NEXT IAS

THE CRUX

November Issue; 2025

Chief Editor

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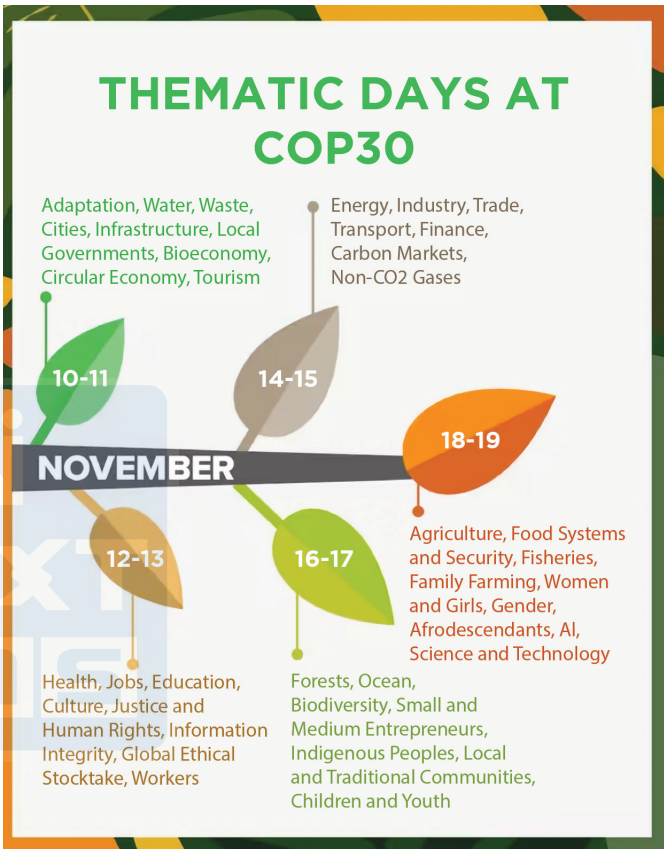
UNFCCC COP30

The 30th Conference of the Parties (COP30) to the UNFCCC concluded in Belém, Brazil, with nations adopting the Belém Package as the central negotiated outcome to advance the implementation of the Paris Agreement.

Key Outcomes of COP30

- **Belém Package:**
  - A set of 29 decisions shifting COP focus from negotiations to implementation.
  - Emphasis on climate finance, just transition, adaptation monitoring, gender inclusion, and global cooperation.
- **Global Mutirão Agreement:**
  - Prioritises **delivery of existing commitments** rather than introducing new mandatory targets.
  - Balances the interests of developed and developing countries.
  - Launch of a **Global Mutirão Platform** to speed up action in energy, finance, and trade.
- **Just Transition Mechanism (Belém Action Mechanism):**
  - Supports capacity building and cooperation for fossil-fuel dependent sectors.
  - Lacks **new or assured** financial support.
- **Global Implementation Tracker & Belem Mission to 1.5°C:**
  - New monitoring systems to assess whether national actions align with **1.5°C pathways.**
  - Strong focus on accountability in implementing NDCs.
- **Adaptation Initiatives:**
  - Launch of the **NAP Implementation Alliance** to accelerate national adaptation planning.
  - Agreement to **triple adaptation finance by 2030** compared to 2025 levels — financing responsibilities still unclear.
  - **Global Goal on Adaptation (GGA):** 59 voluntary indicators adopted along with the **Baku Adaptation Roadmap.**
- **Belem Health Action Plan:**
  - Strengthens health systems to cope with climate impacts.
  - Focus on health equity, climate justice, and community-centred governance.
- **Tropical Forests Forever Facility (TFFF):**
  - Payment-for-performance model using satellite tools to reward tropical forest conservation.
  - Target to mobilise **USD 125 billion**, with Brazil contributing the first **USD 1 billion.**
- **Belém 4x Pledge:**
  - **Aim:** Quadruple sustainable fuel use by **2035** from 2024 levels.
  - Covers hydrogen, biofuels, biogas, and e-fuels.
  - **IEA** to track progress annually.
- **Belem Declaration on Hunger, Poverty & People-Centred Action:**
  - Signed by 43 countries + the EU.
  - Puts **vulnerable communities** at the centre of climate action through social protection and livelihood resilience.
- **Belém Gender Action Plan:** Ensures **gender-responsive climate policies** and women's participation in decision-making.



India's Position at COP30

- **Climate Finance as a Legal Commitment:**
  - India, along with the BASIC (Brazil, South Africa, India, China) group and the LMDC (Like-Minded Developing Countries) group, pushed for **grant-based, adequate and predictable climate finance.**
  - Called for a **universally agreed definition** of climate finance to avoid accounting manipulation.
  - Highlighted the serious **adaptation finance gap**:
    - Developing countries will need **USD 310–365 billion per year** by 2035,
    - while current adaptation finance flows stand at around **USD 26 billion** only.
- **Emphasis on Equity and Climate Justice:**
  - Strong reaffirmation of the principle of Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC) under the UNFCCC.

- Stressed that **historical emitters must lead** in deep emissions reduction.
- Opposed **trade-linked climate measures** such as the European Union's **Carbon Border Adjustment Mechanism (CBAM)**, describing it as a discriminatory barrier against developing nations.

➲ **Focus on Adaptation and Support for Vulnerable Countries:**
- Stated that adaptation must receive **equal importance** as mitigation.
- Called for **predictable financial and technological support** for climate-vulnerable developing countries, including Small Island Developing States and Least Developed Countries.

United Nations Framework Convention on Climate Change (UNFCCC) COP

➲ COP is its **supreme decision-making body**, meeting annually to: assess global climate progress; negotiate climate action and update commitments, including Nationally Determined Contributions (NDCs).

Supporting Bodies:

➲ **SBI:** Subsidiary Body for Implementation

➲ **SBSTA:** Subsidiary Body for Scientific and Technological Advice.

Additional Roles:

COP also functions as:

➲ **CMP:** Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol

➲ **CMA:** Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement

Hosting Pattern:

➲ **COP venues rotate among five UN regional groups:**
- Africa
- Asia-Pacific
- Eastern Europe
- Latin America and the Caribbean
- Western Europe and Others Group (WEOG)

➲ **Türkiye** to host COP31.

➲ **Ethiopia** to host COP32 (Addis Ababa, 2027).

➲ **India** has proposed to host COP33 (2028)

Major Shortcomings of COP30

➲ **No Consensus on Fossil Fuel Phase-Out:** COP30 did not deliver a clear and time-bound roadmap for phasing out fossil fuels. The final agreement avoided mandatory commitments, which weakens the global push to remain within the 1.5°C temperature limit.

➲ **Unclear Climate Finance Commitments:** The conference failed to clarify finance obligations under Article 9.1 of the Paris Agreement.
- There is still no predictable, transparent, and scaled-up system for delivering finance to developing nations, especially for mitigation and adaptation.

➲ **Adaptation Finance Ambiguity:** Although a pledge to triple adaptation finance by 2030 was made, the burden-sharing mechanism remains uncertain. The lack of clarity on contributors and timelines risks worsening climate vulnerability in developing regions.

➲ **Weak Accountability and Enforcement Systems:** Despite the introduction of monitoring tools, COP30 lacked binding enforcement measures. The absence of strict timelines, compliance mechanisms, and consequences leaves implementation dependent on political will.

➲ **Just Transition Mechanism Without Funds:** The newly adopted Just Transition Mechanism does not include dedicated or assured financial support. This limits the capacity of countries dependent on coal and fossil-fuel sectors to protect workers, livelihoods, and regional economies during transition.

➲ **Delayed NDC Revisions and Widening Emissions Gap:** Several major emitters delayed updating their Nationally Determined Contributions (NDCs). With existing emissions trajectories not aligned to science-based pathways, the global ambition gap continues to grow.

Way Forward

➲ **Legally-Binding Global Climate Finance Goal:** Establish clear definitions, timelines, and responsibilities to ensure financing is adequate, predictable, and grant-based, with higher priority for adaptation and loss-and-damage support.

➲ **Global Roadmap for Fossil Fuel Transition:** Develop a structured phase-down framework with differentiated responsibilities, reflecting varied development levels and economic dependencies.

➲ **Strengthen Monitoring and Compliance Mechanisms:** Introduce independent verification systems and enforce corrective actions to ensure commitments are translated into measurable progress.

➲ **Secure Funding for Just Transition:** Mobilise long-term financial, technological, and capacity-building support to ensure workers and communities shift smoothly toward green jobs and sustainable industries.

➲ **Accelerate NDC Updates and Ambition:** Encourage early submission of enhanced NDCs consistent with 1.5°C pathways, while ensuring developed countries take the lead in deep emissions cuts.

➲ **Localised Adaptation and Community Resilience:** Expand direct financing to vulnerable communities, promote nature-based solutions, and improve early-warning infrastructure for disaster preparedness.

➲ **Inclusive Climate Governance:** Ensure active representation of women, Indigenous Peoples, youth, and marginalised groups in climate planning and implementation.

NEW PARADIGMS IN AGRICULTURE

NITI Aayog and the World Economic Forum propose technology-led pathways for intelligent, sustainable agricultural transformation.

Background

- Agriculture has long been the pillar of India's economy, employing around 45% of the workforce and contributing about 18% to the Gross Domestic Product (GDP) (Economic Survey 2024).
- However, the very success of **India's Green Revolution** — which boosted food production through high-yield seeds, chemical fertilizers, and irrigation — is now showing signs of exhaustion.
- Decades of **input-intensive farming** have led to soil degradation, groundwater depletion, and rising input costs, while climate change has made agriculture more unpredictable. Crop yields are stagnating even as the demand for sustainable food production rises.
- To address these **structural challenges**, **NITI Aayog** and the **World Economic Forum (WEF)** have introduced a bold vision — a new Paradigms in agriculture, where technology and data replace chemicals and guesswork as the driving forces of productivity.
- This marks a shift from input intensity to intelligence intensity, powered by **frontier** and **deep technologies.**

NITI Aayog's Roadmap for Frontier Agriculture

- NITI Aayog's report, **"Reimagining Agriculture: A Roadmap for Frontier Technology-Led Transformation",** envisions a smart, sustainable, and inclusive agricultural system.
- **Core Objectives:**
  - **Enhancing Productivity:** Use of AI and analytics for precise input use and crop management.
  - **Climate Resilience:** CRISPR-engineered seeds and predictive weather systems to reduce climate risks.
  - **Resource Efficiency:** IoT-enabled micro-irrigation to save water and fertilizers.
  - **Inclusive Access:** Making technology affordable and accessible to small and marginal farmers.
- According to NITI Aayog (2025), these measures can increase productivity by 25%, reduce input costs by 20%, and raise farmer incomes by up to 40%.

New Paradigm: Frontier and Deep Technologies

- In simple terms, this new paradigm is not about using more inputs but about using better intelligence.
- It merges science, data, and innovation to make agriculture smarter, more resilient, and environmentally responsible.

Frontier Technologies

- Frontier technologies are those that sit at the **boundary ("frontier")** of modern science and engineering, bringing together digital, biological, and physical systems.
- They include innovations like Artificial Intelligence (AI), Internet of Things (IoT), robotics, blockchain, and nanotechnology.
- These technologies act as the **"digital nervous system"** of agriculture — sensing, analyzing, and guiding decisions in real time.
- **For example:**
  - **Artificial Intelligence (AI)** can predict pest attacks, optimize irrigation schedules, and forecast yields.
  - **Internet of Things (IoT)** devices can monitor soil moisture, temperature, and nutrient levels using sensors.
  - **Robotics and drones** can automate sowing and spraying, reducing human labor and minimizing chemical use.
  - **Nanotechnology** allows for smart fertilizers that release nutrients precisely when and where crops need them.
- Frontier technologies thus digitize agriculture, turning every farm into a network of data-driven decisions.

Deep Technologies

- Deep technologies go one step further. These are **research-intensive innovations** built on fundamental science, often requiring years of experimentation in biotechnology, materials science, and advanced computing.
- They **"go deep"** into the **biological** and **molecular level** to engineer long-term solutions.
- **Examples include:**
  - **CRISPR** (Clustered Regularly Interspaced Short Palindromic Repeats) **Gene Editing:** Used to precisely modify plant DNA to make crops **drought-resistant or pest-tolerant.**
  - **Synthetic Biology:** Creating new biological systems or modifying existing ones for **better productivity and disease resistance.**
  - **Quantum Computing and Advanced Materials:** Enabling faster simulations for agricultural research and creating stronger, more efficient sensors.

- If **frontier tech** makes agriculture intelligent, **deep tech** makes it biologically resilient and regenerative. Together, they redefine farming from being resource-intensive to knowledge-intensive.
- *Frontier technologies turn data into decisions; deep technologies turn biology into resilience.*

Global Deep-Tech Revolution in Agriculture

- The World Economic Forum's report, **"Shaping the Deep-Tech Revolution in Agriculture," identifies seven transformative tools** — AI, IoT, Robotics, Computer Vision, CRISPR, Nanotechnology, and Remote Sensing.
- **According to WEF estimates:**
  - **Crop yields** could rise by 30%,
  - **Chemical waste** could drop by 20%, and
  - **Greenhouse gas** emissions could reduce by 15%.
- However, the WEF emphasizes that these technologies must be **inclusive and equitable,** ensuring that smallholders benefit through training, infrastructure, and transparent data governance.

Technologies Driving the Transformation

- **Artificial Intelligence (AI):** Enables predictive farming by analyzing weather data, soil conditions, and crop growth patterns.
- **Internet of Things (IoT):** Connects farm sensors, drones, and irrigation systems for precise control of resources.
- **CRISPR Gene Editing:** Alters crop genetics to enhance yield and tolerance to heat, drought, and disease.
- **Robotics and Drones:** Automate tasks such as spraying, weeding, and harvesting to improve efficiency.
- **Nanotechnology:** Creates fertilizers and pesticides that target crops precisely, reducing environmental pollution.
- **Digital Twins:** Virtual models of farms that simulate real-world farming scenarios for smarter planning.
- **Satellite Sensing:** Monitors large-scale agricultural patterns such as crop health and rainfall variability.
- In this model, data becomes the fertilizer, and algorithms become the plough — every decision is informed by science and analytics.

India's Readiness for the New Paradigms

- **India is well-positioned to lead this deep-tech revolution:**
  - Over **1,200 AgriTech startups** are developing solutions for drone-based spraying, soil analytics, and digital marketplaces.
  - The **Digital Agriculture Mission (2021–25)** is creating a unified platform for farmer data and open-access innovation.
  - The **Indian Council of Agricultural Research (ICAR)** is advancing research in CRISPR-edited crops, nanofertilizers, and precision farming.
  - The National Bank for Agriculture and Rural Development (**NABARD**) supports agri-innovation through **dedicated funding and rural entrepreneurship programs.**
- **To make this transformation inclusive, NITI Aayog has proposed a three-tier strategy:**
  - **Aspiring Farmers:** Access to low-cost IoT kits and basic digital literacy.
  - **Transitioning Farmers:** Adoption of AI and micro-irrigation systems through credit-linked schemes.
  - **Advanced Farmers:** Use of robotics, blockchain, and digital twins for large-scale operations.
- This model ensures that the benefits of innovation reach all farmers, preventing a new digital divide in rural India.

Additional Information

- **Aspiring Farmers (≈85%) –** typically smallholders with limited connectivity or capital. The focus is on digital literacy, weather alerts, and low-cost IoT kits.
- **Transitioning Farmers –** semi-commercial cultivators ready for credit-linked technologies such as micro-irrigation, mechanization, and AI-based crop analytics.
- **Advanced Farmers –** large-scale producers who can integrate digital twins, robotics, and blockchain traceability.

Challenges and Solutions

- **High Cost of Technology:** Many tools are unaffordable for smallholders.
  - **Solution:** Promote domestic manufacturing, cooperative ownership models, and subsidized credit through NABARD.
- **Rural Connectivity Gap:** Only 40% of rural India has stable internet (Telecom Regulatory Authority of India, 2024).
  - **Solution:** Expand BharatNet broadband, build Digital Agriculture Hubs, and create offline-compatible apps.
- **Skill Deficits:**
  - Farmers lack training to handle advanced systems.
  - **Solution:** Include agri-tech courses in Krishi Vigyan Kendras (KVKs) and train rural youth and women as tech facilitators.
- **Data Privacy Concerns:** Lack of data regulation may expose farmers to exploitation.
  - **Solution:** Develop a National Agri-Data Governance Framework ensuring ownership, consent, and data security.
- **Policy Coordination Issues:** Diverse state policies hinder innovation scaling.
  - **Solution:** Establish a National Frontier Agri-Tech Mission to align state and central policies.

Analytical Perspective: From Inputs to Intelligence

- The deep-tech transformation represents not just new tools, but a new philosophy of agriculture.
- The **Green Revolution emphasized physical inputs** — seeds, fertilizers, and irrigation — while the **Deep-Tech Revolution emphasizes** information, precision, and sustainability.
- **Agriculture becomes predictive instead of reactive:** AI anticipates weather shocks, IoT monitors real-time soil health, and CRISPR ensures resilience at the genetic level.
- This model also **creates new jobs —** from drone pilots and data scientists to AI-based farm managers — redefining agriculture as a knowledge profession.

G20 SUMMIT, 2025

The 20th G20 Summit 2025 in Johannesburg, themed "Solidarity, Equality, Sustainability," emphasized the priorities of the Global South. Leaders concluded the event by adopting the G20 Johannesburg Leaders' Declaration.

Major Highlights of the G20 Summit 2025

- **G20 Johannesburg Leaders' Declaration:** Consensus achieved on a **122-paragraph document** covering climate commitments, multilateral reform, inclusive governance, and development goals.
- **Ubuntu Philosophy:** The declaration drew inspiration from **Ubuntu**—the African idea of shared humanity—calling for greater global cooperation to address conflicts, inequalities, and humanitarian crises.
- **UN Security Council Reform:** Strong call to restructure the **UNSC** to reflect modern realities by increasing representation from **Africa, Latin America, and Asia-Pacific**.
- **Fight Against Terrorism:** Clear, unanimous condemnation of all forms of terrorism, aligning with India's long-standing position.
- **Climate Finance & Energy Transition:** Pledge to shift climate finance from **"billions to trillions"** and ensure equitable energy transition under the Paris Agreement.
- **Women's Empowerment:**Commitment to dismantle barriers to women's full participation in society, acknowledging their role in peace and development.
- **Debt & Financial Reforms:**Launch of a **Cost of Capital Commission** to address unfair credit rating practices and the **African risk premium**. Africa's rising debt burden (**USD 1.8 trillion**) was spotlighted.
- **Mission 300:** Target to **provide electricity to 300 million people** in Sub-Saharan Africa by 2030, supported by the World Bank and African Development Bank.
- **Critical Minerals Framework:**Endorsed sustainable mineral supply chains with investment in exploration and **local value-addition** in developing countries.
- **Youth & Gender Commitments: Nelson Mandela Bay Target:** Reduce **Not in Education, Employment, or Training (NEET)** rates by **5% by 2030**.
  - Achieve **25% gender parity** in labour participation by **2030**.
- **Troika for 2025: Brazil – South Africa – United States** ensure leadership continuity.

Spirit of Ubuntu

- **Meaning:** African philosophy of shared humanity — *"I am because we are"*.
- **Values:** Cooperation, compassion, reconciliation, and collective well-being.
- **Mandela's Example:** Peaceful transition from apartheid through unity and forgiveness.

G20 Overview

Characteristic	Description
Establishment	1999, after Asian Financial Crisis
Summit Level	Raised in 2008
Aims	Secure global financial stability
Membership	19 countries + European Union + African Union (AU)
Presidency	Rotates annually
Secretariat	No permanent Secretariat
Group Rotation	Divided into 5 groups
Global Representation	85% GDP, 75% trade, ⅔ population
Troika	Current, previous, next Presidency

What is the G20?

The Group of 20 is made up of 19 of the world's biggest economies, as well as the European Union. It formed in 1999 to discuss policy matters and financial stability.

India's Key Contributions at G20 2025:

- **Countering Drug-Terror Networks:** Proposed a G20 Initiative to combat narcotics trafficking and terror financing, especially fentanyl-based supply chains.
- **Africa-Centric Development Vision:** Proposed G20–Africa Skills Multiplier Initiative to train 1 million trainers in the next decade.
- **Healthcare, Knowledge & Space Partnerships**
  - **Suggested:**
    - G20 Global Healthcare Response Team
    - Traditional Knowledge Repository
    - **Open Satellite Data Partnership** for agriculture, fisheries & disaster management
- **Critical Minerals & Supply Chain Security:** Proposed a Critical Minerals Circularity Initiative — recycling, urban mining, diversified sources.
- **Responsible AI Governance:** Advocated a Global Compact on AI—focus on human oversight, safety, transparency, and curbing misuse (deepfakes, cybercrime, terror). Invited countries to the AI Impact Summit 2026 in India.
- **Fair Global Order:** Strong push for UNSC reforms, demanding representation for Africa, Latin America, and Asia-Pacific to modernize global governance.

Relevance of G20:

- **Premier Economic Coordination Forum:** The G20 shapes global economic governance, representing 85% GDP and 75% trade, and has expanded from crisis response to sustainability, digital and geopolitical issues.
- **Crisis Management Role:** During the 2008 crisis, the G20 injected $5 trillion to prevent a deeper recession and still serves as a key dialogue platform in a fragmented world.
- **Debt & Financial Stability:** The G20's **Common Framework** helps restructure debt for high-risk nations, while the **FSB** improves financial rules on crypto, shadow banking, and cross-border financing.
- **Climate Action & Energy Transition:** As 80% carbon emitters, G20 commitments like tripling renewables and green initiatives such as **LiFE** directly impact global climate goals.
- **Reforming Global Institutions:** The G20 leads the push to reform the IMF, World Bank, and UN, including enhanced financing and the AU's membership for fairness in decision-making.
- **Digital Governance Leadership:** The G20 shapes standards on AI, cybersecurity, and data, recognizing India's Digital Public Infrastructure model as a scalable Global South solution.
- **Global Health Security:** The **Pandemic Fund** strengthens health surveillance, emergency response, and vaccine equity after weaknesses exposed during COVID-19.
- **Food, Energy & Supply Chain Security:** The G20 coordinates resilient supply routes and food security, seen in initiatives like IMEC and support for grain supply in vulnerable regions.
- **Voice of the Global South:** Greater focus on climate justice, concessional finance, and development priorities driven by emerging economies like India, Brazil, and South Africa.

Key Challenges Limiting G20 Effectiveness

- **Geopolitical Fragmentation:** US–China rivalry and wars like Ukraine derail unity, dilute declarations, and reduce high-level participation.
- **Consensus Rule Causes Weak Outcomes:** Unanimity leads to soft language and delays, turning commitments into non-binding compromises.
- **Poor Implementation Track Record:** Climate finance delays, limited debt relief, and continued fossil subsidies show widening action gaps.
- **Unilateralism & Protectionism Growing:** Tariffs, subsidy disputes, and US dollar dominance weaken multilateral norms and undermine trust.
- **North–South Inequality Persists:** Poor nations face high debt, low finance access, and digital divides despite G20 commitments.
- **No Permanent Institutional Structure:** Lack of a secretariat causes inconsistency, slow delivery, and weak follow-up on commitments.
- **Agenda Overload (Mission Creep):** Too many issues — from migration to AI — stretch resources and reduce focus on core economic stability.

Reforms Needed

- **Create a Permanent Secretariat:** A full-time body would ensure continuity, track implementation, and strengthen accountability.
- **Adopt Qualified-Majority Voting:** Majority-based decisions on non-security issues would speed action and prevent watered-down declarations.
- **Improve Debt Relief Mechanisms:** The Common Framework must be faster and include private creditors to ease crises for low-income nations.
- **Ensure Timely Climate Finance:** Clear delivery schedules and greater operationalisation of green funds are needed for just transitions.
- **Enhance Representation & Inclusion:** Broader Global South participation will increase legitimacy and balance advanced economy dominance.
- **Limit Agenda Overstretch & Monitor Progress:** Focus should return to finance, climate, trade, and inequality with measurable mid-term reviews.
- **Develop Clear Digital & AI Governance Frameworks:** Global standards must ensure safety, fair data access, and digital inclusion, especially for developing regions.

WHITE-COLLAR TERRORISM

The recent Red Fort car blast, involving multiple doctors, has renewed serious concerns about white-collar terrorism, where educated professionals play a role in supporting extremist actions.

About

- The 2025 Red Fort car blast was caused by a mixture of ammonium nitrate and TATP (triacetone triperoxide), commonly referred to as "Mother of Satan".
- The ammonium nitrate was mixed with fuel oil to create an ANFO (Ammonium Nitrate Fuel Oil) explosive.

Details of the Explosive Materials

- **Ammonium Nitrate:** This is a common chemical widely used as a fertilizer. By itself, it is an oxidiser and not considered a high explosive, but when mixed with fuel oil and triggered by a detonator, it creates a powerful explosion (ANFO).
  - Investigators traced large quantities (over 2,600 kg) of NPK fertilizer and over 1,000 kg of ammonium nitrate sourced from shops in Haryana's Faridabad, Nuh, and Sohna areas.
- **TATP (Triacetone Triperoxide):** Forensic analysis also confirmed the presence of this highly unstable and sensitive explosive at the blast site.
  - TATP is notorious for its volatility, as it can detonate from heat or friction without a traditional detonator, which is why it is nicknamed "Mother of Satan".

Meaning

- White-collar terrorism refers to **terrorist activities carried out by highly educated professionals** — such as doctors, engineers, professors, IT experts who use their expertise, social networks, and trusted societal positions to plan, support, and execute terror operations.
- Unlike conventional militants, these individuals may **operate covertly within professional or academic environments**, facilitating logistics, procurement of materials, radicalization, recruitment, and even operational execution with lower suspicion due to their legitimate professions.

Major Drivers behind White-Collar Terrorism

- **Relative Deprivation and Identity Grievances:** Professionals may feel ideological, political, or identity-based injustice despite being economically secure. This perceived deprivation pushes them to adopt extremist identities that seem more powerful than their professional roles.
- **Digital Radicalisation through Encrypted Platforms:** Platforms with end-to-end encryption allow individuals to consume extremist material privately. Technically skilled professionals become valuable assets because they can use digital tools for cyber operations, planning, and communication.
- **Veil of Social Respectability:** Educated individuals enjoy trust and credibility in society, which helps them avoid suspicion. Security agencies find it difficult to profile them because they have clean records and stable careers.
- **Clean and Self-Generated Financing:** Professionals fund activities through their legal income, making financial flows

Identification via DNA Profiling in Red Fort Explosion Case

In the investigation of the explosion near the Red Fort, forensic teams are comparing the DNA of Dr. Umar Nabi Bhat's mother with unidentified bodies recovered from the blast site to determine whether he is among the deceased victims.

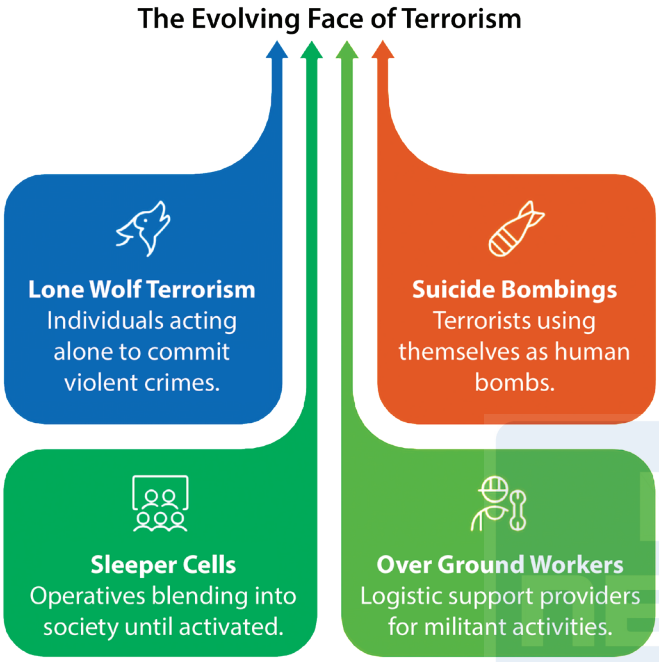
- **Meaning of DNA Profiling:** DNA profiling is a forensic technique used to identify individuals by analysing specific, unique patterns within their genetic material. Since every person (except identical twins) has a distinct DNA sequence, it is a dependable method for victim identification and solving crimes.
- **Importance of Using Mother's DNA:**
  - **Highly Reliable Identification:** Crucial in cases where bodies are unrecognisable due to severe burns or disintegration.
  - **Kinship Analysis:** The mother provides a direct biological reference, helping establish identity through shared genetic markers.
  - **Use of Hard Tissues:** Bones and teeth can still provide DNA even when soft tissues are extensively damaged.

Methods of DNA Identification:

- **Autosomal Short Tandem Repeats (Short DNA Sequence Repeats) Profiling:**
  - Involves analysing repeating units of DNA present at specific locations (loci) in the autosomal chromosomes.
  - A 50% similarity in these repeats between the victim and the mother confirms biological relationship with high accuracy.
- **Mitochondrial DNA (mtDNA) Analysis:**
  - Useful when nuclear DNA is too degraded.
  - mtDNA is inherited exclusively from the mother, enabling confirmation of maternal lineage.

appear normal. This reduces the chances of financial intelligence systems detecting suspicious transactions.

- **Urban Anonymity and Flexible Mobility:** Large cities offer privacy, multiple networks, and fewer social checks. Professionals can move, meet, or communicate without attracting local attention.



Challenges in Countering White-Collar Terrorism

- **Invisible Threat Profiles:** Most white-collar extremists have no criminal, social, or intelligence history. Their normal lifestyle keeps them outside existing watchlists used by agencies.
- **Financial Monitoring Limitations:** Self-funding bypasses systems like the Financial Intelligence Unit–India (FIU-IND). Banks struggle to separate ordinary high-income spending from terror-related expenditure.
- **Insider Access to Sensitive Systems:** Doctors, engineers, researchers, and IT professionals have privileged access to labs, hospital systems, software codes, or chemicals. Misuse of such access makes detection very difficult.
- **Inadequate Deradicalisation Models:** Current deradicalisation efforts focus on poverty, unemployment, and social grievances. These programmes do not effectively target ideologically driven, well-resourced individuals.

Steps Taken

- **Stronger Legal Framework (UAPA):** The Unlawful Activities (Prevention) Act (UAPA) empowers agencies to designate individuals as terrorists and freeze assets quickly. This helps target self-funded and professionally planned terror activities.
- **Empowered National Investigation Agency (NIA):** The National Investigation Agency can investigate terror cases nationwide without state approval.
  - This improves speed and coordination in cases involving skilled professionals operating across states.
- **Financial Monitoring through FIU-IND and TFFC:** The Financial Intelligence Unit–India (FIU-IND) and the Terror Funding and Fake Currency Cell (TFFC) track suspicious digital transactions and clean-money financing.
  - This helps detect professionals who self-fund terror operations.
- **Digital Surveillance via I4C and CERT-In:** The Indian Cyber Crime Coordination Centre (I4C) and the Computer Emergency Response Team–India (CERT-In) monitor encrypted platforms, dark-web activity, and cyber threats. These systems help identify technology-driven radicalisation early.
- **Multi-Agency Intelligence Sharing (MAC):** The Multi-Agency Centre (MAC) enables real-time intelligence exchange between IB, RAW, NIA, state police, and other agencies.
  - This improves detection of "clean-skin" professionals who move across regions.
- **Regulation of Dual-Use Chemicals and Components (PESO Rules):** The Petroleum and Explosives Safety Organisation (PESO) and Explosives Rules tighten control over chemicals and equipment that can be misused. Companies must report unusual or large purchases, reducing risks from insiders.

Measures for Effective Prevention

- **Artificial Intelligence-Based Behavioural Analysis:** Artificial Intelligence (AI) tools can detect unusual behaviour, digital movements, or access patterns. This approach is more effective than traditional identity-based profiling.
- **Strong Know Your Employee (KYE) Systems:** Sensitive organisations must track employee access to chemicals, databases, and restricted equipment. Regular audits can detect suspicious changes in behaviour or work patterns.
- **Real-Time Tracking of Dual-Use Materials:** A national system should monitor chemicals, laboratory equipment, and electronic components that can be used for violence. Any unusual or clustered purchase should raise an alert.
- **Enhanced Cyber Intelligence and Human Intelligence (HUMINT):** Intelligence teams must map metadata, infiltrate extremist chat groups, and strengthen cyber forensics. This can help identify radicalisation at an early stage.
- **Updated Legal and Financial Frameworks:** Laws like the Unlawful Activities (Prevention) Act (UAPA) and agencies such as the National Investigation Agency (NIA) should be equipped to handle self-funded and technology-driven extremism. Fintech and research institutions must follow strict reporting rules.
- **Reskilling Security Agencies for Tech-Driven Threats:** Train police and intelligence agencies in cyber forensics, data analytics, and Artificial Intelligence. This will help them understand the methods used by highly skilled extremists.

SC's OPINION ON PRESIDENTIAL REFERENCE

A five-judge Constitution Bench of the Supreme Court has issued its advisory opinion in the 16th Presidential Reference under Article 143 of the Constitution.

Key Highlights of the Supreme Court Ruling

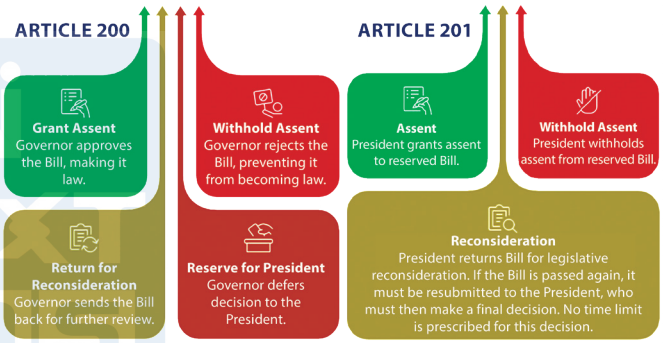
- **No Judicially-Mandated Timelines:** The Court stated that neither Article 200 nor Article 201 contains fixed time limits for assent decisions. The expression "as soon as possible" cannot be converted into an enforceable deadline. However, prolonged, unjustified inaction may be subject to judicial review, and courts may direct the Governor to act, but without imposing timelines or scrutinizing the decision's content.
- **Deemed Assent Rejected:** The Court held that the doctrine of "deemed assent" has no constitutional foundation.
  - Courts cannot use Article 142 to create a consequence where a Bill automatically becomes law due to executive delay, as this would amount to the judiciary substituting the constitutional role of the Governor or President.
- **President Not Bound to Seek SC Opinion:** The President is not required to approach the Supreme Court under Article 143 for every reserved Bill. Decisions under Article 201 can be made based on independent constitutional satisfaction.

Article 142

- **Article 142 of the Indian constitution** is a provision that empowers the Supreme Court to pass any decree or order necessary for doing complete justice in any case or matter pending before it. It also makes such decree or order enforceable throughout the territory of India.
- **The importance of Article 142 lies in the following aspects:**
  - It enables the Supreme Court to **exercise executive and legislative functions in certain situations,** such as issuing guidelines, directions, or orders to the government or other authorities.
  - It allows the Supreme Court to **intervene in matters of public interest, human rights, constitutional values, or fundamental rights**, and to protect them from any violation or infringement.
  - It enhances the Supreme Court's role as the **guardian of the constitution and the final arbiter of the law.**

Relevance of the Verdict

- **Upholds Federal Balance:** By refusing to impose strict timelines on the President or Governors, the judgment preserves the constitutional equilibrium between the Union and the States in the legislative process.
- **Reinforces Separation of Powers:** The Court clarified that it cannot step into executive domain by dictating timelines or creating legal fictions like deemed assent, thereby preventing judicial overreach.
- **Prevents Misinterpretation of Constitutional Provisions:** The ruling removes ambiguity surrounding Articles 200 and 201, ensuring that the phrase "as soon as possible" is not converted into rigid judicial directions.
- **Ensures Accountability Against Executive Delay:** While rejecting timelines, the Court affirmed that prolonged and unexplained inaction remains subject to judicial review, preventing indefinite stalling of State legislation.
- **Provides Clear Guidance for Future Disputes:** By settling the issue of deemed assent and timelines, the decision will guide future challenges involving Governor-State relations and avoid inconsistent judicial orders.



Concerns of the States

- **Interference in State Autonomy:** States argue that the Governor's role in reserving bills for the President undermines the autonomy of state legislatures, especially when the bills are in the State List.
- **Misuse of Discretion:** There are concerns that Governors reserve bills contrary to the advice of the State Council of Ministers, leading to misuse of discretionary powers.
- **Delays in Decision-Making:** Many states complain of delays in the President's decision on reserved bills, which affects the timely enactment of laws.
- **Lack of Clear Guidelines:** States suggest that there should be clear guidelines for the Governor and Union Government to prevent arbitrary use of discretion.
- **Impact on Federalism:** Some states believe that Articles 200 and 201, which allow the Governor to reserve bills, are inconsistent with the true federal structure of India.

NOTE TO READERS

For Complementary reading of ***"Presidential Reference under Article 143"***, refer Page 18-19 of May-2025 edition of NEXTIAS Current Affairs Magazine.

SC VERDICT ON TRIBUNALS REFORMS ACT

The Supreme Court (SC) of India has struck down several provisions of the Tribunals Reforms Act, 2021, holding that they provide excessive executive control over the appointment, tenure, and overall functioning of tribunals.

Key Provisions of the Tribunals Reforms Act, 2021

- **Central Government Control Over Service Conditions:** The Act authorizes the Union Government to prescribe the qualifications, appointments, salaries, tenure, removal, and overall service conditions of tribunal members.
- **Search-cum-Selection Committee (SCSC):** Appointments to tribunals are made by the Central Government based on recommendations of an SCSC headed by the Chief Justice of India or a Supreme Court Judge nominee.
- **Minimum Age Requirement of 50 Years:** Persons under the age of 50 are not eligible for appointment as Chairpersons or Members of tribunals.
- **Fixed Short Tenure of Four Years:** Chairpersons: 4-year term or up to 70 years of age (whichever is earlier).
- **Members:** 4-year term or up to 67 years of age (whichever is earlier).
- **Panel of Two Names for Each Post:** The SCSC must recommend a panel of two candidates per vacancy, giving the government the final choice.
- **Provision for Re-appointment:** Tribunal members are allowed to be re-appointed, which may affect independence due to potential executive influence.
- **Service Conditions on Par with Central Civil Servants:** Salary, allowances, and benefits of tribunal members are aligned with those of equivalent Central Government officers.

Provisions of the Tribunals Reforms Act, 2021 Invalidated by the Supreme Court

- **Minimum Age Requirement of 50 Years:** Declared arbitrary as it excludes younger but experienced advocates and experts.
  - Violated earlier rulings permitting advocates with 10+ years of practice to be eligible.
- **Four-Year Tenure for Members and Chairpersons:** Struck down because short tenures compromise institutional independence and continuity. The Court restored a minimum five-year tenure.
- **Panel of Two Names per Vacancy:** Rejected as it enabled the government to pick its preferred candidate, undermining the selection process.
  - The Court mandated that the Search-cum-Selection Committee recommend **only one name per post.**
- **Service Conditions on Par with Civil Servants:** Invalidated since tribunal members perform judicial — not executive — functions.
  - Violated the constitutional principle of separation of powers.
- **Repackaging Earlier Invalidated Provisions:** Parliament attempted to override prior SC judgments by reenacting the same flaws from the 2021 Ordinance.
  - The Court reaffirmed judicial review as part of the **Basic Structure Doctrine** and said Parliament must fix defects, not ignore the Court's rulings.

Tribunals in India:

- **Constitutional Provisions: In 1976, Articles 323A and 323B** were inserted in the Constitution of India through the **42nd Amendment.**
  - In 2010, the Supreme Court clarified that the subject matters under Article **323B are not exclusive,** and legislatures are empowered to create tribunals on any subject matters under their purview as specified in the Seventh Schedule of the Constitution.
- Currently, tribunals have been created both as substitutes to High Courts and as subordinate to High Courts.
  - In the former case, appeals from the decisions of Tribunals lie directly with the Supreme Court.
  - In the latter case appeals are heard by the corresponding High Court.

Major Tribunals in India	
Tribunal Type	**Jurisdiction Area**
Central Administrative Tribunal (CAT)	Service matters of public servants
National Green Tribunal (NGT)	Environmental protection and related disputes
Income Tax Appellate Tribunal (ITAT)	Direct tax dispute resolution
National Company Law Tribunal (NCLT)	Corporate law, company disputes, and insolvency matters
Armed Forces Tribunal (AFT)	Service-related matters of armed forces personnel
Telecom Disputes Settlement and Appellate Tribunal (TDSAT)	Telecom and broadcasting disputes

Benefits of Tribunals

- **Reduced Burden on Courts:** Tribunals handle specialized cases, helping decongest regular courts and speed up justice delivery.
- **Specialized Expertise:** Tribunals comprise judicial and technical experts who can better adjudicate complex issues like taxation, environment, and service matters.
- **Faster Disposal of Cases:** They follow simplified procedures compared to traditional courts, ensuring quicker resolution of disputes.
- **Cost-Effective Justice:** Procedural flexibility and reduced litigation timelines help lower legal costs for litigants.
- **Accessibility for Citizens:** Tribunals often have multiple regional benches, making dispute resolution more geographically accessible.
- **Less Formal and More Flexible Process:** They are less rigid than regular courts, making them more user-friendly and easier for non-lawyers to navigate.

Challenges in India's Tribunal System

- **Executive Dominance:** Heavy government role in appointments and service conditions compromises independence.
- **No Unified Oversight:** Unlike courts, tribunals lack centralized monitoring of performance and efficiency.
- **High Pendency:** Backlogs remain high due to vacancies and slow appointments (ITAT alone involves trillions in pending disputes).
- **Short, Reappointment-Based Tenure:** Creates vulnerability to government pressure.
- **Procedural Inconsistencies:** Non-uniform rules confuse litigants and hinder justice delivery.
- **Overlapping Jurisdictions:** Leads to conflicts and delays between courts and tribunals.
- **Inadequate Data Systems:** Absence of strong research and data to guide reforms.

Way Forward

- **Digitisation & Technology Adoption:** Wider use of e-filing, virtual hearings, paperless records, and AI for case management.
- **Uniform Procedural Framework:** Standard rules to prevent inconsistencies and simplify litigant experience.
- **Clear Jurisdictional Boundaries:** Avoid overlaps and ensure faster dispute resolution.

LAW COMMISSION OF INDIA (272ND REPORT, 2017)

- **Ensure independence of tribunals** by separating them from parent ministries and placing them under an independent umbrella body.
- **Standardise appointments** through a transparent selection committee, with judicial members having primacy.
- **Fix uniform tenure and service conditions** to reduce executive influence.
- **Provide adequate infrastructure**, including permanent courtrooms, staff, IT systems, and training.
- **Reduce multiplicity of tribunals** by merging those with overlapping functions.
- **Strengthen appellate mechanisms**, ideally placing appeals before High Courts rather than separate appellate tribunals.

JUSTICE MALIMATH COMMITTEE, 2004

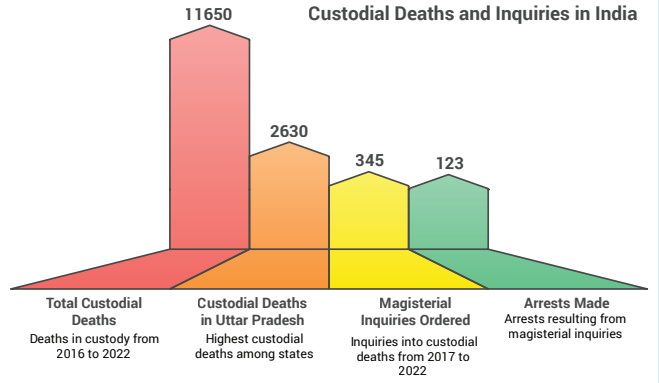
- **Establish a National Tribunal Commission** to oversee administration, appointments, and performance of tribunals.
- **Improve case management** and introduce timelines for disposal of cases.
- **Use technology** for filing, tracking, and hearings to reduce delays.
- **Ensure functional autonomy** so tribunals operate without interference from executive departments.

SC PANEL REPORT ON CUSTODIAL DEATH

A Supreme Court (SC) panel has released a comprehensive report on prison reforms, revealing deep systemic gaps in the investigation of custodial deaths.

