and 2005.

Aim: To provide a cost-effective, land-based alternative to expensive Liquefied Natural Gas (LNG) imports for India and Pakistan's industrial and power sectors.

Key Features:

- **Capacity:** Designed to supply **60 mmscmd** (million standard cubic meters per day) each to India and Pakistan.
- **Economic Impact:** Offered lower transit costs compared to maritime shipments.
- **Strategic Leverage:** Aimed to foster regional cooperation and peace through economic interdependence.

Current Status: Dormant/Recast. India effectively exited negotiations in 2007 due to U.S. sanctions (CAATSA pressure), pricing disagreements, and security fears regarding the pipeline passing through Balochistan.

About The Turkmenistan-Afghanistan-Pakistan-India (TAPI) Pipeline:

What it is?

- An **1,814 km** trans-regional pipeline project supported by the Asian Development Bank (ADB) to bring gas from Central Asia to South Asia. Following the stalling of IPI, India shifted its focus to this **Central Asian** alternative, which enjoyed broader international and institutional backing.

Established In: India officially signed the intergovernmental agreement in **2010**, though the idea dates back to the mid-90s.
Aim: To diversify India's energy basket away from West Asian volatility by tapping into the world's second-largest gas field.
Key Features:

- **Source:** Originates from the **Galkynysh gas field** in Turkmenistan.
- **Capacity:** Projected to transport **33 billion cubic meters (bcm)** of natural gas annually.
- **Diplomatic Support:** Unlike IPI, TAPI was promoted by the U.S. as part of the New Silk Road strategy to stabilize Afghanistan's economy through transit fees.

Current Status: Partially Active/Stalled.

- While the Turkmen-Afghan section was inaugurated in **October 2025** (linking Serhetabat to Herat), the extension to Pakistan and India remains stalled.

TRANSGENDER PERSONS (PROTECTION OF RIGHTS) AMENDMENT BILL, 2026

The Transgender Persons (Protection of Rights) Amendment Bill, 2026, aims to fix gaps in the 2019 law but has drawn criticism for conflating diverse identities, restricting the definition of transgender persons, and replacing self-identification with medical certification.
By overlooking key concerns like civil rights, internal exploitation, and non-consensual intersex surgeries, it risks reinforcing structural inequalities while raising concerns about dignity, privacy, and equality.

Constitutional & Legal Framework

Provision	Relevance
Article 14	Right to equality—non-discrimination on grounds of gender identity
Article 15	Prohibition of discrimination—extends to gender identity (NAZ Foundation v. Govt. of NCT, 2009)
Article 21	Right to life and personal dignity—includes right to self-perceived gender identity (NALSA v. Union of India, 2014)
Transgender Persons Act, 2019	Original framework recognizing transgender identity; faced implementation gaps
Amendment Bill, 2026	Seeks to fix vagueness but introduces new contradictions

The Supreme Court in **NALSA (2014)** recognized transgender persons as a third gender and affirmed the right to self-identification without medical intervention—a principle the 2026 Bill explicitly undermines.

Key Changes Introduced by the Amendment Bill

Provision	2019 Act	2026 Amendment
Definition	Inclusive, based on self-perceived gender identity	Narrowed to specific identities (kinner, hijra, aravani, intersex variations)
Self-Identification	Right to self-perceived gender identity	Removed; replaced with medical board certification
Certifying Authority	District Magistrate	Medical board headed by Chief Medical Officer
Intersex Inclusion	Included under transgender umbrella	Retained conflation; no separate recognition
Exploitation Penalties	General provisions	Rigorous imprisonment (5–14 years) for forced begging/servitude
Civil Rights	Not addressed	Still absent (marriage, adoption, inheritance, divorce)

Structural Flaws: Conflation of Distinct Identities

Identity	Nature	Distinct Needs
Transgender	Psychological and social construct; gender identity distinct from sex assigned at birth	Self-identification, gender-affirming care, anti-discrimination
Intersex	Biological spectrum of sex characteristics (1–2% globally)	Ban on non-consensual surgeries, medical ethics, separate recognition

Critical Issue: The Bill continues to lump intersex persons under "transgender," erasing intersex-specific needs. Intersex infants face non-consensual "normalizing" surgeries causing lifelong trauma—yet the Bill contains no ban on such procedures, violating Article 21 (bodily integrity) and privacy.