Major Highlights

- **Delays in custodial death probe:** It highlighted severe delays in forensic examinations due to a 52% staff vacancy in state forensic labs.
  - As a result, 1,237 enquiries into custodial deaths remained pending in district courts for over a year as of 2023.
  - Prisoners who died in custody are often subject to **lengthy investigations.**
- **Issues in Prison Administration:** Prison manuals refer to prison work related to conservancy and sanitation as **'menial' or 'work of degrading character'**, which perpetuates a hierarchical view of labour.
  - In some states, prison manuals continue to retain provisions which perpetuate caste-based prejudices by assigning prison work based on the caste identity.
- **Disparity in Payments:** Significant disparities exist in the daily wages paid to prisoners, with amounts ranging from Rs 20 in Mizoram to Rs 524 in Karnataka.
  - Several states pay prisoners much less than the prescribed minimum wage for their labour.
- **Mental Health Care:** The jail medical officers in most states have not received the required training in mental health care, which is a violation of the 2018 Mental Health Act and affects the well-being of inmates.
- **Delays in Judicial Process:** Delays in the judicial process, especially for accused persons in custody for more than a year, are a significant challenge in India's legal system.



Reasons behind Custodial Deaths

- **Colonial Legacy of Policing:** The Indian police system is still heavily influenced by the Police Act of 1861, designed for control rather than service.
- **Weak Accountability Mechanisms:** Investigations into custodial deaths are often carried out by the same police department, leading to bias.
- **Torture as a Tool of Investigation:** Due to poor training and lack of forensic infrastructure, police often resort to third-degree methods to extract confessions.
- **Marginalisation and Vulnerable Groups:** Most victims come from weaker socio-economic backgrounds. Lack of legal literacy and resources prevents families from seeking justice.
- **Poor Implementation of Safeguards:** Safeguards under Article 21 & 22 of the Constitution, D.K. Basu guidelines (1997), NHRC directives, and Supreme Court judgments are often ignored. Mandatory requirements like medical examinations, arrest memos, and informing relatives are routinely violated.

Legal Initiatives to Curb Custodial Deaths in India

- **Supreme Court Guidelines (D.K. Basu vs. State of West Bengal, 1997):** It laid down mandatory arrest and detention safeguards**:** informing relatives, maintaining arrest memo, medical examination, legal counsel, production before magistrate within 24 hours.
- **National Human Rights Commission:** NHRC requires mandatory reporting of all custodial deaths within 24 hours. Issues advisories and seeks compliance reports from states.
- **Supreme Court Directions on CCTV Cameras (2020, Paramvir Singh Saini Case):** Directed installation of CCTV cameras with night vision and audio in all police stations and prisons. Ordered independent committees at state and district levels for monitoring.
- **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023:** Introduces provisions for greater transparency in arrests, use of forensic methods, and citizen-centric procedures.

Way Forward

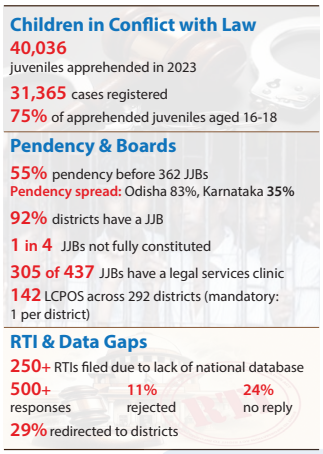
- **Police Reforms & Modernisation:** Shift from force-based policing to scientific investigation using forensics, technology, and humane interrogation.
- **Independent Investigation:** Set up independent bodies like Police Complaints Authorities to probe custodial deaths instead of the same police unit.
- **Strict Accountability:** Enforce zero tolerance by ensuring swift suspension, prosecution, and disciplinary action against guilty officials.
- **Implement Safeguards:** Mandate compliance with D.K. Basu guidelines, CCTV monitoring, NHRC reporting, and regular audits of police stations.
- **Legal Aid & Victim Support:** Strengthen legal literacy and free legal aid while ensuring witness and victim protection in complaints.
- **Training & Sensitisation:** Provide continuous training in human rights, ethics, and stress management to police personnel.

BACKLOG OF CASES IN JUVENILE JUSTICE BOARDS (JJBs)

The 'Juvenile Justice and Children in Conflict with the Law: A Study of Capacity at the Frontlines', released by the India Justice Report (IJR) revealed alarming gaps in India's juvenile justice system.

Key Findings of Study

- **High Case Pendency:** About 55% of cases before 362 JJBs are pending, with big differences across states (83% in Odisha, 35% in Karnataka).
  - This shows serious delays in justice for children.
- **Poor Data & Transparency:** There is no central database like National Judicial Data Grid (NJDG).
  - RTI findings show weak data sharing—many replies were rejected, missing, or passed around. JJBs disposed of less than half of the 1 lakh+ cases filed nationwide.
- **Vacancies & Limited Resources:** 24% of JJBs are not fully staffed and 30% lack legal aid clinics.
  - Each JJB handles around 154 pending cases yearly, causing strain due to staff shortages, low funding, and poor monitoring.



- **Systemic Weaknesses:** Ongoing problems include weak coordination, no integrated data system, poor oversight, and low accountability.
  - The decentralized setup leads to uneven implementation across states.

Suggestions Made in Study

- **Prioritize Rehabilitation:** Probation should be central to juvenile justice. With 40,000+ juveniles apprehended in 2023—mostly aged 16–18—a reformative approach is essential.
- **Fill Vacancies Quickly:** Appoint all social worker members so every JJB has its full three-member panel.
- **Better Training:** Provide regular training on child rights, trauma-informed care, and JJ Act provisions for JJB members, police, and probation officers.
- **Improve Infrastructure:** Create child-friendly courts and ensure access to counselors, translators, and legal aid.
- **Stronger Data Systems:** Build real-time digital dashboards to monitor cases and board functioning.
- **Improve Coordination:** Strengthen cooperation between JJBs, CWCs, DCPUs, and the police to support rehabilitation and reintegration.

Juvenile Justice (Care and Protection of Children) Act, 2015

- It provides a comprehensive legal framework for the care, protection, development, and rehabilitation of children in need, including those in conflict with the law. It **replaced the earlier 2000 legislation** to address emerging challenges in juvenile justice.

Two Categories of Children:

- **Children in Conflict with Law (CCL):** Those alleged or found to have committed an offence under the law and are below 18 years of age.
- **Children in Need of Care and Protection (CNCP):** Those who are vulnerable or at risk, including orphans, abandoned children, and victims of abuse.

Key Features

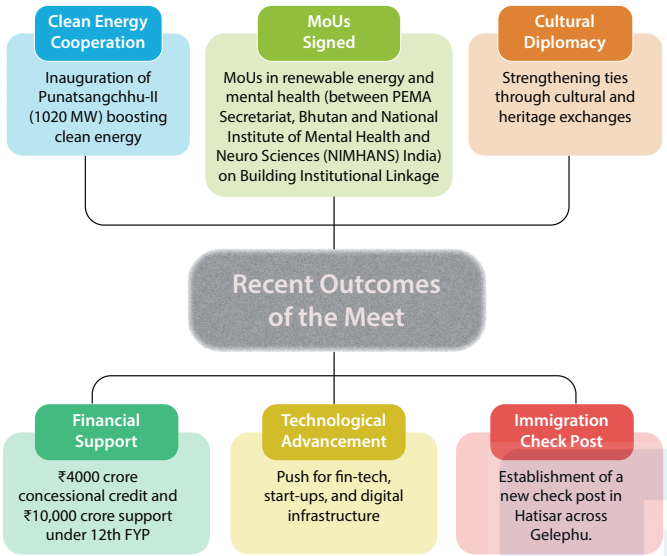
- The JJA allows **children aged 16–18** to be tried as adults for heinous crimes, **subject to assessment** by the **Juvenile Justice Boards.**
- It emphasizes reformation and social reintegration through child care institutions, foster care, and adoption.
- **Amendment in 2021** put greater authority to **District Magistrates** to ensure effective implementation of the Act, including oversight of **Child Welfare Committees (CWCs) and JJBs.**

Role and Structure of Juvenile Justice Boards (JJBs)

- JJBs are **quasi-judicial bodies** established in **every district** to handle cases involving children in conflict with the law.
- **Composition:** One Metropolitan Magistrate or Judicial Magistrate First Class (serves as Chairperson) and Two social worker members, including at least one woman;
- **Key Functions:** Conduct inquiries and trials for offences committed by juveniles; Assess whether a child aged 16–18 should be tried as an adult for heinous offences; Ensure legal aid, psychological support, and child-friendly procedures during proceedings and Refer children to rehabilitation programs and monitor their progress;
- **Child-Centric Approach:** Proceedings are conducted in a non-adversarial, informal setting; Emphasis on the child's best interests, privacy, and dignity; and Rehabilitation and reintegration prioritized over punitive measures.

PM MODI'S VISIT TO BHUTAN

Prime Minister Narendra Modi's recent visit to Bhutan strengthened the special ties of friendship and cooperation between the two countries.



Brief on India-Bhutan Relations

- **Historical:** Diplomatic relations between India and Bhutan were established in 1968.
  - The basic framework of India- Bhutan relations has been the Treaty of Friendship and Cooperation signed in 1949.
  - The treaty was revised in 2007 giving Bhutan more autonomy while reaffirming mutual respect for sovereignty and close cooperation.
  - In 2024, Prime Minister Shri Narendra Modi was conferred the **Order of the Druk Gyalpo,** Bhutan's highest civilian decoration, the first foreign leader to be given the award.
- **Geo-strategic:**
  - **Buffer against China:** Bhutan serves as a geographic buffer between India and China.
    - Its location helps protect the vulnerable Siliguri Corridor (Chicken's Neck) – India's only land link to the Northeast.
    - China has no formal diplomatic relations with Bhutan but is actively negotiating the boundary issue.
    - India sees Bhutan as vital to maintaining a South Asian balance of power and resists Chinese strategic encroachment, especially near the tri-junction.
  - **Neighbourhood First Policy:** Bhutan is a central pillar of India's 'Neighbourhood First' policy.
    - Stability in Bhutan reflects India's larger vision for regional peace and cooperation in South Asia.
    - Bhutan plays a role in enhancing India's connectivity to Northeast India.
    - India's Act East Policy aims to connect Northeast with Southeast Asia, and Bhutan is integral to such land-link corridors.
  - **Regional Diplomacy:** Bhutan supports India in SAARC, BBIN, BIMSTEC, helping counter external influence.
  - **Internal Security:** Cooperation helps curb insurgent networks in Northeast India via strong border policing.
- **Geo-Economic:** India has consistently been **Bhutan's top trading partner-** both as an import source and as an export destination.
  - Since 2014, India's trade with Bhutan has more than tripled—from USD 484 million in 2014–15 to **USD 1,777.44 million in 2024–25**, accounting for over 80% of Bhutan's overall trade.
  - **2016 India-Bhutan Agreement on Trade, Commerce and Transit,** establishes a free trade regime between the two countries and also provides Bhutan duty free transit of goods to/from third countries.
  - **Developmental Partnership:** India remains Bhutan's foremost development partner, supporting its national priorities since its 1st Five-Year Plan (1971).
    - **Annual Plan Talks (Bilateral Development Cooperation Talks):** Institutionalised mechanism for deciding priorities and modalities of assistance.
    - **Sectors Covered:** Roads, infrastructure, digital connectivity, hydropower, agriculture, education, health, HR development, urban development, etc.
- **Energy Cooperation (Hydropower & Renewables):** India has constructed 4 major HEPs in Bhutan-
  - Chukha (336 MW), Kurichhu (60 MW), Tala (1020 MW), Mangdechhu (720 MW).
  - Currently, there are two HEPs under construction**:** 1020 MW Punatsangchhu-I HEP and 1020 MW Punatsangchhu-II HEP.
- **Space Cooperation:** South Asia Satellite Ground Station inaugurated in 2019 by both Nations.
  - The two sides collaborated on the India-Bhutan SAT, the first satellite jointly developed by India and Bhutan, launched in 2022.
  - Both sides signed a Joint Plan of Action on Space Cooperation in 2024.
- **Fin-Tech: RuPay Card:** Launched in two phases (2019 & 2020) for full interoperability. In 2021, India's Bharat Interface for Money (BHIM) application was launched in Bhutan with the objective of promoting cashless payments between the two nations.

- **Indian Diaspora in Bhutan:** About 50,000 Indians are presently working in Bhutan in the sectors such as infrastructure development, hydropower, education, trade and commerce signifying close people to people ties between the two countries.

Challenges in Relations

- **Economic Imbalance:** Bhutan faces a large trade deficit with India, importing much more than it exports. Despite preferential trade agreements, Bhutanese industries struggle to diversify.
- **China Factor and Border Negotiations:** Bhutan and China have held 24 rounds of border talks, including a 2021 MoU on a "three-step roadmap."
  - India is concerned about potential China–Bhutan border agreements, especially in the Doklam region, which is strategically vital for India.
- **Connectivity Gaps:**
  - Limited road and rail links restrict economic and strategic integration.
  - Bhutan has reservations about joining the BBIN Motor Vehicles Agreement due to environmental and cultural concerns.
- **Environmental and Sustainability Concerns:** Bhutan's model of Gross National Happiness and environmental protection sometimes clashes with India's infrastructure-led approach.
- **Strategic Balancing and Autonomy:**
  - Bhutan seeks greater foreign policy autonomy, especially in global forums.
  - While the 2007 Treaty revision gave Bhutan more space, India still plays a dominant role in its external affairs and defence, which could create friction if not managed with sensitivity.

Way Forward

- **Make economic partnership more equitable:** Diversify Bhutan's economy; enhance value-added exports; reform hydropower models for shared benefits.
- **Enhance connectivity:** Fast-track **rail links**, better roads, border trade zones, and digital connectivity with India's Northeast.
- **Strengthen security alignment:** Institutionalised consultations on the China factor; improve border surveillance.
- **Green development focus:** Advance cooperation in **hydro, solar, hydrogen**, eco-tourism, and climate adaptation — respecting Bhutan's **GNH principles**.

IBSA DIALOGUE FORUM

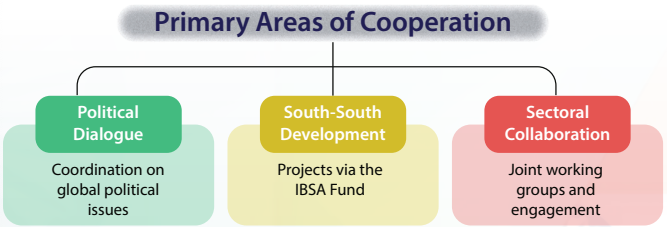
At the G20 Summit in Johannesburg, India's PM met the Brazilian and South African Presidents to revitalise the India–Brazil–South Afri (IBSA) Forum.

Key Highlights of IBSA Summit (2025)

- **Security Cooperation:** India proposed regular NSA-level meetings and stressed stronger coordination against terrorism.
- **Tech & Development:** India announced an IBSA Digital Innovation Alliance to share digital public infrastructure like UPI, CoWIN, cybersecurity tools, and women-led tech initiatives.
- **Climate-Resilient Agriculture Fund:** India suggested creating a fund to support sustainable farming, building on the success of the IBSA Fund and promoting cooperation in millets, natural farming, disaster resilience, green energy, and traditional medicine.
- **AI Impact Summit:** India invited IBSA leaders to the summit next year to promote safe, human-centric AI.
- **UNSC Reform:** India pushed for reform, stating the current structure does not reflect the roles of India, Brazil, and South Africa in global affairs.

About IBSA Forum:

- IBSA is a **trilateral platform** bringing together **three major democracies** from Asia, Africa, and South America — India, Brazil, and South Africa — with common development challenges and shared values.
- It was institutionalized as the **IBSA Dialogue Forum** through the **Brasilia Declaration (6 June 2003)**.
- Unlike other groupings, IBSA has **no permanent secretariat or headquarters** — functioning through coordinated meetings and working groups.



- **Key Initiatives:**
  - **IBSA Fund (Operational since 2004):** Supports **poverty eradication, hunger, and development** through **South–South cooperation** in Least Developed Countries (LDCs), managed by the United Nations Office for South-South Cooperation (UNOSSC).
    - Has funded **46 projects** worth **USD 53.27 million** in **34 developing nations** — mainly LDCs.
  - **IBSAMAR Exercise:** A trilateral naval exercise involving the navies of India, Brazil, and South Africa to enhance maritime cooperation.

Significance of IBSA for India

- **Championing the Global South:** IBSA offers India a leadership role **without Chinese dominance**, unlike BRICS or SCO.
- **Push for Multilateral Reform:** All members advocate **UNSC restructuring** and support each other's candidatures for permanent membership — reinforcing India's stance.
- **Shared Democratic Values:** Cooperation is based on **pluralism, human-centric development, and a rules-based international order**, boosting India's global soft power.
- **South–South Development Cooperation:** The IBSA Fund strengthens India's image as a **trustworthy development partner** without debt-driven projects.
- **Collective Strategic Voice:** Focus on **terrorism**, climate, trade, digital public infrastructure and food security enhances India's global influence.

Challenges to Effective IBSA Collaboration

- **Different Foreign Policies:** Brazil, India, and South Africa often have shifting or conflicting strategic priorities, reducing coordinated action.
- **BRICS Overshadowing:** BRICS gets more attention—especially due to China's influence—making IBSA seem less important.
- **Weak Trade Links:** Limited connectivity and similar export profiles create competition instead of economic cooperation.
- **No Permanent Structure:** Without a secretariat, decisions are slow, coordination is weak, and follow-up is inconsistent.
- **Geographical Distance:** Long distances and poor logistics increase trade costs and limit private-sector engagement.
- **Domestic Priorities:** Internal political and economic challenges reduce consistent high-level IBSA engagement.

Future Roadmap

- **Focus on Niche Areas:** Work on democratic governance, climate action, clean energy, and digital public infrastructure.
- **Build Institutions:** Set up a permanent secretariat and Business Council to deepen economic ties.
- **Improve Strategic Coordination:** Use IBSA to align positions within BRICS and balance major-power influence.
- **Strengthen IBSA Fund:** Expand development projects to reinforce South-South cooperation.

GEOTHERMAL ENERGY

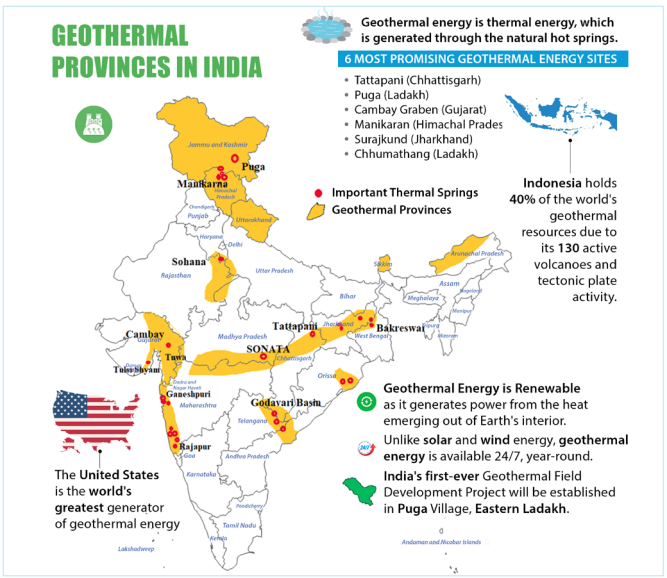
Energy Efficiency Services Limited (EESL) to develop India's largest geothermal energy technology pilot project in Araku Valley, Andhra Pradesh.

Background

- As India accelerates toward its Net **Zero 2070 goal**, it faces a dual challenge — to meet rising energy demand while decarbonizing the power sector.
- In this context, the **Energy Efficiency Services Limited (EESL)** has announced a landmark initiative**:** establishing India's largest geothermal energy technology pilot project in **Araku Valley** and Visakhapatnam, Andhra Pradesh.
- This marks India's strategic shift from **conventional renewables** like solar and wind to frontier clean-energy technologies that can deliver **24×7 green power** — a critical step in building an energy-secure and climate-resilient economy.

Geothermal Energy: The Hidden Renewable

- Geothermal energy harnesses the **Earth's internal heat** — stored in rocks, fluids, and magma — to produce electricity or provide direct heating.
- Unlike **intermittent renewables (solar and wind),** it offers baseload power with a capacity factor of **80–90%,** making it one of the most reliable clean energy sources (IRENA, 2025).
- Globally, geothermal energy powers nations like **Iceland, Kenya, Indonesia, and New Zealand,** demonstrating how deep-earth technologies can complement solar and wind to ensure energy continuity.
- In India, studies by the **Geological Survey of India (GSI) and ONGC Energy Centre** estimate **10,000 MW** of geothermal potential across identified regions — the **Himalayan belt, Cambay basin, Godavari graben, and the Andaman–Nicobar islands (MNRE, 2024).**



Araku Geothermal Pilot Project

- The **Araku Valley–Visakhapatnam** pilot project, to be implemented by **EESL under the Ministry of Power**, is India's first attempt to demonstrate commercially scalable geothermal technology.
- **Key Features:**
  - **Location:** Araku Valley and Visakhapatnam district, Andhra Pradesh — **a high geothermal gradient zone.**
  - **Technology:** Binary-cycle and closed-loop geothermal systems using hot water reservoirs for electricity generation.
  - **Capacity (Pilot Phase):** 2–5 MW, scalable up to 100 MW post-validation.
  - **Collaborators:** ONGC Energy Centre, Geological Survey of India, and global geothermal research partners.
  - **Timeline:** To be operationalized by 2026, post resource validation and drilling assessments.
- This initiative symbolizes India's entry into **deep-earth renewable exploration,** complementing solar, wind, and green hydrogen within the national energy transition framework.

Strategic and Geological Significance:

- Araku Valley's **unique geological composition** makes it an ideal site for pilot experimentation:
  - **High geothermal gradient:** Subsurface temperatures exceeding 250°C at shallow depths.
  - **Stable rock formations:** Favourable for deep drilling and reservoir stability.
  - **Proximity to the grid:** Visakhapatnam's infrastructure supports immediate power evacuation.
  - **Socio-economic potential:** The tribal-dominated Araku region can benefit from jobs, clean heating, and tourism-based livelihoods.
- **A 2023 GSI–ONGC joint study** confirmed that Araku's thermal anomalies are comparable to global medium-enthalpy geothermal fields, making it a strategic testing ground for scalable deployment.

Analytical Significance of Geothermal Energy

- **Bridging Renewable Intermittency:**
  - **Solar and wind,** while vital, **are intermittent** — generating power only when the sun shines or wind blows.
  - Geothermal energy provides continuous, baseload generation, balancing the grid and enabling India to move toward a **100% renewable-powered ecosystem.**

- **IEA (2025) notes** that countries with geothermal capacity experience 40% fewer blackouts and 30% lower balancing costs in renewable grids.

- **Complementing India's Energy Diversification:**
  - India's renewable energy mix remains dominated by **solar (41%) and wind (36%),** while hydro and biomass account for the rest (MNRE, 2024).
  - Geothermal energy introduces a third pillar — continuous, location-based energy — reducing overdependence on weather-dependent systems.
  - By adding even 1 GW of geothermal capacity, India could displace 6 million tonnes of CO2 annually, according to EESL projections (2025).
- **Advancing Technological Sovereignty:**
  - Geothermal energy represents a **frontier technology** — combining AI-enabled subsurface mapping, robotic drilling, and closed-loop systems.
  - Developing indigenous capability in this domain can place India alongside Iceland, Japan, and the U.S. in geothermal R&D leadership.
  - This aligns with "**Atmanirbhar Bharat in Clean Tech",** pomoting technology localization rather than dependence on imported turbines or PV modules.
- **Socio-Environmental Sustainability:**
  - **Low Carbon Footprint:** Emissions are less than 50 g of CO2 per kWh — nearly 90% lower than coal (IEA, 2023).
  - **Minimal Land Footprint:** Uses 99% less land than solar farms for equal output.
  - **Community Development:** Can power local heating, horticulture, and agro-tourism in tribal regions like Araku.
  - Thus, geothermal energy supports **SDG 7 (Affordable Energy), SDG 9 (Innovation), and SDG 13 (Climate Action) simultaneously.**

Global Context and Lessons for India

- **Iceland meets 70%** of its energy needs through geothermal, powering industries and district heating.
- **Kenya generates over 40%** of its electricity from geothermal plants in the Great Rift Valley.
- **Indonesia aims for 9.3 GW** geothermal capacity by 2035.
- India can learn from these nations' policy models — **particularly Kenya's risk mitigation fund** and **Indonesia's PPP exploration mode**l — to attract private investment into high-risk drilling stages.

Challenges and Structural Constraints

- **High Upfront Costs:** Exploration and drilling account for 40–60% of total project costs, often exceeding ₹40 crore per MW.Without financial guarantees, private players remain hesitant.
- **Technological and Human Capital Gaps:** India lacks specialized drilling rigs, trained geothermal engineers, and real-time monitoring systems — all critical for safe and efficient extraction.
- **Regulatory and Policy Vacuum:** The Draft National Geothermal Energy Policy (2023) remains unapproved, leaving licensing, pricing, and risk-sharing mechanisms undefined.
- **Environmental Concerns:** While clean, geothermal drilling may cause induced seismicity or affect groundwater if poorly managed — calling for strong environmental safeguards and EIA norms.

Government Policy and Institutional Response

The Ministry of New and Renewable Energy (MNRE) has initiated steps to institutionalize geothermal development:

- **Draft National Geothermal Energy Policy (2023):** Envisions 1,000 MW by 2030 through PPPs and concessional finance.
- **National Clean Energy Fund (NCEF):** May provide viability gap funding for early-stage exploration.
- **EESL's Frontier Clean Energy Program:** Focuses on geothermal, tidal, and hydrogen pilots for future diversification.
- MNRE (2025) identifies geothermal as a **"frontier renewable",** crucial for India's long-term decarbonization roadmap.

Way Forward: From Pilot to Power

For geothermal to become a mainstream clean energy source, India must adopt a multi-pronged strategy:

- **Finalize the Geothermal Policy:** Provide clarity on land acquisition, royalty sharing, and risk insurance.
- **Create a Geothermal Development Fund:** Similar to Indonesia's model for exploration cost-sharing.
- **Strengthen R&D Ecosystem:** Establish a National Geothermal Centre of Excellence in collaboration with IITs, GSI, and NGRI.
- **Promote PPP and Global Collaboration:** Partner with Iceland, Japan, and New Zealand for technical assistance.
- **Build Local Capacity:** Train engineers, geologists, and rural youth in geothermal operations through Skill India 2.0.

Conclusion

- The Araku Geothermal Pilot Project represents more than a technological milestone — it is a strategic experiment in energy diversification and climate resilience.
- By tapping the Earth's heat, India is venturing into the next frontier of renewables, complementing its solar and hydrogen ambitions.
- If executed effectively, this initiative could redefine India's clean energy story — shifting the paradigm **from surface to sub-surface, from sunlight to the Earth's inner warmth.**

The next revolution in India's energy journey will rise not with the sun — but from beneath the soil.

INDIA'S COOPERATIVE REVOLUTION

Amul tops and IFFCO ranks second globally in the World Cooperative Monitor 2025 rankings.

Introduction

- India's cooperative sector has once again made global headlines. **The International Cooperative Alliance (ICA) and Euricse (European Research Institute on Cooperative and Social Enterprises)** ranked Amul's parent body GCMMF as the world's largest cooperative and IFFCO as the second in the **World Cooperative Monitor 2025.**
- This recognition is not just about corporate scale — it is about **economic democracy and grassroots resilience**. India's cooperative institutions have proven that inclusive capitalism can succeed where pure profit models falter, creating a template for people-owned prosperity.
- **Ranking:** The World Cooperative Monitor evaluates cooperatives based on the ratio of **turnover to GDP per capita**, offering a globally comparable measure of socioeconomic impact rather than mere size.

Analytical Significance: What These Rankings Reveal

- The global recognition of Amul and IFFCO goes far beyond **organizational performance.** It symbolizes India's cooperative strength as a third model of economic development — standing between **state-led socialism and market-driven capitalism.**

Economic Democracy at Scale

- Cooperatives decentralize ownership and ensure shared value creation.
- Each member gets one vote — regardless of capital contribution — embedding equality into the economic system.
- In contrast to corporate concentration, cooperatives redistribute wealth within communities, reducing inequality at the grassroots level.
- World Bank (2025) observes that cooperative participation can raise rural household incomes by 25–30%, largely through collective bargaining and cost-sharing.

Rural Industrialization and Local Value Addition

- Amul and IFFCO exemplify how value chains can be localized.
- Instead of exporting raw material and importing finished goods, cooperatives integrate production, processing, and marketing within the rural economy.
- This internalizes profits and stimulates rural entrepreneurship.

Women's Economic Agency

- Women constitute the backbone of the dairy cooperative system.
- According to NABARD (2024), over one-third of Amul's members are women, making it a large-scale engine of gender empowerment.
- Regular income, financial literacy, and collective participation have given women stronger roles in decision-making and community leadership.
- Thus, cooperatives are gender multipliers — achieving SDG 5 (Gender Equality) through everyday economic activity.

Amul: From Milk to Economic Democracy

- **Founded in 1946** in Anand, Gujarat, Amul emerged from a local struggle against exploitative middlemen. **Under Dr. Verghese Kurien's visionary leadership**, it evolved into the nucleus of **India's White Revolution,** making the country the world's largest milk producer.
- **Three-Tier Model of Empowerment**
  - **Village Level:** 18,600 dairy societies collect milk directly from producers.
  - **District Level:** 18 unions handle processing and packaging.
  - **State Level (GCMMF):** Markets and manages the Amul brand.
- This structure ensures that ownership, decision-making, and profits remain with the producers themselves — over 36 lakh farmers, most of them women.

IFFCO: The Cooperative Powerhouse in Agriculture

- **Established in 1967,** the Indian Farmers Fertiliser Cooperative Limited (IFFCO) arose from the need to make fertilizers affordable and accessible.
- Today, it comprises **36,000** member cooperatives serving over 50 million farmers across India.
- **Beyond fertilizers, IFFCO has diversified into:**
  - **Digital agriculture** via IFFCO Kisan platforms.
  - Rural finance, logistics, and insurance.
  - **Sustainable inputs** and biofertilizers aligned with Atmanirbhar Bharat goals.

Cooperative Federalism in Practice

- The success of India's cooperative movement represents true federal decentralization — economic power flowing from villages to districts to states.
- It strengthens local governance and creates bottom-up accountability, complementing the spirit of the 73rd and 74th Constitutional Amendments.

Policy and Institutional Framework

The cooperative sector's growth rests on a robust legal and policy ecosystem:

- **97th Constitutional Amendment (2011):**
  - Made forming cooperatives a Fundamental Right **(Art. 19(1)(c)).**
  - Added **Article 43B** to promote voluntary and democratic cooperatives.
  - Introduced **Part IX-B** for governance and elections.
- **Multi-State Cooperative Societies (MSCS) Act, 2002:** Regulates interstate operations and mandates transparent governance.
- **National Cooperative Policy (2002):** Focuses on professionalism, transparency, and capacity-building.
- **Ministry of Cooperation (2021):** Established to reform governance, promote digitization, and support innovation under the vision of "**Sahakar Se Samriddhi" (Prosperity through Cooperation).**

Persistent Challenges

Despite their success, cooperatives face systemic and structural bottlenecks that threaten long-term sustainability:

- **Governance and Political Interference:** Leadership often influenced by local politics, diluting democratic norms.
- **Credit and Financial Constraints:** Dependence on informal funding restricts scaling and diversification.
- **Technological Backwardness:** Only 23% of Primary Agricultural Credit Societies (PACS) are digitized (NABARD, 2023).
- **Legal Fragmentation:** Overlapping state and central laws slow innovation and compliance.
- **Regional Imbalances:** Cooperative success concentrated in Gujarat, Maharashtra, and Kerala; weaker penetration in eastern and northeastern states.
- **Market Competition:** Corporate and MNC entrants challenge cooperatives on efficiency and branding. These weaknesses show that institutional reform and digital transformation are essential to maintain competitiveness in the era of globalization.

Reform Pathways: Making Cooperatives Future-Ready

- **Governance and Leadership Reform:**
  - Mandatory leadership certification and digital audit systems.
  - Separation of political oversight from cooperative management.
  - Encourage professional CEOs and board training in cooperative enterprises.
- **Financial Inclusion and Innovation:**
  - Link cooperatives to NABARD's refinance schemes and fintech credit networks.
  - Launch a Cooperative Investment and Innovation Fund for digitization and sustainability.
- **Technological Modernization:**
  - Achieve 100% computerization of PACS by 2026.
  - Promote e-platforms and cooperative e-commerce to link producers to consumers directly.
  - Use blockchain for traceability in dairy and fertilizer supply chains.
- **Legal and Policy Streamlining:**
  - Introduce a National Cooperative Code for uniform standards.
  - Create a National Cooperative Tribunal for faster dispute resolution.
  - Integrate cooperative databases under the Unified Cooperative Digital Portal.
- **Regional and Social Expansion:**
  - Develop cooperative hubs in northeast and eastern India with targeted capacity-building.
  - Provide tax incentives and mentorship for youth and women-led cooperatives.
  - Collaborate with NGOs and SHGs for awareness and participation.

World Cooperative Monitor 2025 Rankings

- **Publisher:** International Cooperative Alliance (ICA).
- **Data:** Uses financial data from the fiscal year 2023 (typically April 1, 2023 – March 31, 2024).
- **Focus:** Ranks leading cooperatives based on economic performance, including the significant Turnover/GDP per capita category, assessing their impact relative to their national economies

The Way Forward

The next phase of India's cooperative movement must be built on innovation, integration, and internationalization:

- Digital-first cooperatives can enhance transparency and global market reach. Green cooperatives can pioneer sustainable farming and circular economies.
- Youth-led and tech-driven cooperatives can transform sectors like agri-tech, renewable energy, and rural logistics.
- Government initiatives like the National Multi-State Cooperative Societies (2023) for exports, seeds, and organic produce, and the Dairy Infrastructure Development Fund (DIDF) show a forward-thinking approach.
- But the ultimate goal is philosophical — to ensure that India's economic growth remains people-centered.

FUNCTIONAL FOODS

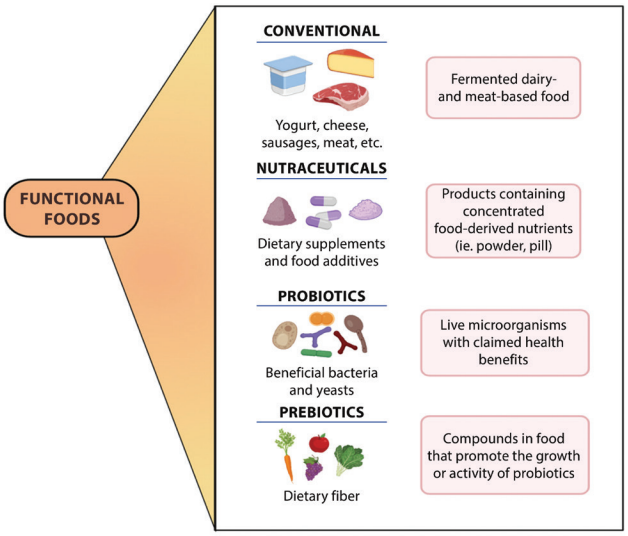
India's nutrition strategy is shifting toward functional foods and smart proteins for health and sustainability.

About

- Food is no longer about calories; it is about chemistry, climate, and consciousness.
- As lifestyles evolve and **Non-Communicable Diseases (NCDs)** rise, the global food system is undergoing a profound shift — from feeding populations to nourishing societies.
- At the heart of this transformation lie functional foods — nutrient-enhanced, bioactive, and sustainable foods that blur the line between nutrition and medicine.
- For India, where 16% of the global population faces overlapping challenges of undernutrition and obesity, functional foods offer a strategic solution that connects public health, economic innovation, and environmental stewardship.

Functional Foods: Nutrition as Preventive Medicine

- Functional foods provide health benefits beyond basic nutrition. They may be naturally nutrient-rich or fortified with bioactive compounds like probiotics, omega-3s, vitamins, minerals, and antioxidants.
- They address chronic diseases, improve immunity, and enhance well-being.
- **Examples:**
  - **Fortified milk** with vitamin D and calcium for bone health.
  - **Oats and millets** with soluble fibre for cholesterol management.
  - **Probiotic** yogurt for gut balance.
  - **Plant-based dairy/meat** alternatives reducing saturated fats.
- Functional foods embody the philosophy of **"food as preventive medicine",** bridging the gap between healthcare and agriculture.



Changing Paradigm: From Calorie Sufficiency to Nutrient Efficiency

- For decades, India's nutrition policy focused on food security — ensuring adequate calories. However, the 21st century demands nutrition security — **ensuring adequate micronutrients and bioactive compounds.**
  - **Health Data:** India accounts for 77 million diabetics and rising obesity rates (NFHS-5).
  - **Economic Data:** NCDs cost India nearly USD 2.5 trillion in lost productivity by 2030 (World Bank).
- Functional foods thus represent a preventive economic strategy, not merely a dietary one.
  - They shift focus from treating disease to preempting it through nutrition innovation.

Smart Proteins: Innovation Meets Sustainability

- A frontier in functional nutrition, **smart proteins** derive from plants, microbes, fungi, or cultured cells. They replicate the taste and texture of animal-based products but with a fraction of the resource and carbon footprint.
- India's **Good Food Institute (GFI India)** and start-ups like GoodDot, Evo Foods, and Blue Tribe are pioneering plant-based meat and fermentation-derived proteins.
- FAO (2024) estimates that plant-based proteins can reduce greenhouse gas emissions by up to 90% compared to livestock.
- Thus, functional foods are not only nutritional innovations — they are climate technologies, aligning food systems with India's Net Zero 2070 commitment.

Economic Significance: Nutrition as a Growth Industry

- The global functional food market is valued at over USD 300 billion, growing at 8–10% annually (Euromonitor 2024).
- India's domestic market is projected to reach USD 25 billion by 2030, driven by:
  - Rising post-pandemic health awareness.
  - Government's emphasis on fortification and nutrition security.
  - Expansion of middle-class preventive health spending.
- Functional foods are a new industrial frontier — creating jobs in agriculture, biotechnology, logistics, and R&D. For every ₹1 invested in food fortification, WHO estimates a return of ₹20–30 in healthcare cost savings.
- This positions functional foods not as luxury consumption but as economic infrastructure for human capital.

Policy and Institutional Framework

Government Initiatives Driving the Shift

- **Food Fortification Programme (FSSAI):** Mandatory micronutrient enrichment in salt, rice, wheat flour, and oil.
- **Millet Mission (Shree Anna):** Promotes climate-resilient, nutrient-dense millets; integrated into G20 agenda.
- **Poshan Abhiyaan (National Nutrition Mission):** Tackles malnutrition through fortified foods and behaviour change.
- **PLI Scheme for Food Processing (2021):** Incentivizes production of fortified and health-oriented foods.
- **Start-Up India & Atal Innovation Mission:** Support R&D in smart proteins and agri-biotech.
- These initiatives indicate that India's food policy is evolving from subsidy-led welfare to science-led nutrition economics.

Functional Foods and India's SDG Commitments

Functional foods cut across the SDG spectrum:

- **SDG 2 (Zero Hunger):** Nutrient-dense alternatives to staple diets.
- **SDG 3 (Good Health):** Reduction in NCD burden through preventive nutrition.
- **SDG 12 (Responsible Consumption):** Encourages resource-efficient production.
- **SDG 13 (Climate Action):** Promotes low-emission, plant-based diets.
- They reflect the transition from **"food security" to "food sustainability",** bridging agriculture, industry, and public health policy.

Challenges to Scaling Functional Foods

- **Regulatory Ambiguity:** India lacks a unified framework distinguishing foods, nutraceuticals, and pharmaceuticals, complicating approvals and marketing.
  - FSSAI's current standards are product-based rather than function-based.
- **Low Consumer Literacy:** While awareness is rising in urban areas, rural and semi-urban populations remain unaware of preventive nutrition.
- **Cost and Access Gaps:** Fortified foods often cost 20–30% more due to R&D, certification, and packaging costs.
- **Supply Chain Barriers:** Functional foods, especially probiotics, require specialized cold-chain infrastructure.
- **Limited Scientific Validation:**
  - Long-term clinical studies on ingredient efficacy are insufficient, limiting consumer trust.
  - Unless these gaps are addressed, functional foods will remain a niche health segment instead of a mass nutrition solution.

Strategic Roadmap: Making Functional Foods Mainstream

- **Regulatory Reform and Governance:** Create a National Functional Food Framework under FSSAI. Mandate scientific validation and transparent labelling of health claims.
  - Align standards with Codex Alimentarius for global market access.
- **Strengthen Research and Innovation:** Establish Functional Nutrition Centres of Excellence under CSIR, ICAR, and IITs.
  - Promote public–private partnerships in food biotechnology.
  - Offer R&D tax credits and incubation grants for agri-startups.
- **Expand Access and Affordability:** Integrate functional foods into ICDS, mid-day meals, and PDS.
  - Provide fortification subsidies for vulnerable populations.
  - Conduct nationwide nutrition literacy campaigns to drive behavioural change.
- **Build Sustainable Agri-Value Chains:** Strengthen farm-to-factory linkages for nutrient-rich crops like millets, pulses, and soy.
  - Encourage eco-friendly packaging and local processing clusters.
  - Empower cooperatives and SHGs to participate in functional food production.
- These reforms can transform India from a "**consumer of global nutrition technologies**" into a producer and exporter of functional nutrition.

India's Strategic Edge

- India's agricultural diversity (millets, pulses, herbs), biotech capacity, and growing wellness market provide natural leverage.
- With global demand for plant-based proteins expected to triple by 2035 (Boston Consulting Group, 2024), India could emerge as a functional food powerhouse — the "pharmacy and pantry of the world."
- However, success will depend on integrating agricultural innovation, consumer trust, and regulatory clarity into a single coherent policy.

Conclusion

- Functional foods represent the convergence of health, science, and sustainability — an idea whose time has come. They have the power to redefine public health strategy, reduce disease burden, and empower farmers through value-added agriculture.
- As India moves from food security to nutrition sovereignty, functional foods will become a national asset — ensuring that the country's economic growth is not just measured in GDP, but in well-being per capita.

The future of food is not about feeding hunger, but sustaining health.

HEAVY METALS CONTAMINATION

A recent Environmental Earth Sciences study reported dangerous heavy metal contamination in Cauvery River fish, threatening both ecosystems and public health.

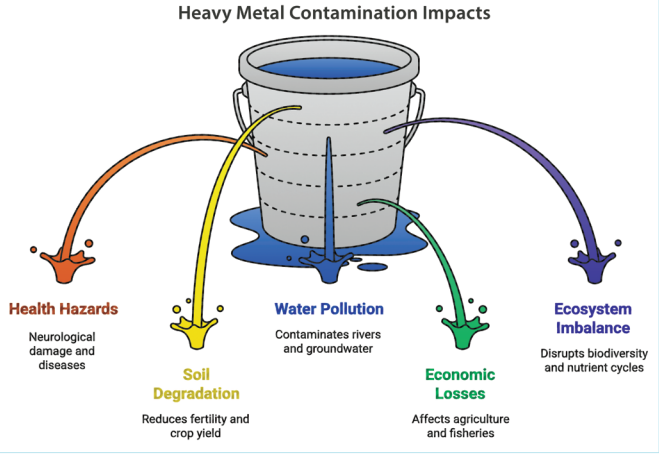
About Heavy Metals

- These are naturally occurring elements with **high atomic weights and densities.**
- While some like iron and zinc are essential in trace amounts, others such as **lead, mercury, arsenic and cadmium** are toxic even at low concentrations.
  - These pollutants settle in river sediments and **bioaccumulate in aquatic life,** entering the human food chain through fish and drinking water.

Sources of Contamination

- **Anthropogenic sources** like coal mining, smelting, leather tanning, and many more.
- **Natural sources:** Some heavy metals are naturally present in groundwater due to seepage from rocks, volcanic activities and forest fires.