International Standards Violated:

- UN and WHO define intersex as distinct from transgender
- Forcing intersex persons into transgender category undermines human rights frameworks India has committed to uphold

Erosion of Self-Identification & Medicalization of Identity

NALSA (2014) affirmed: "Self-identified gender is a fundamental right."

The Bill replaces this with:

- Medical board certification
- Mandatory hospital reporting of transgender surgeries
- Exclusion of non-heteronormative gender fluid identities

This medicalization recreates the very barriers the 2019 Act sought to dismantle and contradicts global best practices moving toward self-declaration models (as seen in countries like Argentina, Ireland, and Norway).

Entrenchment of Exploitative Structures

Issue	Analysis
Hijra Jamath-Gharana System	Colonial-era structure where chief nayaks control chelas' earnings from begging and prostitution; traps gender-nonconforming children in bonded labour
Amendment's Effect	Penalizes external perpetrators but leaves internal hierarchies untouched; effectively legitimizes and codifies exploitative structures
Children's Vulnerability	Gender-nonconforming children abandoned by families are thrust into these systems; police often refuse to register missing complaints; no rehabilitation framework

Historical Context: Earlier Indic frameworks were more inclusive and affirming of diverse identities, free from colonial distortions—a heritage the Bill ignores.

Omissions: Civil Rights & Intersectionality

Absent Provisions:

- No civil rights: marriage, adoption, inheritance, divorce, succession
- No intersectional lens: caste, disability, poverty, religion—transgender persons from SC/ST or disabled backgrounds face compounded discrimination without targeted remedies
- No mandate for genetic counselling, India-specific longitudinal studies on affirming surgeries
- Inadequate privacy safeguards for medical data

Impact: Transgender and intersex persons remain excluded from the very institutions—family, marriage, inheritance—that define citizenship and dignity in Indian society.

Critical Analysis: Strengths & Weaknesses

Strengths	Weaknesses
Increased penalties for forced exploitation	Undermines NALSA's self-identification principle
Acknowledges implementation gaps of 2019 Act	Conflates distinct identities; erases intersex-specific needs
	Medicalizes identity; violates privacy and bodily autonomy
	Leaves hijra exploitative structures intact
	No civil rights; no intersectionality

Way Forward

- **Separate Sex & Gender Identity:** Official documents must distinguish between sex identity (male/female/intersex) and gender identity—addressing root causes of data invisibility
- **Separate Intersex Legislation:** Ban non-consensual "normalizing" surgeries on intersex infants; mandate genetic counselling; align with UN CRPD recommendations
- **Restore Self-Identification:** Reverse medicalization; reinstate right to self-perceived gender identity as affirmed in NALSA
- **Dismantle Exploitative Structures:** Reform hijra jamath-gharana system; create rehabilitation framework for gender-nonconforming children; ensure police accountability
- **Civil Rights Framework:** Extend marriage, adoption, inheritance, and succession rights to transgender persons
- **Rebrand Institutions:** Rename National Council for Transgender Persons as GIESC (Gender Identity/Expression and Sex Characteristics) Welfare Council to reflect inclusive, scientifically accurate framework
- **Intersectionality:** Targeted remedies for transgender persons from SC/ST, disabled, and economically vulnerable backgrounds

The Transgender Persons Amendment Bill, 2026, seeks reform but deepens flaws by narrowing definitions, medicalizing identity, and ignoring civil rights. It undermines the constitutional vision of dignity, equality, and privacy in *NALSA*, highlighting the need for an inclusive, rights-based framework.

HYPERCAPNIC HYPOXIA

A recent scientific study has highlighted a growing environmental concern in coastal ecosystems, revealing that a majority of mangrove sites worldwide are already experiencing mild to severe hypercapnic hypoxia.

This condition, driven by rising atmospheric carbon dioxide levels and warming temperatures, is pushing estuarine environments into a chemically stressful state, with significant ecological and economic implications.

Understanding Hypercapnic Hypoxia

Hypercapnic hypoxia refers to a condition characterised by elevated carbon dioxide (CO_2) levels and reduced dissolved oxygen in water. This dual stressor creates a hostile environment for aquatic life.

It is particularly prevalent in mangrove ecosystems during low tide, especially in low-salinity zones and tropical regions where higher temperatures intensify biological and chemical processes.

Causes and Environmental Triggers

The primary drivers of hypercapnic hypoxia are climate change-induced increases in atmospheric CO_2 and rising global temperatures.