Heavy Metal	Common Sources of Water Pollution
Lead (Pb)	Industrial discharge, batteries, paints, plumbing
Mercury (Hg)	Mining, coal combustion, industrial effluents
Cadmium (Cd)	Mining, electroplating, batteries, fertilizers
Arsenic (As)	Industrial waste, mining, pesticides, natural leaching
Chromium (Cr)	Tanneries, dye & pigment industries, metal plating
Nickel (Ni)	Metal industries, mining, waste disposal
Copper (Cu)	Industrial runoff, pipes, mining
Zinc (Zn)	Galvanization, fertilizers, industrial effluents



Remedies for Heavy Metal Contamination

- **Scientific and Technological Solutions:** Eco-friendly reduction methods like **adsorption, membrane filtration, and photocatalysis** are being refined for sustainable water treatment.
  - **Bioremediation:** Microorganisms and plants *(e.g., Streptomyces Rochei)* are used to absorb and detoxify metals from soil and water.
  - **Phytoremediation:** Certain plants can extract metals from contaminated soil, offering a low-cost and green solution.
  - **Biosorption:** It relies on the utilization of various types of raw materials derived from agro-waste, plant residue, and algal and microbial biomass.
  - **Reverse Osmosis:** Water is passed through a series of semi-permeable filters.
  - **Resin based water treatment technology:** It uses ion exchange resins — small, porous beads — to purify water by swapping undesirable ions for harmless ones.
- **KC Valley Project:** Karnataka's treated wastewater recharge initiative helped restore groundwater quality in drought-prone areas.
- **Community and Environmental Action:**
  - **Decentralized water treatment:** Emphasizes local solutions like sand filtration and activated carbon for rural communities.
  - **Land remediation:** Steel slag and other industrial byproducts are being repurposed to reduce soil toxicity.

Government Initiatives

- **National Clean Ganga Mission (NCGM) and Namami Gange** target industrial effluent reduction.
- **National Aquifer Mapping & Management Programme (NAQUIM)** identifies heavy-metal zones.
- **Ban on leaded petrol (BS Norms)** and lead paint regulations (2016).
- **E-waste Management Rules (2022)** to curb toxic discharges.
- National Programme on Prevention & Control of Fluorosis and Arsenicosis.

Way Forward

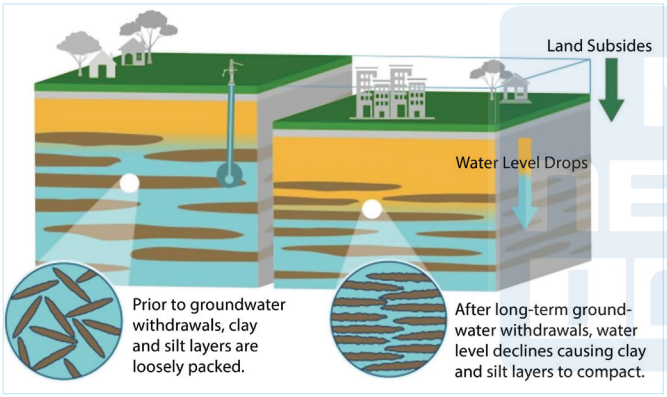
- **Scale Up Green Technologies:** Expand eco-friendly methods like adsorption, membrane filtration, photocatalysis, bioremediation, phytoremediation, and biosorption for sustainable cleanup.
- **Strengthen Water Treatment Infrastructure:** Promote reverse osmosis, ion-exchange resin systems, and decentralized treatment units, especially in rural and peri-urban areas.
- **Repurpose Industrial Waste:** Use materials like steel slag for safe and cost-effective land remediation.

LAND SUBSIDENCE THREAT IN INDIA'S MEGACITIES

A recent study titled "Building Damage Risk in Sinking Indian Megacities" has revealed that approximately 878 km² of land across five major Indian cities—Delhi, Chennai, Mumbai, Kolkata, and Bengaluru—is subsiding.

About Land Subsidence

- According to the **National Oceanic and Atmospheric Administration (NOAA),** Land subsidence refers to the **gradual sinking, lowering, or collapse of the Earth's surface** due to the removal or loss of subsurface materials, such as soil, groundwater, or minerals.
- It can occur naturally **(Karst processes, tectonic activities or Soil compaction)** or be induced by human activities (**mining or construction activities**).
- Across the world, many cities are slowly sinking from tropical megacities like Jakarta in Indonesia and Manila in the Philippines, to **India's own Joshimath, which recently faced land subsidence.**



Key Findings

- **Population and Infrastructure at Risk:** Nearly **1.9 million people** and over 23,000 buildings face severe damage risk if current trends persist for 50 years.
- **Current Damage:** Over 2,400 buildings in Delhi, Mumbai, and Chennai are already at high risk of damage.
- **Geologic Variation:** Cities built on soft alluvial soils (Delhi, Kolkata, Chennai) are more vulnerable than those on igneous or metamorphic rock formations (Bengaluru).

Causes of Land Subsidence

- **Excessive Groundwater Extraction:** Continuous withdrawal of groundwater causes aquifer compaction, leading to ground-level sinking.
- **Weight of Urban Infrastructure:** The increasing load from high-rise buildings in densely built-up areas accelerates ground deformation.
- **Inefficient Urban Planning:** Unregulated construction on reclaimed or soft soil zones amplifies vulnerability.
- **Climate Stress:** Irregular rainfall patterns and reduced groundwater recharge due to urban sealing worsen the problem.
- **Unregulated Dumping of Waste:** Municipal solid waste piles exert heavy pressure on land, especially if dumped on weak or marshy soils.
- **Mining Activities:** Coal, limestone, and sand mining create underground voids that can collapse.
- **Oil and Gas Extraction:** Removing underground hydrocarbons reduces pressure, causing gradual sinking.
- **Soil Erosion & Riverbank Instability:** Erosion weakens soil structure, making areas prone to subsidence.
- **Natural Causes:** Geological faults, tectonic activities, and the dissolution of underground rocks (e.g., limestone in karst areas).

Impacts of Land Subsidence

- **Infrastructure Damage:** Cracks in buildings, road deformities, and disrupted pipelines or drainage networks.
- **Flooding Risk:** Lowering of land height, especially in coastal cities like Mumbai and Chennai, heightens flood exposure during heavy rains or storm surges.
- **Economic Costs:** Repair and reconstruction expenses may rise substantially in coming decades.
- **Compounded Hazards:** Land subsidence can intensify the impacts of earthquakes and sea-level rise, posing multi-dimensional threats to urban safety.
- **Threat to Water Networks:** Subsidence misaligns water supply, sewer, and stormwater pipes.
- **Transport Disruptions:** Rail tracks warp, metro lines shift, and airport runways crack.
- **Loss of Agricultural Productivity:** Soil compaction reduces fertility and disrupts irrigation channels.
- **Saline Water Intrusion:** Coastal sinking allows seawater to intrude into groundwater.

Way Ahead

- **Soil testing and simulation models** should be used to predict the likelihood of subsidence. Installing **InSAR (satellite radar interferometry) and ground sensors** could help prevent disasters in densely populated areas.
- **Urban Hydrogeological Zoning:** Mandatory mapping of soil and groundwater characteristics is needed before any large-scale construction.
- **Infrastructure Design:** Strengthen building codes to address differential ground movement and adopt resilient foundation technologies in soft-soil regions.

STEM CELL THERAPY

Japanese scientists have successfully used adipose-derived stem cells to heal spinal fractures in osteoporosis patients.

Stem Cell Therapy

- Stem cell therapy is a branch of **regenerative medicine** (medicine focused on rebuilding damaged tissues or organs) that uses stem cells to repair, replace, or regenerate cells lost due to injury, ageing, or disease.
- Unlike conventional treatments that only manage symptoms, stem cell therapy aims to restore normal biological function at the cellular level.

How it Works:

- **Collection:** Stem cells are obtained from the **patient** (autologous therapy) or a **donor** (allogenic therapy).
- **Processing:** Cells are isolated and enhanced in laboratories using biotechnology techniques such as cell culture and gene modification.
- **Administration:** Processed cells are introduced into the body through **intravenous** (into the bloodstream), **intrathecal** (into the spinal canal), or localised injections.
- **Regeneration:** These cells migrate to damaged sites, **differentiate** (transform) into the required cell types, and release growth factors (proteins that trigger repair).
- In essence, the therapy activates the body's natural healing mechanisms, offering long-term restoration rather than temporary relief.

Stem Cells

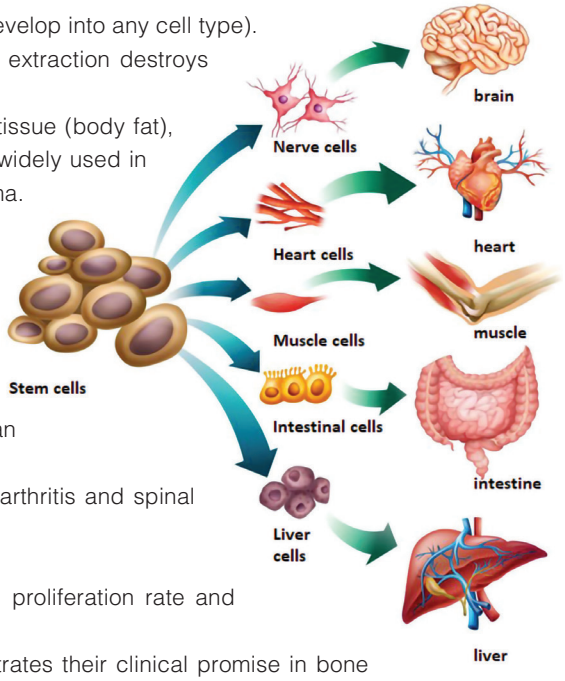
- Stem cells are **undifferentiated biological cells** (cells not yet specialised) with the ability to self-renew (make identical copies indefinitely) and **differentiate** (transform into specific cell types such as nerve, blood, or bone cells).
- They serve as the foundation for all tissues and organs in the body, earning them the title of "**master cells.**"

Key Properties:

- **Self-Renewal:** Continuous division without losing their defining characteristics.
- **Differentiation:** Ability to form specialised cells depending on the body's needs.
- **Plasticity:** Adaptability to function in different tissue environments.
- These properties make stem cells essential for regenerative medicine and disease modelling.

Types of Stem Cells

- **Embryonic Stem Cells (ESCs):**
  - Derived from early-stage embryos, ESCs are **pluripotent** (able to develop into any cell type).
  - They hold vast potential but raise ethical concerns because their extraction destroys embryos.
- **Adult (Somatic) Stem Cells:** Found in bone marrow, skin, and adipose tissue (body fat), these are **multipotent** (able to form only certain cell types). They are widely used in bone marrow transplants to treat **leukaemia** (blood cancer) and lymphoma.
- **Induced Pluripotent Stem Cells (iPSCs):**
  - Created by reprogramming adult cells (like skin cells) to behave like embryonic stem cells.
  - iPSCs avoid ethical issues and are crucial in disease modelling, drug testing, and gene therapy.
- **Mesenchymal Stem Cells (MSCs):**
  - Found in bone marrow, umbilical cord, and adipose tissue, MSCs can differentiate into bone, cartilage, and muscle cells.
  - Their anti-inflammatory properties make them valuable in treating arthritis and spinal injuries.
- **Adipose-Derived Stem Cells (ADSCs):**
  - Extracted from body fat through liposuction, ADSCs have a high proliferation rate and remain viable even in elderly patients.
  - The recent Japanese success in healing spinal fractures demonstrates their clinical promise in bone and tissue regeneration.



Applications of Stem Cell Therapy

- **Neurological Disorders:** Repairing neurons in Parkinson's disease, Alzheimer's disease, and spinal cord injuries.
- **Cardiovascular Diseases:** Regenerating heart muscle after myocardial infarction (heart attack).
- **Blood Disorders:** Treating sickle cell anaemia, leukaemia, and lymphoma.
- **Orthopaedics:** Healing fractures, arthritis, and osteoporosis through bone and cartilage regeneration.
- **Organ Regeneration:** Producing insulin-secreting pancreatic cells for diabetes and hepatocytes (liver cells) for liver diseases.
- **Drug Discovery:** Creating in vitro (lab-based) tissue models to test drug safety and efficacy.

Advantages

- Promotes natural tissue regeneration instead of symptomatic relief.
- Minimally invasive, reducing surgical complications and recovery time.
- Provides long-term healing by addressing the root cause.
- Enables personalised treatment (based on the patient's own cells or genetic makeup).
- Avoids ethical controversies through alternatives like iPSCs and ADSCs.
- Potentially reduces long-term healthcare costs by decreasing repeat interventions.

Global Scenario

- **Japan:** Global pioneer with the Regenerative Medicine Law (2014), enabling early clinical application. Institutions such as Osaka University and RIKEN are leading in iPSC-based treatments.
- **United States:** The **Food and Drug Administration (FDA)** regulates stem cell research under the 21st Century **Cures Act (2016)**. Research at Harvard and Stanford focuses on cardiac and ocular regeneration.
- **European Union:** The European Medicines Agency (EMA) regulates Advanced Therapy Medicinal Products (ATMPs) to ensure ethical compliance.
- **China and South Korea:** Significant investment in joint and corneal tissue repair technologies.
- **World Health Organization (WHO):** Projects the global regenerative medicine market to surpass USD 50 billion by 2030, with Asia-Pacific leading growth.

India's Position

- India's research and clinical practices are guided by the ICMR–DBT (Indian Council of Medical Research–Department of Biotechnology) Guidelines for Stem Cell Research, 2017.
- **These guidelines:**
  - Permit only approved clinical trials;
  - Prohibit commercial, unverified therapies;
  - Require informed consent, data privacy, and ethical oversight.
  - However, they remain advisory, highlighting the need for binding legislation.
- **Research Ecosystem:**
  - Institutions such as AIIMS, IITs, and NCCS Pune are major contributors.
  - **Private firms** like Stempeutics Research (Bengaluru) and Reliance Life Sciences (Mumbai) have advanced clinical studies.
- **Collaborations:**
  - India partners with Japan under the Indo–Japan Science Dialogue and with the European Union under the EU–India Health Partnership to promote knowledge sharing and innovation.
- **Policy Reforms Needed:**
  - Experts advocate a National Regenerative Medicine Act and a National Stem Cell Registry to ensure safety, transparency, and standardisation.

Challenges and Solutions

- **Limited Clinical Validation:**
  - Many therapies remain in experimental stages.
  - **Solution:** Establish a National Stem Cell Research Network under ICMR to conduct standardised multicentre clinical trials.
- **Risk of Tumour Formation:**
  - Uncontrolled growth can lead to **teratomas** (tumour-like cell masses).
  - **Solution:** Ensure genetic stability testing and compliance with WHO safety protocols.
- **Immune Rejection:**
  - Donor-derived cells may trigger immune reactions.
  - **Solution:** Prioritise **autologous therapy** (self-derived cells) and apply CRISPR gene editing (Clustered Regularly Interspaced Short Palindromic Repeats) to enhance compatibility.
- **High Cost:**
  - Treatment expenses (₹10–30 lakh) restrict accessibility.
  - **Solution:** Integrate approved therapies under Ayushman Bharat and promote Public–Private Partnerships (PPP) to lower costs.
- **Ethical and Legal Concerns:**
  - Embryonic stem cell use and unregulated clinics raise moral and safety issues.
  - **Solution:** Enact a Regenerative Medicine Law with strict licensing and monitoring provisions.
- **Public Misinformation:**
  - Unverified clinics advertise "**miracle cures.**"
  - **Solution:** Launch public awareness programmes under the Ministry of Health and regulate claims under the Consumer Protection Act (2019).

ELIMINATION OF VIOLENCE AGAINST WOMEN

International Day for the Elimination of Violence against Women was recently observed on November 25 with the theme "UNiTE to End Digital Violence against All Women and Girls".

Background

- In 1993, the **UN General Assembly** adopted the **Declaration on the Elimination of Violence against Women**, laying the foundation for global action.
- In 2000, the UN officially designated **November 25 as the International Day for the Elimination of Violence Against Women**, encouraging governments, international bodies, and NGOs to hold annual awareness activities worldwide.

Present Status and Issues

- According to World Health Organisation (WHO), **over a fifth of women in India aged 15-49 were subjected to intimate partner violence in 2023**, while nearly 30% have been affected during their lifetime.
- As per the NCRB report, a **total of 4,48,211 crimes against women were reported in 2023**, an increase from 4,45,256 cases in 2022 and 4,28,278 in 2021.
- The NCRB further notes that 2022 saw a **4.0% increase over 2021** (4,28,278 cases), with the majority of cases registered under **cruelty by husband or his relatives (31.4%),** followed by **kidnapping and abduction (19.2%),** assault with intent to outrage modesty (18.7%), and rape (7.1%).
- **According to UN**, AI-enabled anonymity and weak accountability mechanisms have aggravated online abuse. Globally, **nearly 1.8 billion women and girls** remain without legal safeguards against digital harassment.

India's Fight to End Violence Against Women: Laws and Legislations

- **Constitutional Safeguards:**The Constitution of India not only grants equality to women but also empowers the State to adopt measures of positive discrimination in favour of women.
- **Article 14:** It confers on men and women equal rights and opportunities in the political, economic and social spheres.
- **Article 15(3):** Provide for a special provision enabling the State to make affirmative discrimination in favour of women.
- **Article 16:** It provides for equality of opportunities in matter of public appointments for all citizens.
- **Article 39(a):** Mentions that the State shall direct its policy towards securing to all citizens men and women, equally, the right to means of livelihood, while **Article 39(c)** ensures equal pay for equal work.
- **Article 42:** It directs the State to make provision for ensuring just and humane conditions of work and maternity relief.
- **Fundamental Duty:** Constitution imposes a fundamental duty on every citizen through Articles 51 (A)(e) to renounce practices derogatory to dignity of women.
- **National Commission for Women (NCW), established in January 1992:** Monitors legal safeguards, handles complaints online and offline, and runs a 24×7 domestic violence helpline.
- **Protection of Women from Domestic Violence Act, 2005 (PWDVA):** Defines domestic violence broadly, covering physical, sexual, emotional, and economic abuse.
- **POSH Act, 2013:** Ensures workplace safety through Internal Committees (ICs) and Local Committees (LCs). MWCD's SHe-Box centralises complaint reporting and tracking.
- **Bharatiya Nyaya Sanhita, 2023** (effective July 1, 2024)**:** Replaces the IPC, strengthens penalties for sexual offences (including life imprisonment for rape of minors), expands definitions, and mandates audio-video recording of victim statements.

Major Schemes and Support Services

- **Mission Shakti:** A mission-mode programme enhancing women's safety, security, and empowerment across their life cycle.
- **Swadhar Greh Scheme:** Provides shelter, food, legal aid, counselling, and rehabilitation for women in difficult circumstances.
- **One Stop Centres (OSCs):** District-level hubs offering integrated services — police support, medical aid, legal assistance, counselling, and temporary shelter.
- **Stree Manoraksha:** NIMHANS-led training for OSC staff on psychosocial and mental health support.
- **Helplines & Emergency Response:** Women Helpline 181 (24×7 nationwide support).
  - Emergency Response Support System (ERSS) 112 for police, fire, and ambulance services.
  - WhatsApp helpline (7217735372) for urgent assistance.

Conclusion

- India is strengthening its response to gender-based violence through **Mission Shakti's One Stop Centres**, Women Help Desks, and helplines, alongside legal reforms like the **Bharatiya Nyaya Sanhita, 2023** and digital tools and the **Digital Shakti Campaign**.
- These measures aim to ensure **accessible reporting, survivor support, and faster justice, reflecting India's commitment to a safer, inclusive environment** where women and girls can live with dignity and equality both offline and online.

1 POLITY & GOVERNANCE

NEED FOR SHIFT FROM FOOD SECURITY TO NUTRITION SECURITY

At the inaugural session of the Emerging Science, Technology and Innovation Conclave (ESTIC) 2025 PM Modi urged the scientific community to focus on moving from food security to nutrition security.

Status of Food Security in India

- According to the **Third Advance Estimates for 2024-25,** India has achieved record foodgrain production of **353.96 million tonnes,** including **117.51 million tonnes** of wheat and 149.07 million tonnes of rice.
- **The National Food Security Act (NFSA), 2013** ensures subsidised foodgrains to about **81.35 crore beneficiaries**, covering 75% of rural and 50% of urban populations.
- As of July 2025, the **Food Corporation of India (FCI)** and state agencies have a total of **917.83 Lakh Metric Tonnes (LMT)** of covered and Cover and Plinth (CAP) storage capacity for central pool grains. However food security does not ensure nutritional security.

Need to Focus towards Nutrition Security

- **Persistent Child Malnutrition:** According to NFHS-5 (2019–21);
  - 35.5% of children under five are stunted (low height-for-age).
  - 19.3% are wasted (low weight-for-height).
  - 32.1% are underweight.
- **Maternal and Women's Nutrition:** The proportion of malnourished women (BMI < 18.5) declined modestly from 22.9% to 18.7%, but anemia among women (15–49 years) remains alarmingly high at 57% (NFHS-5).
- **Micronutrient Deficiencies:** India faces widespread deficiencies of iron, vitamin A, zinc, and iodine. The Comprehensive National Nutrition Survey (CNNS) found that over 50% of preschool children suffer from vitamin A or iron deficiency.
  - Such "**hidden hunger**" persists even in food-secure households that depend heavily on cereal-based diets.
- **Economic and Social Impact:** Malnutrition limits human capital development, reducing productivity, increasing healthcare costs, and perpetuating the cycle of poverty, thereby affecting national development goals.

Government Initiatives for Nutritional Improvement

Initiative	Description
POSHAN Abhiyaan	Reduces stunting, undernutrition, and anemia
POSHAN 2.0	Integrates nutrition program and monitoring app
Food Fortification	Mandates fortified rice distribution by 2028
ICDS	Provides nutrition, monitoring, and education
Anaemia Mukt Bharat	Targets reduction of anaemia
Dietary Diversification	Promotes millets and pulses

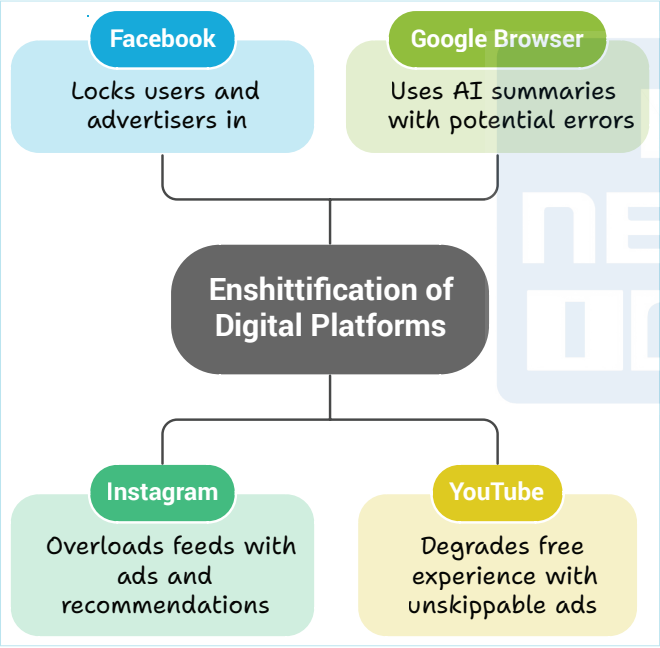
Parameter	Food Security	Nutrition Security
Focus	Calorie sufficiency	Adequate intake of macro & micronutrients
Goal	Prevent hunger	Ensure physical and cognitive well-being
Indicators	Grain availability, PDS coverage	Anaemia, stunting, obesity, diet diversity
Approach	Quantity-driven	Quality- and diversity-driven
Policy Orientation	Cereal-centric (rice & wheat)	Crop & diet diversification
Main Schemes	PDS, NFSA, Mid-Day Meal	Poshan Abhiyaan, ICDS, Food Fortification Mission
Measurement Metric	Food availability per capita	Nutrition outcomes and diet diversity
Sustainability Aspect	Short-term relief	Long-term health & sustainability

DEGRADATION OF SOCIAL PLATFORMS

'Enshittification' is a term increasingly being used to describe how your digital experiences, services, and transactions have become worse over time.

About Enshittification

- In 2022, the Canada-born author and activist **Cory Doctorow** coined the term "enshittification."
  - It refers to the systematic decline in quality and fairness of digital platforms due to profit-maximizing behaviour by tech companies.
- **It occurs when platforms:**
  - Start by prioritizing users to attract a large base.
  - Shift focus to business customers (advertisers, sellers, partners) to maximize revenue.
  - Finally exploit both users and business clients to extract maximum profit — leading to decline or collapse.



Concerns

- **Data monopoly:** Platforms manipulate data for profit rather than user welfare.
- **Distortion of competition:** Dominant platforms squeeze smaller competitors by favouring their own services.
- **Loss of trust:** Users doubt authenticity and neutrality of digital services, as algorithms manipulate what users see, limiting choice and agency.
- **Digital divide deepens:** Quality information and ad-free experiences become a privilege.
- **Privacy and Data Exploitation:** Excessive data collection and tracking are used to maximise ad revenue.
- **Manipulation:** Search results and recommendations become biased towards the platform's own interests.
- **Digital Fatigue:** Constant ads, algorithmic manipulation, and reduced authenticity create frustration. Users disengage or experience "digital burnout."
- **Long-term Platform Instability:** When platforms overexploit both users and businesses, they eventually lose credibility and collapse — a "digital decay" cycle.

Government Initiatives

- **Digital Competition Bill (Draft, 2024):** It aims to prevent anti-competitive practices by Big Tech firms and seeks to curb self-preferencing, data misuse, and gatekeeping by large digital platforms.
- **Digital Personal Data Protection (DPDP) Act, 2023:** It establishes data protection rights for users and mandates consent-based data processing and penalties for misuse.
- **Competition (Amendment) Act, 2023:** It strengthens powers of the Competition Commission of India (CCI).
  - Targets digital market monopolies and enables faster investigation into anti-competitive conduct.
- **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021:** Mandates grievance redressal, traceability, and transparency in content moderation. It also ensures platform accountability for user harm or misinformation.
- **Open Network for Digital Commerce (ONDC):** It is designed to democratize e-commerce by creating an open, interoperable network.
- **Digital India Initiative:** Focuses on inclusive digital access, cybersecurity, and digital literacy — empowering citizens to make informed digital choices.

UNION HEALTH MINISTRY SETS 3 GUINNESS WORLD RECORDS

The Union Health Ministry has achieved three Guinness World Record titles under the nationwide "Swasth Nari, Sashakt Parivar Abhiyaan" (SNSPA) campaign.

About

The Records Achieved are:

- Most people register for a health care platform in one month.
- Most people sign up for a breast cancer screening online in one week. Most people sign up for vital signs screening online in one week (at state level).

Swasth Nari, Sashakt Parivar Abhiyaan

- The PM launched the nationwide campaign "Swasth Nari, Sashakt Parivar Abhiyaan" from 17th September to 2nd October 2025, in conjunction with Poshan Maah.
- The campaign focuses on improving the health and nutrition of women, adolescent girls, and children.
- This recognition from Guinness World Records stands as a testament to India's collective effort.

INDIA'S NEW AI GOVERNANCE GUIDELINES

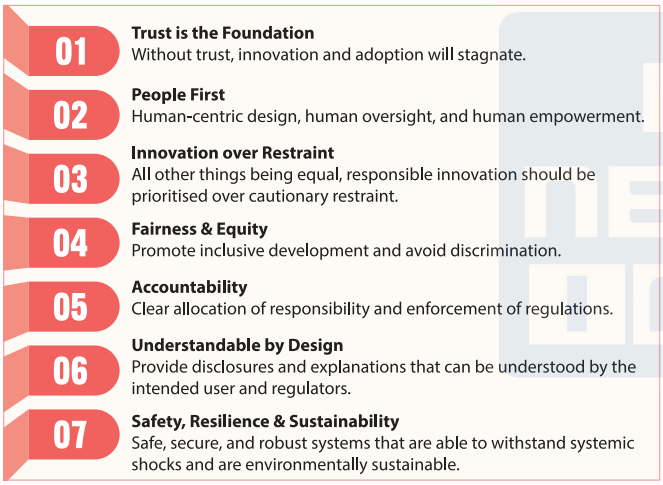
The Ministry of Electronics and Information Technology (MeitY) released the India AI Governance Guidelines.

About

- These guidelines **present a governance framework** that seeks to advance technical progress and mitigate the potential risks of AI to society, while being firmly grounded in the needs and aspirations of India.
- **A drafting committee** was constituted by the Ministry of Electronics and Information Technology (MeitY) in July 2025.
  - Its mandate was to draw on available literature, review existing laws, study global developments, and develop suitable guidelines for AI governance in India.

Major Highlights

- **Seven principles** have been adapted for application across sectors and aligned with national priorities.



Key Recommendations

It examines key issues in AI governance from India's perspective & makes recommendations across six pillars:

- **Infrastructure:** Enable innovation and adoption of AI by expanding access to foundational resources such as data and compute, attract investments, and leverage the power of digital public infrastructure.
- **Capacity Building:** Initiate education, skilling, and training programs to empower people, build trust, and increase awareness about the risks and opportunities of AI.
- **Policy & Regulation:** Adopt balanced, agile, and flexible frameworks that support innovation and mitigate the risks of AI. Review current laws, identify regulatory gaps in relation to AI systems, and address them with targeted amendments.
- **Risk Mitigation:** Develop an India-specific risk assessment framework that reflects real-world evidence of harm.
- **Accountability:** Adopt a graded liability system based on the function performed, level of risk, and whether due diligence was observed.
- **Institutions:** Adopt a whole of government approach where ministries, sectoral regulators, and other public bodies work together to develop and implement AI governance frameworks.
- **An institutional framework** to implement the AI governance guidelines has also been suggested:
  - High-level body (AI Governance Group) Government agencies (MeitY, MHA, MEA, DoT, etc.)
  - Sectoral regulators (RBI, SEBI, TRAI, CCI, etc.)
  - Advisory bodies (NITI Aayog, Office of PSA, etc.)
  - Standards bodies (BIS, TEC, etc.).
- **Action Plan:** The Action Plan identifies outcomes mapped to **short, medium, and long-term timelines.**

NATIONAL COMPANY LAW APPELLATE TRIBUNAL (NCLAT)

The Supreme Court refused to intervene with an order of the National Company Law Appellate Tribunal (NCLAT) which had allowed Aakash Educational Services Ltd, a subsidiary of Byju's, to proceed with its proposed rights issue.

About

- The National Company Law Appellate Tribunal (NCLAT) was constituted under **Section 410** of the **Companies Act, 2013,** with effect from **2016.**
- It functions as a **quasi-judicial body** to hear appeals against orders of the National Company Law Tribunal (NCLT) and several other regulatory authorities.
- It also serves as the Appellate Tribunal for hearing appeals against orders passed by the
  - **National Company Law Tribunal** (under Section 61 of the Insolvency and Bankruptcy Code, 2016),
  - **Insolvency and Bankruptcy Board of India** (under Sections 202 and 211 of the IBC),
  - **Competition Commission of India (CCI),** and
  - National Financial Reporting Authority (NFRA).

WRITTEN GROUNDS OF ARREST MUST BE FURNISHED IN LANGUAGE ARRESTEE UNDERSTANDS: SC

The Supreme Court of India has held that any arrest is illegal if the written grounds of arrest are not provided in a language understood by the accused — extending this safeguard from special laws to all arrests, including under IPC and BNS.

Constitutional Basis

- **Article 22(1):** Requires timely communication of the grounds of arrest and guarantees the right to counsel.

- **Article 21:** Ensures that deprivation of liberty must follow a fair, just, and reasonable procedure.
- The Court held that these articles must be read together to ensure meaningful protection of arrestees.

Supreme Court's Key Observations

- **Right to Know:** Arrested persons must be informed of the specific reasons and charges.
  - **Article 22(1):** Requires timely communication of the grounds of arrest and guarantees the right to counsel.
  - **Article 21:** Ensures that deprivation of liberty must follow a fair, just, and reasonable procedure.
  - The Court held that these articles must be read together to ensure meaningful protection of arrestees.
- **Language Requirement:** Grounds must be provided in a language the arrestee can understand; oral explanation or documents in an unfamiliar language are insufficient.
- **Written Clarity:** Written grounds enable the arrestee to seek legal help or apply for bail.
- **Non-Compliance:** Failure to follow these requirements makes the arrest illegal.

Article 22

- **Article 22(1):** No person can be detained in custody without being informed of grounds of arrest nor shall be denied the right to consult or be defended by a legal practitioner.
- **Article 22(2):** Every person who is arrested/detained in custody shall be produced before a magistrate within 24 hours of such an arrest.
- **Article 22(3):** The above two clauses will not apply to a person who is detained in accordance with a law providing for preventive detention.
- **Article 22(4):** No person can be detained for more than a period of 3 months unless an advisory board confirms that there is sufficient cause for continuation of such detention.

Significance

- **Uniform Safeguard:** Extends the protection to all arrests, ensuring consistency across laws.
- **Empowerment:** Protects linguistic and educationally disadvantaged individuals.
- **Accountability:** Forces police and agencies to follow due process and reduces arbitrary arrests.
- **Rule of Law:** Reinforces that liberty can be restricted only through clear, transparent, and fair procedures.

NATIONAL SOCIAL ASSISTANCE PROGRAMME (NSAP)

The National Social Assistance Programme serves as a key pillar of India's social security system, providing essential support to citizens in need.

About

- **Introduced:** On 15 August 1995.
- It is a **fully funded Centrally Sponsored Scheme** that extends financial support to individuals **living below poverty line (BPL).**
- Implemented by the Ministry of Rural Development.
- **Operation:** It operates across both **rural and urban areas.**
- **Pensions Covered:** NSAP covers old age pension, widow pension, disability pension, family benefit, and food security.

The NSAP at Present Comprises Five Sub-Schemes as its Components:

- **Indira Gandhi National Old Age Pension Scheme (IGNOAPS):**
  - Financial assistance to elderly citizens aged 60 years.
  - Those between 60 and 79 years of age receive Rs.200 per month, while those aged 80 years and above are provided Rs.500 per month.
- **Indira Gandhi National Widow Pension Scheme (IGNWPS):**
  - Widows aged between 40 and 79 years.
  - Pension of Rs.300 per month and for those aged 80 years and above, the amount is Rs.500 per month.
- **Indira Gandhi National Disability Pension Scheme (IGNDPS):**
  - Scheme caters to individuals aged between 18 and 79 years who have severe or multiple disabilities and belong to families living below the poverty line.
  - The beneficiaries are eligible for central assistance of Rs.300 per month and who are 80 years and above receive Rs.500 per month.
- **National Family Benefit Scheme (NFBS):**
  - A household living below the poverty line becomes eligible for lump sum financial assistance in the unfortunate event of the death of its primary breadwinner between 18 and 59 years of age.
  - The family receives Rs.20,000 as support to help them cope with the immediate financial difficulties arising from the loss.
- **Annapurna Scheme:** 10kg of food grains per month are provided free of cost to those senior citizens who, though eligible under IGNOAPS, are not receiving old age pension.

Implementation:

- **Selection:** Gram Panchayats and Municipalities play an active role in identifying eligible beneficiaries under the different NSAP schemes.
- **Disbursement:** Benefits are provided through DBT mode (94%) i.e beneficiary's bank or post office savings accounts, or via postal money orders.
- **Monitoring:** States and Union Territories have the flexibility to implement the schemes through any State Government department, but each must appoint a Nodal Secretary at the State level to oversee implementation and coordinate with relevant departments.

NATIONAL LEGAL SERVICES DAY

Every year, November 9 is celebrated as the National Legal Services Day to commemorate the Legal Services Authorities Act, 1987, which led to the establishment of organisations providing free legal aid to the needy.

About

- India as the world's largest democracy is built on the foundation of justice, equality, and liberty.
- The **Constitution of India** guarantees equal rights and equal protection under the law to all citizens. These include:
  - **Art 14:** Equality Before Law
  - **Article 21:** Protection of Life And Personal Liberty
  - **Article 22:** Protection Against Arrest and Detention in Certain Cases
  - **Article 39A:** Equal Justice And Free Legal Aid *(Introduced through the 42nd Amendment)*.

Legal Services Authorities Act, 1987

- It came into effect on **November 9, 1995**, led to the establishment of a nationwide framework to provide **free and competent legal services** to the marginalized and disadvantaged sections of society.
- The **Legal Services Authorities Act, 1987** established **Lok Adalats** and **Permanent Lok Adalats** as forums for amicable settlement of disputes, including pre-litigation matters.
- **Three-Tier Structure of Legal Services Authorities:**
  - **National Legal Services Authority (NALSA):** Headed by the **Chief Justice of India;** funded through Central funding and donations;
  - **State Legal Services Authorities (SLSAs):** Headed by the **Chief Justice of the High Court;** funded through Central and State Government support;
  - **District Legal Services Authorities (DLSAs):** Headed by the **District Judge;** funded through State Government funding and donations;
- **Accessing Free Legal Aid:** Eligible individuals can apply for free legal services through:
  - Written or oral applications at Legal Services Authorities offices;
  - **Online applications** via NALSA, State, or District portals;
- Applications are processed promptly, and as per **Regulation 7(2)** of the **NALSA (Free and Competent Legal Services) Regulations, 2010,** decisions need to be made within **seven days**.
  - From **2022–23 to 2024–25**, over **44.22 lakh people** benefited from free legal aid and advice.

Role of NALSA and State Legal Services Authorities

NALSA, along with State Legal Services Authorities (SLSAs), plays a pivotal role in:

- **Organizing Lok Adalats** for speedy and amicable dispute resolution.
- **Running Legal Aid Clinics** in remote and underserved areas.
- Conducting legal literacy camps to educate citizens about their rights. Supporting victim compensation schemes and mediation services.

Innovative Initiatives for Holistic Justice

- **DISHA Framework:**
  - **Tele-Law and Nyaya Bandhu:** These digital initiatives connect citizens, especially in remote areas, with legal advisors via technology.
  - **Legal Literacy and Awareness Programme (LLLAP):** It promotes legal awareness through communication materials in **22 scheduled languages**, with active participation from state agencies.
- **Fast-Track Courts (FTCs):** It was established to ensure speedy trials in cases involving women, children, senior citizens, and other vulnerable groups.
- **Fast Track Special Courts (FTSCs):** Focused on serious sexual offences, including cases under the **POCSO Act**.
- **Gram Nyayalayas:** These village-level courts enhance access to justice in rural areas.
- **Nari Adalats:** An initiative under the **Mission Shakti** scheme, **Nari Adalats** address gender-based violence through mediation and reconciliation.
  - Composed of **7–9 women**, they empower women to assert their rights and access legal aid.
- **Special Courts for Marginalized Communities:** To safeguard the rights of Scheduled Castes and Scheduled Tribes, **211 Exclusive Special Courts** have been set up under the **SC/ST (Prevention of Atrocities) Act, 1989**.

INDIA DEVELOPMENT AND STRATEGIC FUND

The Confederation of Indian Industry (CII) has suggested setting up an India Development and Strategic Fund (IDSF) to support long-term growth and global economic security.

About IDSF

- **Aim:** To create a **"twin-arm"** national fund to mobilise domestic and global savings and recycle capital from mature assets into new productive capacity.
  - It will build an enduring financial engine for **long-term national development beyond annual budgets.**
- **CII suggested that IDSF will have two arms:**
  - **Development Investment Arm:** It will focus on Long-term domestic priorities.
    - **Sectors:** Infrastructure, Clean energy, Logistics and industrial corridors, MSME scale-up, Education & skilling, Healthcare, Urban infrastructure.
    - **Role:** Acts as anchor investor, attracting pension funds, sovereign wealth funds, and institutional investors (both domestic and foreign).

- **Strategic Investment Arm:** It will focus on securing critical overseas assets vital for India's economic and security interests.
- **Targets:** Energy assets, Critical minerals, Frontier technologies (AI, semiconductors).

Confederation of Indian Industry (CII)

- **Type:** Non-government, not-for-profit, industry-led and industry-managed organization.
- **Established:** 1895 (as Engineering and Iron Trades Association; renamed CII in 1992).
- **Headquarters:** New Delhi.
- **Membership:** Over 9,000 direct members (private and public enterprises, SMEs, MNCs) and 300,000 indirect members (through sectoral associations).
- **Coverage:** All sectors of economy across 62 offices in India and 8 overseas offices.
- CII charts change by working closely with governments and thought leaders and enhancing efficiency, competitiveness and business opportunities for industry.

SUPREME COURT ON PRIVILEGED COMMUNICATIONS

The Supreme Court reaffirmed the vital role of advocates in a constitutional democracy, ruling that lawyers cannot be compelled to disclose client communications unless the legal advice is used to commit or conceal a crime.

Background

- The judgment arose from suo motu proceedings after an Ahmedabad police officer issued a notice under Section 179 of the BNSS, 2023, summoning a defence counsel to reveal case details.

About Privileged Communications

- Privileged communications refer to **confidential exchanges** between certain protected relationships, such as attorney-client and spousal, that the law shields from being disclosed or compelled as evidence in court.
- The **Bharatiya Sakshya Adhiniyam (BSA), 2023,** protects privileged communications from being disclosed in court.
- **Sections 128–134 outline these safeguards.**
  - **Section 128** shields marital communications, even post-divorce, unless in cases of inter-spousal crime or litigation.
  - **Section 129 restricts access to unpublished official** records without departmental approval to protect national interest.
  - **Section 132 upholds advocate-client confidentiality** by prohibiting disclosure of professional communications.

Latest Observations of Supreme Court

- The Supreme Court ruled that compelling a lawyer to disclose client communications—except under specific exceptions in **Section 132 of the Bharatiya Sakshya Adhiniyam (BSA), 2023**—violates the constitutional right to a fair trial.
- The Court emphasized that **legal professional privilege protects the accused's right to equitable representation and cannot be bypassed by summoning the lawyer** unless the communication involves client consent, illegal purposes, or observed criminal activity.
- By linking this privilege to Article 20(3) (protection against self-incrimination), the Court constitutionalised it as a safeguard for citizens, not a lawyer's privilege.
- It also affirmed that advocates are constitutional actors'' vital to the justice system, and forcing them to testify against clients undermines **Articles 14 and 21 by collapsing the boundary between defence and prosecution.**

NATIONAL ACTION PLAN ON AMR 2.0

Recently, the Union Health Minister launched the second version of the National Action Plan on Antimicrobial Resistance (NAP-AMR) (2025–29).

About NAP-AMR 2.0 (2025–29)

- It addresses gaps from **NAP-AMR 1.0 (2017–2021)**, including strengthening surveillance, expanding public awareness, enhancing private-sector engagement, and improving regulatory and laboratory capacity.
- It adopts a **strong One Health approach**, involving coordination across human health, animal health, agriculture, food systems, and the environment.
- It involves over **20 ministries** with clear timelines and dedicated budgets.

About Antimicrobial Resistance (AMR)

- **Antimicrobials** *(including antibiotics, antivirals, antifungals, and antiparasitics)* are used to treat infections in humans, animals, and plants.
- Antimicrobial Resistance (AMR) occurs when **pathogens no longer respond to** Antimicrobials, making infections harder to treat and increasing the risk of disease spread, illness, disability, and death.
- It is a natural process which is accelerated by the **misuse and overuse of antimicrobials** in humans, animals, and plants.

AMR's Burden

- Globally, AMR contributed to **4.95 million deaths in the world** in 2019 and it is expected to reach **10 million** deaths by 2050.
- **In India,** there were **297,000 deaths** attributable to AMR in 2019, and it is expected to reach **2 million** deaths by 2050.
  - A Lancet report added that more than **80% of Indian patients** carry **multidrug-resistant organisms (MDROs),** the highest globally.

Challenges Associated with AMR

- **High antibiotic misuse** in humans, livestock, poultry, and aquaculture.
- **Easy 'Over The Counter (OTC)' availability** of antibiotics despite regulations.
- **Weak laboratory networks** for microbiological testing and surveillance in many states.
- **Low prescription audits** and poor implementation of antimicrobial stewardship in smaller hospitals.
- **Environmental contamination** due to pharmaceutical effluents and hospital waste containing antimicrobial residues.
- **Limited public awareness**, especially in rural areas.
- **Fragmented inter-ministerial coordination**, despite the One Health framework.

EARTH SYSTEM SCIENCES COUNCIL

5 institutes of the Ministry of Earth Sciences have been formally brought under a single umbrella by merging five separate Societies into one single called "Earth System Sciences Council" (ESSC).