Warmer waters hold less oxygen, while increased CO_2 dissolves into water bodies, altering their chemistry. Additionally, reduced water circulation during low tide exacerbates oxygen depletion, making mangrove estuaries more vulnerable to such conditions.

Impacts on Biodiversity and Livelihoods

Hypercapnic hypoxia poses a serious threat to biodiversity within mangrove ecosystems. Fish nurseries, which rely on oxygen-rich waters, are particularly at risk.

The condition reduces habitat quality, leading to a decline in fish populations and shifts in species composition, often favouring smaller or more tolerant species over larger, reef-associated ones. This ecological imbalance directly affects fisheries, endangering the livelihoods of millions of people dependent on coastal resources.

Important Facts for Exams

- Hypercapnic hypoxia involves both high CO_2 levels and low dissolved oxygen in aquatic systems.
- Mangroves are highly productive ecosystems found in tropical and subtropical intertidal zones.
- Low tide and high temperature conditions intensify hypoxic stress in estuaries.
- Mangroves act as critical fish nurseries and coastal buffers against erosion.

Significance of Mangroves in Coastal Ecology

Mangroves are salt-tolerant trees and shrubs that thrive in coastal intertidal zones with saline or brackish water. These ecosystems are adapted to extreme conditions such as fluctuating tides, high salinity, and low oxygen soils.

They serve as vital buffers between land and sea, protecting coastlines from erosion and storms. Moreover, mangroves support rich biodiversity by providing breeding and nursery grounds for numerous marine and terrestrial species, making their preservation essential in the face of emerging climatic threats.

INDIA -VIETNAM CULTURAL DIPLOMACY

India and Vietnam have strengthened bilateral cooperation in tribal and ethnic development following a high-level ministerial meeting held in New Delhi on 20 March 2026.

The meeting marked an important step in elevating engagement between the two countries, building on earlier official-level discussions and reinforcing their Comprehensive Strategic Partnership.

High-Level Ministerial Engagement

The meeting was co-chaired by Union Minister for Tribal Affairs Jual Oram and Vietnam's Minister of Ethnic and Religious Affairs Dao Ngoc Dung.

It followed earlier deliberations between senior officials from both sides, where policy frameworks, development strategies, and best practices concerning tribal and ethnic communities were discussed. The ministerial dialogue aimed to institutionalise cooperation and expand collaboration at the leadership level.

Focus on Cultural and Strategic Ties

India highlighted Vietnam as a key partner under its Act East Policy and Indo-Pacific vision. The discussions emphasised deep-rooted historical and cultural linkages between the two nations, shaped by shared civilisational values and Buddhist traditions.

The recent exposition of the Sacred Relics of Lord Buddha from Sarnath in Vietnam, which witnessed large public participation, was cited as a symbol of strong people-to-people connect.

Key Areas of Collaboration

Both sides explored cooperation in livelihood promotion, sustainable agriculture, value addition to forest-based products, skill development, research partnerships, and cultural preservation.

Vietnam reiterated its commitment to inclusive development of its 54 ethnic groups through targeted interventions in infrastructure, education, healthcare, and livelihoods. India and Vietnam agreed to share best practices and leverage socio-cultural similarities to enhance development outcomes.

Important Facts :

- India and Vietnam share a Comprehensive Strategic Partnership, marking 10 years in 2026.
- Vietnam has 54 recognised ethnic groups targeted under inclusive development policies.
- Act East Policy guides India's engagement with Southeast Asia.
- DGTR deals with trade remedies, while the Ministry of Tribal Affairs focuses on tribal welfare.

Towards Institutionalised Cooperation

The two sides reviewed a draft Memorandum of Cooperation aimed at formalising collaboration between the ministries. Vietnam confirmed approval of the draft and invited the Indian Minister to visit for its formal signing.

Both countries reaffirmed that sustained high-level engagement and mutual trust remain central to advancing cooperation, with a shared commitment to inclusive and sustainable development of tribal and ethnic communities.

KALINJAR FORT

The hill region surrounding Kalinjar Fort in Banda district, Uttar Pradesh, has been officially designated as a National Geo-Heritage Site by the Geological Survey of India (GSI). This recognition highlights the area's exceptional geological significance along with its rich historical and cultural legacy. The site lies within the Vindhya mountain range and is expected to emerge as a key attraction in a proposed tourism circuit connecting Kalinjar, Khajuraho and Chitrakoot.

Unique geological significance of the region

The Kalinjar region showcases a rare geological feature known as the Eparchaean Unconformity. This phenomenon occurs when rock layers from vastly different geological periods come into contact. At Kalinjar, nearly 2.5-billion-year-old Bundelkhand granite is overlain by around 1.2-billion-year-old Kaimur sandstone.

This formation provides crucial insights into Earth's ancient geological history and makes the site valuable for scientific study and geo-tourism.

Geology and strategic importance of the fort

The geological structure of the region played a vital role in the fort's defensive strength. The elevated rocky terrain provided natural protection, while locally available stones were used to construct the fort's massive walls.

This close relationship between natural landscape and human construction reflects a strong geo-cultural link, where geology directly influenced architecture and military strategy.

Historical and mythological importance

Kalinjar Fort holds immense historical and religious value. It is known for ancient temples, including the renowned Neelkanth Mahadev temple, associated with the legend of Lord Shiva consuming poison during the Samudra Manthan.

The site finds mention in Buddhist literature and was once ruled by the Chedi dynasty during the time of Gautama Buddha. It later became part of the Mauryan Empire and evolved through several historical phases, including the Gupta period.

Important Facts for Exams

- Kalinjar Fort is located in Banda district of Uttar Pradesh within the Vindhya range.
- The site exhibits the Eparchaean Unconformity, a rare geological contact.
- Bundelkhand granite (2.5 billion years old) is overlain by Kaimur sandstone (1.2 billion years old).
- Neelkanth Mahadev temple at Kalinjar is linked to the Samudra Manthan legend.

Implications for conservation and tourism

The geo-heritage status is expected to strengthen conservation efforts and promote awareness of the site's importance. The GSI has installed informational signage explaining its geological and historical relevance. Authorities anticipate increased tourism, which may boost local livelihoods and integrate Kalinjar into a broader heritage tourism network in the Bundelkhand region.

OPERATION URJA SURAKSHA

India has launched **Operation Urja Suraksha** amid escalating tensions in West Asia to safeguard energy supply routes through the Strait of Hormuz.

About Operation Urja Suraksha:

What it is?

- **Operation Urja Suraksha** is a strategic maritime security mission launched by the Indian Navy to ensure the safe transit of India-bound energy cargo vessels from the Persian Gulf region.
- It focuses on protecting shipping routes in and beyond the Strait of Hormuz, one of the world's most critical energy chokepoints.

Aim:

- To ensure uninterrupted energy supply to India by safeguarding oil and gas shipments.
- To provide secure maritime navigation and escort services in conflict-prone waters.

Key Features:

- **Naval Escort Mechanism:** Indian warships escort vessels after they exit Hormuz, ensuring safe passage through the Gulf of Oman into the Arabian Sea
- **Layered Maritime Security:** Deployment of destroyers and frigates with coordinated monitoring and communication systems
- **Safe Route Navigation:** Identification of secure maritime corridors to avoid threats like sea mines and electronic disruptions

Significance:

- **Energy Security Assurance:** Protects India's critical imports (crude oil, LNG, LPG), reducing vulnerability to supply shocks
- **Strategic Maritime Presence:** Enhances India's role as a **net security provider** in the Indian Ocean Region.

REGIONAL CONNECTIVITY SCHEME- MODIFIED UDAN

The Union Cabinet has approved the Regional Connectivity Scheme – Modified UDAN with an outlay of ₹28,840 crore for 2026–2036.

About Regional Connectivity Scheme – Modified UDAN:

What it is?

- **Modified UDAN** (Ude Desh ka Aam Nagrik) is the evolved second phase of India's flagship regional airport development program, designed to make air travel sustainable and accessible for the next decade.

Launched In:

- While the original scheme began in 2016, the **Modified UDAN** was approved by the Union Cabinet on **March 25, 2026**, for implementation starting from **FY 2026-27**.

Aim:

- The scheme seeks to transform India into a globally competitive aviation ecosystem by connecting underserved regions, reducing travel costs for the common citizen, and supporting the vision of **Viksit Bharat 2047**.

Key Features:

- **Infrastructure Expansion (CAPEX):** An outlay of **₹12,159 crore** to develop **100 airports** from existing unserved airstrips over the next eight years.
- **Modern Helipad Network:** Development of **200 modern helipads** at a cost of ₹15 crore each to solve connectivity challenges in hilly, island, and remote areas.
- **Viability Gap Funding (VGF):** A dedicated fund of **₹10,043 crore** to provide financial support to airline operators, ensuring routes remain profitable while keeping fares low for passengers.
- **O&M Support:** To ensure sustainability, the government will provide Operation & Maintenance support for three years (capped at **₹3.06 crore/year per airport**) for around 441 aerodromes.
- **Atmanirbhar Aircraft Acquisition:** Focused on indigenous manufacturing by procuring **HAL Dhruv helicopters** and **HAL Dornier aircraft** for state-run carriers like Pawan Hans and Alliance Air.