About ESSC

- **Aim:** To **streamline governance** and collectively address the scientific and humanitarian problems posed by the changing climate, erratic monsoons and melting polar regions.
- **Institutes Merged:** Indian Institute of Tropical Meteorology (IITM) in Pune, the National Centre for Polar and Ocean Research (NCPOR) in Goa, the National Institute of Ocean Technology (NIOT) in Chennai, the National Centre for Earth Science Studies (NCESS) in Thiruvananthapuram, and the Indian National Centre for Ocean Information and Services (INCOIS) based in Hyderabad.
- **Earth System Science Organisation comprises two sub-ordinate offices:** the India Meteorological Department (IMD) and the National Centre for Medium Range Weather Forecasting (NCMRWF).
- **ESSC** formally registered as a body in **2023,** MoES Secretary will head the ESSC and the minister for Earth Sciences will act as the ESSC president.
- It is intended to support the government's broader approach of **"minimum government, maximum governance."**

PROTECTED AREA PERMIT

Nagaland Chief Minister has urged the Union Home Minister to urgently review the re-imposition of the Protected Area Permit (PAP) regime in the state.

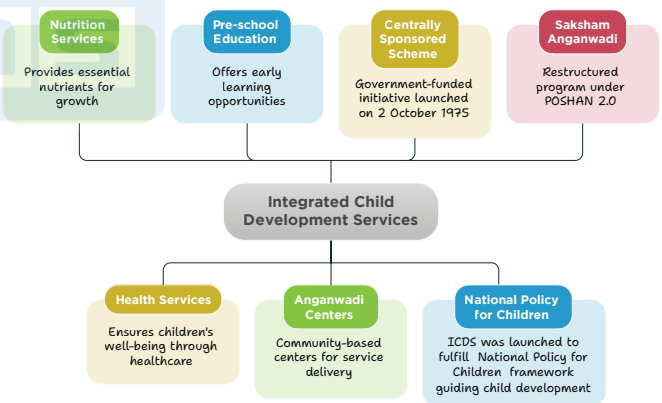
About

- **Overview:** The Protected Area Permit (PAP) is a special permit required by foreign nationals to visit certain sensitive regions of India that lie close to international borders.
  - This system is mandated under the Foreigners (Protected Areas) Order, 1958.
- **Eligibility:** PAP is mandatory for foreign citizens (excluding Bhutanese nationals) to enter these areas. Indian citizens require an Inner Line Permit (ILP) for some overlapping regions.
  - Permits are usually granted for specific tourist circuits/ routes and are time-bound; overstaying is prohibited.
  - Generally, only group tourists (minimum of two persons) traveling with registered tour operators are allowed.
- **States/Areas Under PAP (2025 Update):** Whole of Arunachal Pradesh, Manipur, Mizoram, & Nagaland. Parts of Himachal Pradesh, Jammu & Kashmir, Uttarakhand, and Rajasthan.
- **Validity and Compliance:** PAP is valid only for the specified area, route, and time mentioned in the permit.
- **Difference from Restricted Area Permit (RAP):** The RAP regime applies mainly to the Andaman & Nicobar Islands and parts of Sikkim; policies are similar but locations are different.

INTEGRATED CHILD DEVELOPMENT SERVICES PROGRAMME

Integrated Child Development Services programme has expanded widely and improved nutrition, education, and early childhood care through anganwadis.

About



ARTICLE 240

The Union Home Ministry clarified that no Constitutional Amendment Bill in the upcoming winter session would bring Chandigarh under Article 240.

Constitution (131st Amendment) Bill, 2025

- It proposes to bring Chandigarh under Article 240, grouping it with Union Territories that lack legislatures, thereby empowering the President to frame regulations for it.
- It will open the door to an independent administrator in the Union Territory of Chandigarh. The Punjab Governor is currently the Administrator of Chandigarh.

- The move is aimed to simplify the Central Government's law-making process for Chandigarh.
- It aims to ensure uniformity in governance across Union Territories without legislatures.
- It aims to empower the President to frame regulations for Chandigarh, equivalent to Acts of Parliament.

Opposition and Concerns

- The Constitution (131st Amendment) Bill, 2025 has triggered sharp opposition in Punjab.
- Parties argue it undermines Punjab's claim over Chandigarh, which holds a unique status as the joint capital of Punjab and Haryana under the 1966 Reorganisation Act.
- Critics fear it could allow an independent administrator, ending the tradition of the Punjab Governor overseeing Chandigarh.

Article 240 of the Constitution

It grants the power to the President to make regulations for the peace, progress and effective governance of certain Union territories, including the Andaman and Nicobar Islands, Lakshadweep, and Dadra and Nagar Haveli and Daman and Diu.

JUSTICE SURYA KANT BECOMES 53RD CJI

Recently, Justice Surya Kant was sworn in as the 53rd Chief Justice of India (CJI), succeeding Justice BR Gavai. The oath of office was administered by the President of India at Rashtrapati Bhavan.

About

- **Origins in Colonial Judiciary:** The position of Chief Justice traces its lineage to the Supreme Court of Judicature at Fort William, established under the Regulating Act in 1774 by the British Parliament.
  - It was headed by a Chief Justice, with Sir Elijah Impey as the first to hold the title in India.
  - Over time, High Courts were established in Calcutta (1862), Bombay, and Madras, each led by a Chief Justice under the Indian High Courts Act, 1861.
- **Post-Independence Constitutional Framework:** The Constitution of India (1950) formally established the Supreme Court of India under Article 124, replacing the Federal Court of India (1937–1950).
  - **Justice Harilal Jekisundas Kania** became the **first Chief Justice of India** on January 26, 1950, the day the Constitution came into effect.

Constitutional Mandates of the Chief Justice of India

- The Supreme Court of India is established under **Part V, Chapter IV (Articles 124 to 147)** of the Constitution of India. Key provisions include:
- **Article 124:** Establishment and constitution of the Supreme Court.
  - **Article 124 (1):** There shall be a **Supreme Court of India** consisting of a **Chief Justice of India** and **other Judges.**
  - **Article 124 (2):** Every Judge of the Supreme Court shall be **appointed by the President of India** by warrant under his hand and seal and shall hold office until he attains the **age of sixty-five years.**
- **Article 145:** It empowers the Supreme Court to make rules for regulating its practice and procedure, under the **leadership of the CJI.**
- **Article 146:** It grants the **CJI authority** over the appointment and service conditions of officers and servants of the Supreme Court.
- **Article 147:** It defines the term 'Supreme Court' to include the Chief Justice and other judges.

Judicial Independence and Safeguards

- **Tenure Security:** The CJI can be removed through impeachment under Article 124(4) and (5). The removal requires proven misbehavior or incapacity.
- **Financial Autonomy:** Salaries and allowances are charged on the Consolidated Fund of India (CFI).
- **Post-Retirement Restrictions:** The CJI cannot plead or act in any court or before any authority in India after retirement.

Key Responsibilities of the CJI

- **Oath of President of India:** Every President and every person acting as President or discharging the functions of the President shall, before entering upon his office, **make and subscribe to an oath or affirmation in the presence of the Chief Justice of India** or, in his absence, the senior-most Judge of the Supreme Court available.
- **Judicial Leadership:** Presides over **Constitution Benches** and allocates cases to other judges.
  - **Master of the Roster:** The term refers to the **CJI's prerogative** to decide which judge hears which case. It was **reaffirmed by the Supreme Court in 2018**, declaring the **CJI as the 'spokesperson of the court'** and the sole authority over bench composition.
- **Administrative Head:** Oversees the functioning of the Supreme Court and its registry.
- **Collegium System:** Heads the collegium responsible for recommending appointments and transfers of judges in the higher judiciary.
- **Final Court of Appeal:** The Supreme Court is the final court of appeal in civil, criminal, and constitutional matters.
  - **Article 32:** It empowers the Court **to enforce Fundamental Rights** through **writs** like habeas corpus, mandamus, prohibition, quo warranto, and certiorari.

- **Article 136:** It grants the Court **discretionary power to grant special leave** to appeal from any judgment or order passed by any court or tribunal in India.

- **Judicial Review and Guardian of the Constitution:** The Supreme Court, under the leadership of the CJI, has the power to:
  - Strike down unconstitutional laws and executive actions.
  - Interpret constitutional provisions, especially in cases involving federal disputes, fundamental rights, and electoral laws.
  - Ensure **checks and balances** among the three branches of government.
- **Advisory Role:** Plays a consultative role in matters such as the appointment of Election Commissioners and Lokpal members.

CONSTITUTION DAY

26th November is being celebrated as Constitution Day to mark the adoption of the Constitution of India by the Constituent Assembly (CA).

About Constitution Day (Samvidhan Divas, National Law Day)

- **In 2015, the Ministry of Social Justice and Empowerment** notified the GOI's decision to celebrate the 26th November as Constitution Day.
- The day was celebrated as a tribute to **Dr B R Ambedkar as Chairman** of the **Drafting Committee.**

Constituent Assembly Timeline

Year	Event
1934	Demand made by M.N. Roy
1940	Demand accepted by British government
1946	9th December, First session on Draft Constitution
1949	26th November, Constitution of India adopted
1950	26th January, Constitution of India came into force

Key Facts about Constituent Assembly

- Took **2 years, 11 months & 17 days** for drafting the Constitution of India.
- **Dr Sachchidananda Sinha** was appointed as **1st President of CA.**
- Dr Rajendra Prasad was the **chairman of the Constituent Assembly.**
- Jawaharlal Nehru (PM) made the **'Objectives Resolution'** on 13th Dec. 1946, later adopted as **Preamble on 22nd Jan 1947.**
- **The constituent assembly** acted as the **temporary legislature** until a new one was to be constituted.

Brief About Constitution of India

- **The longest written constitution** of the World (25 Parts & 12 Schedules)
- The Constitution of India **wasn't typed or printed** and is handwritten & stored in a Helium **filled case**.
- It was handcrafted by the artists of **Shantiniketan** under the **guidance of Acharya Nandalal Bose.**

ARTICLE 141

The Supreme Court of India strongly criticized the rising trend of "bench hunting," where litigants seek out subsequent benches to overturn or modify earlier rulings.

About

- **Article 141 is the constitutional provision** that mandates that the law declared by the Supreme Court shall be binding on all courts within the territory of India.
  - This establishes the Supreme Court as the highest authority, and its decisions are essential for maintaining the uniformity and certainty of the law throughout the country.
  - This principle, meaning **"to stand by things decided,"** is the foundation of Article 141. It ensures that once a point of law has been authoritatively decided, it should be followed in future cases.

Need of Article 141

- Prevents different High Courts from interpreting laws differently.
- Provides stability in jurisprudence.
- Ensures lower courts follow established principles.
- Strengthens constitutional supremacy and judicial discipline.

INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE

Chief Election Commissioner (CEC) Gyanesh Kumar is going to assume the Chairship of the International Institute for Democracy and Electoral Assistance (International IDEA) for the year 2026.

About International IDEA

- It was founded in 1995, is an inter-governmental organisation.
- It works to strengthen democratic institutions and electoral processes worldwide.
- It currently has **35 member countries**, with the United States and Japan as observers.
- India is a **founding member of International IDEA** and has played an active role in its governance and initiatives.

Significance

- The Chairship is seen as a recognition of the Election Commission of India's (ECI) credibility and innovation as one of the world's leading Election Management Bodies.

2 INTERNATIONAL RELATIONS

INDIA – US SIGN 10 YEAR ROADMAP FOR MAJOR DEFENSE PARTNERSHIP

India and the U.S. signed a landmark 10-year road map to guide strategic collaboration and cooperation between the two countries across the defence spectrum.

Key Features of the 10-Year Roadmap

- It emphasizes joint defence production, intelligence sharing, technology co-development, and enhanced military interoperability.
- Both sides committed to strengthening **multilateral exercises such as Yudh Abhyas, Malabar, and Tiger Triumph**, and to expanding partnerships in disaster response and counter-terrorism.
- The pact encourages **direct defence sales and joint development of advanced equipmen**t like munitions, drones, and surveillance aircraft.
- The agreement supports indigenous manufacturing under **"Make in India, Make for the World,"** and aims to boost India's defence production capabilities and military modernization.

India-US Defence Cooperation

- The United States declared India a **Major Defence Partner (MDP) in 2016.**
- **Foundational Defence Agreements:** India and the US have signed key pacts like **LEMOA (2016), COMCASA (2018), BECA (2020)** enabling logistics sharing, secure communications, and geospatial intelligence cooperation.
- **2+2 Ministerial Dialogue:** The annual **2+2 Dialogue** enhances strategic coordination between foreign and defence ministers of both countries, covering defence trade, technology, and Indo-Pacific security.
- **Defence Exercises:** India and the US conduct major joint military exercises such as **Yudh Abhyas**, **Cope India**, **Tiger Triumph**, and the multilateral **Malabar** (with Japan & Australia).
- **Defence Trade:** The US has become one of India's largest defence suppliers, providing platforms like **C-17, C-130J, Apache, Chinook, MH-60R** helicopters, and UAV systems.
- **Technology & Industrial Cooperation:** Under **iCET (Initiative on Critical and Emerging Technologies)** and **DTTI (Defence Technology and Trade Initiative)**, the two countries collaborate on jet engines, drones, and high-tech defence manufacturing.
- **Indo-Pacific Strategy:** Both nations emphasize **free, open, and rules-based Indo-Pacific**, working closely through **QUAD**, maritime domain awareness, and naval cooperation.
- **Counterterrorism & Intelligence Sharing:** Enhanced cooperation in intelligence exchange, counterterrorism operations, secure communications, and maritime surveillance strengthens regional security.

APEC SUMMIT IN SOUTH KOREA

Recently, the Asia-Pacific Economic Cooperation (APEC) Summit (2025), held in Gyeongju, South Korea, concluded with the adoption of APEC Leaders' Gyeongju Declaration (2025).

Key Highlights APEC Summit (2025)

- **Adoption of Leaders' Declaration (Gyeongju Declaration):** APEC leaders endorsed a joint declaration reaffirming their commitment to:
  - Free and open trade across the Asia-Pacific region;
  - Strengthening supply chain resilience;
  - Promoting inclusive and sustainable economic growth;
  - Advancing digital transformation and climate action.
- **US – China Engagement:** It signaled a thaw in bilateral tensions, with both leaders agreeing to resume trade dialogue and reduce tariffs on select goods.
- **Climate and Sustainability Focus:** The declaration included commitments to:
  - Accelerate clean energy transitions;
  - Support climate-resilient infrastructure;
  - Enhance cooperation on carbon markets and green financing.
- **Digital Trade and Innovation:** Countries emphasized the need to:
  - Harmonize digital trade standards;
  - Promote cross-border data flows;
  - Support small and medium enterprises (SMEs) in accessing digital tools;

About Asia-Pacific Economic Cooperation (APEC)

- It is a regional economic forum established in **1989** to strengthen the interdependence of economies across the Asia-Pacific region.
- It uses the term *'economies'* instead of *'countries or nations'* to emphasize its focus on **economic and trade collaboration** rather than political or territorial representation.
- It operates through **cooperation and consensus**, emphasizing **voluntary participation** rather than binding treaties.
  - All member economies have an **equal voice**, and decisions are made collectively through dialogue.

- **Member Economies (21 Members):** Australia; Brunei Darussalam; Canada; Chile; People's Republic of China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; The Philippines; The Russian Federation; **Singapore (APEC Secretariat & Headquarter);** Chinese Taipei; Thailand; United States of America; and Viet Nam.

ABRAHAM ACCORDS

The US President confirmed Kazakhstan has formally joined the Abraham Accords.

About

- The Abraham Accords refer to a series of normalisation agreements signed in 2020 between **Israel and several Arab countries**, brokered by the **United States under the Trump administration.**
- For decades, **most Arab nations refused to recognise Israel** until the Palestinian issue was resolved.
- The Abraham Accords marked a major shift in Middle East diplomacy by establishing **open relations between Israel and certain Arab states** without prior resolution of the Israel–Palestine conflict.
- **UAE became the first Gulf country** to normalise relations with Israel in 2020 as part of the Abraham Accords.
- **Countries:** Israel, UAE, Bahrain, Sudan, Morocco and Kazakhstan.

Significance

- Marked a breakthrough in **Arab–Israeli relations** after decades of hostility.
- **Reduced Israel's regional isolation** and expanded its diplomatic presence in the Arab world.
- **Strengthened U.S. strategic influence** in the Middle East.
- Created **new economic and technological partnerships** across the region.

INDIA, NEPAL INK PACT TO STEP UP TRADE TIES

India and Nepal have amended the Treaty of Transit to facilitate the movement of rail-based freight between Jogbani in India and Biratnagar in Nepal.

About

- This liberalisation extends to **key transit corridors** — Kolkata-Jogbani, Kolkata-Nautanwa (Sunauli), and Visakhapatnam-Nautanwa (Sunauli).
- **Aim:** To strengthen multimodal trade connectivity between the two countries and Nepal's trade with third countries.
- These new measures are expected to **further consolidate economic and commercial linkages** between the two countries and beyond.

Overview of India - Nepal Relations

- **Shared Border:** The country shares a border with five Indian states - Sikkim, West Bengal, Bihar, Uttar Pradesh and Uttarakhand.
  - Land-locked Nepal relies heavily on India for the transportation of goods and services and access to the sea is through India.
- **The India-Nepal Treaty of Peace and Friendship:** Signed in 1950, it forms the bedrock of the special relations that exist between India and Nepal.
  - Nepalese citizens avail facilities and opportunities on par with Indian citizens in accordance with the provisions of the Treaty.
- **Defence Cooperation:** India has been assisting the Nepal Army (NA) in its **modernisation by supplying equipment and providing training.**
  - Both countries conduct **Joint Military Exercise SURYA KIRAN** alternately in India and in Nepal.
  - Since 1950, India and Nepal have been awarding each other's Army Chief with the **honorary rank of General**.
  - **The Gorkha regiments** of the Indian Army are raised partly by recruitment from **hill districts of Nepal.**
- **Trade and Economic:** India remains **Nepal's largest trade partner and Investment** where Indian firms account for **33.5 % of total FDI stock in Nepal**.
  - Nepal is India's 17th largest export destination, up from 28th position in 2014.
  - India constitutes 64.1% of the total trade of Nepal, comprising about $8.85 billion USD (Indian FY 22-23).
  - This includes $8.015 billion USD of exports from India to Nepal and $839.62 million USD of exports from Nepal to India.
- **Connectivity and Development Partnership:** India is the largest developmental donor of Nepal in the field of priority sectors such as health, education and connectivity.
  - Some of the major projects include Gauchar Airport (presently Tribhuvan Airport), East West Highway, development of cross-border rail links and establishment of **Integrated Check Posts**.
- **Energy Cooperation:** India and Nepal have had a **Power Exchange Agreement since 1971** for meeting the power requirements in the border.

- **Joint Vision Statement on Power Sector Cooperation 2022:** It includes joint development of power generation projects in Nepal, development of cross-border transmission infrastructure, and coordinated operation of the national grids.

- **Operation Maitri & post-earthquake reconstruction assistance:** In the wake of the 2015 earthquake in Nepal, GoI was the first responder and carried out its **largest disaster relief operation abroad (Operation Maitri).**
- **Cultural Ties:** The leaders of the two countries have often noted the **age-old 'roti beti' relationship,** which refers to **cross-border marriages** between people of the two countries.

INDIA WITHDRAWS FROM AYNI AIRBASE

India has shut down its operations at the Ayni airbase in Tajikistan, a key overseas facility that had provided its strategic influence in Central Asia.

Ayni Airbase

- The airbase, originally built during the Soviet era, was in poor condition following the split of the Soviet Union.
  - India invested around $80 million since 2002 to upgrade it with a 3,200-metre runway, hangars, fuel depots, and air traffic control, largely executed by the Border Roads Organisation
- It is situated in **Tajikistan around 20 km from Afghanistan's Wakhan Corridor,** which shares a boundary with the **Pakistan-occupied Kashmir (PoK) and with China's Xinjiang province.**

Importance

- Ayni was India's only full-fledged overseas base, and its location offered India a military foothold in central Asia and leverage over Pakistan.
  - It also facilitated evacuation operations after the Taliban's return in 2021.
- It served as a strategic Indian military outpost and initially used during India's support to the Northern Alliance against the Taliban. At its peak, around 200 Indian personnel and Sukhoi-30 MKI jets were stationed there.
- Its presence projected influence in the region dominated by major powers like Russia and China.

Reasons behind recent Withdrawal

- India withdrew from the Ayni airbase in Tajikistan in 2022 after its bilateral agreement for rehabilitation and development of the facility concluded.
- The Tajik government reportedly declined to renew the lease due to pressure from Russia and China.
- The withdrawal was carried out quietly and only came to light recently.
- Its loss is seen as a setback for India's long-term strategic influence and regional security posture, especially given the significant investments made over two decades.

Additional Information

- India currently does **not operate any functional overseas military base.** However, in 2024, it inaugurated a **strategic airstrip and jetty on Agaléga Islands in Mauritius**, enhancing its maritime reach in the western Indian Ocean and surveillance capability off Africa's east coast.
- India also maintains a military training team in Bhutan for the Royal Bhutan Army and Bodyguard.
- India operated temporarily from Bangladesh and Sri Lanka during the 1971 war and IPKF mission.
- In contrast, China has an official base in Djibouti and is reportedly building one in Tajikistan, while the U.S. maintains over 100 overseas bases globally, including major installations in South Korea, Qatar, Germany, and Japan.

INDIA-CANADA CRITICAL MINERALS, AEROSPACE PARTNERSHIPS

India and Canada held the 7th Ministerial Dialogue on Trade and Investment (MDTI) recently.

About

- India and Canada reaffirmed mutual respect and forward-looking cooperation, agreeing to deepen strategic collaboration in **critical minerals, clean energy, aerospace, and dual-use technologies.**
- They emphasized resilient, diversified supply chains—especially in **agriculture**—and committed to a transparent investment climate.
- Both sides highlighted the **importance of people-to-people ties** and pledged continued **ministerial engagement** with trade and investment stakeholders in early 2026.

India-Canada Relations

Overview:

- India-Canada ties are underpinned by shared values of democracy, cultural diversity, expanding economic engagement and long-standing people-to-people ties.
- Both sides have dialogue mechanisms such as Ministerial levelStrategic, Trade and Energy dialogues; Foreign Office Consultations; Joint Committee Meeting on Environment and other sector specific joint working groups (JWG).

Economic Relations:

- In 2024, India–Canada bilateral trade in goods totaled CAD 13.32 billion, with India exporting CAD 8.02 billion and importing CAD 5.30 billion.
- Bilateral services trade in 2024 stood at CAD 18.6 billion, with India's exports at CAD 3.5 billion and imports at CAD 15.1 billion.

Security Cooperation:

- India and Canada engage on counter-terrorism through the Joint Working Group (JWG) established in 1997, with cooperation further strengthened by the 2018 Framework for Countering Terrorism and Violent Extremism.

Civil Nuclear Cooperation:

- India and Canada signed a Nuclear Cooperation Agreement (NCA) in June 2010, which came into force in September 2013, enabling peaceful nuclear collaboration.
- Further cooperation in science, technology, and innovation was formalized through an MoU during Prime Minister Trudeau's visit in February 2018.

Energy Cooperation:

- India and Canada held a Ministerial-level Energy Dialogue in September 2016, which was expanded in February 2018 to include electricity, energy efficiency, and renewables.
- Further engagement occurred when India's Petroleum Secretary participated in the World Petroleum Congress 2023 in Calgary.

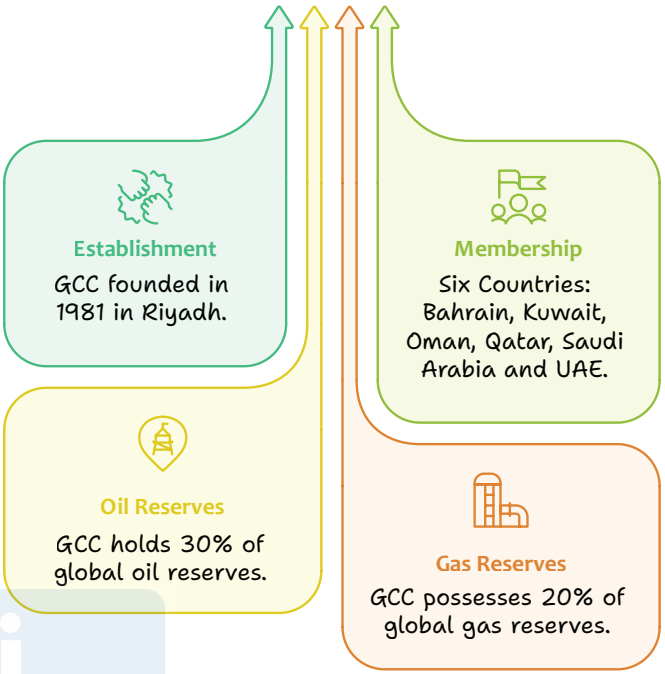
Space

- India and Canada have built a longstanding space partnership through MoUs signed between ISRO and the Canadian Space Agency in 1996, 2003, and 2015, focusing on satellite tracking, space astronomy, and peaceful space technology cooperation.
- ANTRIX, ISRO's commercial arm, has launched several Canadian nanosatellites, including Canada's first low-Earth orbit satellite aboard ISRO's 100th PSLV mission in January 2018.

GCC APPROVED "ONE-STOP" TRAVEL SYSTEM

In a major step toward deeper regional integration, the Gulf Cooperation Council (GCC) has approved a "one-stop" travel system that will simplify movement across member nations.

About GCC



OPERATION SOUTHERN SPEAR

The United States has launched Operation SOUTHERN SPEAR in Latin America, aimed at "removing narco-terrorists."

About the Operation

- **SOUTHCOM** stands for the **U.S. Southern Command**, whose area of responsibility includes **31 countries across South America, Central America and the Caribbean**.
- **According to the U.S., the mission aims to:**
  - Defend the U.S. homeland
  - Remove narco-terrorist threats from the Western Hemisphere
  - Prevent drug flows that the U.S. says are harming its population.

INDIA-EURASIAN ECONOMIC UNION (EAEU)

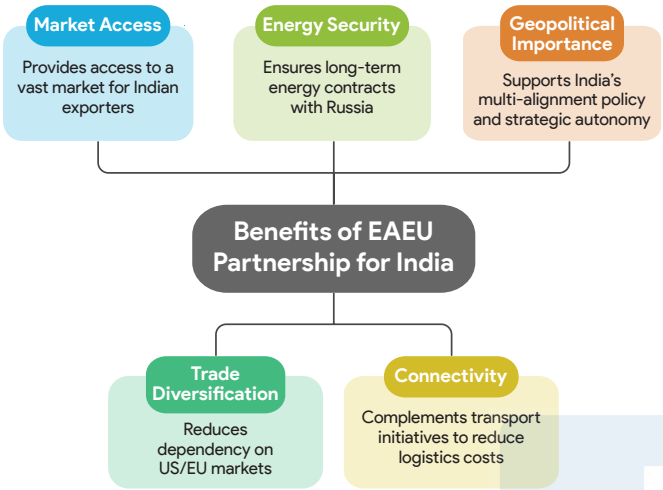
India and Russia reiterated their resolve to achieve $100 billion bilateral trade by 2030 in Moscow and reviewed steps for the India-Eurasian Economic Union (EAEU) free trade agreement in goods.

About EAEU

- The EAEU is an **international economic union and free trade zone** comprising Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia, established by the Treaty on the Eurasian Economic Union in 2014 and effective since January 2015.
- The Union pursues the **free movement of goods, services, capital, and labour, coordination** of economic policies,

elimination of non-tariff trade barriers, and harmonization of regulations among members.

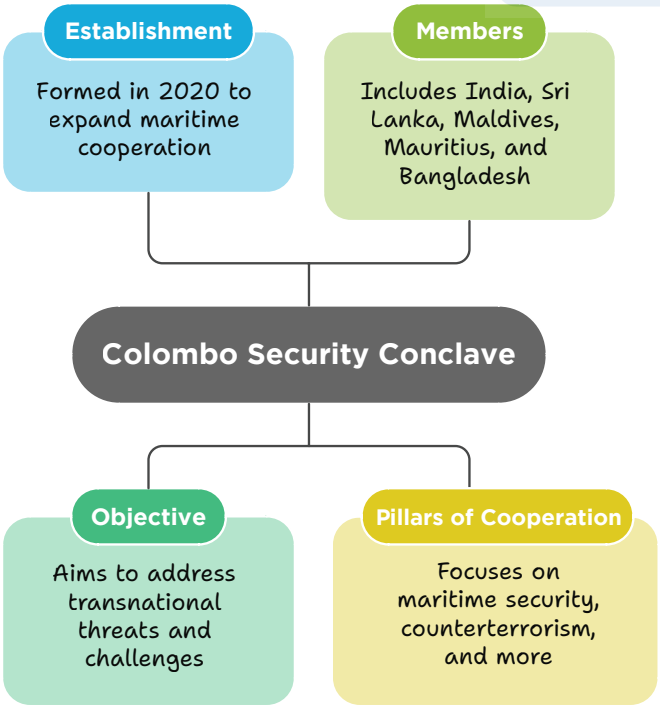
- The **EAEU covers a market of nearly 200 million people**, with a combined **GDP of $6.5 trillion**, and is managed by its Supreme Eurasian Economic Council and Eurasian Economic Commission.



COLOMBO SECURITY CONCLAVE

The Colombo Security Conclave (CSC) officially welcomed Bangladesh as its fifth member state during the 8th Deputy National Security Adviser (DNSA) level meeting.

About



SYSTEMATIC OBSERVATIONS FINANCING FACILITY (SOFF)

The Systematic Observations Financing Facility provides grants for the collection of weather and climate data.

About

- The SOFF is a specialised **UN climate fund** established by the World Meteorological Organisation (WMO), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP).
- SOFF works with nations who have the most severe observation gaps, with a focus on **Least Developed nations and Small Island Developing States**. SOFF contributes to the worldwide public good by offering long-term financial and technical help.
- SOFF intends to promote and accelerate the ongoing collection and international exchange of the most important surface-based weather and climate observations in accordance with the globally agreed-upon Global Observing Basic Network.

INDIA-U.S. DEFENCE DEAL

The US State Department has approved the sale of the FGM-148 Javelin anti-tank missile system and the M982A1 Excalibur precision-guided artillery munitions worth $93 million to India.

About

- This is being seen as a first in a series of defence deals to be signed after **both countries signed a 10-year framework** to deepen bilateral defence relations.

FGM-148 Javelin Anti-Tank Missile System

- The Javelin missile system is a **modern anti-tank guided missile system** that is used extensively across the world.
- It is a **single man-portable fire-and-forget medium-range anti-tank weapon system** designed to defeat all known and projected threat armour.
- Javelin automatically guides itself to the target after the initial launch, allowing the **operator to take cover,** relocate or prepare to engage another threat.
- India has requested up to 216 of the **M982A1 Excalibur tactical projectiles** for purchase.
  - For the Indian Army, Excalibur offers an opportunity to significantly expand precision-strike capacity without adding new artillery platforms.
  - Precision-guided munitions also help conserve ammunition in high-altitude conflict zones, where logistics chains are often stretched.
- **Significance:** The combined packages, worth an estimated $92.8 million, reflect the converging defence priorities between India and U.S., while also supporting India's long-term plans for self-reliance in advanced munitions.

INDIA-FRANCE TO JOINTLY MANUFACTURE HAMMER

Bharat Electronics Limited (BEL) and France's Safran Electronics & Defence (SED) have signed a joint venture agreement to manufacture the HAMMER precision-guided air-to-ground weapon system in India.

About

- The accord follows a memorandum of understanding signed during **Aero India in 2025.** Under the plan, a joint venture company with 50:50 shareholding will be incorporated in India.
- **The joint venture** will take up localisation of manufacturing, supply and maintenance of the HAMMER weapon system for the Indian Air Force and the Indian Navy.
  - Indigenisation is expected to gradually rise to nearly 60%, including sub-assemblies, electronics and mechanical parts.
- **The HAMMER (Highly Agile Modular Munition Extended Range),** is highly agile, and fit for operations in mountainous terrain like Ladakh.
  - Also known as a glide bomb, HAMMER precision-guided munitions have a range of up to 70 km and can be fitted to standard bombs of 250kg, 500kg, 1,000kg weights.
  - It is compatible with multiple combat aircraft, including the Rafale and the Light Combat Aircraft Tejas.
  - With a range of up to 70 km, it enables stand-off attacks from outside hostile air defence coverage.

OPERATION SAGAR BANDHU

In the aftermath of Cyclone Ditwah, which caused widespread devastation across Sri Lanka, India swiftly launched Operation Sagar Bandhu to support relief and rescue efforts.

About

- The Indian Navy launched **Operation Sagar Bandhu** to support Sri Lanka after Cyclonic Storm ***Ditwah.***
- **INS Vikrant** and **INS Udaygiri**, already in Colombo for the **75th Anniversary International Fleet Review (IFR-2025)**, were tasked at short notice for HADR operations. Both ships handed over **relief provisions** for distribution to cyclone-affected communities.
- **Ship-borne helicopters** carried out **aerial reconnaissance** and supported **Search and Rescue (SAR)** operations. These efforts led to the **successful rescue of Sri Lankan citizens.**
- To further strengthen relief work, **INS Sukanya** was deployed to **Trincomalee on 01 December 2025**, carrying additional critical relief material.
- Indian and Sri Lankan authorities are in **close coordination** to ensure timely and effective delivery of aid.
- The Navy's quick deployment highlights India's role as the **First Responder in the Indian Ocean Region (IOR).**
- The operation reflects India's commitment under the **MAHASAGAR vision** and **Neighbourhood First policy.**
- The Indian Navy reaffirms its **solidarity and humanitarian support** to the people of Sri Lanka.

ARUNACHAL PRADESH IS AN INTEGRAL AND INALIENABLE PART OF INDIA: MEA

The ministry of external affairs (MEA) said that Arunachal Pradesh is an integral and inalienable part of India.

About

- Recently, Chinese immigration officials at the Shanghai airport **detained an Indian Citizen for 18 hours** on the ground that her **passport was "invalid"** as her birthplace was **Arunachal Pradesh.**
  - The immigration officers declared her passport "invalid," saying Arunachal is not part of India.
  - MEA strongly criticised China over the "arbitrary detention" calling it a violation of **International civil aviation norms**, including the **Chicago and Montreal Conventions.**

China's Claim Over Arunachal Pradesh

- **Arunachal Pradesh, known** as the **North Eastern Frontier Agency (NEFA)** until **1972,** is the largest state in the northeast and shares international borders with China (Tibet) in the north and northeast, Bhutan towards the west and Myanmar to the east.
- **China's Claims:** China claims Arunachal Pradesh as a **part of southern Tibet.** Its main interest lies in the **district of Tawang,** which is in the north-western region of Arunachal and borders Bhutan and Tibet.

Shimla Convention 1914

- The 1914 Simla convention, which included a Chinese representative on an equal footing with a Tibetan representative, gave birth to the McMahon Line separating Tibet from India in the eastern sector.
- It clearly defined the frontiers of the boundary between India and Tibet.

India's Stand

- **Arunachal Pradesh is an Integral Part of India:** India asserts full sovereignty over Arunachal Pradesh based on historical, legal, and administrative continuity.
  - People of Arunachal Pradesh have democratically elected governments within the Indian Constitution.
- **McMahon Line is the Legal Boundary:** India recognises the 1914 McMahon Line as the official and legitimate boundary.
- **China's Claims Are Unfounded:** Government statements consistently underline that assigning invented names or issuing stapled visas does not change the ground reality.
- **Evidence of Effective Control:** India has administered the region continuously since Independence—governance, elections, judiciary, development schemes, and armed forces presence. People of Arunachal identify culturally, politically, and socially with India.
- **Development and Infrastructure in Arunachal Will Continue:** India rejects China's objections to infrastructure projects.
  - Stands that development of Indian territory is India's internal matter.

INTERNET RIGHTS GROUP CHALLENGES AUSTRALIA UNDER-16 SOCIAL MEDIA BAN

An internet rights group named the Digital Freedom Project launched a legal challenge to halt world-first Australian laws that will soon ban under-16s from social media.

About

- More than **one million accounts** held by teenagers under 16 are set to be **deactivated in Australia.**
- **The ban includes platforms** such as YouTube, TikTok, Snapchat and Meta's Facebook and Instagram. Companies that fail to comply with the ban could **face penalties** of up to 49.5 million Australian dollars ($32.22 million).
- The Digital Freedom Project had challenged these laws arguing they were an **"unfair" assault on freedom of speech.**
- Governments and tech firms around the world are closely watching Australia's effort to implement the ban, one of the most comprehensive efforts **to police minors' social media access.**

INDIA RE-ELECTED TO INTERNATIONAL MARITIME ORGANISATION COUNCIL

India has been re-elected to the Council of the International Maritime Organisation (IMO) for 2026-27 with the highest vote tally.

About

- **Overview:** It is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships
- **Genesis:** IMO was established in 1948 following a UN conference in Geneva and came into existence in 1958.
- **Functions:**
  - Its role is to **create a fair, universally adopted regulatory framework** that prevents operators from cutting costs at the expense of safety and sustainability, while fostering innovation and efficiency.
  - Its measures cover all aspects of shipping — from **design and construction to operation and disposal** — ensuring the industry remains safe, energy-efficient, and environmentally sound.
- **Members:** IMO has 175 Member States and three Associate Members, and its headquarters are in **London, United Kingdom.**
  - India joined the IMO in 1959.
- **Structure:** The IMO is administered by a biennially convened Assembly of all member states and a 40-member Council elected for two-year terms.
  - The Assembly functions as the organisation's highest governing authority.

3 ECONOMY

AABHAR' ONLINE STORE

Indian Railways launches 'Aabhar' online store to promote indigenous artisans, ODOP, and GI products.

About the Initiative

- The 'Aabhar' online store, supported by **Indian Railways,** is a new **e-commerce platform** designed to showcase and sell handcrafted gift items made by **tribal artisans, handloom weavers, and traditional craft makers.**
  - It integrates products from the **One District One Product** (ODOP) initiative and **Geographical Indication (GI)**-tagged items, reflecting India's cultural diversity and craftsmanship.
- The initiative aligns with the government's broader mission of '**Vocal for Local**' and '**Atmanirbhar Bharat**', aiming to bridge the gap between rural artisans and urban consumers through digital access and logistical support.

Economic and Social Significance

- The '**Aabhar**' store promotes **inclusive economic growth** by expanding market access for artisans who often struggle with limited visibility and middlemen exploitation.
- By leveraging Indian Railways' extensive network, the platform ensures efficient distribution across India, transforming stations and railway channels into retail touchpoints.
- It also helps preserve **traditional crafts,** tribal art forms, and regional specialities, generating livelihood opportunities, especially for women and marginalized communities.
  - The inclusion of GI and ODOP products ensures authenticity and promotes district-level specialization, reinforcing local identity within national markets.

Analytical Perspective

- 'Aabhar' is **more than an online marketplace**—it is a digital policy intervention blending **commerce with culture.**
  - It demonstrates how public infrastructure like Indian Railways can be leveraged for grassroots entrepreneurship, **aligning with SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure).**
- By linking artisans directly to consumers, the initiative enhances value realization, supports sustainable livelihoods, and strengthens India's creative economy—**turning gratitude (Aabhar) into empowerment.**

DIGITAL MARINE FISHERIES CENSUS

The Centre launches Digital Marine Fisheries Census (MFC) 2025 with new apps for real-time data collection.

About the Initiative

- The **Union Ministry of Fisheries, Animal Husbandry and Dairying** has launched the MFC 2025 to **digitally map India's marine fishing ecosystem.** Conducted **once every ten years,** this comprehensive census will enumerate fishermen households, fishing vessels, landing centers, and infrastructure **across India's 9 coastal states and 4 Union Territories.**
- The 2025 edition introduces two key digital tools — **VYAS–BHARAT** (for household data collection) and **VYAS–SUTRA** (for vessel and harbor information). These mobile-based applications mark a shift from paper-based surveys to a real-time, geo-tagged digital database, ensuring higher accuracy, transparency, and faster policy integration.
- The census will be implemented by the **Central Marine Fisheries Research Institute (CMFRI)** in collaboration with the **Fishery Survey of India (FSI),** supported by coastal state governments.

Significance and Impact

- The digital census aims to strengthen evidence-based policymaking for India's **Blue Economy,** which contributes **nearly 1.1% of GDP** and supports over **40 lakh livelihoods.** Accurate enumeration of fisher households, gender participation, fleet size, and fishing capacity will aid in:
  - Designing targeted welfare schemes and insurance programs.
  - Regulating fishing efforts to ensure sustainability and conservation.
  - Promoting marine spatial planning and climate adaptation.
  - Enhancing India's capacity to meet **SDG 14 (Life Below Water).**

Analytical Perspective

- The **Digital MFC 2025** represents a **governance transformation** — from fragmented records to a unified, technology-enabled marine database. It reflects India's move towards a **Digital Blue Economy,** where data-driven decisions ensure both ecological balance and economic growth.
- By integrating digital tools with social welfare and environmental stewardship, the census turns information into infrastructure — empowering coastal communities while sustaining the ocean's wealth.

NORTH EASTERN SCIENCE & TECHNOLOGY (NEST) CLUSTER

Union Minister inaugurates (NEST) Cluster at IIT Guwahati to boost innovation.

About the Initiative

- The (NEST) Cluster, launched at **IIT Guwahati**, is a pioneering initiative by the Office of the **Principal Scientific Adviser (PSA)** to the Government of India.
  - It aims to foster collaborative research, innovation, and technology-based entrepreneurship across the eight northeastern states.
- The NEST Cluster is part of the **national Science & Technology (S&T) Clusters Program,** which already operates in cities like Bengaluru, Hyderabad, and Pune.
  - By bringing this model to the Northeast, the initiative seeks to integrate the region into India's innovation and startup ecosystem.
- **The cluster will focus on four core domains:**
  - Sustainable Natural Resource Management
  - Agri-Biotechnology and Food Processing
  - Digital Connectivity and Smart Infrastructure
  - Skill Development and Technology Diffusion
- Institutions such as **IIT Guwahati, NERIST, Tezpur University, and regional industries** will collaborate under a common platform to promote **research translation, incubation, and entrepreneurship.**

Significance and Impact

- The NEST Cluster represents a major step in regional innovation decentralization, enabling the Northeast to move from a consumption-based to a knowledge-driven economy.
- **It will:**
  - **Strengthen** STEM research and start-ups in **frontier areas.**
  - **Promote** local resource-based industries like **bamboo, sericulture, and renewable energy.**
  - **Facilitate** public–private partnerships for **technology commercialization.**

Analytical Perspective

- The NEST Cluster symbolizes a shift in India's science policy from centralization to region-specific innovation ecosystems.
  - It aligns with **SDG 9 (Industry, Innovation, and Infrastructure)** and **Act East Policy** by positioning the Northeast as a hub for science-led regional development.
- By bridging academia, government, and industry, NEST transforms the Northeast from a peripheral region into a strategic innovation frontier — linking local potential with national progress.

NATIONAL BEEKEEPING AND HONEY MISSION (NBHM)

India expands the National Beekeeping and Honey Mission to boost scientific beekeeping and rural livelihoods.

About the Mission

- The NBHM, launched under the **Ministry of Agriculture and Farmers Welfare in 2020**, aims to promote scientific beekeeping, improve honey quality, and enhance income diversification for farmers. Implemented through the **National Bee Board (NBB),** it forms a key component of the '**Sweet Revolution',** envisioned to make India a global honey and bee-product hub.
- **NBHM Focuses on Three Core Pillars:**
  - **Capacity Building:** Training beekeepers in modern techniques and colony management.
  - **Infrastructure Support:** Setting up Integrated Beekeeping Development Centres (IBDCs), honey testing laboratories, and processing units.
  - **Research and Innovation:** Encouraging R&D on bee health, pollination services, and product diversification (royal jelly, bee wax, propolis).

Economic and Environmental Significance

- Beekeeping not only supplements farmer income but also **enhances crop productivity by 15–20%** through pollination. India currently produces over **1.3 lakh** metric tonnes of honey annually, with growing **exports to the U.S., U.K., and Middle East markets.**
- NBHM also **strengthens the rural non-farm economy, promoting women-led microenterprises** and FPOs in honey clusters. Environmentally, it supports biodiversity and climate resilience by sustaining pollinator populations essential for agriculture and ecosystems.

Analytical Perspective

- The mission represents a shift from viewing beekeeping as a cottage activity to treating it as an agri-tech enterprise.
  - By linking pollination services with market access, NBHM integrates environmental stewardship with economic gain — aligning with **SDG 2 (Zero Hunger), SDG 8 (Decent Work), and SDG 15 (Life on Land).**
- In essence, NBHM is not just about producing honey — it's about building a pollination-powered rural economy where sustainability and prosperity thrive together.