Significance:

- Boosts trade, tourism, and local commerce in Tier-2 and Tier-3 cities by integrating them into the national mainstream.
- Improved helipad infrastructure enables faster medical evacuations and disaster response in difficult terrains.
- Democratizes air travel, allowing common citizens to fly at affordable rates through subsidized seats.

CORPORATE LAWS (AMENDMENT) BILL, 2026

The Union Cabinet has moved the **Corporate Laws (Amendment) Bill, 2026**, in the Lok Sabha, subsequently referring it to a 31-member Joint Parliamentary Committee(JPC) for detailed scrutiny.

About Corporate Laws (Amendment) Bill, 2026:

The Corporate Laws (Amendment) Bill, 2026, is a strategic legislative update designed to modernize the regulatory framework governing Indian businesses by amending the Companies Act, 2013, and the Limited Liability Partnership (LLP) Act, 2008.

Aim:

- The primary objective is to foster a more business-friendly environment in India by reducing the compliance burden and fear of imprisonment for minor mistakes. It seeks to align corporate governance with the current economic landscape and the vision of a Viksit Bharat.

Key Features:

- **Decriminalization of Offences:** Shifts 21 minor/technical offences from a criminal court-based system to an electronic **e-adjudication platform** where only monetary penalties are levied, removing the risk of imprisonment.
- **CSR Threshold Revision:** Increases the net profit threshold for mandatory Corporate Social Responsibility (CSR) from **₹5 crore to ₹10 crore**, exempting many small companies from the 2% spending requirement.
- **Hybrid Meetings:** Enables companies to hold Annual General Meetings (AGM) and Extraordinary General Meetings (EGM) via **video conferencing**, with a mandatory physical meeting required only once every three years.
- **Extended Timelines:** Increases the time allowed to transfer unspent CSR funds for ongoing projects to a designated bank account from 30 days to **90 days**.
- **Self-Declaration Framework:** Replaces several traditional affidavits required under the Acts with simple **self-declarations**, reducing paperwork and notarization costs.
- **LLP Conversion:** Introduces a new framework allowing specified trusts (registered under SEBI or IFSC) to convert into Limited Liability Partnerships (LLPs).

Significance:

- By removing criminal penalties for procedural errors, the Bill encourages entrepreneurship and reduces the inspector raj or discretionary power of officials.
- The relaxations provided to companies make it easier for smaller, unorganized businesses to register as formal corporate entities.
- The push for digital meetings and e-adjudication aligns Indian corporate law with global standards, increasing shareholder participation and transparency.

Trade Marks Act, 1999

The Delhi High Court is hearing a trademark dispute where Novo Nordisk alleged infringement of its brand **Ozempic** by Dr. Reddy's Laboratories through the similar name **Olymviq.**

About Trade Marks Act, 1999:

What it is?

- The Trade Marks Act, 1999 is India's principal legislation governing the registration, protection, and enforcement of trademarks.
- It replaced the 1958 Act to align with the TRIPS Agreement and modern intellectual property standards.

Aim:

- To protect brand identity and commercial interests of businesses
- To prevent consumer confusion and deception, especially critical in pharmaceuticals where errors can be life-threatening

Organisation Involved: Administered by the Controller General of Patents, Designs and Trade Marks.

Key Features:

- Deceptive Similarity Test: Prohibits marks that are identical or likely to confuse consumers, even if differences exist in spelling or design.
- Phonetic & Visual Assessment: Courts assess both how a trademark sounds and appears, since similarity in pronunciation alone can mislead users.
- Higher Threshold for Medicines: As per Cadila Healthcare Ltd v Cadila Pharmaceuticals Ltd, even minor similarity is barred due to potential health risks.

- Non-Proprietary Names (INN) Protection (Section 13): Prevents exclusive rights over generic drug names, ensuring essential medicines remain universally identifiable.
- Well-Known Trademark Protection: Famous brands receive extended protection across sectors to prevent dilution or unfair advantage by imitators.