PERIODIC LABOUR FORCE SURVEY (PLFS) REPORT

The Periodic Labour Force Survey (PLFS) was conducted by the Labour Bureau for the July-September 2025 quarter.

Key Findings

- Since **January 2025**, the survey methodology was updated to provide **monthly and quarterly estimates** for both **rural and urban areas**.
- **Unemployment Rate:** Overall it **dropped to 5.2%** in July-September, 2025 from 5.4% in the previous quarter.
  - **Rural:** It declined to 4.4% during the period from 4.8%.
  - **Urban:** Increased from 6.1% to 6.2% for males, and from 8.9% to 9.0% for females.
- **Employment Pattern:**
  - **Rural areas:** Dominated by self-employment – increased to 62.8% (from 60.7%). Majority engaged in the agriculture sector – 57.7% (up from 53.5%), due to seasonal operations.
  - **Urban areas:** Regular wage/salaried employment rose slightly to 49.8% (from 49.4%). The workforce was concentrated in the tertiary sector – 62.0% (up from 61.7%).
- **Labour Force Participation Rate (LFPR):**
  - **Overall LFPR:** 55.1% (steady from 55.0% last quarter).
  - **Rural LFPR:** 57.2% (up from 57.1%).
  - **Urban LFPR:** 50.7% (up from 50.6%).
  - **Female LFPR:** Increased to 33.7% (from 33.4%).
  - **Rural female LFPR:** 37.5% (up from 37.0%).
- **Worker Population Ratio (WPR):** For persons of age 15 years and above in the country during the quarter was 52.2%.
  - In rural areas, WPR was 54.7% as compared to WPR of 47.2% recorded in urban areas for the same quarter.

Key Takeaway

- **Rural employment** improved, driven by agriculture and self-employment.
- **Urban employment** remained stable, with a slight rise in salaried jobs.
- **Female participation** in the labour force showed a gradual rise.
- **Overall unemployment** declined, reflecting a moderate labour market recovery.

URBAN COOPERATIVE BANKS

Recently, the Union Home and Cooperation Minister, at the 'Co-op Kumbh 2025', called on Urban Cooperative Banks (UCBs) to play a transformative role in empowering India's youth and underprivileged communities.

Key Highlights of Co-op Kumbh 2025

- **Delhi Declaration 2025:** It was adopted by the **National Federation of Urban Cooperative Banks and Credit Societies (NAFCUB)**, focusing on enhancing financial stability, governance, and digitization within the cooperative banking network.
- **Digital Push:** Two new digital initiatives **Sahkar Digi-Pay and Sahkar Digi-Loan** were launched to empower even the smallest cooperative banks.
  - These enable digital payments and loan disbursement services, integrating UCBs into India's broader digital revolution.
- **Commitment to Strengthening the Cooperative Credit Ecosystem:** The government aims to establish an **UCB** in every Indian city with a population exceeding **two lakh** within the next **five years.**
  - It aims to **expand the urban cooperative credit ecosystem** and make financial inclusion more accessible across urban India.

About Urban Cooperative Banks (UCBs)

- **UCBs** are a subset of cooperative banks in India that operate mainly in **urban and semi-urban areas.**
- **Democratic Participation:** Cooperative societies are based on the **principles of cooperation** like mutual help, democratic decision making and open membership, unlike commercial banks.
- As per **RBI and NABARD,** there are 1,457 Urban Cooperative Banks, 34 State Co- operative Banks (StCBs), 351 District Central Co-operative Banks (DCCBs) and one Industrial Cooperative Bank which are **under the supervision of RBI and NABARD.**

History

- The **Cooperative Credit Societies Act, 1904** (introduced during Lord Curzon's tenure) and its 1912 amendment provided the **legal foundation for the cooperative movement in India**, including cooperative credit institutions.
- The **first urban cooperative credit society** in India was established in 1889 in Baroda (Anyonya Sahakari Mandali).

Registration Framework

UCBs are registered as cooperative societies, based on their area of operation:

- **State Cooperative Societies Acts:** For UCBs operating within a single state.
- **Multi-State Cooperative Societies Act, 2002:** For UCBs operating across multiple states.

Categorisation of UCBs

- Urban Co-operative Banks (UCBs) are categorized into **four tiers** for regulatory purposes by the **Reserve Bank of India (RBI)** based on their deposit size.
  - **Tier 1:** UCBs with deposits up to Rs. 100 crore. This includes all unit UCBs and salary earners' UCBs, regardless of their deposit size.
  - **Tier 2:** UCBs with deposits between Rs. 100 crore and Rs. 1,000 crore.
  - **Tier 3:** UCBs with deposits between Rs. 1,000 crore and Rs. 10,000 crore.
  - **Tier 4:** UCBs with deposits of more than Rs. 10,000 crore.

Regulation and Control: Dual Structure

- UCBs function under a dual regulatory system, involving both the Reserve Bank of India (RBI) and the Registrar of Cooperative Societies (RCS).
- **Banking Regulation Act, 1949:** Since 1966, the RBI has exercised oversight over UCBs, particularly in areas such as **licensing, capital adequacy, lending policies, and overall financial stability.**
- **The Banking Regulation (Amendment) Act, 2020** further strengthened the RBI's authority, empowering it to intervene directly in the management and governance of Urban Cooperative Banks.
- **Registrar of Cooperative Societies:** The state governments or the central government, through their respective RCS, oversee the administrative and cooperative functioning of UCBs.

Significance of UCBs

- **Financial Inclusion:** By reaching out to the unbanked and underbanked sections of society, they play a crucial role in promoting **financial inclusion.**
- **Easy Access to Credit:** They offer **easy access to credit** to their customers that too at competitive interest rates.
- **Promoting Savings:** They encourage saving habits by offering deposit accounts tailored to rural needs.
- **Local Development:** These banks understand local needs better and thus play a **significant role in rural development** by funding various agricultural and rural development activities.
- **Rural Development:** The majority of these banks operate in rural areas, catering to the specific needs of **farmers, small businesses, and low-income households.**
- **Priority Sector Lending:** UCBs allocate 65% to PSL in FY 2024-25 but targeted to increase it to 75% by March 2026.
- **Financial Literacy Promotion:** They often act as financial literacy educators, empowering rural communities to make informed financial decisions.

Current Challenges Faced by UCBs

- **Declining Numbers:** The total number of UCBs has dropped from 1,926 in 2004 to around 1,500 in 2024 due to regulatory and financial pressures.
- **Regulatory Constraints:** UCBs have faced restrictions on branch expansion and licensing. New licenses have not been issued since 2004.
- **Governance and Compliance Issues:** Many UCBs struggle with outdated governance structures, poor compliance with the Banking Regulation Act, and limited technological adoption.
- **Financial Vulnerabilities:** Limited capital base and exposure to risky lending practices have affected their stability.

Related Initiatives and Reforms

- **NUCFDC Formation:** NUCFDC was established to serve as an umbrella organization for UCBs, offering financial support, regulatory guidance, and capacity building.
- **Empowerment Measures:** RBI has allowed UCBs to **open new branches and empowered their boards** to formulate settlement policies similar to commercial banks, under the direction of the Ministry of Cooperation.
- **Expert Committee Recommendations:** A committee chaired by **Shri NS Vishwanathan** submitted a report in 2021 recommending the creation of a strong apex entity and improved regulatory mechanisms.
- **Modernization and Reforms in Cooperative Sector:**
  - It emphasized that significant policy reforms have modernized cooperatives and resolved long-pending challenges **since the creation of the Ministry of Cooperation.**
  - Several state governments have adopted model bylaws for **Primary Agricultural Credit Societies (PACS)**, ensuring uniformity and transparency.
- **Financial Discipline and Reduction in NPAs:** Highlighting financial improvements, Shah stated that **Non-Performing Assets (NPAs)** in the cooperative sector have **declined from 2.8% to 0.6%** in the past two years.
- The **Union Ministry of Cooperation** has outlined **four key objectives**, including:
  - **Engaging youth** through new educational initiatives such as **Tribhuvan Sahkari University**.
  - Promoting multi-sectoral collaboration.
  - Ensuring financial discipline and efficiency.
  - Expanding the reach of cooperatives across urban and rural India.
- The **United Nations (UN)** designated **2025** as the **International Year of Cooperatives (IYC 2025)** under the theme **'Cooperatives Build a Better World',** which aims to serve as a platform to **modernize and scale the cooperative banking system.**

Way Forward

- **Strengthening Governance and Supervision:** Enhance board professionalism by requiring that at least half of all directors possess relevant expertise in banking, finance, or law.
- **Consolidation and Mergers:** Promote voluntary consolidation, allowing financially **weaker UCBs to merge with stronger institutions** to build more robust and sustainable entities.
- **Independent Audits:** Ensure financial integrity by **mandating regular audits** conducted by independent and autonomous agencies.
- **Technology Adoption:** Encourage UCBs to adopt modern banking technologies to **improve operational efficiency, cybersecurity**, and customer service.
- **Social Audits:** Introduce **stakeholder-driven social audits** to evaluate policy effectiveness, fund utilisation, and accountability.

DIGITAL GOLDS/ E-GOLDS

The Securities and Exchange Board of India (SEBI) has cautioned the general public against investing in digital gold and e-gold products.

About Digital Gold

- Digital gold refers to **buying gold without physically possessing** the precious metal. The **price** of digital gold is linked to that of physical gold.
- Digital gold is created using blockchain technology.
- It allows investors to buy, sell and store gold electronically.
- **Taxation:** In India, buying gold, whether physical or digital, **usually attracts GST**, though the exact rate for digital gold can vary depending on how the provider structures the product.
  - When you **sell digital gold**, any profit is treated as a **capital gain**, and the tax rate depends on how long you have held it.

Reason for Surge

- The investment in digital gold has existed for several years, but **there has been a surge in their popularity over the last one year.**
  - The reasons include a **steep rise in gold prices**, combined with the convenience, and ease of owning gold digitally through online platforms.
- The digital gold products **remain unregulated** and do not fall under any regulatory ambit, **exposing investors to heightened risks.**

Pros of Investing in Digital Gold

- Digital gold is **easy to access** and allows one to **sell it quickly** in case of an emergency.
- Unlike traditional gold purchases, digital gold allows investors to **start investing with smaller amounts.**
- It also **eliminates the storage hassle,** which is the biggest challenge associated with physical gold.
- Digital gold allows investors **to convert their investment into physical gold** whenever required as it can be converted into coins, bars, or jewellery.
- Investing in digital gold **does not require a demat account or margin deposits**, making it a more convenient option.

Concerns Related Investing In Digital Gold

- **Unregulated status:**
  - Digital gold is not recognized as a security or regulated as a commodity derivative under SEBI's rules.
  - It operates in a regulatory void, meaning SEBI cannot offer any protections or grievance redressal.
- **Risks Involved:** This void exposes investors to significant **counterparty risks** (the platform company defaulting or going bankrupt) and **operational risks** (storage issues, data breaches, or fraud) with **no formal recourse or investor protection mechanisms.**

Why SEBI has Cautioned Investors?

- It has observed that **several digital and online platforms** are offering investors the facility to invest in digital gold or e-gold products. Many jewellers from both the organised and unorganised sectors are providing opportunities for investment in digital gold.
- These gold products may entail significant risks for investors and may expose investors to counterparty and operational risks.

Recommendations of SEBI

- Investors should look at investing in gold products which are regulated by the Sebi to avoid any kind of risk.
- **Investment in alternatives to digital gold which are regulated by SEBI -**
  - **Gold Exchange-Traded Funds (Gold ETFs):** Traded on stock exchanges, these are backed by pure physical gold bullion and are regulated by SEBI.
  - **Sovereign Gold Bonds (SGBs):** These are issued by the Government of India, offering an annual interest rate and tax exemptions on capital gains at maturity.
  - **Electronic Gold Receipts (EGRs):** These can be traded on recognized stock exchanges and are governed by SEBI's regulatory framework.
  - Investments in these products can be made through **Sebi-registered intermediaries** and are **governed by the regulatory framework** prescribed by the markets regulator.

Securities and Exchange Board of India (SEBI)

- The SEBI is the **principal regulator of the securities and capital market** in India.
- It was established in **1988** and given statutory powers through the SEBI Act of **1992.**
- The **Headquarters** of SEBI is located in Mumbai.
- It also has **4 regional offices**, located in Ahmedabad, Kolkata, Chennai, and Delhi.
- SEBI's primary goal is to **protect the interests of investors, promote and regulate the securities market**, and ensure its orderly functioning.

EXPORT PROMOTION MISSION

Amid pressure on goods exports to the US due to high 50% tariffs, the Union Cabinet has approved a six-year (FY 2025–26 to FY 2030–31) Export Promotion Mission with an outlay of Rs 25,060 crore.

About

- **In the Union Budget for 2025-26,** the Finance Minister announced an Export Promotion Mission.
  - The Mission serves as a flagship initiative to enhance India's export competitiveness, particularly for **MSMEs, first-time exporters, and labour-intensive sectors**

- **Ministries:** Driven jointly by the Ministries of Commerce and Industry, the Ministry of Micro, Small, and Medium Enterprises, and the Ministry of Finance.
- **Priority Sectors:** Under EPM, priority support will be extended to sectors impacted by recent global tariff escalations, such as textiles, leather, gems & jewellery, engineering goods, and marine products.
- **Implementing Agency:** The Directorate General of Foreign Trade (DGFT) will act as the implementing agency through two schemes-
- **Niryat Protshahan:** Focuses on improving access to affordable trade finance for MSMEs through a range of instruments such as interest subvention, export factoring, collateral guarantees, credit cards for e-commerce exporters, and credit enhancement support for diversification into new markets.
- **Niryat Disha:** Focuses on **non-financial enablers** that enhance market readiness and competitiveness, including export quality and compliance support, **assistance for international branding**, packaging, and participation in trade fairs, **export warehousing and logistics**, inland transport reimbursements, and trade intelligence and capacity-building initiatives.

Major Components of EPM

Financial Support

- **Credit Guarantee Scheme for Exporters (CGSE):** Provides 100% coverage by the **National Credit Guarantee Trustee Company Ltd (NCGTC).**
  - For additional credit facilities up to ₹20,000 crore to eligible exporters (including MSMEs).
  - Enables **collateral-free credit**, improving liquidity and competitiveness.
- **Integration of Schemes: Interest Equalisation Scheme** (interest subvention for exporters) and **Market Access Initiative (MAI)** (support for trade fairs, market promotion) both are merged under a digitally driven EPM framework.

Non-Financial Support

- **Addressing Non-Tariff Barriers (NTBs):** Funding for compliance, certifications, and technical standards.
- **Market Acquisition & Branding:** Assistance for international exhibitions, packaging, and branding.
- **Logistics Cost Reduction:** Support for supply chain efficiency and trade facilitation.

The Mission is Expected to

- Facilitate access to affordable trade finance for MSMEs.
- Enhance export readiness through compliance and certification support.
- Improve market access and visibility for Indian products.
- Boost exports from non-traditional districts and sectors.
- Generate employment across manufacturing, logistics, and allied services.

Export Performance of India

- **Overall export performance:** India's combined merchandise and services exports rose by 5.19% in April–August 2025 compared to the corresponding period last year.
- **Export value:** Total exports for this period stood at USD 346.10 billion.
- **Merchandise exports:** Goods exports registered a 2.31% increase, touching USD 183.74 billion between April and August 2025.
- **Non-petroleum, non-gems and jewellery exports:** These segments recorded a robust 7.76% growth, amounting to USD 146.70 billion.
- **Growth drivers:** Sectors such as engineering goods, electronics, pharmaceuticals, and chemicals were the major contributors to export expansion.
- **Challenges:** However, the merchandise trade deficit widened in September 2025, as imports outpaced export growth.

Conclusion

- The **Export Promotion Mission (EPM) and the Credit Guarantee Scheme for Exporters** represent a significant move to strengthen India's export capacity in an environment marked by growing **protectionism** and rising tariff barriers.
- Collectively, these initiatives reflect a **strategic policy transition** towards sustainable, competitive, and inclusive export expansion in the post-pandemic global landscape.

NEW ROYALTY RATES OF CRITICAL MINERALS

The Union Cabinet has approved to specify/revise the royalty rate of four critical minerals- caesium, Graphite, Rubidium and Zirconium to promote domestic production and reduce import dependecy.

What are Critical Minerals?

- **Critical minerals** are minerals that are **essential for a country's economic development**, technological progress, energy transition, and national security, but are at **high risk of supply disruption due to scarcity**, geopolitical concentration, or unstable supply chains.
- In 2023, the Centre identified **30 critical minerals**, including lithium, cobalt, nickel, graphite, tin and copper, which are essential for the country's **economic development and national security.**

What is Royalty Rate?

- A royalty rate is a charge imposed by the government on mining companies for extracting minerals from the earth.
- Royalty rates are governed by Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act) & Mineral Concession Rules, 1960.
- These laws empower the Central Government to fix and revise royalty rates periodically after consulting State Governments.

Significance

- Graphite, Caesium, Rubidium and Zirconium are important minerals for high-tech applications and energy transition. This would help in **reducing import dependence.**
- **Graphite:** It is a crucial component in **electric vehicle (EV) batteries**, primarily serving as the anode material, which enables high conductivity and charge capacity. However, India imports 60% of its requirement of Graphite.
- **Zirconium:** It is a versatile metal used in various industries, including **nuclear energy,** aerospace, healthcare and manufacturing, due to exceptional corrosion resistance and high temperature stability.
- **Caesium:** It is mainly used in the high-tech **electronic sector,** particularly in atomic clocks, **GPS systems**, other high precision instruments, medical instruments including in cancer therapy, etc.
- **Rubidium:** It is used in making specialty glasses used in fibre optics, telecommunication systems, night vision devices etc.

INDIA TO SOURCE 10% LPG IMPORTS FROM US IN 2026

India has signed its first structured contract to import liquefied petroleum gas (LPG) from the United States.

Background of the Deal

- The deal comes amid **India–US trade pact negotiations**, with New Delhi seeking to reduce its trade surplus with Washington after US tariffs on Indian goods, and signals India's willingness to step up American energy imports.
- Recently, Trump administration imposed **50% tariffs on many Indian goods.**

Liquefied Petroleum Gas (LPG)

- It is a group of hydrocarbon gases—mainly **propane, normal butane, and isobutane**—produced from crude oil refining or natural gas processing.
- It can be **sold separately or blended**, and is easily liquefied under pressure (without cryogenic cooling) for convenient transport and storage.

Status in India:

- India, the **world's third-largest consumer of crude oil,** relies on imports for about 88% of its crude needs and meets **nearly half of its natural gas demand through LNG imports.**
- The US has emerged as a key energy partner, ranking as the fifth-largest supplier of crude oil and the **second-largest supplier of LNG to India.**
- **LPG**, largely used as cooking fuel in India, is heavily subsidised and **over 60% of demand is met through imports**, with the government expanding access to rural households to reduce reliance on polluting fuels.

Key Highlights of Recent Deal

- Public sector refiners IOC, BPCL, and HPCL awarded a one-year deal for 2.2 million tonnes per annum—about 10% of India's annual LPG imports—for 2026 from the **US Gulf Coast.**
- **Diversification:** The agreement hailed as a **"historic first,"** marking diversification away from traditional West Asian suppliers such as Saudi Arabia, UAE, Qatar, and Kuwait.
- **Trade Balance:** The deal also serves as a **step to narrow India's trade surplus with the US**, which has been a sticking point in trade negotiations
- **Deepening Trade:** It marks a major step in deepening energy trade with the United States amid ongoing trade pact negotiations.

ELECTRONICS DEVELOPMENT FUND (EDF)

Recently, the Government of India launched the Electronics Development Fund (EDF) aimed at catalyzing innovation, research, and entrepreneurship in the electronics and IT sectors. India's electronics market is projected to reach $300 billion by FY26.

About EDF

- **Overview:** It was launched in 2016 under the MeitY as a key component of the Digital India and Make in India missions.
- **Fund of Funds Model:** EDF invests in **Daughter Funds**, which then invest in startups and innovation-driven enterprises, and it **does not directly invest in startups.**
- **Fund Manager:** The fund is **managed by** CANBANK Venture Capital Fund Ltd. (CVCFL).

What are Daughter Funds?

These are professionally managed venture capital funds that receive investment from the EDF to support startups and innovation in electronics and IT.

Strategic Importance

- Reducing India's dependence on imported electronics,
- Encouraging domestic innovation in critical technologies like semiconductors, IoT, AI, and robotics.
- Positioning India as a global hub for electronics design and manufacturing.

MODIFIED UDAN REGIONAL AIR CONNECTIVITY SCHEME

The government has proposed a ₹30,000 crore outlay for the modified UDAN regional air connectivity scheme, to extend it beyond April 2027.

About

- Of this, ₹18,000 crore is earmarked for **new airport development** and ₹12,000 crore for **viability gap funding (VGF)** to support airlines connecting underserved regions.

Key Features of the Modified UDAN Scheme

- **Expanded Reach:** Adding 120 new destinations to connect more underserved regions.
- **Passenger Target:** Aiming to carry 4 crore additional passengers within the next 10 years.
- **Focus on Specific Regions:** Prioritizing the development of helipads and smaller airports in hilly, aspirational, and northeastern regions to improve access to remote areas.
- **Infrastructure Development:** Facilitating the development of new (greenfield) airports and upgrading existing ones.
- **Air Cargo Enhancement:** Improving air cargo infrastructure, including upgrading for high-value perishable goods, and streamlining customs protocols.

WATER BUDGETING

NITI Aayog released a report "Water Budgeting in Aspirational Blocks" to provide structured approach for estimating water demand and enhance local water security.

About Water Budgeting

- **Water budgeting** is a systematic process of accounting for all water inflows, outflows, and changes in water storage within a specific geographical area over a defined period.
- It functions much **like a financial budget**, helping communities and policymakers understand the **total volume of available water resources versus the total demand across various sectors.**

key Applications

- **Water Security:** The water budget **provides insights for each block related to its water demand-supply scenario,** challenges and recommendations and identifying suitable measures for enhancing water security.
- **Drought Management:** It helps **identify potential water deficits early**, allowing for proactive planning and the implementation of drought-proofing strategies.
- **Sustainable Use:** It aids in **establishing sustainable extraction limits** and prioritizing water use for various sectors (domestic, agriculture, industry, environment).
- **Support SDG's:** It directly **supports SDG 6 (Clean Water & Sanitation)** and the national push toward water-use efficiency.
- **Crop Planning:** In agriculture, it helps farmers make **informed decisions** about cropping patterns and irrigation methods (e.g., switching to less water-intensive crops or using micro-irrigation) based on available water, thereby optimizing water use.
- **Policy and Governance:** The NITI Aayog has promoted water budgeting exercise uses a web-based **platform Varuni** to enhance the block-level water security.
- **Decentralised Management:** It will strengthen decentralised planning under Jal Jeevan Mission, Jal Shakti Abhiyan, and Atal Bhujal Yojana to encourage **data-driven water management** and build climate resilience.
- **Community Participation:** The process involves local communities in monitoring their water accounts (e.g., groundwater levels), fostering a sense of collective ownership and promoting responsible water usage.

INDIA'S RE-ELECTION TO EXECUTIVE COMMITTEE OF CODEX ALIMENTARIUS COMMISSION

India has been re-elected to the Codex Alimentarius Commission's Executive Committee for the Asia region during the 48th session, securing this position until the end of CAC50 in 2027.

About Codex Alimentarius Commission

- **Established:** 1963 by FAO and WHO with headquarter in **Rome, Italy.**
- **Objective:** Protect consumer health and promote fair practices in food trade.
- **Members:** 189, including 188 countries and 1 organization (European Union).
- **Meetings:** Annual sessions rotating between Geneva and Rome.
- **Codex Alimentarius:** It is a collection of international food standards that have been adopted by the CAC.

Significance and Functions

- **WTO Recognition:** Codex standards are recognized by the WTO SPS Agreement as the reference for food trade disputes.
- **Global Harmonization:** The CAC helps harmonize **national food safety regulations**, facilitating international trade.
- **Scope of Standards:** The "Food Code" covers areas like food hygiene, additives, residues, contaminants, labeling, and analysis methods.

CENTRE NOTIFIES FOUR NEW LABOUR CODES

The Government of India has announced the implementation of the four Labour Codes with effect from 21st November 2025 rationalising 29 existing labour laws.

About

- **The four Labour Codes include** the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020 and the Occupational Safety, Health and Working Conditions Code, 2020.

Result of Rationalizing Labour Laws

	29 LAWS	*Vs*	4 CODES
Rules	1436		351
Returns	31		Single (Electronic)
Forms	181		73
Registers	84		8
Registration	8*		Single
License	4		Single
Compounding	-		Introduced first time
Improvement Notice	-		Introduced first time

**Factories, BOCW, Contract Labour, Plantation, Motor Transport, ISMW, ESI & EPF*

The Four Labour Codes and Key Provisions

Code 1: The Code of Wages, 2019

- **Subsumed Laws:** Payment of Wages Act, 1936; Minimum Wages Act, 1948; Payment of Bonus Act, 1965; Equal Remuneration Act, 1976.
- **Universal Minimum Wages:** The Code establishes a statutory right to minimum wages for all employees across both organized and unorganized sectors.
- **Introduction of Floor Wage:** A statutory floor wage shall be set by the Government based on minimum living standards, with scope for regional variation.
  - No state can fix minimum wages below this level, ensuring uniformity and adequacy nationwide.
- **Universal Coverage for Wage Payment:** Provisions ensuring timely payment and preventing un-authorized deductions will apply to all employees, irrespective of wage limits.
- **Overtime Compensation:** Employers must pay all employees overtime wages at least twice the normal rate for any work done beyond the regular working hours.

Code 2: The Industrial Relations Code, 2020

- **Subsumed Laws:** Trade Union Act, 1926; Industrial Employment (Standing Orders) Act, 1946; Industrial Disputes Act, 1947.
- **Fixed Term Employment (FTE):** Allows direct, time-bound contracts with full parity in wages and benefits; gratuity eligibility after one year.
- **Permission During Layoff:** Raises the threshold for government approval for layoffs, retrenchment, and closure from 100 to 300 workers, with states allowed to increase further.

Code 3: The Code on Social Security, 2020

- **Subsumed Laws:** 9 laws including Employees' Compensation Act, 1923; Maternity Benefit Act, 1961.
- **Expanded ESIC (Employees' State Insurance) Coverage:** ESIC now applies pan-India, eliminating the criteria of "notified areas."
- **Time-bound EPF (Employees' Provident Fund) Inquiries:** A five-year limit has been set for initiating EPF inquiries and recovery proceedings, to be completed within two years (extendable by one).
- **Inclusion of Gig and Platform Workers:** New definitions are included- "aggregator," "gig worker," and "platform worker" to enable social security coverage.
- **Social Security Fund:** A dedicated fund to finance schemes for unorganised, gig, and platform workers.
- **Commuting Accidents Covered:** Accidents during travel between home and workplace are now deemed employment-related, qualifying for compensation.

Code 4: The Occupational Safety, Health and Working Conditions Code 2020

- **Subsumed Laws:** 13 laws including Factories Act, 1948; Plantation Labour Act, 1951; Mines Act, 1952.
- **Health Checkup:** Employers must provide free annual health check-ups for all workers aged above 40 years.
- **Expanded Provision:** Provisions can be extended to establishments with a single employee engaged in hazardous or life-threatening work.

The key reasons behind these reform include:

- **Modernizing outdated laws:** The primary goal is to simplify India's complex and outdated labour laws, reduce the compliance burden for employers (promoting ease of doing business), and extend social security and safety nets to a larger segment of the workforce, especially in the unorganised sector.
- **Streamlining enforcement:** Multiplicity of authorities in different labour laws led to complexity and difficulty in enforcement.
- **Impact on Workers:** Key benefits include **universal minimum wages, social security portability via Aadhaar-linked Universal Account Numbers (UAN),** clearer employment terms through mandatory appointment letters, and enhanced safety and gender equality provisions.
- **Impact on Industry:** The reforms offer **flexibility to employers** through fixed-term employment and higher thresholds for lay-offs, which the government hopes will **encourage formalisation and attract investment.**

Concerns

- **Anti Workers Reform:** Trade unions have largely opposed the codes, labelling them "anti-worker" and fearing a **dilution of worker protections**, restrictions on the **right to strike**, and potential misuse of fixed-term employment to replace permanent jobs.
- **Federal Challange:** The implementation also requires cooperation from all states, as **labour is a Concurrent List subject.**

G-SECS

Recently, G-Sec yields have inched upward even though the RBI has cut the repo rate.

About

- **Overview:** Government Securities, commonly known as G-Secs, **are tradable debt instruments** issued by the **Central Government or State Governments of India** to borrow funds from the public to finance fiscal deficits and public spending.
- **Types:** They can broadly be classified into four categories, namely Treasury Bills (T-bills), Cash Management Bills (CMBs), dated G-Secs, and State Development Loans (SDLs).
- **Issuance:** These securities are issued primarily through auctions conducted by the **Reserve Bank of India (RBI)** on its electronic platform **E-Kuber.**

Bond Yield

- A bond yield is the return an investor earns from holding a government or corporate bond.
- It reflects interest paid on the bond relative to its market price.
- **Relationship to price:** Bond prices and yields have an inverse relationship. When a bond's price falls, its yield rises, and vice versa.

Relation between Bond Yield and Repo Rate

- Repo rate influences overall interest rates.
- Higher repo rates → investors expect higher returns → bond yields rise.
- Lower repo rates → easier borrowing → bond yields fall.

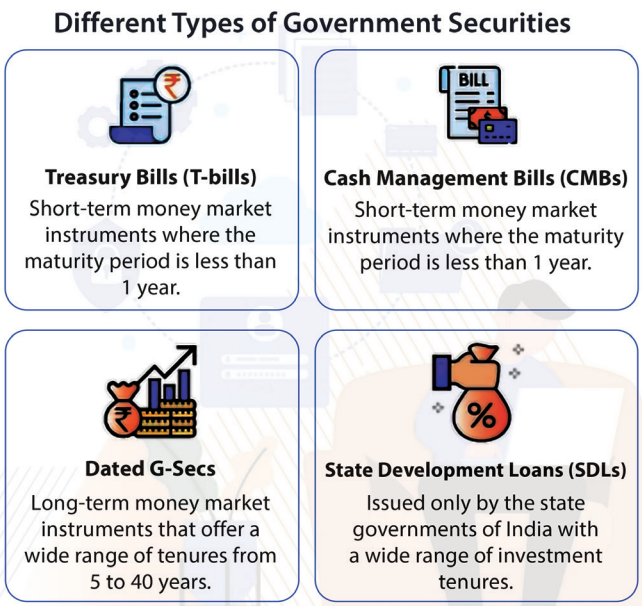
Why Bond Yields can Rise Even when the Repo Rate is Cut

- Normally, a repo rate cut means borrowing becomes cheaper and bond yields should fall.
- But bond yields sometimes rise instead due to **fears of higher inflation, larger government borrowing, currency weakening,** and Liquidity Constraints and Slow Monetary Transmission prompting investors to demand higher returns.

About E-Kuber:

- E-Kuber is the **Core Banking Solution (CBS) of the Reserve Bank of India (RBI)** that allows commercial banks and government entities to manage their accounts and transactions electronically and securely.
- **Government Securities Auctions:** It serves as a single-window system for a wide range of government banking needs, including fund management, electronic payments, and government security auctions.
- **Centralised Platform:** The platform enables real-time transactions and provides a centralized view of cash flows for effective financial management.

Types of Government Securities



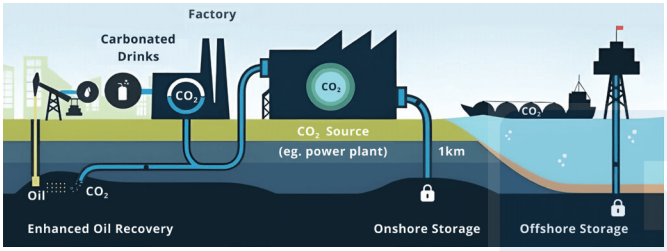
4 ENVIRONMENT

CARBON CAPTURE FOR NET-ZERO INDIA

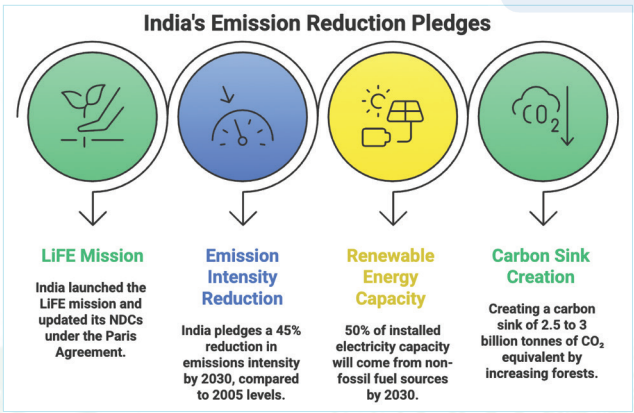
Ocean-based carbon capture can help India reach net-zero by 2070, turning its seas into engines of carbon removal and blue growth.

Carbon Capture, Utilisation, and Storage (CCUS):

- The International Energy Agency (IEA) defines CCUS as a **group of technologies for capturing of CO2 from large and stationary CO2 emitting sources,** such as fossil fuel based power plants and other industries.



- CCUS also involves the **transport of the captured CO2** to sites for:
  - Utilization in different applications
  - Injection into geological formations
  - Depleted oil & gas fields for permanent storage and trapping of the CO2.



Ocean-based Negative Emission Techniques:

- **Ocean Alkalinity Enhancement (OAE):** Increases seawater's natural ability to absorb CO_2 through addition of alkaline minerals like lime or olivine.
- **Biological Carbon Capture:** It involves **phytoplankton, seaweed, and microalgae** that absorb CO_2 through photosynthesis.
- **Ocean fertilisation** promotes the growth of phytoplankton by adding required micronutrients, such as phosphorus, iron, or nitrogen, facilitating long-term deep-ocean carbon storage.
- **Marine protected areas,** including coral reefs and mangroves (8.3 percent of the ocean), are vital for ocean health.
  - **Mangroves** store up to **1,000 tonnes** of carbon per hectare.

India's Potential for Ocean-Based CCUS

- India, with **2.6 gigatonnes of annual CO_2 emissions**, stands as the world's **third-largest emitter** after the US and China.
- India's **11,098.8 km coastline** and **2 million sq. km** Exclusive Economic Zone (EEZ) offer vast opportunities for ocean-based carbon sequestration.
  - **Seaweed farming** over 20% of India's ocean area could remove 0.6–1 gigatonne of CO_2 annually.
  - OAE, when combined with aquaculture, can provide highly durable and stable carbon storage.
- **Captured carbon can be repurposed** for biofuels, pharmaceuticals, green hydrogen, fertilizers, biopolymers, and construction materials, promoting circular carbon economies and blue growth.

CHINA'S FIRST-EVER THORIUM FUEL CONVERSION

China has successfully achieved the first-ever conversion of thorium into uranium fuel within a Thorium Molten Salt Reactor (TMSR).

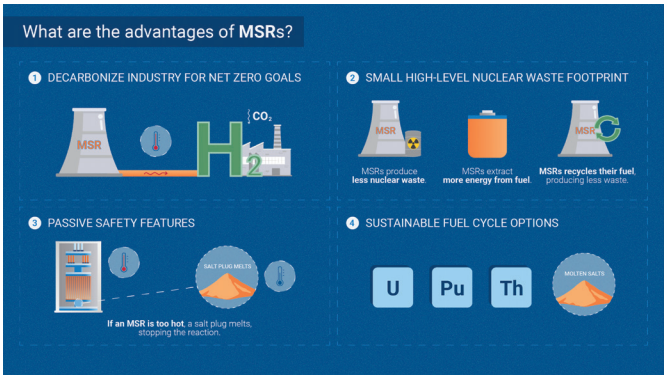
About

- It is the first time in the world that scientists have been able to acquire experimental data on thorium operations from inside a molten salt reactor.
- The achievement makes the 2 megawatt liquid-fuelled thorium-based molten salt reactor (TMSR) the only operating example of the technology in the world to have successfully loaded and used thorium fuel.

Molten Salt Reactor (MSR)

- It is a **fourth-generation nuclear reactor** that uses **molten salt as both fuel carrier and coolant,** instead of solid fuel rods and water.
- The reactor operates at atmospheric pressure and high temperatures (≈700°C).
- It allows continuous circulation of liquid fuel, enabling on-the-fly refuelling.
- **Thorium-to-Uranium Conversion Process:** Thorium-232 absorbs a neutron → becomes Thorium-233 → decays to Protactinium-233 → decays to Uranium-233 (fissile).

- This creates a "**burn while breeding" cycle** – self-sustaining and highly fuel-efficient.
- The **conversion occurs inside the reactor core,** eliminating the need for external fuel fabrication.



India's Thorium Reserves

- India has one of the largest reserves of thorium in the world.
- **Major thorium deposits** are found with large reserves in **Kerala, Odisha, Tamil Nadu, and Andhra Pradesh.** Together, **Kerala and Odisha account for over 70%** of India's thorium.
- India has been developing a **three-stage nuclear program,** with thorium-based reactors being a critical part of the third stage.
- **Challenges:** Extracting thorium from ores requires high amounts of energy and creates significant waste.
  - While India has large thorium reserves, extracting it for nuclear energy use has faced challenges, including the need for advanced reactor technology and economic viability.

Key Advantages of TMSR

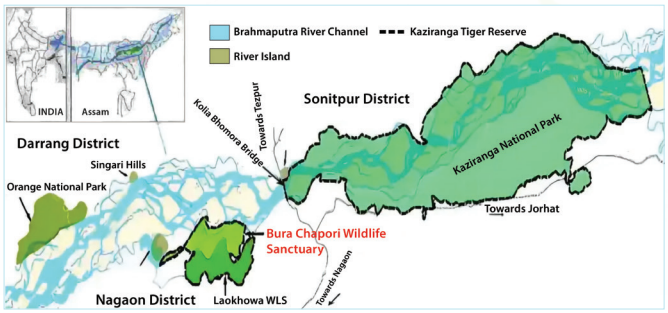
- **Safety:** Operates at atmospheric pressure; molten salts trap radioactive materials; automatic drain system for leak containment.
- **Efficiency:** Continuous fuel circulation allows full fuel utilisation and minimal waste.
- **Low Water Requirement:** No need for cooling water; suitable for inland or arid areas.
- **Reduced Radioactive Waste:** Produces less long-lived nuclear waste than uranium reactors.
- **Fuel Abundance:** Thorium is 3–4 times more abundant than uranium.

ROWMARI-DONDUWA WETLAND COMPLEX

Experts from academic institutions and conservation groups are collaborating to propose the Rowmari and Donduwa wetlands in Assam for Ramsar site designation.

About

- The Rowmari-Donduwa wetland complex is within the **Laokhowa Wildlife Sanctuary**, which is a part of the **Kaziranga Tiger Reserve.**



  - **Laokhowa** and the adjoining **Burhachapori Wildlife Sanctuaries** function as connectivity corridors for wild animals migrating between the **Kaziranga Tiger Reserve** and **Orang National Park** (Kaziranga-Orang landscape).
- It hosts around **120 species** of resident and migratory birds annually, including globally threatened species such as, the **knob-billed duck, black-necked stork, and the ferruginous pochard.**
- This complex has recorded more birds than the only two Ramsar sites in the northeast, **Assam's Deepor Beel and Manipur's Loktak Lake.**

Ramsar Convention

- A Ramsar site is a **wetland designated** as one of **international importance** under the Ramsar Convention.
- It was signed on **February 2, 1971** in **Ramsar, Iran** and came into force in 1975. India became a signatory to the **Ramsar Convention in 1982.**

INTERNATIONAL DAY FOR BIOSPHERE RESERVES

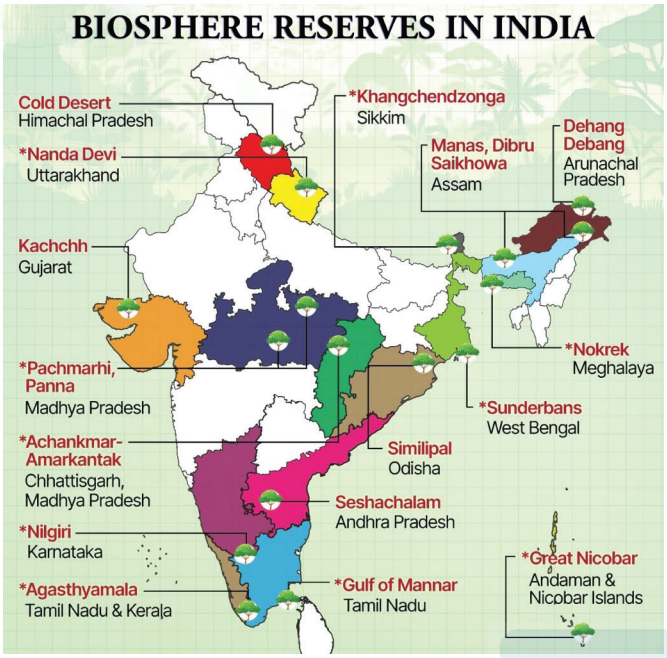
The International Day for Biosphere Reserves was observed on 3rd November.

Biosphere Reserves

- **Biosphere reserves** are areas identified by national governments for conserving biodiversity and promoting sustainable development.
  - It includes terrestrial, marine and coastal ecosystems.
- They are nominated by **national governments and remain under the sovereign jurisdiction** of the states where they are located.

BRs in India

- India has **18 Biosphere Reserves** covering 91,425 sq. km, with **13 recognized by UNESCO.**



- The programme operates under a **Centrally Sponsored Scheme** with a 60:40 funding pattern, and 90:10 for North Eastern and Himalayan states.
- In 2025, India's **Cold Desert Biosphere Reserve** in **Himachal Pradesh** was included in UNESCO's World Network of Biosphere Reserves.
- National initiatives like Project Tiger, Project Elephant, and Green India Mission complement Biosphere Reserve efforts.

World Network of Biosphere Reserves (WNBR)

- The UNESCO World Network of Biosphere Reserves (WNBR) was formed in **1971.**
- It covers internationally designated protected areas, known as biosphere reserves, which are meant to demonstrate a balanced relationship between people and nature. They are created under the Man and the Biosphere Programme (MAB).

RHESUS MACAQUE

The National Board of Wildlife has reinstated Schedule II protection for the Rhesus Macaque, strengthening legal safeguards against its hunting, trade, and mistreatment.

Rhesus Macaque (Macaca Mulatta)

- It is a diurnal, omnivorous primate that alternates between tree-dwelling and ground movement.
- It inhabits diverse ecosystems, including various forest types, mangroves, scrublands, rainforests, and areas near human settlements.
- It is found throughout most of southern Asia, in eastern Afghanistan, Bangladesh, Bhutan, China and India.
- It is listed as **Least Concern**.
  - It is listed on **CITES Appendix II.**

National Board for Wildlife (NBWL)

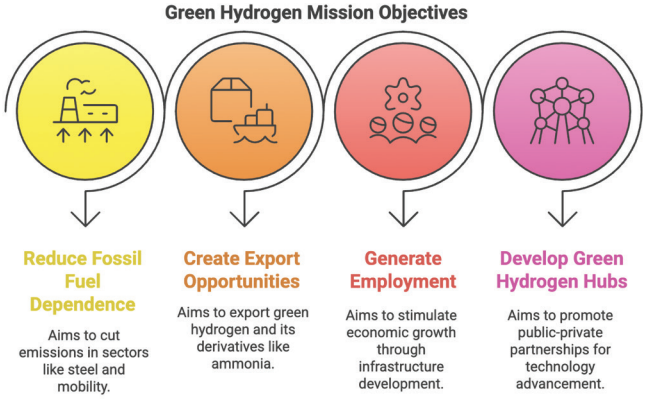
- **Statutory body** under the Wildlife (Protection) Act, 1972.
- **Chaired by the Prime Minister**; the Environment Minister is Vice-Chair.
- Includes **government officials, experts, and NGOs** (about 47 members).
- Advises the Centre on **wildlife conservation policy**.
- **Approves or rejects projects** within protected areas and eco-sensitive zones.
- Has a **Standing Committee** that handles most project clearances.