Infringement vs Passing Off:

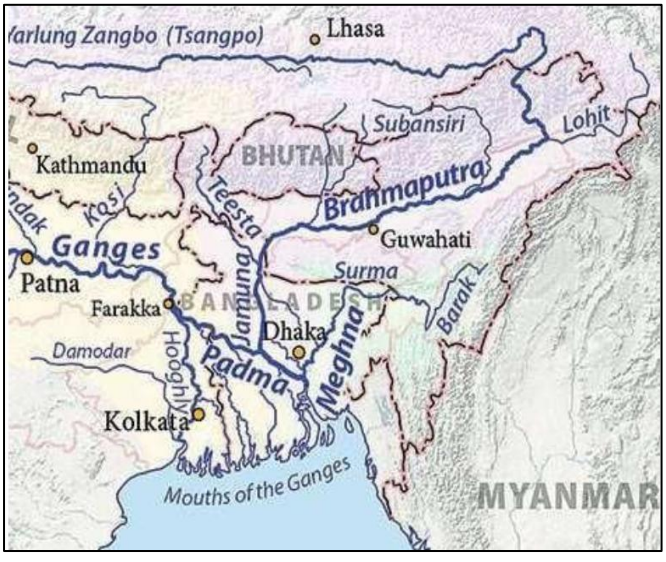
1. Statutory Remedy: Available for registered trademarks with defined legal protection.
2. Common Law Remedy: Protects unregistered marks based on reputation and goodwill.

Significance:

- **Consumer Safety:** Reduces risk of wrong drug dispensing, especially in India's multilingual and low-awareness settings.
- **Encourages Innovation:** Secures brand reputation and returns on R&D investment, promoting continued pharmaceutical innovation.

PADMA RIVER

A tragic accident at the Dauladia terminal in Bangladesh resulted in at least 16 deaths after a passenger bus plunged into the Padma River while boarding a ferry.



About The Padma River:

What it is?

- The Padma is the main channel of the **Ganges (Ganga)** river in Bangladesh. It flows southeast for approximately 120 kilometers until it joins the Meghna River near the Bay of Bengal. It is known for its massive width, shifting channels, and high discharge rates.

Origin:

- The river enters Bangladesh from India near Chapai Nawabganj. It originates where the main branch of the Ganges bifurcates (splits) at the **Farakka Barrage** in the Murshidabad district of West Bengal, India.

Tributaries (Feeding into the Padma): The **Mahananda** River is a major tributary that joins the Padma in northwestern Bangladesh.

Distributaries: Several important rivers branch off from the Padma, including the **Ariyal Khan**, **Madhumati**, and the **Bhairab**.

Major Confluence: The Padma is a major tributary of the **Meghna River** system; the two join at Chandpur before flowing into the sea.

Key Geological Features:

- **Braided Character:** The Padma is a classic **braided river**, characterized by multiple shifting channels and chars (temporary sandy islands) created by high sediment loads.
- **High Erosion Rate:** It is notorious for its bank erosion, which frequently displaces coastal communities and alters the geography of the surrounding districts.
- **Massive Discharge:** During the monsoon season, the Padma carries a staggering volume of water, often exceeding **75,000 cubic meters per second**.

- **The Padma Bridge:** A feat of modern engineering, the 6.15 km multipurpose bridge spans the river, connecting the southwest of the country to the capital, Dhaka.

Significance:

- It supports the livelihoods of millions through fishing and providing water for the irrigation of the fertile deltaic plains.
- Despite the new bridge, ferry terminals like **Dauladia and Paturia** remain critical for the movement of heavy vehicles and goods between the capital and the southwestern districts.

USE OF ARTIFICIAL INTELLIGENCE (AI) IN DISASTER MANAGEMENT

The Government of India highlighted the expanding use of Artificial Intelligence (AI) in disaster management following the enactment of the Disaster Management (Amendment) Act, 2025.

About Use Of AI In Disaster Management:
What it is?

- The application of Artificial Intelligence (AI) and Machine Learning (ML) across the disaster management cycle—preparedness, mitigation, response, and recovery—to enhance prediction, decision-making, and coordination.

Various AI Applications in Disaster Management:

- **Weather Forecasting & Early Warning:**
  - India Meteorological Department uses AI/ML for 7-day advance weather predictions.
  - Cyclone tracking and intensity prediction under Mission Mausam.
- **Flood Forecasting & Hydrological Modelling:**
  - Central Water Commission uses AI for short-range flood forecasting.
  - Real-time flood advisory via digital portals using rainfall-based modelling .
- **Risk Mapping & Decision Support Systems:**
  - National Disaster Management Authority developed Web-DCRA & DSS tools.
  - Dynamic risk atlases help in cyclone preparedness and evacuation planning.
- **Remote Sensing & Hazard Mapping:**
  - National Remote Sensing Centre developed Flood Hazard Atlases .
  - Satellite data + AI used for mapping vulnerable regions.
- **Avalanche Forecasting & Geo-Intelligence:**
  - Defence Research and Development Organisation uses AI for:
    - Avalanche prediction
    - Remote sensing-based detection
    - Autonomous forecasting systems

VARIABLE RATE REPO (VRR) AUCTIONS

The RBI injected ₹55,837 crore into the banking system via a 3-day VRR auction to address tightening liquidity.

About Variable Rate Repo (VRR) Auctions:

What is Variable Rate Repo (VRR) Auctions?

- A **Variable Rate Repo (VRR)** is a monetary policy tool used by the RBI to inject liquidity into the banking system when cash becomes scarce. Unlike the fixed-rate repo, the interest rate in a VRR is determined through a competitive bidding

How it Works?

1. **Announcement:** The RBI notifies banks of its intent to lend a specific amount (e.g., ₹1 lakh crore) for a set duration (e.g., 3 days).
2. **Bidding:** Commercial banks submit bids stating the amount they want to borrow and the interest rate they are willing to pay.
3. **Allotment:** The RBI accepts bids starting from the highest rate offered down to a **cut-off rate,** which is the lowest rate at which funds are disbursed.
4. **Collateral:** Banks provide government securities to the RBI as collateral, which they repurchase (Repo) at the end of the term.

Aim of VRR:

- The primary objective is **liquidity management**. By infusing cash, the RBI ensures that banks have enough funds to meet daily requirements, preventing the Call Money Rate (the rate at which banks lend to each other) from spiking far above the policy Repo rate.

Key Features of Short-Term VRR:

- **Flexibility:** It targets immediate, temporary deficits (usually 1 to 14 days) caused by seasonal factors like tax payments or festivals.
- **Market-Driven:** The Variable Rate allows the market to determine the cost of funds based on actual demand.
- **Short Duration:** These are tactical tools, unlike Open Market Operations (OMO), which provide long-term durable liquidity.
- **Collateralized:** Like all repo transactions, these are backed by high-quality government bonds.

Implications:

- By filling the liquidity gap, it prevents volatility in the short-term money market.
- Ensures that banks don't tighten lending to businesses and consumers just because they are temporarily low on cash.
- High demand for VRR funds usually indicates that the banking system is in a deficit mode rather than a surplus mode.

CHOKRAMUDI HILLS

The **Chokramudi hills** in Kerala, previously a hub for illegal encroachment and construction, have been reclaimed by the government and transformed into a thriving natural habitat.

- This restoration has led to the return of the endangered **Nilgiri tahr** and the revival of the rare **Neelakurinji**

About Chokramudi Hills:

What it is?

- Chokramudi is one of the highest and most ecologically fragile peaks in the Munnar region. It is characterized by high-altitude **shola-grassland** ecosystems that are vital for the hydrology and biodiversity of the Western Ghats.

Located In: Bison Valley Panchayat, near Munnar in the Idukki district of Kerala.

Key Features:

- **Strategic Elevation:** Being one of the tallest peaks in the area, it offers a distinct microclimate suitable for high-altitude flora and fauna.
- **Neelakurinji Habitat:** The hills are a major site for the mass flowering of *Strobilanthes kunthiana* (Neelakurinji), which blooms once every 12 years.
- **Eravikulam Link:** Its proximity to the Eravikulam National Park makes it a natural corridor for the movement of mountain ungulates.
- **Grassland Ecosystem:** The peak is covered with Montane Grasslands, which act as a sponge for rainwater, feeding downstream areas like Bison Valley.

About Nilgiri Tahr: (Nilgiritragus hylocrius)
What it is?

- The Nilgiri tahr is a sturdy, mountain goat-like ungulate. It is the **State Animal of Tamil Nadu** and is the only species of caprine (goat-antelope) found in tropical India.