3RD INTERNATIONAL CONFERENCE ON GREEN HYDROGEN (ICGH 2025)

At the 3rd International Conference on Green Hydrogen, the Union Minister for New & Renewable Energy called the National Green Hydrogen Mission a catalyst for India's clean-energy transition.

About National Green Hydrogen Mission

- It was launched by the Government of India in January 2023 and spearheaded by the Ministry of New and Renewable Energy (MNRE).
- It is a cornerstone of India's strategy to achieve energy independence by 2047 and net-zero emissions by 2070.
- It aims to position India as a global hub for the production, utilization, and export of green hydrogen and its derivatives.



Challenges

- **High production costs:** Electrolyzer technology and renewable energy inputs remain expensive.
- **Infrastructure gaps:** Limited hydrogen pipelines, refuelling stations, and storage facilities.
- **Technology maturity:** Many green hydrogen applications are still in pilot or demonstration stages.

- **Policy coordination:** Cross-sectoral alignment is needed across energy, transport, industry, and finance ministries.
- **Global competition:** Countries like the EU, US, and China are also aggressively pursuing green hydrogen leadership.

National Green Hydrogen Mission Outcome

5 MMT of Green Hydrogen Produced Annually by 2030.

6 lakh+ green jobs Created across the Value Chain.

₹1 lakh crore reduction in fossil fuel imports.

50 MMT of greenhouse gas emissions avoided annually.

Way Ahead

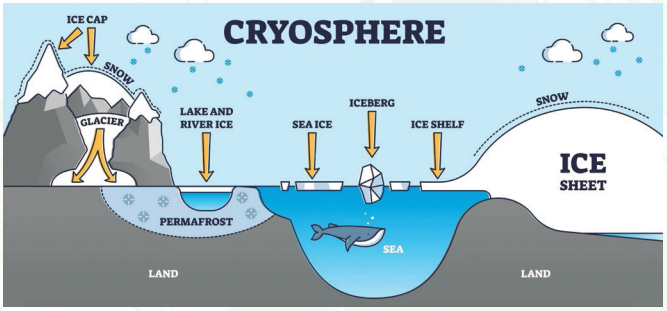
- **Cost Reduction:** Scale electrolyser manufacturing and expand cheap renewable energy.
- **Infrastructure Expansion:** Develop pipelines, storage, refuelling stations, and hydrogen hubs.
- **Technology Advancement:** Boost R&D and fast-track commercialisation of emerging applications.
- **Policy Alignment:** Strengthen inter-ministerial coordination and ensure stable incentives.
- **Global Competitiveness:** Build export capacity through global partnerships and dedicated hubs.
- **Skill Development:** Train workforce and support innovation through academia–industry linkages.

INTERNATIONAL CRYOSPHERE CLIMATE INITIATIVE

The "2025 State of the Cryosphere Report" underscores that Earth's glaciers and ice sheets are rapidly melting.

About Cryosphere:

- The cryosphere refers to all of Earth's frozen water—any place where water is in solid form. This includes Glaciers, Ice Sheets, Sea Ice, Snow Cover, Permafrost, Ice Caps & Ice Shelves etc.



Key Highlights of the Report:

- **Critical Thresholds:** Cryosphere nearing irreversible melt around 1°C warming; some glaciers may collapse at even lower temps.
- **Global Ice Loss:** Greenland & Antarctica melting faster, accelerating sea-level rise and disrupting ecosystems.
- **Sea Ice Decline:** Record-low Arctic & Antarctic sea ice (2025) affecting climate patterns and marine life.
- **Sea-Level Rise:** At today's ~1.2°C, long-term rise could reach several meters; keeping warming ≤1.5°C slows it significantly.
- **Water Resources:** Ice melt in 2023 equaled ~13% of global annual water use; shrinking glaciers threaten water security for billions.
- **Ocean Changes:** Meltwater and warming seas are weakening major currents, including the AMOC, risking colder N. Europe.
- **Increased Risks:** Loss of permafrost, reduced snow cover, and ocean acidification intensify climate impacts on people and ecosystems.

BOXFISH

Engineers at the University of Colorado Boulder created a mathematical model based on Turing's 1952 pattern-formation theory to replicate the ornate boxfish's skin patterns.

About

- They are small, shallow-water marine fishes from the family Ostraciontidae, known for their **rigid, boxlike carapace** made of fused plates, which encases most of their body except the eyes, mouth, fins, and tail.
- They are **found in warm tropical seas** worldwide.
- They are brightly colored and sometimes called **cowfish due to hornlike head projections.**
- Though edible and often dried as curios, boxfish release a toxic substance when handled that can harm nearby fish.

INDIA-BOTSWANA CHEETAH TRANS LOCATION PACT

India-Botswana formally announced the translocation of eight Cheetahs to India as a part of 'Project Cheetah'.

About

- India declared the **cheetah extinct in 1952**, after decades of over-hunting, habitat fragmentation, and depletion of prey species.
- The launch of Project Cheetah in 2022 and the arrival of cheetahs from Namibia and South Africa created the **world's first intercontinental relocation programme for a large carnivore.**

- And, **Botswana, a landlocked country** with nearly 70% of its landmass covered by the **Kalahari Desert**, holds one of the world's largest wild cheetah populations.

Project Cheetah

- **Overview:** Project Cheetah is India's ambitious attempt to reintroduce the cheetah in suitable open forest and grassland ecosystems.
- **Launched By:** National Tiger Conservation Authority (NTCA), a statutory body under the Wildlife (Protection) Act, 1972 (amended 2006).
- **Objective:** To reintroduce cheetahs into India's grassland ecosystems and establish a viable, free-ranging cheetah population.
- **Global First:** It is the world's first intercontinental translocation of a large wild carnivore.
- **Translocations So Far:**
  - 8 cheetahs from Namibia in 2022
  - 12 cheetahs from South Africa in 2023
  - 8 cheetahs from Botswana (2025 announcement)

Cheetah

- The ***cheetah (Acinonyx jubatus)*** is the world's fastest mammal and the only large carnivore to have gone extinct in India (1952). Unlike other big cats, cheetahs do not roar.
- **There are two main species:** The African cheetah (Vulnerable) and the Asiatic cheetah (Critically Endangered), found only in eastern Iran and parts of Africa.
- India has reintroduced cheetahs under Project Cheetah (2022) with individuals translocated from Namibia and South Africa to Kuno National Park.

GLOBAL CARBON EMISSIONS ARE PROJECTED TO RISE

New research by the Global Carbon Project was released during COP30 in Belem, Brazil.

Global Carbon Project

- It was founded in 2001 through a collaboration of the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP), the World Climate Research Programme (WCRP) and Diversitas.
- It is a Global Research Project of Future Earth and a partner of the World Climate Research Programme.

Purpose

- It was established to build a shared scientific knowledge base that informs policy and action to curb greenhouse gas emissions.
- It focuses on the global biogeochemical cycles of **Carbon Dioxide (CO_2), Methane (CH_4), and Nitrous Oxide (N_2O)**—examining both natural and human drivers and exploring low-carbon pathways.
- Its work complements international efforts under the UNFCCC, including the Kyoto Protocol and Paris Agreement, aimed at balancing greenhouse gas sources and sinks to stabilize the climate system.

FINN'S WEAVER

Ornithologists raised an extinction alarm as Finn's Weaver sightings vanished from Terai wetlands (Haripura Dam, Uttarakhand) in 2025—no birds or nests found after 17 males + 10 females in 2021.

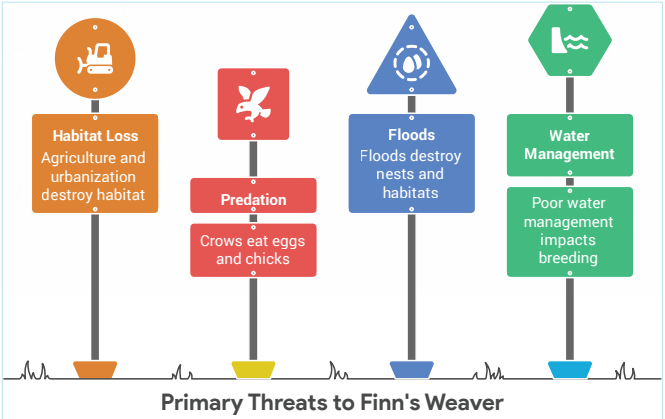
About

- Finn's Weaver (Ploceus megarhynchus), also known as **Finn's Baya or Yellow Weaver**, is a rare **weaver bird species native** to the grasslands of the **Ganges and Brahmaputra valleys in India and Nepal.**
- Finn's Weaver is one of the four weaver species in India, characterised by **bright yellow plumage** during the breeding season and globular nests on treetops (unlike suspended nests of other weavers).
- The bird is so named after **Frank Finn**, the British officer.

Key Characteristics:

- **Habitat:** Terai grasslands, wetlands, marshes (Uttarakhand, Uttar Pradesh, Assam); granivorous (seeds), opportunistically insectivorous during breeding.

- **Conservation Status:**
  - **IUCN:** Vulnerable (BNHS seeks upgrade to Critically Endangered);
  - Wildlife Protection Act 1972**:** Schedule IV



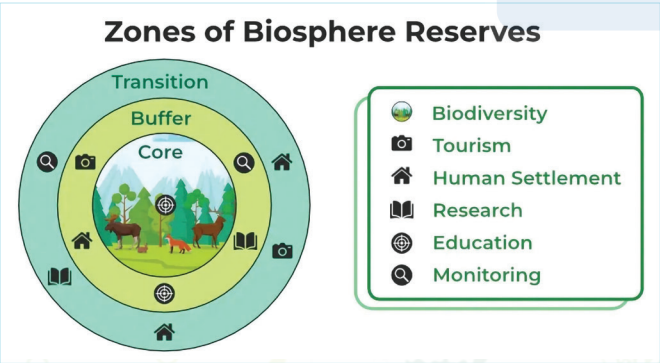
Primary Threats to Finn's Weaver

SC PROHIBITED TIGER SAFARIS

The Supreme Court (SC) has issued directions to prohibit tiger safaris in the core or critical tiger habitat.

Directions by SC

- **Sensitive Zones:** SC directed all states **to notify the buffer and core areas** of the tiger reserve **within six months.**
- Notify **Eco-Sensitive Zones (ESZs)** around all tiger reserves, including buffer and fringe areas, no later than one year from the date of judgement.



- **Tiger Conservation Plan (TCP):** The bench noted that from nine tiger reserves in 1973, the expanse of Project Tiger has increased to **58 reserves across India.**
  - Directions were given to prepare a Tiger Conservation Plan (TCP) within three months.
  - **The National Tiger Conservation Authority (NTCA)** shall monitor the TCPs are put in place and whether the Steering Committees have been meeting **at least twice a year.**
- **Tiger Safaris:** The Supreme Court has **prohibited tiger safaris in core tiger habitats,** mandating them only on non-forest land with rescue centers for conflict animals and using electric vehicles.
- **Prohibited Activities:**
  - In the buffer and fringe areas of a tiger reserve it banned:
  - commercial mining, setting up of saw mills, industries causing pollution, establishment of major hydroelectric projects and activities related to tourism.
- **Activities Allowed:** Regulated activities such as:
  - establishment of hotels and resorts as per approved tourism prescriptions,
  - commercial use of natural water resources including ground water harvesting,
  - fencing of premises of hotels and lodges, widening of roads,
  - and movement of vehicular traffic at night.

SARANDA FOREST

The Supreme Court directed the Jharkhand government to declare the ecologically rich Saranda forest as a wildlife sanctuary.

About

- Saranda Forest in Jharkhand is **Asia's largest Sal (Shorea robusta) forest**, spanning approximately 820-900 square kilometres.
- It is famously called the **"land of seven hundred hills,"** reflecting its hilly terrain.
- The forest is part of the **Chhotanagpur biogeographic zone.**
- It forms a natural landscape continuum with forests of Odisha and Chhattisgarh.
- It is home to critically endangered species, including the endemic sal forest tortoise, four-horned antelope, Asian palm civet, and wild elephants.
- It has been inhabited by th**e Ho, Munda, Uraon and allied Adivasi communities** whose subsistence and cultural traditions are intrinsically tied to forest produce.
- It also accounts for **26% of India's iron ore reserves.**

CAFE-3 NORMS

India's plan to tighten fuel-efficiency rules under the proposed third phase of the Corporate Average Fuel Efficiency (CAFE) rules from FY28 has opened a sharp divide within the auto industry.

About

- Carmakers split over how the next phase of norms **should treat small and large vehicles.**
- The framework sticks to a **weight-based formula** that steadily tightens through FY32, but its structure means **lighter cars face far steeper improvements** than heavier SUVs.
- The onus of reducing emissions is much higher on smaller cars than it is for bigger, heavier SUVs.
  - They feel that in bigger cars, there is a **greater scope of implementing emissions-reducing technologies**, such as hybrid or full electric powertrains. But, in smaller cars, the scope is far less as these are built to a budget.

India's Current CAFE Norms

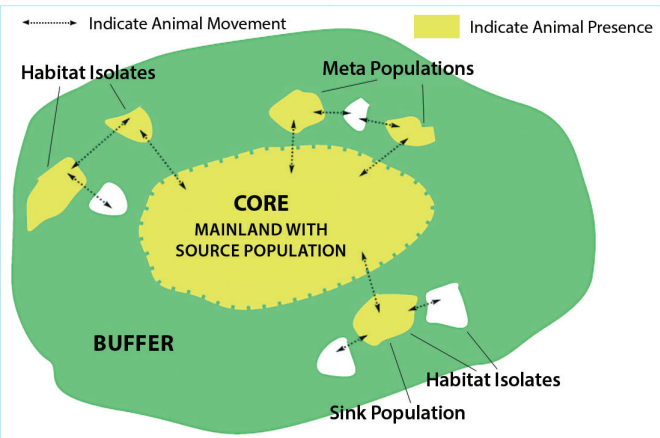
- The Bureau of Energy Efficiency introduced the CAFE norms in 2017 to regulate fuel consumption and carbon emissions from passenger vehicles.
- **These norms apply to** vehicles running on petrol, diesel, Liquefied Petroleum Gas (LPG), Compressed Natural Gas (CNG), hybrids, and Electric Vehicles (EVs) weighing less than 3,500 kg.
- The norms were tightened in the beginning of financial year 2022-23, with **increased penalties for non-compliance.**
- These norms are designed to **reduce oil dependency and curb air pollution.**

SC APPOINTED PANEL ASKS GOA TO NOTIFY TIGER RESERVE

A Supreme Court-appointed Central Empowered Committee (CEC) has recently recommended notifying a tiger reserve in Goa in two phases.

About

- The committee has proposed **Cotigao Wildlife Sanctuary and Netravali Wildlife Sanctuary**, which are contiguous to Karnataka's Kali Tiger Reserve, to be notified as the **core area** of the tiger reserve.



- The Committee has also recommended inclusion of **Bhagwan Mahavir National Park** along with the northern part of **Bhagwan Mahavir Wildlife Sanctuary** as the **buffer zone** of the proposed reserve.
- This recommendation is part of India's broader efforts to expand its network of tiger reserves under the **Wildlife (Protection) Act, 1972, managed by the statutory National Tiger Conservation Authority (NTCA)** chaired by the Minister of Environment and Forest and Climate Change.
- The creation of a tiger reserve in Goa aims to strengthen tiger conservation in the Western Ghats, enhance biodiversity protection, and support ecological balance in the region.
- Currently, India has 58 tiger reserves, with the latest being **Madhav Tiger Reserve in Madhya Pradesh.**

Notification of a Tiger Reserve

- Tiger Reserves are notified by **State Governments** as per provisions of **Section 38V of the Wildlife (Protection) Act, 1972,** on recommendation of the National Tiger Conservation Authority.
- Tiger reserve designation attracts enhanced funding from Project Tiger (Centrally Sponsored Scheme) for **conservation, research, and habitat management.**

AFRICAN GREY PARROT

According to state forest departments, there are no officially registered breeders or authorized pet shops for African grey parrots in India, despite their widespread availability in markets.

About

- The African grey parrot (Psittacus erithacus) is a **medium-sized, highly intelligent parrot** regarded as the best mimic among bird species, often **nicknamed "The Einsteins of the Bird World."**
- It is native to West and Central Africa, inhabiting savannas, coastal mangroves, woodland edges, and forest clearings.
- There are **two main subspecies:** the Congo African Grey (CAG), known for its bright red tail, and the Timneh African Grey (TAG), with a darker maroon tail.
- African greys are notable for their exceptional talking and comprehension abilities, capable of large vocabularies and contextual speech.
- The species is **classified as Endangered by the IUCN**, mainly due to habitat loss and heavy international pet trade capture.

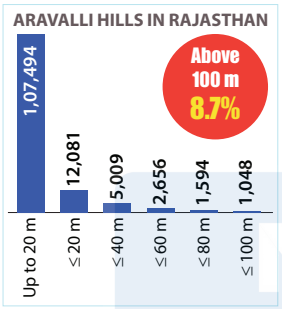
DEFINITION OF THE ARAVALLI HILLS

The Supreme Court has recently accepted the recommendations of a Union Environment Ministry panel on the definition of the Aravalli Hills to restrict mining.

About

- The Supreme Court has accepted the committee's recommendations relating to:
  - the uniform definition of the Aravalli Hills and Ranges;
  - prohibition of mining in core/ inviolate areas;
  - and measures for enabling sustainable mining and preventing illegal mining in the Aravalli Hills and Ranges.

Background



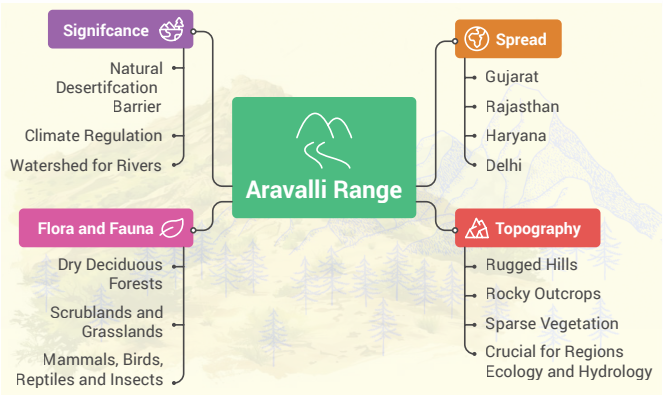
- For decades, the Aravalli hills have been **under severe pressure from mining**, **both legal and illegal,** and other development activities such as construction.
- Last year, the SC had asked the government to **come up with an uniform definition of the Aravalli.**
- **Old Definition:**
  - While the **Forest Survey of India (FSI) has been using a 3-degree slope yardstick** to define Aravalli Hills **since 2010,** a technical committee formed for the purpose in **2024 modified the benchmark.**
  - It defined any landform with a **slope of at least 4.57 degrees** and a height of at **least 30m** to identify as Aravalli Hills.
  - These yardsticks would effectively **cover up to 40% of the Aravallis.**

New Definition by Panel

- Any landform that is at an **elevation of 100 m or more** above the local relief will be considered as part of the Aravalli Hills, along with its slopes and adjacent land.
  - By this definition **90% of the Aravali Hills will not be** counted as Aravalli anymore.
- **As per an internal assessment by the Forest Survey of India (FSI):** Barely 1,048, or **just 8.7%** spread across 15 districts in Rajasthan, are 100 m or more in height. The 20m height cut-off is crucial for a hill's function as a wind barrier.

Concerns with the New Definition

- The new definition would exclude **more than 90% of the Aravalli Hills** from classification as Aravalli, potentially **permitting mining and construction activities** with **significant environmental consequences**, including impacts on NCR air quality.
- **Area Excluded:** The ministry identified 34 Aravalli districts across four states, omitting several districts with established Aravalli presence.



Way Ahead

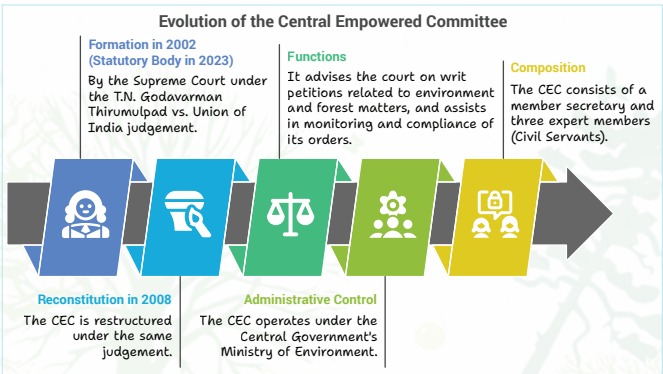
- After accepting the 100-m height definition, the Supreme Court directed the ministry to prepare a **Management Plan for Sustainable Mining,** in collaboration with the **Indian Council of Forestry Research and Education (ICFRE),** for the Aravalli Hills based on this new definition.

CENTRAL EMPOWERED COMMITTEE

The Supreme Court directed that the Union government not to take any steps to disband the Central Empowered Committee (CEC) without first obtaining the prior approval of the Court.

Issue

- The Cabinet Secretariat has cited the example of the **National Green Tribunal (NGT),** and said that with both NGT and CEC functional, duplicity of agencies may be leading to a delay in deciding the jurisdiction between the two.
- The Cabinet Secretariat had asked the Environment Ministry to refer the matter of the CEC's future to the Law Commission.



5 GEOGRAPHY

TORKHAM BORDER

The Torkham border crossing between Afghanistan and Pakistan has reopened after nearly weeks of closure following deadly border clashes.

About

- The **Torkham border** is a major crossing point between **Afghanistan and Pakistan**, located along the **Grand Trunk Road** on the international border.
- It connects **Nangarhar province** of Afghanistan with **Khyber Pakhtunkhwa province** of Pakistan.
- It is the **busiest port of entry** between the two nations, serving as a key hub for **transport, trade, and logistics**.

UMNGOT RIVER

Meghalaya's Umngot river has turned unusually murky, sparking concerns over pollution from highway construction activities.

About

- Umngot River, also called **Dawki or Wah Umngot**, flows through **Dawki in Meghalaya's West Jaintia Hills** and is famed for its crystal-clear, transparent waters that reveal the riverbed below.
- It runs along the India–Bangladesh border, serving both as a natural boundary and a key cross-border trade route.
- The discoloration, typically seen only during monsoons, is being linked to construction activities for the Shillong-Dawki road upgrade.

ANGOLA

President Droupadi Murmu made the first-ever Indian presidential visit to Angola to strengthen bilateral ties under the India–Africa Forum Summit framework.

About Angola (Capital: Luanda)

- **Location:** Angola is located on the west coast of Southern Africa, bordered by Namibia (south), Zambia (east), the Democratic Republic of Congo (north), and the Atlantic Ocean (west).
- **Political Overview:** Angola gained independence from Portugal in 1975 after years of anti-colonial struggle led by the MPLA (People's Movement for the Liberation of Angola).
- **Economic Profile:**
  - It is Africa's second-largest oil producer after Nigeria.
  - Diamonds form another major export sector.
- **Geographical Profile:**
  - Roughly square-shaped, rising from a narrow coastal plain to a central plateau averaging 1,000–2,000 m in elevation.
  - Highest Point is Mount Moco near Huambo & major rivers are Cuanza, Cunene, and Cuango.

GOGABEEL LAKE

Gogabeel Lake has been officially designated as India's 94th Ramsar site.

About Gogabeel Lake

- Gogabeel Lake is a **naturally formed oxbow wetland** situated in the riverine landscape of the **Katihar district of Bihar.**
- Its strategic location between the Ganga and Mahananda rivers makes it a critical hydrological and ecological buffer zone.

6 INTERNAL SECURITY

RUSSIA'S 'DOOMSDAY MISSILE'

Russia has launched its newest nuclear submarine 'Khabarovsk' designed to carry the underwater nuclear drone 'doomsday missile'.

About

- It is also known as **Poseidon** and It can travel at high speeds, greater than those of existing submarines and torpedoes.
- It can operate at great depths and across intercontinental distances, which could make it difficult to intercept.
- It is capable of intercontinental travel and immense destruction.
- It can travel deep underwater across long distances with a nuclear power source. It can reach **coastal targets and serve as a strategic deterrent.**

INDIA NAVY COMMISSIONS INS IKSHAK

The Indian Navy has commissioned INS Ikshak, the third vessel of the Survey Vessel Large class, into active service during a ceremony held at the Naval Base in Kochi.

About INS Ikshak

- **Meaning: Ikshak** means **"Guide"** in Sanskrit — symbolizing its role in hydrographic precision.
- **Built by:** Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.
- **Indigenous Content:** Over **80%**, showcasing India's **Aatmanirbhar Bharat** initiative and MSME collaboration.
- **Purpose:** Conducts **coastal and deep-water hydrographic surveys** of ports, harbours, and sea routes. Supports **coastal defence**, **disaster relief**, and **medical missions**.

CHINA'S AIRCRAFT CARRIER FUJIAN

China has commissioned its first indigenously designed aircraft carrier, Fujian.

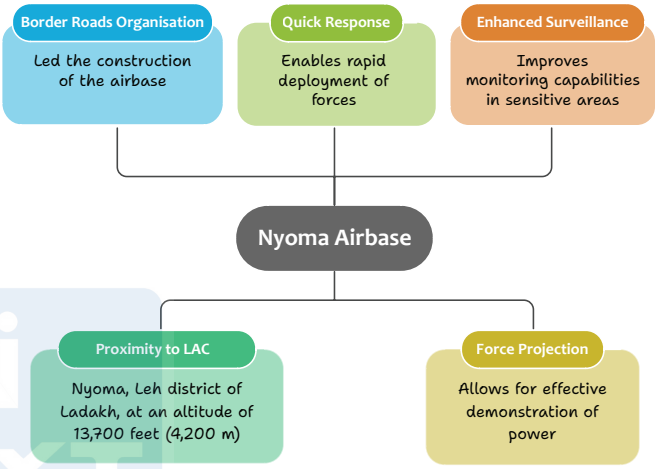
Aircraft carrier Fujian

- It is China's third aircraft carrier and the first to be indigenously designed, named after the province opposite Taiwan.
- Unlike its **Russian-designed predecessors,** Liaoning and Shandong, it features a flat deck and electromagnetic catapults, enabling it to launch heavier and more advanced aircraft.
- Sea trials have included the J-35 stealth fighter, KJ-600 early-warning aircraft, and a variant of the J-15, marking a significant upgrade in China's naval aviation capabilities.

MUDH-NYOMA AIRBASE

The Chief of the Air Staff inaugurated the Mudh-Nyoma airbase in Ladakh.

About



CENTRAL INDUSTRIAL SECURITY FORCE

Central Industrial Security Force (CISF) has been designated as a Recognised Security Organisation (RSO) for seaports under the International Ship and Port Facility Security (ISPS) code.

About

- India has about 250 seaports, of which **65–68 handle active cargo operations.**

CISF Features

Feature	Description
Formation & Growth	Formed in 1968, grown significantly
Security Coverage	Secures critical installations nationwide
Fire Wing	Only CAPF with dedicated fire wing
Recognition	Known as "Shield of Security"
Women Personnel	Largest number of women among CAPFs

SILIGURI CORRIDOR

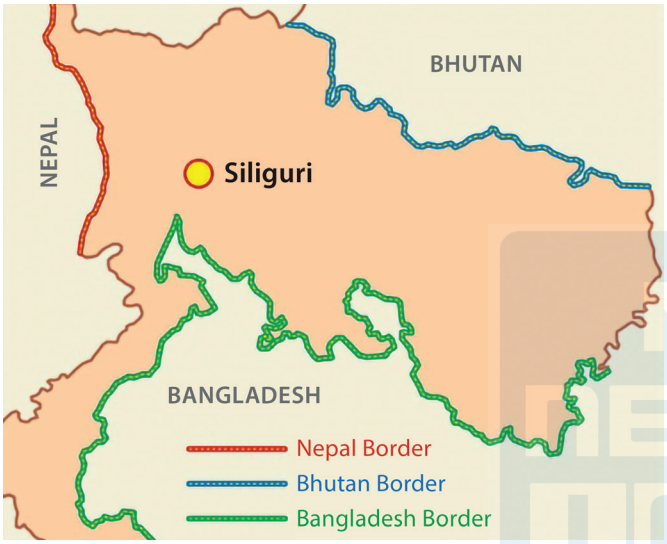
Indian Army sets up three new garrisons near the strategic Siliguri Corridor.

About

- There are security concerns amid the **change of regime in Bangladesh** and **concerns over China's growing presence** near the vulnerable Siliguri Corridor.
- The newly operational stations are expected to **strengthen the Army's operational readiness and improve coordination** with the Border Security Force.

About Siliguri Corridor

- It is also referred to as the **Chicken's Neck,** is a narrow strip of land in West Bengal that connects the Northeastern States to the rest of the country.



  - It is a very important strategic area of eastern India, located between **Mahananda and Teesta river.**

Significance of Siliguri Corridor

- **Strategic Connectivity:** If disrupted, it would isolate the north east states, making it difficult for the government to supply essential goods, services, and military support.
- **Military and Defense Considerations:** It lies close to sensitive international borders, particularly with China, Nepal, and Bangladesh.
  - Securing it ensures unhindered movement of Indian forces and supplies in the event of a conflict.
- **Geopolitical Vulnerability:** The narrowness of the corridor makes it vulnerable to blockages or control by adversaries.
  - Any disruption could sever India's access to the northeast, giving external powers an opportunity to influence or destabilize the region.

INDO-TIBETAN BORDER POLICE (ITBP)

The Indo-Tibetan Border Police force is establishing 10 all-woman Border Outposts along the Line of Actual Control (LAC), marking a significant step toward gender inclusion in border security.

ITBPF Overview

Characteristic	Description
Raised	24 October 1962
Status	Central Armed Police Force
Motto	Shaurya-Dridhata-Karma Nishtha
Operational Roles	Guarding India-China border
Counter-insurgency	Chhattisgarh
Legal Framework	ITBPF Act (1992)

INS MAHE

INS Mahe, India's first Mahe-class anti-submarine warfare shallow watercraft, was commissioned at the Naval Dockyard by the Chief of Army Staff.

About

- INS Mahe is named after the **historic coastal town of Mahe on the Malabar Coast.** The ship has over 80% indigenous components.
- **Features:**
  - It has a twin-shaft diesel propulsion generating over 6 MW of power and this gives it a top speed of 25 knots, a range of 1,800 nautical miles at 14 knots, and an endurance of 14 days.
  - **The key indigenous elements in Mahi include** propulsion and power management systems, integrated combat management suite, medium-frequency hull-mounted sonar, multi-function surveillance radar, torpedo and ASW rocket systems.

Significance

- Once fully inducted, the Mahe-class will replace the Navy's older Abhay-class corvettes.
- INS Mahe will strengthen the anti-submarine warfare grid along the coastline and improve tracking of underwater threats in the littoral zone.
- It will also enhance monitoring of diesel-electric submarines operating in the Indian Ocean.

ARMY LOOKS TO RAISE AGNIVEER VACANCIES TO 1 LAKH A YEAR

The Army plans to raise annual Agniveer intake from about 45,000–50,000 to over 1 lakh to offset a soldier shortfall of nearly 1.8 lakh.

Agnipath Scheme (Tour of Duty Scheme)

Scheme Launch	Recruitment	Service Period	Retention	Regular Service
The Agnipath Scheme was introduced in 2022.	Young individuals are recruited as Agniveers.	Agniveers serve in the Armed Forces for 4 years.	25% of Agniveers are retained for regular service.	Retained Agniveers serve for an additional 15 years.

Reasons for Increasing Vacancies

- **Deficiency of Soldiers:** Even after Agnipath began in 2022, around 60,000–65,000 soldiers keep retiring annually, while only 45,000–50,000 Agniveers were being recruited.
  - This adds up to a deficit of about 20,000–25,000 every year. Currently, the overall deficiency of soldiers is nearly 1.8 lakh.
- **Retiring Agniveers:** From the end of 2026, the first batch of Agniveers will start completing their 4-year term, so some of them will also be leaving service, further increasing the need for higher annual intake.

OPERATION PAWAN

The Chief of the Army Staff (COAS), General Upendra Dwivedi, has paid homage at the National War Memorial to the soldiers who laid down their lives during Operation Pawan (1987 – 1990) in Sri Lanka.

About

- Operation Pawan was India's first major post-Independence peacekeeping mission in Sri Lanka (1987-90).
- Operation Pawan was launched by the **Rajiv Gandhi government** in 1987 after the signing of the **Indo–Sri Lanka Accord.**
- India deployed the **Indian Peace Keeping Force (IPKF)** to Sri Lanka during the country's civil war between the **minority Tamil population** and the **Sinhalese-majority government.**
- **India was deeply concerned due to:**
  - Ethnic and cultural ties with Tamil Nadu
  - Escalating violence
  - Rising **refugee inflow** into India

Additional Information

- The Sri Lankan Civil War concluded on May 18, 2009, with the LTTE's defeat.
- India had not officially commemorated Operation Pawan for decades (while Sri Lanka maintains an IPKF memorial in Colombo), but the Indian Army has now formally recognised troops' sacrifices.
- India's intervention through the IPKF (1987–1990) followed the India–Sri Lanka Accord, intended to disarm the LTTE and enforce regional stability.

RUSSIA'S S-500 AIR DEFENCE SYSTEM

The Prime Minister of India and the President of Russia are set to meet at the upcoming India–Russia Annual Summit, where both sides are expected to discuss India's interest in next-generation S-500 Prometey air defence system.

About

- The S-500 Prometey is Russia's **most advanced long-range, surface-to-air and anti-space defence system**, designed to intercept a wide spectrum of modern and future airborne threats.

S-400 vs S-500 Comparison

Feature	S-400	S-500
Range	380 km	600 km
Target Altitude	30-40 km	Up to 200 km
Threats Intercepted	Aircraft, cruise missiles, Limited ballistic missiles	Ballistic missiles, hypersonic weapons, stealth. Aircraft, LEO satellites
Reaction Time	9-10 sec	3-4 sec
Anti-Satellite Capability	No	Yes
Role	Long-range air defence	Air + space defence

- It is **developed by Almaz-Antey**, Russia's premier air-defence and missile-interception manufacturer.
- **S-500** can intercept aircraft, missiles, and hypersonic threats at distances **up to 600 km.**
- It is operational at altitudes up to 200 km, allowing interception of **ballistic missiles in mid-course, hypersonic glide vehicles & low-Earth-orbit (LEO) satellites.**
- It has a reaction time 3–4 seconds, nearly **twice as fast as the S-400.**

Strategic Significance for India

- **Major Upgrade to India's Air Defence Shield:** Acquiring the S-500 would significantly strengthen India's tiered missile defence network, complementing:

- Prithvi Air Defence (PAD)/Advanced Air Defence (AAD) interceptors,
- S-400 Regiments
- Indigenous systems **(Akash-NG, MR-SAM)**

➲ **Countering China and Pakistan:** It would provide robust countermeasures against China's DF-17 hypersonic missiles and Pakistan's ballistic arsenal.

Air Defense Systems Comparison

Air Defense System	Country of Origin	Targets	Range	Key Features
S-400 Triumph	Russia	Aircraft, ballistic missiles	400 km/30 km	Tracks 300 targets, engages 36 simultaneously
S-500 Prometheus	Russia	Hypersonic missiles, satellites	600 km/exo-atmospheric	Next-gen layered defence
Patriot PAC-3 MSE	USA	Aircraft, ballistic missiles	160 km/24 km	Combat-proven
THAAD	USA	Ballistic missiles	200 km/150 km	Terminal high-altitude ballistic missile defence
Iron Dome	Israel	Short-range rockets, drones	70 km/10 km	90%+ intercept rate
David's Sling	Israel	Ballistic, cruise missiles	300 km / 15 km	Medium-range ballistic, cruise missiles
HQ-9B	China	Multi-target engagement	200 km/27 km	S-300 inspired
Aster 30 SAMP/T	France/Italy	Aircraft, ballistic missiles	120 km / 20 km	NATO-standard

MILITARY EXERCISES

Exercise	Participants	Domain	Started/ Frequency	Latest Edition (Place)	Key Focus/Features
AJEYA WARRIOR	Indian Army & British Army (UK)	Army	Started 2011; Biennial	8th edition – Rajasthan (2025)	Counter-terrorism under UN mandate, semi-urban operations
Suryakiran	Indian Army & Nepal Army	Army	Started 2011; Annual	19th edition – Pithoragarh, Uttarakhand (India)	Counter-terrorism, jungle survival, combat first aid, ambush tactics, heliborne ops; reciprocal hosting

7 SCIENCE & TECHNOLOGY

RESEARCH DEVELOPMENT AND INNOVATION (RDI) SCHEME FUND

PM Modi launched the Research, Development and Innovation (RDI) Scheme Fund while inaugurating the Emerging Science, Technology and Innovation Conclave (ESTIC) 2025 in New Delhi.

About the Scheme

- **Allocation:** The scheme has an outlay of **Rs 1 lakh crore over 6 years**, with Rs 20,000 crore allocated for FY 2025–26, funded from the **Consolidated Fund of India.**
- **Nodal Agency: The Department of Science and Technology (DST)** will serve as the nodal department for implementation of the RDI Scheme.
- **Key Objectives:**
  - **Private Participation:** Encourage the private sector to scale up **research, development, and innovation (RDI) in sunrise domains** and Include sectors relevant for economic security, strategic purpose, and self-reliance.
  - Finance transformative projects at higher levels of **Technology Readiness Levels (TRL).**
  - **Support acquisition of technologies** which are critical or of high strategic importance.
  - Facilitate setting up of a **Deep-Tech Fund of Funds.**
- **Strategic Direction:** The Governing Board of **Anusandhan National Research Foundation (ANRF),** chaired by the **Prime Minister**, will provide an overarching **strategic direction** to the RDI Scheme.

India's R&D Landscape

- India's R&D expenditure has doubled in the last decade, but still remains around **0.7% of GDP**, lower than global leaders such as the **USA (2.8%) and China (2.4%).**
- **The private sector** contributes **less than 40% of total R&D spending,** compared to over **70% in advanced economies**.

ISRO'S LVM3 ROCKET LAUNCHES GSAT-7R

The Indian Space Research Organisation (ISRO) successfully launched the Indian Navy's advanced communication satellite GSAT-7R (CMS-03) from the Satish Dhawan Space Centre in Sriharikota.

About the GSAT-7R Satellite

- **Heaviest Satellite:** Gsat-7R an **indigenously** developed satellite, weighing approximately **4,400 kg,** is India's **heaviest communication satellite** to be launched from the country to date.
  - **Replace Rukmini:** It is designed to **replace Gsat-7 (Rukmini)**, which was launched in 2013 and is primarily dedicated to the Indian Navy.
- ISRO launched the **CMS-O3** satellite aboard its most powerful launch vehicle, the **LVM3**, on its **M5 mission.**
  - The satellite had been successfully inserted into a **Geosynchronous Transfer Orbit (GTO).**

Geosynchronous Transfer Orbit

- The GTO allows satellites to be positioned into geostationary orbits, where they can **maintain a fixed position relative to the Earth's surface.**
- This is crucial for **communication and weather satellites** that need to monitor specific areas continuously.

- **Multiple Payloads:**
  - The satellite carries advanced payloads in multiple frequency bands, **UHF, S-band, C-band and Ku-band,** and includes several indigenous technologies such as a **1,200-litre propulsion tank** and collapsible antenna systems.
  - Its payload includes **transponders** capable of supporting voice, data, and video links over multiple communication bands.
- **Significance:** With state-of-the-art indigenous components, the GSAT-7R will provide robust and **secure telecommunication** coverage across the **Indian Ocean Region.**

LVM3-M5 Vehicle Configuration
(2S200+L110 (HTVE)+C25+5 m OPLF)

LVM3-M5 Stages at a Glance

Stages	Strap-Ons (2 x S200)	Core Stage (L110)	Upper Stage (C25)
Length (m)	26.22	21.4	13.5
Diameter (m)	3.2	4.0	4.0
Propellant	Solid (HTPB)	Liquid ($UH25 + N_2O_4$)	Cryo (LH_2 & LOX)
Propellant Mass (t)	204.5 (each)	115.9	28.6

5th Operational Flight of **LVM3**

LVM3-M5 Vehicle Characteristics

Vehicle Height	43.5 m
Lift off Mass	642 t

LVM3-M5 Mission Specification

GTO Apogee	29970 ± 3700 km
GTO Perigee	170 ± 3.5 km
Inclination	21.4° ± 0.1°
Argument of Perigee	178° ± 0.3°
Launch Azimuth	107°

ENCEPHALOMYOCARDITIS VIRUS

Delhi zoo's lone African elephant died from the rare rodent-borne Encephalomyocarditis Virus (EMCV) — the first such case reported in any Indian zoo.

About

- **Nature of Virus:** It is a small non-enveloped single-stranded RNA virus.
  - Its pathogenesis is both **strain and host-specific**, necessitating deeper research into its virulence factors.
- **Diseases:** It can cause **myocarditis, encephalitis, neurological disorders, reproductive issues**, **and diabetes** across various mammalian species.
- **Transmission:**
  - Consumption of food and water contaminated with rodent urine or feces
  - Ingestion of rats or mice infected with EMCV
  - Transplacental (vertical) transmission in swine
  - Direct transmission between pigs has not been documented
- **Occurrence:**
  - EMCV was first identified in 1945 from a gibbon in Florida, with the first pig case reported in Panama in 1958.
  - It is now widespread globally, especially in South America, Australia, China, Europe, Canada, and the US.

VAISHVIK BHARTIYA VAIGYANIK

Minister of State for Science and Technology interacted with Vaishvik Bhartiya Vaigyanik (VAIBHAV) fellows from across the world.

About

- **Launched:** VAIBHAV fellowship was launched in **2023** and is implemented by the **Department of Science & Technology,** Ministry of Science and Technology.
- **Aim:** The goal is to create an ecosystem of Knowledge and Innovation in the country through global outreach.
- **Eligibility:** Non-Resident Indian (NRI), Persons of Indian Origin (PIO), and Overseas Citizen of India (OCI), currently working abroad.
- **Implementation: Collaboration between scientists of the Indian Diaspora** with Indian Higher Educational Institutions (HEIs), Universities and/or Public Funded Scientific Institutions.
  - The VAIBHAV Fellow would identify an Indian Institution for collaboration and may spend up to two months in a year for a maximum of 3 years.
- **Fellowship** is ₹4,00,000/- for a minimum of 1 month and a maximum of up to 2 months per year for a period of a maximum of 3 years.
- **Institutional Financial Support:** The financial support (up to ₹5 Lakhs per year for 3 years) will be given to the host institution to facilitate the VAIBHAV fellow.

PROJECT SUNCATCHER

Google launches Project Suncatcher to test AI data centres in space.

About

- **Network of Satellites:** The initiative envisions a constellation of compact satellites, each carrying Google's custom-built Tensor Processing Unit (TPU) chips (processors designed specifically for machine learning and AI applications).
- **Exchange Data:** Each satellite will feature high-efficiency solar panels for power and will be connected through free-space optical communication beams, enabling them to relay data between satellites and back to Earth.
- **Target:** In its initial phase, Google intends to launch two prototype satellites by early 2027 to test TPU operations in orbit.

STARLINK SIGNS FIRST DEAL WITH MAHARASHTRA

Maharashtra has become the first Indian state to formally collaborate with Starlink to deliver satellite-based internet connectivity across remote and underserved regions.

About

- **Strengthen Digital Connectivity:** The move is part of the state's Digital Maharashtra mission and aims to strengthen digital connectivity in areas with limited network access.
- **Internet Provider:** Under the partnership, satellite internet will be deployed in government institutions, public infrastructure and underserved districts.

Starlink

- **Direct Internet:** Starlink, owned by Elon Musk's SpaceX, provides internet through a constellation of low-Earth orbit (LEO) satellites that beam signals directly to users on the ground.
- **Last Mile Connectivity:** Unlike traditional broadband that depends on cables or mobile towers, Starlink's system can reach regions where laying fibre or building towers is difficult or uneconomical.
- **Significance:** Satellite internet can support essential services such as online education, telemedicine, digital payments, and e-governance.
  - It can also maintain communication during disasters when ground infrastructure fails.

GPS SPOOFING

The IGI Airport has for the first time witnessed GPS spoofing.

About

- **GPS Spoofing:** It happens when counterfeit satellite signals are broadcast to deceive GPS receivers, causing them to compute false position, navigation, and timing data.