Habitat:

- **Open Montane Grasslands:** They prefer high-altitude grasslands interspersed with shola forests (stunted tropical montane forests).
- **Cliffs and Crags:** They are exceptionally agile and live on steep, rocky cliffs which they use as escape terrain to flee from predators like leopards and tigers.
- **Geographic Range:** Endemic to the **Western Ghats**, primarily restricted to a narrow stretch between the Nilgiri Hills and the Kanyakumari hills.

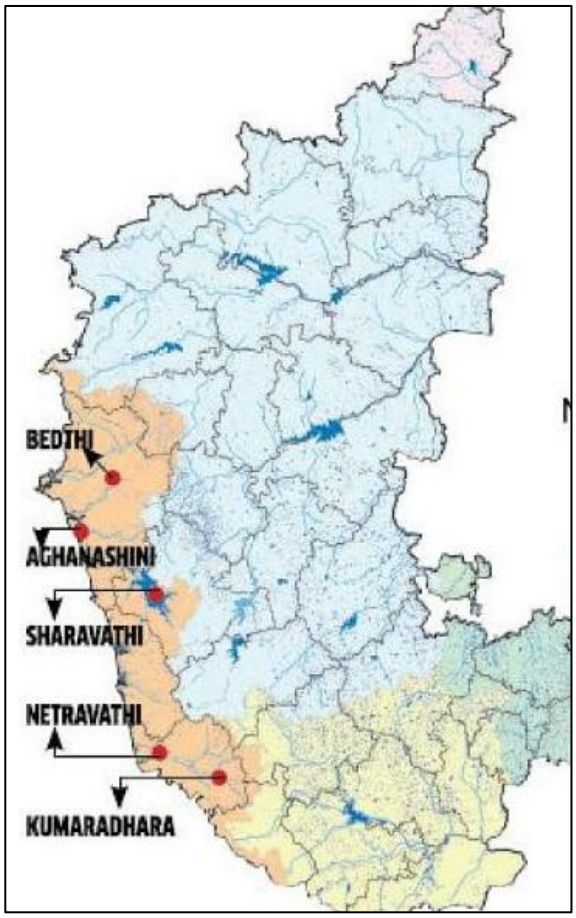
IUCN Status: Endangered (EN).

Key Characters:

- **Sexual Dimorphism:** Males are larger and darker than females. Adult males develop a distinct light-colored patch on their backs, earning them the name **Saddlebacks.**
- **Curved Horns:** Both sexes possess backward-curved horns, though they are larger and more robust in males.
- **Social Structure:** They live in social groups called droves, typically consisting of several females and their young, led by a dominant male.
- **Bristly Mane:** Adult males feature a short, dark, bristly mane along the back of the neck and shoulders.

AGHANASHINI–VEDAVATHI RIVER-LINKING PROJECT

Context: UNESCO has advised the Government of India to strictly adhere to World Heritage Conservation norms regarding the proposed Aghanashini–Vedavathi river-linking project.



About Aghanashini–Vedavathi River-Linking Project:

About Aghanashini River:

- **What it is?**
    - The Aghanashini is one of the most pristine, free-flowing rivers in India. Unlike most major rivers in the country, it remains largely **undammed** and lacks significant industrial pollution, making it an ecological rarity in the West Coast river system.
- **Origin:**
    - It originates at **Sirsi** (specifically in the 'Shankara Tirtha' of the Heggarne forest range) in the Uttara Kannada district of Karnataka.
- **State Flow Through:**
    - It flows entirely through the state of **Karnataka** before emptying into the Arabian Sea.
    - The Aghanashini is **not a tributary**; it is an independent, west-flowing river that drains directly into the **Arabian Sea** at Tadri in the Kumta taluk.

About Vedavati River:

- **What it is?**
    - The Vedavati is a significant **east-flowing river** in South India. Unlike the Aghanashini, which is a short, west-flowing mountain river, the Vedavati is a long, plateau river that eventually joins the Bay of Bengal system. It is a lifeline for the semi-arid regions of central Karnataka and Andhra Pradesh.
- **Origin:**
    - The river is formed by the confluence of two streams, the **Veda** and the **Avati**, which originate in the **Bababudangiri** mountain range of the Western Ghats (Chikkamagaluru district, Karnataka).
    - The two streams flow east and unite at **Pura** to form the Vedavati.
- **Vedavati is a Tributary of:**
    - The Vedavati is a major right-bank tributary of the **Tungabhadra River**.
    - The Tungabhadra itself is the largest tributary of the **Krishna River**. Therefore, the Vedavati is part of the larger **Krishna River Basin**.

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