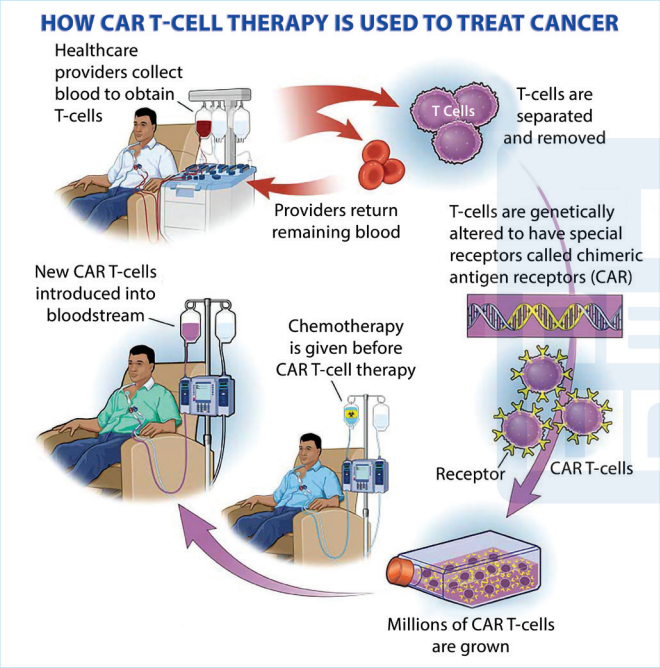
Challenges

- **Create Disruption:** GPS spoofing can severely disrupt **critical infrastructure** across the aviation, logistics, telecommunications, energy, and defense sectors.
- **GPS Jamming:** It is blocking of signals, spoofing feeds incorrect coordinates, making navigation systems misread the aircraft's real location.

INDIA UNVEILS ITS FIRST INDIGENOUS CAR-T CELL THERAPY

Prime Minister Narendra Modi launched NexCAR19 for cancer care.

NexCAR19



- **Development:** NexCAR19 is India's first indigenous CAR T-cell therapy, developed collaboratively by ImmunoACT (incubated under IIT Bombay and Tata Memorial Hospital), with support from DBT and BIRAC.
- **CAR (Chimeric Antigen Receptor) T-cell Therapy:** It is a type of immunotherapy where a patient's own T-cells are genetically engineered to recognize and destroy cancer cells.
- **Process:** This process involves removing T-cells from the patient, modifying them in a lab to express a synthetic receptor called a CAR, and then reinfusing these modified CAR T-cells back into the patient to attack cancer cells.
- **Treatment:** NexCAR19 is designed for treating B-cell blood cancers, particularly leukemia and lymphoma, especially in patients whose cancer has relapsed or not responded to first-line therapies.

Relevence

- NexCAR19 marks India's entry into the **global league of advanced cell and gene therapy innovators**, reinforcing its commitment to affordable, cutting-edge healthcare and biotech self-reliance.

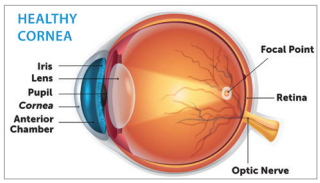
MAKING EYE CARE MORE INCLUSIVE

The Health Ministry has amended the 2025 Transplant Rules to make corneal transplants easier and more accessible.

About the Amendment

- The Ministry of Health and Family Welfare has updated the Transplantation of Human Organs and Tissues Rules, 2025 to improve eye donation and corneal transplantation services across India.
- Earlier, corneal transplant centres had to use an expensive machine called a **Clinical Specular Microscope** to test the health of donated corneas.
- The new rule **removes this mandatory requirement,** allowing district hospitals, small clinics, and rural eye banks to carry out transplants more easily and at lower cost.

About the Cornea



- The cornea is the clear outer layer of the eye that lets light enter and focus on the retina.
- Injury, infection, or disease can make it cloudy (called corneal opacity), causing blindness.
- In such cases, doctors perform a corneal transplant using a healthy cornea from a donor.

Significance

- Corneal blindness affects around 1.2 million Indians, with 30,000 new cases every year.
- By simplifying procedures, the amendment promotes affordable, accessible, and inclusive eye care, especially in rural areas—aligning with Ayushman Bharat's goal of equitable healthcare for all.
- Restoring sight is not just medicine — it's a step toward equality.

RICIN

The Gujarat ATS stopped a terror plot where suspects were trying to make the deadly toxin, Ricin.

About

- Ricin is a natural poison found in the seeds of the castor bean plant (Ricinus communis) — a plant commonly grown in India to produce castor oil.

- While castor oil is safe, the leftover seed material contains ricin, which is extremely toxic.
- Ricin works by blocking the body's ability to make proteins, which are essential for cell survival. Without proteins, cells die quickly, leading to organ failure and death.
- Even a tiny amount — just a few milligrams — can kill a person if swallowed, inhaled, or injected. There is no known antidote, making it one of the most dangerous natural toxins.

Global Regulation

- Ricin is banned worldwide under the Chemical Weapons Convention (CWC) because it has no safe or industrial use.
- The Organisation for the Prohibition of Chemical Weapons (OPCW) monitors and enforces this treaty to prevent its misuse.

Chemical Weapons Convention (CWC)

- **Adopted:** 1992 | **Came into force:** 1997
- **Administered by:** Organisation for the Prohibition of Chemical Weapons, **headquartered** in The Hague, Netherlands.
- **Objective:** To completely eliminate chemical weapons by prohibiting their development, production, stockpiling, transfer, or use, and ensuring their destruction.
- **India's Role:**
  - India was among the **original signatories and one of the first countries** to ratify the CWC in 1996.
  - India has also declared and destroyed its entire stockpile of chemical weapons under OPCW supervision.

QUANTUM DIAMOND MICROSCOPE

India has built its first Quantum Diamond Microscope (QDM) for high-precision, 3D magnetic field imaging.

About QDM

- The Quantum Diamond Microscope is a new type of microscope that can "see" invisible magnetic fields at an extremely small (nanoscale) level.
- It works using special spots inside diamond crystals called Nitrogen-Vacancy (NV) centers. These tiny defects act like magnetic sensors.
- When laser light shines on them, the color of light they give off changes depending on the nearby magnetic field. Scientists then use this information to make detailed 3D maps of magnetic activity — something ordinary microscopes cannot do.

Why it Matters

- The QDM is important because it allows scientists to study materials, electronic chips, and even biological tissues without damaging them.
- **It helps in areas such as:**
  - **Electronics:** Finding tiny faults in microchips.
  - **Neuroscience:** Tracking brain activity through magnetic signals.
  - **Clean Energy:** Studying magnetic behavior in batteries and superconductors.
- This technology supports India's National Quantum Mission, which aims to develop homegrown tools for quantum computing, communication, and sensing.

National Quantum Mission (NQM)

- **Launched in 2023,** the National Quantum Mission aims to position India as a global leader in quantum computing, communication, sensing, and materials research.
- With an outlay of ₹6,000 crore (2023–2031), it seeks to develop indigenous quantum technologies, boost R&D infrastructure, and promote public–private collaboration in advanced quantum science.

Analytical Perspective

- By developing the QDM indigenously, India has moved a step closer to becoming self-reliant in advanced scientific instruments.
- It shows India's shift from learning quantum theory to applying it for real-world innovation, positioning the country as a key player in the global quantum technology revolution.

NEUROTECHNOLOGY

UNESCO has launched the first global guidelines to ensure neurotechnology develops responsibly and protects human rights.

About

- Neurotechnology refers to scientific tools that can read, record, or even influence brain activity.
- It combines neuroscience, artificial intelligence (AI), and engineering to develop systems like Brain–Computer Interfaces (BCIs), which allow people to control devices using brain signals.
- These technologies can help patients with paralysis, memory loss, or brain injuries regain movement or communication abilities.
- However, because they deal directly with brain data, they raise serious concerns about privacy, free will, and control over one's own thoughts.
- If misused, such tools could allow governments or companies to monitor or manipulate people's emotions and decisions.

UNESCO's Ethical Framework

- UNESCO's new framework — the first of its kind — ensures that human dignity stays at the centre of neurotech innovation.

- It defines what counts as brain data, promotes informed consent, and seeks special protections for children and vulnerable people.
- It also bans any deceptive or manipulative use of brain data for political, medical, or commercial gain.

UNESCO

- The United Nations Educational, Scientific and Cultural Organization (UNESCO), **founded in 1945** and **headquartered** in Paris, **promotes** education, science, culture, and communication to build peace and sustainable development.
- **India** was a **founding member** and has played an active role in UNESCO's initiatives—hosting offices in New Delhi, and contributing to global programmes in education reform, cultural preservation, and digital ethics.

Why it Matters

- With neurotechnology expected to grow into a USD 25 billion industry by 2030, these global rules are vital.
- For India, they offer a roadmap to build ethical standards for brain–computer technologies under AI and health policies — ensuring progress without compromising the freedom of the human mind.

AURAMINE IN INDIAN FOOD

India continues to face repeated food adulteration incidents due to non-permitted synthetic dyes like Auramine O.

About Auramine O

- Auramine O is a **synthetic yellow dye** used in textiles, leather processing, paper, and inks, and as a staining agent in microbiology. **Industrially valuable but biologically harmful,** it has no legal approval as a food additive in India, the EU, or the United States.
- Yet, its low cost and bright colour appeal make it a **tempting adulterant in Indian sweets, turmeric, and street foods**. Studies by the **FSSAI** and independent labs have found traces of Auramine and similar dyes such as **Metanil Yellow, Rhodamine B, and Malachite Green** in food samples — especially during festivals when demand peaks.

Health Implications

Auramine O is toxic even in micro-quantities. Chronic exposure can lead to:

- Liver and kidney damage, causing long-term metabolic disorders.
- Spleen enlargement and immune suppression.
- Mutagenic and carcinogenic effects, with potential DNA alteration and cancer risk.
- Children and pregnant women are particularly vulnerable, as their detoxification systems are less developed.

ARTIFICIAL INTELLIGENCE LITERACY IN INDIA

The Ministry of Electronics and IT launched 'YUVA AI for ALL' under the IndiaAI Mission to promote AI literacy.

About the Initiative

- The 'YUVA AI for ALL' programme is **India's first mass-scale AI literacy initiative,** launched by the (MeitY). It seeks to make artificial intelligence accessible to every Indian citizen, from students and teachers to working professionals and lifelong learners.
- This **free, 4.5-hour self-paced online course** introduces the fundamentals of AI — how machines learn, make decisions, and influence everyday life — in an engaging, simple, and multilingual format. The goal is to **train 1 crore** (10 million) Indians in basic AI understanding, bridging the knowledge gap between tech creators and users.
- By focusing on inclusivity, ethics, and digital literacy, the initiative aligns with India's broader vision of making technology a tool for empowerment rather than exclusion.

The IndiaAI Mission

The IndiaAI Mission, launched by MeitY, serves as the backbone for this initiative. It focuses on:

- Developing **indigenous AI models and datasets** to reduce dependence on foreign technologies.
- **Building AI infrastructure** such as high-performance computing and open data platforms.
- **Supporting AI start-ups** and innovation through grants and partnerships.
- **Promoting Responsible AI,** ensuring transparency, fairness, and ethical deployment.

HANOI CONVENTION

Seventy-two nations have signed the landmark UN Convention against Cybercrime in Hanoi to tackle global cyber threats.

About the Convention

- The Hanoi Convention, formally known as the **United Nations Convention against Cybercrime,** marks a historic global effort to combat cyber threats through international cooperation and legal harmonization.

Aim and Purpose

- The convention provides a **legislative and cooperative framework** for countries to jointly investigate, prosecute, and prevent cybercrimes.

- It also seeks to build capacity in developing nations lacking digital infrastructure or legal systems to deal with cyber incidents effectively.

Key Highlights

- **First Universal Framework:** The Hanoi Convention is the first-ever global treaty addressing cybercrime comprehensively.
- **Legally Binding Instrument:** Once ratified, it will be binding on all signatories, ensuring accountability and consistency.
- **Adoption:** Approved by the UN General Assembly in **2024** after five years of negotiation; open for signing until **2026.**
- **Entry into Force:** Will come into effect 90 days after 40 states ratify it.

Key Provisions

- **Cyber-dependent Crimes:** Unauthorized access (hacking), data interference, and system disruption.
- **Cyber-enabled Crimes:** Online fraud, identity theft, and the non-consensual sharing of intimate images.
- **Child Exploitation:** Criminalizes online sexual abuse, grooming, and distribution of child abuse material.
- **Cross-border Cooperation:** Enables real-time data sharing and a 24/7 global response network for law enforcement agencies.
- **Conference of States Parties:** To periodically evaluate implementation and enhance cooperation.
- **Secretariat:** The UN Office on Drugs and Crime (UNODC) will serve as the secretariat and implementation body.

CLOUDFLARE

A major outage at Cloudflare disrupted global platforms like X, ChatGPT, and several other key websites.

About

- Cloudflare Inc. is a **US-based internet infrastructure and cybersecurity company** that safeguards and optimizes web operations worldwide.
  - It acts as a **protective intermediary** between users and website servers, ensuring security, speed, and reliability.
- It provides three essential services:
- **Security:** Shields websites from cyberattacks, particularly **Distributed Denial of Service (DDoS)** attacks, by filtering harmful traffic before it reaches servers.
- **Performance:** Uses a **Content Delivery Network (CDN)** with hundreds of global data centers to deliver cached content quickly, reducing latency.
- **Traffic Management:** Distributes web traffic intelligently to prevent crashes during high demand or cyber disruptions.

Analytical Perspective

- Cloudflare handles nearly **20%** of global web traffic, making it critical to the internet's functioning. Its temporary outage revealed how interconnected and fragile global digital infrastructure has become.
- For India, which is rapidly digitizing under **Digital India,** this incident highlights the need for domestic data infrastructure, stronger cybersecurity policies, and internet resilience frameworks to avoid overdependence on global private providers.
- Cloudflare's failure was more than a technical glitch — it was a wake-up call for digital sovereignty.

PHARMACOGENOMICS

Pharmacogenomics is changing modern medicine by helping doctors choose drugs based on each person's genes.

About

- Pharmacogenomics combines pharmacology (how medicines work) and genomics (the study of genes) to understand why the same medicine affects people differently.
- Every person's body processes medicines in a unique way because of small genetic variations. These differences decide how fast a drug is absorbed, how long it stays in the body, and how strong its effect will be.
- Using this information, doctors can design personalized treatments — choosing the right medicine at the right dose for each patient.
  - For *example*, some cancer drugs only work if a person has a certain genetic marker, and some heart medicines can cause harm if given without checking specific genes.

Analytical Perspective

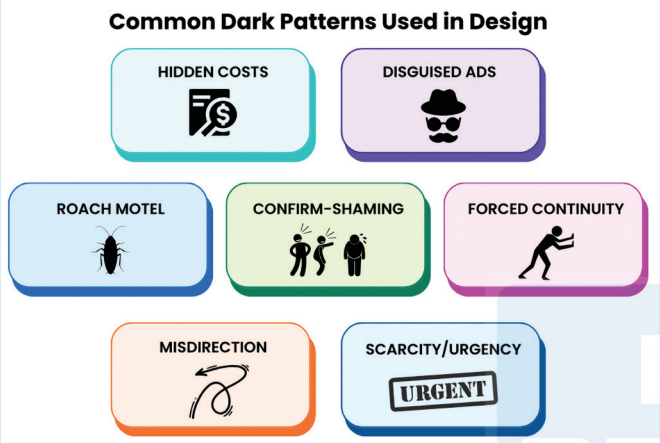
- Around the world, adverse drug reactions are a major cause of hospital admissions.
  - Pharmacogenomics helps reduce such risks by predicting bad reactions in advance, making healthcare safer and more effective.
- For India, with its huge genetic diversity, this approach can transform healthcare.
  - Building a national genetic database and promoting affordable testing will help design medicines suited to Indian populations.
- However, awareness, cost, and ethical handling of genetic data are key challenges.
- Pharmacogenomics marks the beginning of a new era of medicine — one where treatment is not just prescribed, but personally designed.

DARK PATTERNS

The Central Consumer Protection Authority (CCPA) confirmed that 26 major online platforms now follow anti-dark pattern rules.

About

- Dark patterns are tricks built into websites or apps that push users to do things they may not want to — such as buying something accidentally, signing up for unwanted subscriptions, or giving away personal data.
  - ***For example***, fake countdowns ("only 1 item left!") or pre-ticked consent boxes are dark patterns.
- These designs play on human psychology, making users act quickly or carelessly, and reduce their ability to make free and informed choices.



Central Consumer Protection Authority

- The Central Consumer Protection Authority (CCPA) was **established** in 2020 under the **Consumer Protection Act, 2019** to protect consumer rights and prevent unfair trade practices. It functions under the **Ministry of Consumer Affairs, Food and Public Distribution.**
- Its **key roles** include investigating complaints, recalling unsafe goods, ordering refunds, and penalizing misleading advertisements. The CCPA also **issues guidelines** for e-commerce platforms, regulates dark patterns, and ensures truthful consumer information
- It acts as a central enforcement body promoting fairness, accountability, and consumer empowerment in India's digital and physical markets.

Impact

- In India's growing digital market, such deceptive designs **erode consumer trust** and **promote unfair competition.**
- They also **threaten privacy,** as users may share personal data unknowingly.

Legal Safeguards

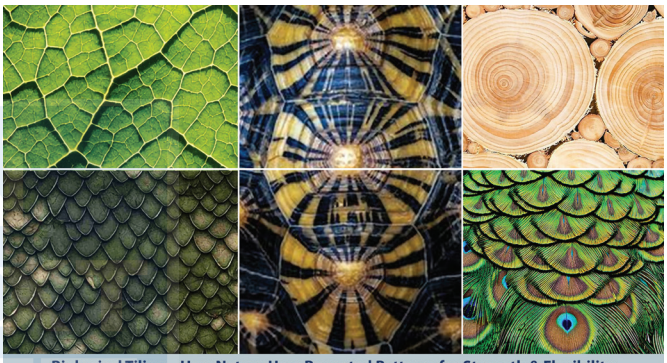
- Under **Section 2(47)** of the **Consumer Protection Act, 2019**, dark patterns are defined as **unfair trade practices.**
- The CCPA, under **Section 18,** has issued the 2023 Guidelines, banning 13 misleading design tricks in e-commerce.

BIOLOGICAL TILINGS

A PNAS Nexus study by German scientists found that tiling patterns are common across living organisms.

About

- Biological tilings are repeating patterns where small, solid pieces—called tiles—fit together to form strong and flexible surfaces.
- **They appear in many forms of life:**
  - Turtle shells and fish scales are made of mineral tiles.
  - Virus capsids are made of protein tiles.
  - Plant cell walls contain sugar-based tiles.
- These tiles are separated by softer joints, allowing both protection and movement—similar to how floor tiles are arranged neatly but can flex with the surface.


Biological Tiling – How Nature Uses Repeated Patterns for Strength & Flexibility

Why it Matters

- This pattern helps living things stay strong without being heavy. The tiling design spreads pressure evenly, resists cracks, and saves energy in growth and repair.
- The study found that nature uses this same geometric principle from tiny viruses to large animals, proving that evolution naturally builds with efficiency.
- Scientists believe understanding these natural designs can inspire new lightweight, flexible materials for robots, airplanes, and medical implants.
- Nature, the oldest engineer, shows that even the smallest patterns can build the strongest systems.

ALTERMAGNETISM

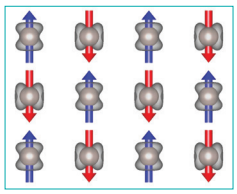
Scientists have discovered altermagnetism, a new form of magnetism that behaves differently from known types.

About

- Magnetism is a force created by the movement and spin of electrons inside certain materials like iron or nickel.
- For over a century, scientists knew only two main types:
- **Ferromagnetism:** All atomic spins point in the same direction, producing a strong magnetic field — like a fridge magnet.

- **Antiferromagnetism:** Neighboring atomic spins point in opposite directions ("up" and "down"), cancelling each other's fields and producing no overall magnetism.

What is Altermagnetism



- Altermagnetism, discovered and confirmed in 2024, combines features of both.
- Like antiferromagnets, it has opposite spins that cancel each other out, so there's no visible magnetic field.
- But inside, it behaves like a ferromagnet — its electrons have different energy levels depending on spin.
- This means the material has an internal magnetic order without being magnetic on the outside — a completely new state of matter.

Why it Matters

- This discovery can change how we design technology.
- Altermagnets can be used in spintronics (devices using electron spin instead of charge) and quantum computers, where magnetic noise must be minimal.
- It's a step toward smarter, faster, and more energy-efficient electronics — and a major leap in our understanding of how magnetism works.

RENEWABLE ENERGY STORAGE TECHNOLOGIES

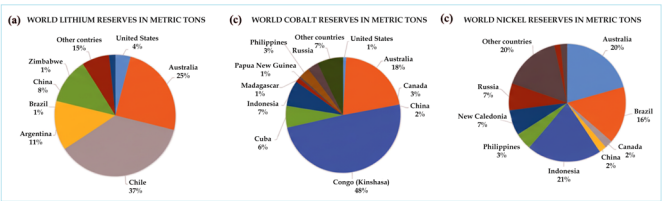
India launches its first 3 MWh Vanadium Redox Flow Battery (VRFB), marking a leap in renewable energy storage.

The Need for Advanced Energy Storage

- India's renewable energy capacity—especially solar and wind—is growing rapidly, but these sources are **intermittent**. Electricity generation fluctuates while demand remains constant, creating instability in the power grid. Hence, **long-duration energy storage (LDES)** is essential to store excess power and release it when required, ensuring grid stability and 24×7 renewable supply.
- Currently, **lithium-ion (Li-ion) batteries** dominate storage systems worldwide. They are used in electric vehicles, mobile devices, and grid storage. However, their sustainability and long-term scalability are limited.

Limitations of Lithium-Ion Batteries

- **Resource scarcity:** Lithium, cobalt, and nickel are concentrated in a few countries, leading to supply chain vulnerability.
- **Safety risks:** Flammable electrolytes can cause thermal runaway and fire hazards.
- **Environmental impact:** Mining these metals causes soil degradation and water depletion.
- **Recycling challenge:** Only about 10% of Li-ion batteries are recycled globally.
- **Short lifespan:** Performance degrades after repeated charge–discharge cycles.
- These challenges have accelerated the search for next-generation (Next-Gen) battery technologies.



Next-Generation Battery Technologies

Next-Gen batteries aim to enhance efficiency, safety, and sustainability:

- **Solid-State Batteries:** Use solid electrolytes instead of liquids, reducing fire risk and improving energy density.
- **Sodium-Ion Batteries:** Replace lithium with abundant, low-cost sodium — ideal for large-scale storage.
- **Metal–Air Batteries:** Generate energy using oxygen from air, offering high energy output.
- **Flow Batteries:** Store energy in liquid electrolytes, allowing easy scalability and longer storage durations.

Vanadium

Vanadium Flow Battery (VFB): India's Breakthrough

- India's Vanadium Redox Flow Battery (VRFB) works through redox (reduction–oxidation) reactions, where vanadium ions in two liquid electrolytes exchange electrons to store and release energy.

About Vanadium:

- Vanadium is a **metallic element** (symbol V) valued for its strength, corrosion resistance, and ability to change oxidation states, making it ideal for steel alloys, aerospace materials, and redox flow batteries.
- **Globally**, China, Russia, and South Africa account for over 85% of vanadium production, primarily as a byproduct of steel manufacturing.
- **In India**, vanadium resources are modest, mainly found in the **northeastern states** like Arunachal Pradesh, Odisha, and Karnataka.
  - According to the Geological Survey of India (GSI), preliminary estimates show around 74 million tonnes of vanadium-bearing ore in Arunachal Pradesh.
  - However, **India currently imports** most of its vanadium, primarily from China and South Africa, for use in the steel and battery industries.

Key Advantages

- **High Safety:** Non-flammable and thermally stable.

- **Durability:** Operates for 15–20 years with minimal efficiency loss.
- **Scalability:** Storage capacity increases by enlarging electrolyte tanks.
- **Recyclability:** Vanadium is reusable, reducing waste and cost.
- Such batteries are ideal for renewable energy integration in India's hot and diverse climatic conditions.

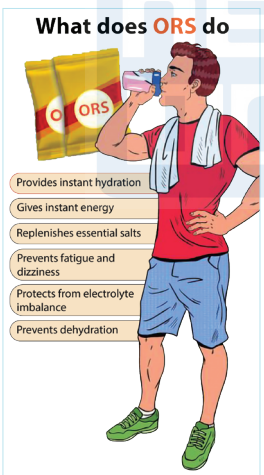
India's Policy Framework and Global Scenario

- India's initiatives like the National Mission on Transformative Mobility and Battery Storage (2019) and PLI Scheme for Advanced Chemistry Cells (2021) encourage local battery innovation. Institutions such as IITs, CSIR, IISc, and C-MET are leading R&D in flow and sodium-ion batteries.
- Globally, Japan, the US, and China are investing heavily in flow and solid-state technologies. The flow battery market is projected to grow by 20% annually, signalling a global transition toward sustainable grid-scale storage.

MISLEADING ORS-LABELLED BEVERAGES

FSSAI orders immediate removal of falsely marketed ORS beverages to protect public health and prevent misinformation.

About ORS



- Oral Rehydration Salts (ORS) is a scientifically approved medical formulation recommended by the World Health Organization (WHO) and UNICEF.
- It is used to treat and prevent dehydration caused by diarrhoea, vomiting, and cholera, especially in children and elderly persons.
- ORS works by replenishing body fluids and electrolytes lost due to dehydration. When mixed with clean drinking water, it becomes a life-saving Oral Rehydration Solution (ORS) — a low-cost, accessible remedy that saves millions of lives globally each year.
- Unlike commercial soft drinks or sports beverages, true ORS follows a precise medical composition, ensuring safe and effective rehydration.

Composition and Function

The WHO-recommended low-osmolarity ORS formula includes:

- **Sodium chloride (NaCl):** Restores essential body salts lost during dehydration.
- **Anhydrous glucose:** Enhances absorption of sodium and water in the intestine through the sodium–glucose co-transport mechanism.
- **Potassium chloride (KCl):** Replaces potassium vital for nerve and muscle functions.
- **Trisodium citrate dihydrate:** Helps correct acid–base imbalance (metabolic acidosis) caused by dehydration.
  - This precise balance ensures efficient water absorption, unlike sugary drinks that can worsen dehydration by drawing water into the intestines.

FSSAI

- The Food Safety and Standards Authority of India (FSSAI) is the national food regulator, established under the Food Safety and Standards Act, 2006, under the Ministry of Health and Family Welfare.

Key Functions:

- Setting science-based food safety standards.
- Regulating manufacture, storage, sale, and import of food items.
- Preventing misleading labels and health claims to protect consumers.
- Ensuring compliance with international standards of food safety and public health.

Significance

- This move strengthens India's food safety governance by preventing commercial misuse of medical-grade products.
- It protects vulnerable consumers, ensures truthful labelling, and reinforces public confidence in India's regulatory framework.
- By distinguishing therapeutic ORS from commercial beverages, the FSSAI upholds scientific integrity, safeguards public health, and aligns India's standards with global best practices.

ULTRA-PROCESSED FOODS

A Lancet report highlights India's rapid rise in ultra-processed food (UPF) sales, worsening obesity and diabetes.

Key Findings of the Report

- India's UPF market expanded from $0.9 billion in 2006 to $38 billion in 2019 — a forty-fold increase.
- This surge is driven by urbanisation, changing lifestyles, aggressive marketing, and food delivery platforms.
- While high-income countries are witnessing stable or declining UPF sales, India's consumption continues to rise sharply.
- The report links this dietary shift to rising obesity, diabetes, and heart diseases, especially among urban youth and children.

Note: Nova classification of food categories. "Processed ingredients" are also known as "processed culinary ingredients".

About Ultra-Processed Foods (UPFs)

- UPFs are **industrially manufactured foods** composed mainly of refined ingredients, additives, preservatives, and artificial flavourings.
- **Common examples** include soft drinks, instant noodles, chips, breakfast cereals, and processed meats.
- They are high in sugar, salt, and unhealthy fats but low in fibre and essential nutrients.
- Designed for long shelf life and convenience, these foods often replace traditional, home-cooked meals, undermining dietary quality.

Concerns and Implications

- According to NFHS-5, adult obesity in India has nearly doubled in the past decade.
- Rising UPF intake accelerates the incidence of Non-Communicable Diseases (NCDs) like diabetes and cardiovascular disorders.
- It also fuels childhood obesity, posing long-term risks to India's healthcare and economic productivity.

Government Measures and Way Forward

- The Food Safety and Standards Authority of India (FSSAI) plans Front-of-Pack Labelling (FoPL) to warn consumers about excessive sugar, salt, or fat.
- Initiatives like Eat Right India promote balanced, traditional diets and food literacy.
- Experts suggest taxing sugary foods, curbing misleading advertising, and integrating nutrition education in schools to reverse unhealthy dietary trends.

RISING ENERGY DEMAND OF AI DATA CENTRES

India is exploring the use of Small Modular Reactors (SMRs) to meet the surging electricity demand from AI-driven and data-intensive data centres.

About

- **Digital Push:** The demand for data centres in India is being driven by the **need for data storage** due to India's **Digital India push, data-localisation policies, expanding internet users and the 5G rollout** which is expected to enable adoption of data intensive technologies such as IoTs and AI.
- **Global Surge:** Global electricity supplied to data centres is projected to rise from ~**460 TWh in 2024** to over **1,000 TWh by 2030** and to about **1,300 TWh by 2035.**
- **Power Demand:** AI workloads use large numbers of **Graphic Processing Units (GPUs)** with individual racks consuming **80-150 KW** compared to **15-20 KW** for traditional enterprise servers.
  - **Power Intensive Sector:** This computational intensity drives an insatiable demand for electricity, making **AI the most significant driver** of increased energy consumption within the data centre sector.
- **Sustainable Nuclear Power:** This rising demand has led major tech companies like Google and Microsoft to turn to **nuclear power solutions** for reliable and carbon-free energy.

Need for Small Modular Reactors (SMRs)

- **Rising Demand:** AI-driven data centres **need sustainable and clean energy solutions** to meet their rapidly rising power demand.
- **Inherent Issues:** While renewable energy has been the first choice for companies, it comes with inherent **challenges of intermittency and inadequate storage.**
- **Viable Solution:** Thus, **Nuclear power offers a viable solution** by providing a clean, round-the-clock power supply.
  - **Reliable Efficient Solution:** SMRs are preferred because they combine enhanced safety through **flexibility and scalability** for incremental capacity addition, **adaptability to remote or off-grid applications**, and **cost-effective construction** enabled by prefabrication.

What are Small Modular Reactors (SMRs)?

- Small modular reactors (SMRs) are advanced nuclear reactors with a power capacity of up to **300 MW(e) per unit,** roughly one-third the generating capacity of traditional nuclear power plants.
  - **Small** – physically a fraction of the size of a conventional nuclear power reactor.
  - **Modular** – making it possible for systems and components to be factory-assembled and transported as a unit to a location for installation.
  - **Reactors** – harnessing nuclear fission to generate heat to produce energy.
- **Types:** There are four main types of SMR i.e., **light water, high temperature gas, liquid metal, and molten salt.**
- **Current Modules:** At present, only two Small Modular Reactor projects have become operational worldwide;
  - **Russia's Akademik Lomonosov floating power unit**, equipped with two 35 MWe modules and in commercial use since 2020, and
  - **China's HTR-PM demonstration project,** which was grid-connected in 2021 and achieved full commercial operations in 2023.

What are the Concerns?

- **Regulatory Challenges:** The current nuclear regulatory framework is primarily designed for large-scale reactors.
  - **Misuse:** The possibility of using SMRs to produce materials for nuclear warheads and co-locating them with military sites raises **non-proliferation concerns**.
- **Legal Hurdles:** India's **Civil Liability for Nuclear Damage Act, 2010,** channels operators' liability to equipment suppliers, deterring foreign investors due to financial risk concerns.
- **High Initial Costs:** Although SMRs are designed to be more cost-effective in the long run, the initial capital investment is significant.
- **Waste Management:** Handling and disposing of nuclear waste remains a significant challenge.
- **Supply Chain and Manufacturing:** Developing a robust supply chain for the components of SMRs and ensuring quality manufacturing processes are critical for their success.

Global SMR Regulatory Reforms

To address these challenges, countries around the world are reforming their SMR regulations in six main ways:

- **Technology-neutral frameworks** to replace large reactor-specific rules.
- **Streamlined licensing** including fleet approvals and combined construction-operating licences.
- **Modular manufacturing accommodation** with factory fabrication certification.
- **International harmonisation** through International Atomic Energy Agency (IAEA) standards and mutual design recognition.
- **Risk-informed requirements** adjusting emergency planning zones and staffing proportional to smaller facility risks.
- **Accelerated deployment** pathways for follow-on units.

India's Efforts towards SMRs

- Research and development on SMRs are ongoing at the **Bhabha Atomic Research Centre (BARC)** in Mumbai.
  - **Bharat Small Reactor (BSR):** It is a notable project which aims to **re-engineer existing reactors** to incorporate additional safety features and enhance their efficiency.
- **Promoting R&D:** India had announced a **Rs 20,000 crore** R&D mission for development of **small modular reactors (SMRs).**
  - **Initial Targets:** India is also targeting the deployment of **at least five** of these indigenously developed reactors **by 2033**.
- **Collaboration: India and France** have launched a cooperation program focused on SMRs and advanced modular reactors (AMRs).

Civil Liability for Nuclear Damage Act (CLNDA) 2010

About:

- It is India's law for **compensating victims** of nuclear incidents.

Key Provisions:

- **No-fault Liability:**It establishes a "no-fault" liability regime where the operator of a **nuclear installation** is held responsible and must provide prompt compensation.
- **Supplier Responsibility:** The act also has a **unique provision** for supplier liability, allowing operators to seek recourse from suppliers in cases of negligence.
- **International Alignment:** The act aligns with India's international obligations, including the **Convention on Supplementary Compensation (CSC)**.

Way Ahead

- **Necessity:** Data centres are central to **India's digital economy and AI future**, but their energy intensity poses a sustainability dilemma.
- **Sustainable Opportunity:** SMRs present a strategic opportunity: ensuring reliable, **green power** while **boosting domestic nuclear manufacturing** and international collaborations.
- **Challenges to address:** However, legislative reforms, addressing liability concerns, and ensuring **safety and public trust** will be critical to translating this vision into reality.

8 SOCIETY

RIGHTS OF TRANSGENDER PERSONS IN INDIA

India has made significant strides in addressing the historical marginalisation of the transgender community through comprehensive legal protections, welfare schemes, and digital accessibility.

LGBTQIA+

- A transgender person is someone whose **gender identity does not match the sex assigned to them at birth**, and may identify as male, female, or beyond the traditional gender binary.
- **LGBTQIA+** is an umbrella term for **lesbian, gay, bisexual, transgender, queer, intersex, and asexual persons,** with '+' representing other identities that are not specifically included in these letters. Thus **LGBTQIA+** persons do not conform with traditional gender roles and expectations.

India's Position on LGBTQIA+ Rights

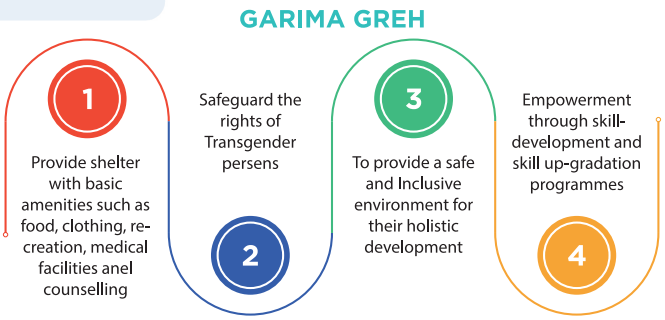
- **As per census 2011,** there were 4.87 lakhs persons in India who opted for "**other" in gender category.**
- **Decriminalisation: Navtej Singh Johar v. Union of India (2018)** decriminalised consensual homosexual acts (Section 377 partially struck down).
- **Transgender Rights:** NALSA v. Union of India (2014) recognised the right to self-identify gender.
  - It recognises **transgender as the "third gender"** upholding their fundamental rights.
- **Constitutional Provisions:** Judgement affirmed them **Article 14** – Right to equality, **Article 15** – No discrimination on grounds of sex and **Article 21** – Right to life and personal liberty.
- **Legislation:** The Transgender Persons (Protection of Rights) Act, 2019 provides legal recognition of transgender identity.
- **Marriage & Adoption:** Same-sex marriage are **not yet legal** as 2023 Supreme Court judgment refused to legalize it but urged legislature to deliberate.

Challenges Faced by the Transgenders

- **Societal Issues:** Trans persons face deep-rooted societal prejudices, leading to **ostracisation from families and communities.**
- **Discrimination** in public spaces, including transport, healthcare centres, and government offices.
- **Lack of Access to Education:** High school dropout rates due to bullying, harassment, and gender-based violence.
- **Barriers in Employment:** Trans persons face widespread discrimination in hiring and the workplace.
  - Often forced into informal, unsafe, and exploitative sectors, like begging or sex work, due to lack of opportunities.
- **Healthcare Exclusion:**
  - Trans persons face lack of gender-affirmative healthcare, discrimination by medical staff, and unavailability of hormonal and surgical services in public hospitals.
  - High mental health burden due to social rejection and isolation.
- **Violence and Abuse:**
  - Prone to verbal, physical, and sexual violence both in public and private spaces.
  - Police harassment and custodial violence are frequent, with little legal redress.
- **Political Underrepresentation:** Low political visibility and representation in mainstream parties and institutions. Lack of policy-making participation hinders the articulation of their needs.

Government Initiatives

- **National Portal for Transgender Persons:** Launched in 2020, enables online applications for identity certificates and access to benefits.
- **SMILE (Support for Marginalised Individuals for Livelihood and Enterprise) Scheme:** Introduced in 2022, provides **livelihood, skill training, and shelter support** through **Garima Greh centres** and Ayushman Bharat TG Plus health coverage.



- **Department of Social Justice & Empowerment:** It has issued **"Equal Opportunities Policy for Transgender Persons"** to ensure that the Transgender community has equal access to employment opportunities etc.
- **National Council for Transgender Persons:**
  - It serves as a **statutory body** under the **Ministry of Social Justice and Empowerment** to safeguard and promote the rights of transgender persons in India.
  - The council also has **five representatives of transgender community**, representatives of NHRC and NCW, representatives of State Governments and UTs and experts representing NGOs.

- **Transgender Protection Cells and National Portal Integration:** Setting up **district-level cells** under District Magistrates to monitor offenses, ensure timely **FIR registration**, and conduct **sensitisation programs**, reinforcing legal protections.

REFORMS IN TRANSGENDER HEALTHCARE: TAMIL NADU MODEL

Tamil Nadu launched inclusive policies and specialized clinics to facilitate trangender community, thus emerged as a national leader in transgender healthcare.

Why Transgender Healthcare Matters?

- **Social Stigma:** Stigma and discrimination in hospitals and clinics.
- **Lacks Gender Neutral Care:** Lack of gender-affirming services, such as hormone therapy and surgeries. Care is often **narrowly restricted** to sexually transmitted infections or gender-affirming surgery.
- **Exclusion:** They face exclusion from **education, housing, employment, and social welfare.** Mental health challenges due to social exclusion and violence.
- **Limited Access:** They are often denied insurance and financial aid.

Related Policy & Legal Reforms

- **NALSA Judgment (Supreme Court, 2014):** Recognized transgender persons as a ***third gender*** and directed:
  - Legal recognition
  - Reservations in education & employment
  - Access to healthcare without stigma.
- **Transgender Persons (Protection of Rights) Act, 2019:** It mandates:
  - No denial of healthcare
  - Separate HIV-centers
  - State governments to provide *medical care for sex-reassignment surgery (SRS).*
  - Coverage under insurance schemes.
- **Transgender Persons (Protection of Rights) Rules, 2020:**
  - District Magistrate certification process
  - Clarified healthcare responsibilities of states
  - Directions for gender-affirming care in public health institutions.
- **National Medical Commission (NMC) 2022–2023 reforms:**
  - Prohibited discriminatory content in MBBS textbooks
  - Directed inclusion of *scientific, non-stigmatizing* transgender health modules.

Healthcare-Specific Reforms

- **Ayushman Bharat – Pradhan Mantri Jan Aarogya Yojana (AB-PMJAY):** Government approved a **transgender health package** including hormone therapy, breast augmentation, penectomy, vaginoplasty, facial feminization, voice therapy, and mental health support.
  - AB-PMJAY reimburses **up to ₹5 lakhs** for select gender-affirming procedures.
- **Garima Greh (Transgender Health Clinics):** These include mental health and primary care services.
  - **Mental Health Integration:** NIMHANS and AIIMS Delhi have published guidelines on gender dysphoria management, counselling, and consent processes for surgeries.

CASE STUDY: Tamil Nadu's Pioneering Interventions

- The **Tamil Nadu medical Council (TNMC)** has mandated **LGBTQIA+ sensitisation** and transgender health training for all doctors, medical faculty members, and students across the state.
  - It makes **Tamil Nadu the first state** to institutionalise such comprehensive training within **Continuing Medical Education (CME) programmes.**
- Tamil Nadu was the first Indian state to offer **free gender-affirming surgeries** in a government hospital.
- **Gender Guidance Clinics (GGCs)** was established in 2018 under the **National Health Mission** to provide multidisciplinary care for transgender persons.
  - Clinics prominently display messages on non-discrimination, privacy, and respect, strengthening trust in the system;
  - GGC doctors were trained by the World Professional Association for Transgender Health (WPATH).
- Tamil Nadu became the **first South Asian region**, in 2022, to extend **universal health insurance** to cover gender-affirming surgeries, and hormone therapy.
- The **Mental Health Care Policy** (**2019**) and **State Policy for Transgender Persons (2025)** solidify the state's commitment to health, education, and property rights for transgender citizens.
- The **Madras High Court** has actively advanced transgender rights in rulings addressing marriage recognition; banning conversion therapy; curriculum reform; ending police harassment; and halting unnecessary intersex surgeries.

Way Ahead

While Tamil Nadu offers a promising model, further work is needed:

- Expand GGCs to provide holistic primary-to-tertiary care.
- Publish a state transgender health manual.
- Regularly train and hold providers accountable.
- Strengthen regulation of empanelled hospitals.
- Expand mental health services in insurance packages.
- Create robust grievance redress systems.
- Promote research and data collection.
- Address societal bias through cross-sector action.

9 CULTURE & HISTORY

ARYA SAMAJ

Prime Minister addressed the International Arya Mahasammelan 2025, lauding Arya Samaj's 150-year legacy and urging support for the Gyan Bharatam manuscript-digitisation mission.

Origin

- **Founder:** Swami Dayanand Saraswati; founded in Bombay (1875), principles finalised in Lahore (1877).
- **Slogan/motto:** "Back to the Vedas"; "Krinvanto Vishwam Aryam" — "Let us ennoble the world."
- **Intellectual stance:** Vedic authority interpreted through rationality; rejection of ritualism and hereditary priesthood.

Swami Dayananda Saraswati (1824–1883)

- **Born** as Mool Shankar Tiwari in Gujarat.
- **Founded** the Arya Samaj (1875).
- **Gave the slogan** "Back to the Vedas", urging revival of Vedic principles and rejection of superstitions.
- **Advocated** monotheism, women's education, widow remarriage, and social equality; opposed idol worship, caste rigidity, and child marriage.
- His work **"Satyarth Prakash"** promoted rationalism and Vedic reform.
- Arya Samaj played a vital role in education (DAV movement) and national awakening.
- His ideas influenced later reformers and nationalists, laying the foundation for India's socio-religious renaissance.

Major Reforms

- **Religious:** Rejected idol worship, elaborate rituals; promoted direct, reasoned devotion and monotheism.
- **Social:** Opposed untouchability, caste by birth, child marriage and forced widowhood; supported widow remarriage, inter-caste marriage and women's education.
- **Educational:** Established DAV schools and Gurukul Kangri — blended Vedic values with modern science; promoted value-based education and social mobility.

Role in Nationalism & Social Change

- Provided institutional and ideological support to leaders (e.g., Lala Lajpat Rai) and youth networks.
- Promoted Swadeshi, civic mobilisation and education-driven social awakening that fed into anti-colonial movements.
- Education institutions produced reform-minded cadres influencing public life.

Contemporary Relevance

- **Women's empowerment:** Early advocacy aligns with policies like Beti Bachao Beti Padhao and legislative focus on gender equality.
- **Education link:** Gurukul + DAV model resonates with NEP 2020's emphasis on holistic, character-based learning and vocationalisation.
- **Cultural diplomacy:** "Krinvanto Vishwam Aryam" supports soft-power initiatives (Yoga, Mission LiFE).
- **Gyan Bharatam:** Digitisation of manuscripts can preserve heritage and engage youth in knowledge preservation.

Strengths

- Strong institutional legacy (DAV schools, gurukuls) ensures sustained impact.
- Synthesises tradition with reform — appeals across conservative and reformist constituencies.
- Historically linked social reform to practical education and mobilisation.

Limitations & Critiques

- **Uneven impact:** Structural caste and socio-economic barriers limited full reform outcomes.
- **Textual primacy:** Emphasis on Vedic infallibility can enable both progressive reinterpretation and literalist readings.
- **Fragmentation:** Regional variations and internal schisms produce inconsistent perceptions.
- **Secularism concern:** Reliance on religious texts raises questions about engagement with a plural, secular polity.

Policy Recommendations

- **Digitisation:** Implement Gyan Bharatam with scholarly standards, open-access, provenance metadata and community participation.
- **Education:** Incorporate experiential gurukul elements into NEP-aligned curricula while ensuring secular, evidence-based pedagogy.
- **Social justice:** Leverage reform legacy to strengthen affirmative measures for caste and gender equity.
- **Scholarship:** Fund critical, plural Vedic scholarship to encourage rigorous, inclusive interpretations.

MUSEUM OF ROYAL KINGDOMS OF INDIA

The Prime Minister laid the foundation stone for the Museum of Royal Kingdoms of India near the Statue of Unity in Gujarat.

About

- **Aim:** To preserve the memory of the past while inspiring future generations with the timeless spirit of unity and sacrifice.
- This museum, costing ₹367 crore, will have four thematic galleries.
- This museum will be built on five acres of land near the Statue of Unity in Ekta Nagar.

Historical Background

- At the time of India's Independence on 15 August 1947, the subcontinent comprised British-administered territories and over 550 princely states and kingdoms.
- Under the leadership of Sardar Vallabhbhai Patel, then Deputy Prime Minister and Home Minister, the rulers of the princely states were persuaded to accede to India through the Instrument of Accession.
- By 1949, nearly all princely states had joined the Indian Union, laying the foundation for a unified and sovereign Republic.
- This peaceful unification stands as a testament to India's spirit of diplomacy, inclusivity, and nation-building.

DESHBANDHU CHITTARANJAN DAS (1870–1925)

The Lok Sabha recently paid floral tribute to Deshbandhu Chittaranjan Das, a prominent nationalist leader and freedom fighter, on his birth anniversary.

Early Life and Background:

- Chittaranjan Das was born on 5 November 1870 in Bengal.
- He was a barrister by profession and earned the title "Deshbandhu," meaning Friend of the Nation, for his dedication to India's freedom movement.
- Initially, he gained prominence as a lawyer who successfully defended Aurobindo Ghosh in the Alipore Bomb Case (1908), an event that connected him closely with the revolutionary phase of the freedom struggle.

Political Journey and Role in the Freedom Movement:

- **Association with Congress and Gandhi:** Das became a strong supporter of Mahatma Gandhi's Non-Cooperation Movement (1919–22). He emphasized the boycott of British institutions and the promotion of national education, indigenous industries, and self-reliance.
- **Formation of the Swaraj Party (1923):**
  - After the withdrawal of the Non-Cooperation Movement, Chittaranjan Das, along with Motilal Nehru, formed the Swaraj Party under the Congress banner.
  - The objective was to enter legislative councils and oppose colonial policies from within. This marked a new phase in India's political struggle, reflecting the debate between "**No-Changers" and "Pro-Changers" within the Congress.**

No-Changers vs Pro-Changers (1922 Split in Congress)

- After Gandhi suspended the Non-Cooperation Movement (1922), Congress leaders differed on future strategy.
- **No-Changers (Rajendra Prasad, C. Rajagopalachari, Malaviya):** Advocated Gandhian constructive work—khadi, village uplift, education; opposed council entry.
- Pro-Changers (C.R. Das, Motilal Nehru)**:** Wanted to enter legislative councils to obstruct and expose British rule; formed the Swaraj Party (1923).
- Though differing in approach, both aimed for Swaraj and remained within Congress, strengthening the freedom movement.

Municipal Leadership:

- In 1924, Chittaranjan Das became the first elected Mayor of Calcutta.
- He implemented various urban and educational reforms, focusing on empowering Indians within municipal administration and improving civic governance.
- **Social and Intellectual Contributions:** Apart from his political work, Das was a reformer, poet, and writer. He advocated for Hindu-Muslim unity, education for all, and the upliftment of the poor.

His literary works include:

- India for Indians
- Freedom Through Disobedience
- These writings reflected his philosophical commitment to Swaraj through moral courage and self-discipline.

GLOBAL PEACE PRAYER FESTIVAL, THIMPHU

Global Peace Prayer Festival (GPPF) was inaugurated in Thimphu, Bhutan, by the Royal Government of Bhutan. The 16-day global event is dedicated to prayers for world peace, healing of humanity, and universal harmony amid ongoing global conflicts.

About the Festival:

- The GPPF 2025 is the first-ever global Buddhist peace initiative held in Bhutan.
- It brought together leaders and scholars from the three main branches of Buddhism — **Theravada, Mahayana, and Vajrayana** — in a united call for global peace.
- The festival symbolizes spiritual unity and Buddhism's universal message of compassion and harmony.

Key Highlights

- **Jabzhi Ritual:**
  - A major spiritual event of the festival, Jabzhi is a Vajrayana Buddhist ritual aimed at cleansing negative karma and dispelling destructive forces.

- It reflects the philosophy of purification and inner transformation central to Vajrayana practice.

➲ **Sacred Relics of Lord Buddha:**
- As a mark of India–Bhutan friendship, the Sacred Relics of Lord Buddha, preserved at the National Museum, New Delhi, were taken to Thimphu as a "goodwill gift" from India.
- The gesture underscores shared Buddhist heritage and spiritual diplomacy between the two nations.

➲ **Inter-Religious Unity:** The presence of all three Buddhist traditions represents the integration of global Buddhist communities, promoting dialogue, tolerance, and peace.

Major Sects of Buddhism

➲ **Theravada Buddhism (Doctrine of the Elders):**
- The oldest form of Buddhism, based on the Pali Canon (Tripitaka).
- Emphasizes individual liberation (Arhat ideal) and strict monastic discipline.
- Focus on meditation, moral conduct, and insight (vipassana).
- Practiced mainly in Sri Lanka, Myanmar, Thailand, Cambodia, and Laos.

➲ **Mahayana Buddhism (Greater Vehicle):**
- Developed later, emphasizing universal salvation through the Bodhisattva ideal.
- Stresses compassion (karuna) and helping others attain enlightenment.
- Introduced new philosophical schools like Madhyamaka and Yogachara.
- Spread widely across China, Japan, Korea, and Vietnam.

➲ **Vajrayana Buddhism (Diamond Vehicle):**
- A later development of Mahayana; focuses on tantric practices and rituals.
- Uses mantras, mandalas, and visualization techniques for rapid enlightenment.
- Emphasizes Guru devotion and esoteric teachings.
- Prominent in Tibet, Bhutan, Mongolia, and parts of India (Ladakh, Sikkim, Arunachal Pradesh).

150TH BIRTH ANNIVERSARY OF BIRSA MUNDA

15 November is observed as Janjatiya Gaurav Divas (designated in 2021), commemorating the birth anniversary of Birsa Munda.

Birsa Munda

➲ He was born in 1874 in Ulihatu village, Jharkhand and was a spiritual reformer and freedom fighter. He is Known as **Dharti Aaba ("Father of the Earth").**

➲ He led the **Ulgulan or "Great Tumult" (1899–1900)** (also called **Munda Rebellion**) which was a fierce movement for tribal self-rule and the restoration of Khuntkatti (community land rights).

➲ He was captured and martyred in Ranchi Jail at the age of 25.

Munda Rebellion (1899–1900)

➲ It was a major tribal uprising led by Birsa Munda against British colonial rule, exploitative **outsiders (called Dikus)**, and the erosion of traditional tribal systems in the **Chhotanagpur region.**

Major Reasons for the Revolt:

➲ **Economic Exploitation & Land Alienation:**
- Imposition of British colonial land revenue policies dismantled the traditional Khuntkatti system of communal land ownership.
- Land was transferred to zamindars, moneylenders, contractors, and non-tribal settlers (Dikus), leading to widespread alienation of tribal land.

➲ **Forced Labour (Beth Begari):** Tribals, especially Mundas, were subjected to compulsory, often unpaid, labor for the British and Dikus, further exacerbating their hardships and fueling resentment.

➲ **Religious and Cultural Suppression:** Missionary activities, forced conversions, and the imposition of foreign laws threatened traditional religious practices.

➲ **Political Marginalization:** The British administration took over the Mundas' traditional rights to land, justice, and self-administration, undermining their autonomy and traditional leadership.

➲ **Identity Assertion & Leadership of Birsa Munda:** Birsa Munda's leadership gave a new sense of identity, spiritual revival, and mobilization, rallying the community to resist colonial exploitation and restore their rights.

Outcome:

➲ Legislative changes**: Chotanagpur Tenancy Act of 1908** to protect tribal land rights.

➲ "Khuntkatti" rights were recognized.

➲ "Beth begari" was banned.

Governments Steps

➲ Janjatiya Gaurav Divas honors the legacy of **Birsa Munda and the contributions of Scheduled Tribes,** aiming to integrate their struggles and heritage into India's national consciousness.

➲ Through initiatives like the Tribal Pride Year and 11 dedicated museums, the government reinforces the vision of Ek Bharat, Shreshtha Bharat—a united nation celebrating all communities.
- These museums, funded under the Support to Tribal Research Institutes scheme, aim to document and disseminate tribal histories often overlooked in mainstream narratives.

RAULANE FESTIVAL

The Raulane Festival of Himachal Pradesh recently drew attention.

About

- It is an ancient, 5,000-year-old traditional festival celebrated in the Kinnaur district of Himachal Pradesh that honors mystical celestial fairies known as **Saunis.**
- **Features:**
  - Two men acting as the symbolic groom **(Raula) and bride (Raulane)**, fully covered in traditional Kinnauri woollens, adorned with masks and ornaments to represent these mystical beings.
  - The pair undertake a slow devotional procession and dance to the **Nagin Narayan Temple.**
  - The dance and procession are seen as a channel between the human and spirit worlds, expressing gratitude, protection, and blessings for the community.

ADI KUMBESWARAR TEMPLE

The kumbabishekam (consecration) of the Adi Kumbeswarar Temple in Kumbakonam(Thanjavur district, Tamil Nadu), has brought renewed attention to the temple's unique stone nagaswaram, a rare wind instrument preserved here.

About

- It is dedicated to **Lord Shiva**, worshipped as *Adi Kumbeswarar* in the form of a **lingam.**
- Based on **Dravidian architecture.**
- The temple dates back to the **Chola period (9th century CE)** and was later renovated by the **Nayak rulers.**
- It is one of the **12 Shiva temples** associated with the **Mahamaham festival**, held once every 12 years in Kumbakonam.

SANGAI FESTIVAL

The Sangai Festival in Manipur was in news recently.

About

- The Sangai Festival is an annual cultural event organized by the Manipur Tourism Department, held from November 21 to 30 each year in Imphal and surrounding areas.
- Named after the endangered brow-antlered deer (Rucervus eldii eldii), Manipur's state animal found only in Keibul Lamjao National Park on Loktak Lake, it was renamed in 2010 from the earlier Manipur Tourism Festival to highlight this unique species and promote tourism.
- The festival showcases Manipur's diverse heritage through folk dances like Ras Leela and Lai Haraoba, indigenous sports such as Thang-Ta and Sagol Kangjei (ancient polo), handlooms, handicrafts, cuisine, music, and adventure activities, drawing visitors to sites like Hapta Kangjeibung and Loktak Lake.

LACHIT BORPHUKAN

PM Narendra Modi paid tribute to Lachit Borphukan, describing him as a symbol of courage, patriotism, and true leadership.

About

- Lachit Borphukan (1622–1672) was a prominent military general and leader of the Ahom Kingdom in present-day Assam, India.
- He is best known for commanding the Ahom forces in the historic Battle of Saraighat in 1671, where he led a decisive victory against the Mughal Empire's attempt to invade and occupy Assam.
- Lachit's leadership not only preserved the political autonomy and cultural identity of Assam but also made him a symbol of patriotism, courage, and strategic military acumen.

Issues faced by Lachit

- **Mughal Expansion Threat:** The expanding Mughal Empire posed a persistent military threat to the Ahom Kingdom during the 17th century.
- **Naval Warfare Challenge:** The Mughals had superior forces and artillery but lacked expertise in riverine and naval combat crucial in Assam's terrain.
- **Internal Governance and Military Coordination:** Ensuring efficient administration and troop preparedness amidst continuous conflict.
- **Geopolitical Constraints:** Securing frontier areas like Guwahati, which were repeatedly contested.
- **Maintaining Morale and Discipline:** Overcoming setbacks and sickness among troops and commanders during prolonged warfare.

Unique Facts

- Lachit Borphukan punished his own maternal uncle for failing to complete fortification work on time, illustrating his prioritization of duty over personal ties.
- Despite being seriously ill during the Battle of Saraighat, Lachit personally led his troops to boost morale and secure victory.
- Lachit employed innovative guerrilla naval tactics based on Assam's river geography, turning a disadvantage in numbers into strategic success.
- He was also an effective administrator who organized villages, crafts classes, and population censuses in Lower Assam.

- His legacy is celebrated as a unifying symbol that transcends caste, tribe, language, and religion, representing Assamese identity and resistance.

Key Challenges Faced by Lachit Borphukan

- **Mughal Military Superiorities:** The Mughal forces had a larger army equipped with cannons and professional infantry but lacked local geographical knowledge and naval warfare skills (Raja Ram Singh's army numbered 30,000 infantry, 1,000 cannons).
- **Geographical Barriers:** Assam's riverine terrain required specialized naval strategies which traditional warfare did not prepare for.
- **Health and Leadership Strain:** Lachit contracted a serious illness during critical phases of the battle, risking his leadership continuity.
- **Internal Discipline:** Maintaining discipline and executing strategic orders in an extensive and diverse army posed difficulties, highlighted by the strict punishment of his uncle.
- **Political Pressure and Resource Management:** Defending Guwahati against Mughal siege while managing limited resources and fortifications under constant threat.

Analysis of Each Challenge

- **Mughal Military Superiorities:** The Mughals brought overwhelming numbers and heavy artillery, but their lack of naval experience led to failure against Lachit's riverine warfare tactics. The conflict hinged on adapting to Assam's unique landscape rather than sheer military might
- **Geographical Barriers:** Lachit's recognition of the terrain allowed him to select the Andharubali triangle for the naval battle, using guerrilla tactics and the currents of the Brahmaputra to neutralize Mughal strengths
- **Health and Leadership Strain:** Lachit's presence despite illness symbolized resilience and boosted troop morale decisively. His leadership under adversity is a case study in military psychology
- **Internal Discipline:** By enforcing strict accountability, including executing close relatives for dereliction of duty, Lachit maintained the operational integrity critical in siege warfare
- **Political Pressure and Resource Management:** The continuous need to fortify Guwahati and manage local craftsmanship and population logistics was essential for sustaining the defense.

Innovative Solutions Inspired by Lachit Borphukan's Leadership

- **Adaptive Military Strategy Using Local Geography:** Develop modern military training modules focused on terrain-specific guerrilla and naval warfare, inspired by Lachit's use of riverine tactics.
- **Leadership Resilience Training:** Incorporate Lachit's example of leading from the front despite personal hardship into leadership programs in military and civil administration.
- **Accountability Frameworks:** Design organizational discipline models emphasizing duty over favoritism, drawing on Lachit's uncompromising approach to internal discipline.
- **Resource and Population Management Systems:** Implement data-driven governance tools similar to Lachit's census and craft class organization to enhance wartime and peacetime local administration.
- **Cultural Identity and Unity Programs:** Use Lachit's legacy as a basis for programs that foster unity across diverse communities, strengthening societal resilience against external threats.

G. V. MAVALANKAR

Lok Sabha Speaker Om Birla floral tributes to Ganesh Vasudev Mavalankar, the first Speaker of the Lok Sabha on his birth anniversary.

About

- Ganesh Vasudev Mavalankar was born on 27th November, 1888 in Baroda (now Vadodara).
  - He served as President of the Constituent Assembly (Legislative) from 1946-1947.
- G.V. Mavlankar was popularly known as **Dadasaheb** and honored by **Jawaharlal Nehru as the "Father of the Lok Sabha"**, was a pivotal figure in shaping India's parliamentary democracy.
- Mavlankar became associated with the Indian National Congress after he joined the Non-Cooperation movement under the leadership of Mahatma Gandhi.
  - He was appointed as the Secretary of the Gujarat Provincial Congress Committee during 1921-22 due to his contributions to the movement.
- Mavlankar co-founded Ahmedabad Education Society and Gujarat Vidyapith, promoting national education alongside Patel and Gandhi.
- He also founded the **National Rifle Association** and the Institute for Afro-Asian Relations.
- His writings, **Manavatana Jharna, Sansmarano, and A Great Experiment** reflect his commitment to democratic values and nation-building.

MADHVACHARYA

Prime Minister Narendra Modi addressed the Laksha Kantha Gita Parayana programme at Sri Krishna Matha, Udupi. Udupi holds a central place in Madhva tradition and Dvaita Vedanta.

About

- The Madhva tradition represents one of the most influential schools of Indian philosophy and religious practice.
- Founded by Jagadguru Madhvacharya (also called Purnaprajna or Ananda Tirtha) in the 13th century, this tradition is rooted in the teachings of Dvaita Vedanta, or the doctrine of dualism.
- The system is known for its strong emphasis on devotion to Vishnu/Krishna, its clear distinction between the individual soul and the Supreme Being, and its contribution to the Bhakti movement.
- A core feature of Dvaita Vedanta is the doctrine of Pancha-Bheda, which outlines five real distinctions**:** God and Soul, God and Matter, Soul and Matter, One Soul and Another Soul & One Type of Matter and Another. These differences are intrinsic to the structure of existence.

Contribution

- Madhva's devotional outlook helped shape the ethos of Karnataka's later Haridasa movement, which produced saint-composers like Purandaradasa and Kanakadasa.
- Madhvacharya authored 37 Sanskrit works, collectively called Sarva-Mula Granthas, which explain and defend his dualistic interpretation of Vedanta.

SIRPUR ARCHAEOLOGICAL SITE

Chhattisgarh government and ASI, after a joint inspection with SADA, are preparing the 5th–12th century Sirpur archaeological site for UNESCO World Heritage nomination through major upgrades including digital exhibits.

About

- **Heritage:** Heritage is our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration.
- Sirpur is located two hours from Raipur in Chhattisgarh's Mahasamund district.
- It was first identified in 1882 by Alexander Cunningham, excavations resumed in the 1950s and later decades.
- **Historical Background:**
  - Flourished from 5th–12th century AD.
  - Capital of **Dakshina Kosala** under **Panduvanshi** and later **Somavamshi** rulers.
- **Other Monuments:**
  - **Lakshmana Temple** (7th century) – finest brick temple of India, dedicated to Vishnu.
  - **Surang Tila** – elevated terrace with 37 steep steps; panchayatana style shrines.
  - **Tivaradeva Mahavihara** – important Buddha statue.

Key Features

- It showcases early-medieval urban planning with palace ruins, markets, residences, temples, stupas, meditation cells, and water systems.
- It was also a **major Buddhist centre**, with large viharas, stupas, and the Tivaradeva Mahavihara housing a significant Buddha statue.
- Its sacred riverine landscape of ghats and temple **clusters embodies UNESCO's vision** of a cultural site shaped by both nature and humankind, enhancing its global heritage value.

UNESCO World Heritage

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity.
- This is embodied in an interna`tional treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.
- A World Heritage Site is a location of "**outstanding universal value"** — a place of cultural and/or natural significance so exceptional that it transcends national boundaries and is of common importance to present and future generations of humanity.
- A **UNESCO tag** enhances a site's international recognition, boosting its tourism and revenue.
- It can also help mobilise funds and strengthen efforts to protect monuments from destruction and encroachment.

BATUKESHWAR DUTT

Batukeshwar Dutt, a brave revolutionary who fought alongside Bhagat Singh in India's freedom struggle, was remembered on his birth anniversary on 18th November.

Introduction to Batukeshwar Dutt

- Batukeshwar Dutt was an Indian socialist revolutionary and freedom fighter, born on 18 November 1910 in Khandaghosh village, Burdwan district, West Bengal.
- He is most famously known for his role in the 1929 Central Legislative Assembly bombing in Delhi, which he carried out along with Bhagat Singh as a protest against the British colonial government's oppressive laws.
  - The bombs thrown were non-lethal and intended as a symbolic act to awaken Indians to the cause of freedom.
- Following his arrest and life imprisonment, he engaged in hunger strikes demanding better rights for political prisoners. Despite his significant contributions, Dutt remains one of the less recognized heroes of India's independence movement, having lived a life of hardship after independence.

Key Issues Around Batukeshwar Dutt's Life and Legacy

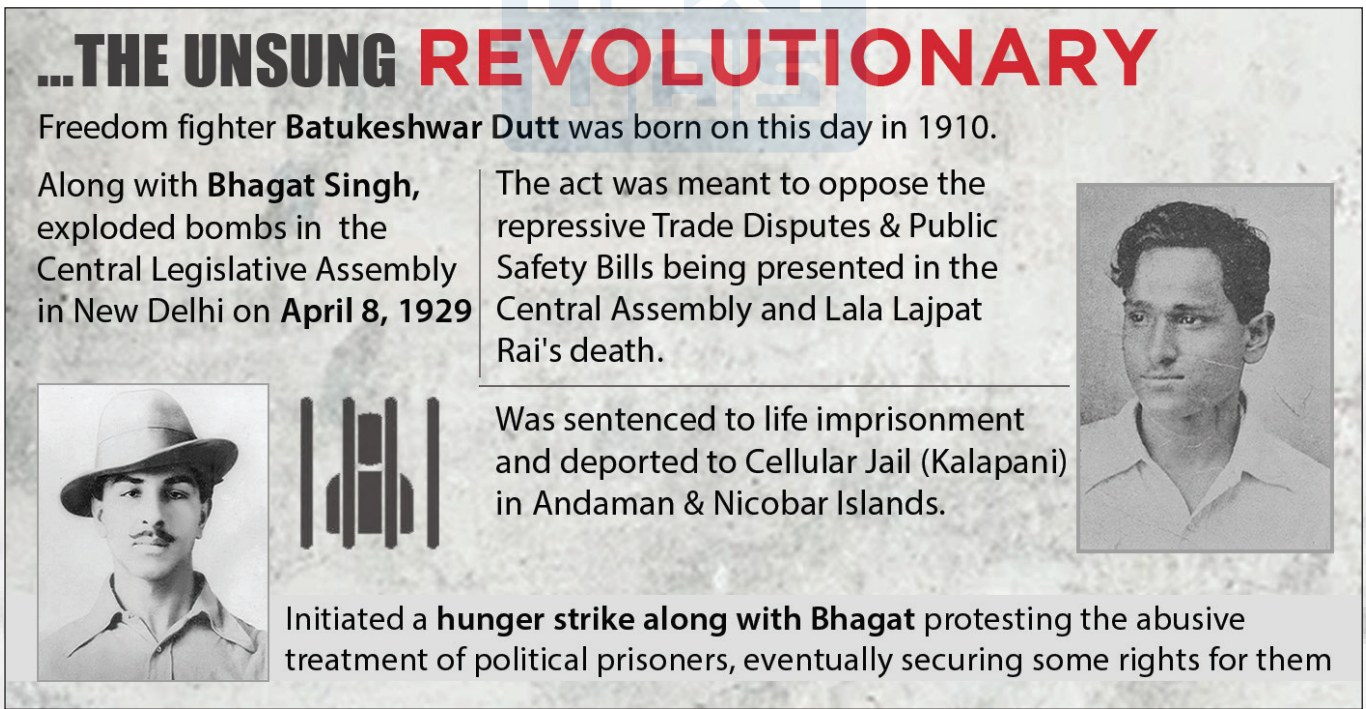
- **Visibility and Recognition:** Dutt is often overshadowed by Bhagat Singh despite his equal participation in revolutionary activities.
- **Political Imprisonment and Torture:** Dutt's harsh treatment in prisons including at Cellular Jail in Andamans, involving rigorous torture and solitary confinement.
- **Post-Independence Neglect:** After 1947, Dutt struggled with poverty and lack of state support despite his sacrifice.
- **Revolutionary Strategy:** His involvement in violent but symbolic protests (like the Assembly bombing) to advance the independence cause.
- **Health Impact:** Long imprisonment and torture severely affected his health, contributing to his early death in 1965.

Unique Facts About Batukeshwar Dutt

- He formed a Marxist study circle called Communist Consolidation inside Andaman jail, promoting political education among prisoners.
- Alongside Bhagat Singh, he converted their trial into a platform for disseminating revolutionary ideas, refusing to acknowledge colonial courts.
- He threw bombs which were deliberately non-lethal to avoid casualties, focusing on protest and propaganda
- Batukeshwar Dutt taught Bhagat Singh Bengali language and introduced him to revolutionary poetry.
- Despite being a key revolutionary, his post-independence life was marked by poverty, and he faced neglect from authorities.

Key Challenges in the Domain of Batukeshwar Dutt's Legacy and Historical Recognition

- **Historical Marginalization:** Dutt's contributions are less highlighted in mainstream history compared to Bhagat Singh (The Wire, 2020).
- **Preservation of Revolutionary Ideals:** Sustaining the ideological legacy of lesser-known revolutionaries like Dutt remains a challenge in education and public memory (The Hindu, 2024).
- **Health and Welfare Post-Independence:** Former revolutionaries like Dutt received inadequate state support affecting their well-being after freedom (ThePrint, 2020).
- **Documentation and Research:** Limited archival documentation and biographical resources challenge comprehensive research on Dutt's life (Wikipedia, 2006).
- **Political Prisoners' Rights Advancement:** Historical neglect of prisoner rights during colonial rule impacted revolutionaries' treatment and posthumous



10 MISCELLANEOUS

KENDRIYA GRIHMANTRI DAKSHATA PADAK

The Kendriya Grihmantri Dakshata Padak has been awarded to 1,466 personnel for the year 2025.

About

- The Kendriya Grihmantri Dakshata Padak was instituted by the **Ministry of Home Affairs (MHA)**.
- **It recognises excellence** in operations, exceptional investigative service, intelligence work marked by courage and determination, and meritorious contributions in forensic science by serving government scientists.
- It is conferred annually on **October 31**, marking the birth anniversary of **Sardar Vallabhbhai Patel,** India's first Home Minister and the architect of national integration.
- **Key Areas of Recognition:** Special Operations, Investigation, Intelligence, and Forensic Science.
- The medal is conferred on members of the **Police Forces, Security Organisations, Intelligence Wings/Branches, Central Armed Police Forces (CAPFs), Central Police Organisations (CPOs)**, and Forensic Science units at the Central, State, and Union Territory levels.

LUCKNOW DESIGNATED A UNESCO CREATIVE CITY OF GASTRONOMY

UNESCO has named Lucknow a Creative City of Gastronomy for its rich Awadhi culinary heritage, making it the second Indian city after Hyderabad (2019) to receive this recognition.

UNESCO Creative City of Gastronomy

- The UNESCO Creative City of Gastronomy designation celebrates cities with rich **culinary traditions** and innovative food cultures that contribute meaningfully to sustainable urban development.
- This recognition is part of the **UNESCO Creative Cities Network (UCCN)**, which promotes cooperation among cities that **prioritize creativity in areas like music, literature, design, and gastronomy.**

Indian Cities in UCCN

City	Creative Category	Year of Designation
Jaipur	Crafts & Folk Arts	2015
Varanasi	Music	2015
Chennai	Music	2017
Mumbai	Film	2019
Hyderabad	Gastronomy	2019
Srinagar	Crafts & Folk Arts	2021
Gwalior	Music	2023
Kozhikode	Literature	2023
Lucknow	Gastronomy	2025

Additional Information

The **UNESCO Creative Cities Network (UCCN)** was established in 2004 to promote cooperation among cities that have identified creativity as a strategic factor for sustainable urban development.

QS ASIA UNIVERSITY RANKINGS

The QS World University Rankings: Asia 2026 has been released.

About the Rankings

- It features a record 1,526 universities from 25 locations, including 557 new entries.
- **Ranking:**
  - QS notes that East and Southeast Asian countries are outperforming India in research impact, faculty resources, and internationalisation, with South Korea and Malaysia showing strong upward mobility due to strategic investments in higher education.
  - Universities in China, Hong Kong, Singapore, South Korea, and Malaysia dominated the top ranks, with The University of Hong Kong taking first place.
- **India Specific Data:** It reveals a sharp decline in rankings for nine of the top 10 Indian institutions, including seven IITs, despite improvements in their overall scores.
  - **IIT Delhi, India's highest-ranked institution**, fell from 44th to 59th, while IIT Bombay dropped 23 places to 71st—its lowest in recent years.
  - The only Indian institution to improve was Chandigarh University, rising to 109th.

KARNATAKA'S MENSTRUAL LEAVE POLICY

Karnataka has become the first State in the country to approve 12 days of paid menstrual leave per year (one day per month) for all women employees, covering both government and private sectors.

Arguments in Favour

- **Promotes Gender-Sensitive Workplaces:** Recognises biological realities of women and promotes inclusivity and empathy in the workplace. Moves beyond gender-neutral policies to gender-responsive labour reforms.
- **Acknowledgement of Menstrual Health:** Encourages open discussion and destigmatisation of menstrual health.
- **Improves Productivity and Well-being:** Allows women to rest during periods of pain or discomfort, leading to better overall performance and morale.
- **Health and Human Rights Perspective:** Upholds women's right to health, dignity, and bodily autonomy.
- **Empowers Working Women:** Particularly beneficial for women in physically demanding jobs or without flexible work conditions.
- **Global Alignment:** Reflects global best practices — countries like Japan, South Korea, Indonesia, Taiwan, and Spain have similar policies.

Arguments Against

- **Risk of Workplace Discrimination:** Employers may become reluctant to hire or promote women, viewing them as less productive or more costly. Could unintentionally reinforce gender bias rather than eliminate it.
- **Implementation Challenges in the Private Sector:** Ensuring compliance and monitoring across diverse industries could be difficult.
- **Insufficient Scope and Uniformity:**
  - One day per month may be inadequate for many women who experience severe menstrual disorders.
  - Lack of a national framework may create policy inconsistency across states and sectors.
- **Period Shaming:** It would exacerbate period shaming in a country where a large number of people consider menstruation to be 'impure'.
- **Social Sensitivity Issues:** Women might prefer to keep their **health-related matters private,** and introducing a specific leave category for menstruation could infringe on **personal privacy.**

Way Ahead

- Women are fighting hard for equality in their workplaces and leadership positions and **menstruation leave could be held against them**.
- Recognising the **diverse nature** of menstrual experiences is essential. Some argue for flexible work hours, work-from-home options, or better menstrual hygiene facilities at workplaces instead of fixed leave days.
- Tailoring support and being accommodative on a **case-by-case basis** promotes inclusivity, while also addressing the individual needs of those navigating their difficult menstrual cycle.

BOOKER PRIZE 2025

David Szalay won this year's Booker Prize for fiction for his novel 'Flesh,' is the first Hungarian-British author to win the Booker Prize.

About

- The Booker Prize, is a **prestigious literary award conferred each year** for the **best single work of sustained fiction** written in the **English language**, which was published in the United Kingdom and/or Ireland.
- **Launch:**
  - It was first awarded in **1969** to promote reading and literature.
  - The inaugural Booker Prize was awarded to **PH Newby for Something to Answer For.**

International Booker Prize

- This prize is awarded **annually** to the best works of long-form fiction or collections of short stories, translated into English and published in the United Kingdom (UK) or Ireland.
- It was established in **2005.**
- In 2022, Geetanjali Shree, for her Hindi novel, **Tomb of Sand,** received the prize.
- **In 2025, Banu Mushtaq and Deepa Bhasthi** won it for the translated anthology of Mushtaq's short stories from Kannada into English, Heart Lamp.

NATIONAL WATER AWARDS 2024

Maharashtra has secured the first position in the Best State category of the 6th National Water Awards for 2024. Gujarat and Haryana have been placed second and third respectively.

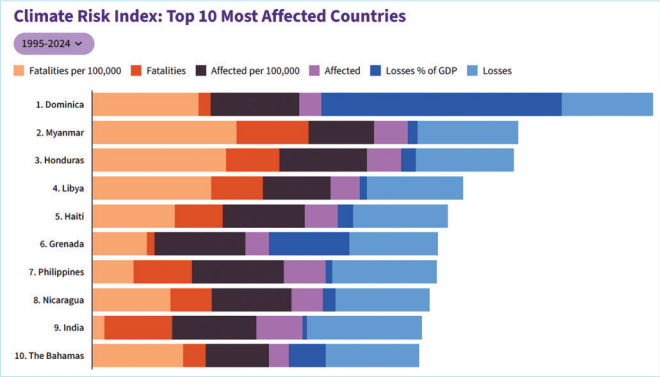
About

- Instituted in 2018 by the **Department of Water Resources, River Development, and Ganga Rejuvenation** (DoWR, RD &GR), the National Water Awards aim to encourage sustainable water management and support the government's 'Jal Samridh Bharat' vision.
- This year, 46 winners have been selected across **ten categories**, including Best District, Best Village Panchayat, Best Urban Local Body, and Best Institution.

CLIMATE RISK INDEX (CRI) 2026

The new Climate Risk Index (CRI) 2026 report has been released by Germanwatch.The analysis was presented at the ongoing COP30 in Belem, Brazil.

Key Findings



- India was ninth on the list of countries most affected by **extreme weather events between 1995 and 2024.**
  - In the last three decades, India faced around 430 extreme weather events, which resulted in inflation-adjusted losses of around $170 billion.
- **Most People Affected:** India ranked third behind Bangladesh and the Philippines.
- **Continuous Threat Category:** It has placed India, along with the Philippines, Nicaragua, and Haiti in the "continuous threats" category.

Additional Information

- The **CRI** is calculated based on the **economic and human effects of extreme weather events.**
- **The higher the rank, the worse a country** has been affected by extreme weather events.
- The index, however, **only analyses rapid onset events** like storms, extreme temperatures, wildfires, glacial lake outbursts, and floods.
- **It does not include slow onset events** like rising mean temperatures, sea level rise, ocean acidification, glacial retreat, etc.

FORMER CHILEAN PRESIDENT MICHELLE BACHELET GETS THE INDIRA GANDHI PEACE PRIZE

Michelle Bachelet, the former President of Chile, has been awarded the Indira Gandhi Peace Prize for 2024.

About

- It is an **annual award** established by the **Indira Gandhi Memorial Trust in India.**
- The prize is named in honor of the **late Prime Minister of India, Indira Gandhi,** and it was instituted in **1986.**
- The award is presented to individuals or organizations that have made **significant contributions** to the promotion of international understanding and peace, the development of new international economic order, and the strengthening of democracy.
- **Categories:** The award is presented in three categories:
  - **Peace:** Recognizes efforts to promote and maintain international peace and security.
  - **Disarmament:** Acknowledges contributions to the reduction and elimination of weapons of mass destruction.
  - **Development:** Honors work in promoting economic and social development.
- The award ceremony typically takes place on **November 19th,** the birth anniversary of Indira Gandhi.

INDIA TO HOST 2030 COMMONWEALTH GAMES

India has been officially awarded the 2030 Commonwealth Games (CWG), with Amdavad (Ahmedabad) declared the host city. India last hosted the CWG in Delhi in 2010.

Historical Background:

- **1891 – Concept Proposed:** John Astley Cooper first proposed a multi-nation sporting event to strengthen unity within the British Empire.
- **1911 – Inter-Empire Championships:** Held in London with participation from Australasia, Canada, South Africa, and the UK.
- Started in **1930** (inaugural event in Hamilton, Canada) as the British Empire Games, the present-day Commonwealth Games is a **multi-sport international event, modeled on the Olympics**, involving athletes from the Commonwealth of Nations and their associated territories
- **2002 – Para-athletes Included:** Full integration of para-sport events began, making the Games more inclusive.
- **2018 – Gender Equality Milestone:** Equal number of medal events for men and women introduced.
- **2022 – Women's Events Lead:** Women's medal events exceeded men's for the first time.

Additional Information

- The Commonwealth of Nations, or simply the Commonwealth, is a voluntary association of **56 sovereign countries**, most of which were former colonies of the British Empire.
- The membership has evolved over time due to political changes and voluntary withdrawals or additions.
- Today, the Commonwealth Games is the world's second-largest multi-sport event and the fourth most-watched global broadcast sports event, featuring athletes from 72 nations and territories.

11 DATA RECAP

COP30 – Belém Package

- A total of **29 decisions were adopted**, shifting focus from negotiation to implementation.
- **Adaptation finance is to be tripled by 2030**, but the burden-sharing mechanism remains undefined.
- **Tropical Forests Forever Facility** aims to raise **USD 125 billion,** with Brazil contributing the first USD 1 billion.

Frontier Agriculture (NITI Aayog–WEF)

- Frontier technologies can **increase productivity by 25%** and **reduce input costs by 20%.**
- India has **1,200+ AgriTech start-ups** focused on drones, AI, soil analytics, and digital supply chains.
- AI and IoT-based farming can **increase farmers' income by 40%** (NITI Aayog, 2025).

Geothermal Energy (Araku Project)

- India has a geothermal potential of **10,000 MW** (GSI + ONGC).
- Araku pilot has a capacity of **2–5 MW**, expandable to **100 MW** (EESL, 2025).
- Geothermal provides **80–90% capacity factor**, significantly higher than solar (20–30%).

India's Cooperative Sector (Amul & IFFCO)

- **Amul ranks as the world's largest cooperative**, while IFFCO ranks second (World Cooperative Monitor, 2025).
- Participation in cooperatives increases rural incomes by **25–30%** (World Bank, 2025).
- Women constitute **over 35%** of Amul's membership (NABARD, 2024).

Functional Foods & Smart Proteins

- Non-communicable diseases will cost India **USD 2.5 trillion by 2030** (World Bank).
- Global functional food market is valued at **USD 300 billion,** with India projected to reach **USD 25 billion by 2030**.
- Smart protein alternatives can reduce **greenhouse gas emissions by up to 90%** compared to livestock (FAO, 2024).

Stem Cell Therapy (Japan Breakthrough)

- Japan successfully used **adipose-derived stem cells** to treat spinal fractures caused by osteoporosis.
- The **Regenerative Medicine Law (2014)** enables fast-track approval and clinical use of stem cell therapies.
- The global stem cell market is projected to cross **USD 50 billion by 2030** (WHO).

White-Collar Terrorism (Red Fort Blast Case)

- The explosive **TATP (Triacetone Triperoxide)** was recovered; it can detonate without a detonator.
- More than **2,600 kg of fertilizer and 1,000 kg of ammonium nitrate** were acquired for the blast.
- The primary suspect was identified using **maternal DNA matching** through autosomal and mitochondrial profiling.

India–Bhutan Relations (2025 Visit)

- India extended **₹4,000 crore concessional credit** and **₹10,000 crore economic support** for Bhutan's 12th Five-Year Plan.
- The Punatsangchhu-II hydropower project (1020 MW) was inaugurated.
- A new **Hatisar Check Post** has been established to enhance border trade and connectivity.

IBSA Dialogue Forum (2025)

- The **IBSA Fund** has supported **46 development projects in 34 countries**, worth **USD 53.27 million**.
- India proposed the **IBSA Digital Innovation Alliance** to share digital public infrastructure models such as UPI and CoWIN.
- All member countries emphasized **UNSC reform**, advocating increased representation for the Global South.

G20 Johannesburg Summit (2025)

- **Theme: "Solidarity, Equality, Sustainability"**, drawing from the Ubuntu philosophy.
- **Mission 300** was launched to provide electricity access to **300 million people in Africa by 2030.**
- India proposed a **Global Compact on Responsible AI** and a **Critical Minerals Circularity Initiative** for recycling and urban mining.

India's Semiconductor Manufacturing

- India approved **four new fabrication units worth USD 30+ billion** under the Modified Semicon India Programme.
- Micron's Gujarat ATMP facility aims to produce **500,000 wafers per month by 2027**.
- India's semiconductor market projected to reach **USD 80 billion by 2028 (ICRA)**.

Green Hydrogen Rules, 2025

- Minimum **70% emissions reduction threshold** to qualify as "Green Hydrogen" in India.
- Mandated **share of green hydrogen in industrial consumption**, starting 2026 in fertilizer and refinery sectors.
- India targets 5 MMT annual green hydrogen production by 2030.

TEST YOURSELF

Objective Questions

Visit: www.nextias.com for monthly compilation of Current based MCQs

SUBJECTIVE QUESTIONS

GS PAPER-I

1. "India's cooperative movement, led by institutions like Amul and IFFCO, is an experiment in economic democracy." Discuss how the cooperative model has transformed rural society and livelihoods in India.
2. The recent global rankings of Amul and IFFCO in the World Cooperative Monitor highlight a new phase of India's cooperative revolution. How do such developments reshape rural social relations, particularly in terms of inclusion and participation?
3. "The next nutrition challenge for India is not calorie sufficiency but nutrient adequacy." In this context, examine how the rise of functional foods reflects changing lifestyles, disease patterns, and social attitudes towards health.
4. Land subsidence in Indian megacities like Delhi, Mumbai and Chennai reflects the intersection of physical geography and unplanned urbanisation. Explain the major causes and spatial patterns of land subsidence in such cities.
5. Despite multiple laws and schemes, violence against women remains pervasive in India. Analyse the socio-cultural factors sustaining such violence and comment on the challenges in changing social attitudes.
6. Urban environmental stresses like land subsidence and groundwater depletion tend to deepen existing social and spatial inequalities. Discuss with suitable examples from Indian cities.

GS PAPER-II

7. Trace the evolution of India–Bhutan relations from the 1949 Treaty of Friendship to the recent high-level visits. How do geostrategic, economic and people-to-people dimensions together sustain this partnership?
8. Hydropower cooperation and digital connectivity projects with Bhutan are often cited as key pillars of India's 'Neighbourhood First' and 'Act East' policies. Explain.
9. "IBSA is a democratic voice of the Global South." Discuss the strategic importance of the IBSA Dialogue Forum for India, distinguishing it from platforms such as BRICS and the G20.
10. Highlight the major outcomes of the Johannesburg G20 Summit 2025. How do these outcomes advance the interests of developing countries in climate finance, debt relief and inclusive development?
11. With reference to the Supreme Court's opinion on the 16th Presidential Reference, discuss the constitutional position on the Governor's assent to State Bills under Articles 200 and 201.What are the limits of judicial intervention in such matters?
12. The Supreme Court's recent decisions on the Tribunals Reforms Act, 2021 reaffirm the basic structure doctrine in the context of tribunal independence. Examine how executive control over appointments, tenure and service conditions can affect the functioning of tribunals.
13. Recent reports on custodial deaths, prison conditions and the functioning of Juvenile Justice Boards (JJBs) reveal deep governance and capacity gaps. Analyse the key issues and suggest measures to make custodial institutions and juvenile justice mechanisms more rights-oriented and accountable.

GS PAPER-III

14. How does NITI Aayog's frontier-tech roadmap aim to shift agriculture from input-intensive to intelligence-intensive, and what challenges arise in including small and marginal farmers?
15. How can deep technologies (AI, IoT, CV, digital twins, CRISPR, nanotech) turn farming into a data-driven, risk-managed system?
16. What is the strategic role of geothermal energy in India's clean-energy transition, especially the Araku–Visakhapatnam pilot? What advantages does it have over solar/wind, and what limits its wider use?
17. What are functional foods and smart proteins, and how can they address India's NCD burden and support climate-friendly food systems?
18. Explain the science behind stem cell therapy and analyse the ethical, regulatory and health-system challenges of its use in India.
19. What is "white-collar terrorism"? What drives it, and why does it pose unique challenges to India's internal security?
20. What are the key sources and health impacts of heavy-metal contamination, and how do bioremediation, phytoremediation and advanced filtration compare as remediation methods?