



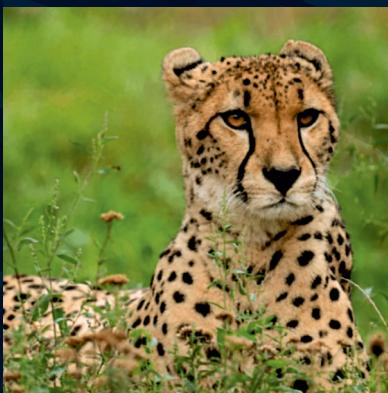
January 2026 Issue

VAJIRAO & REDDY IAS

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For UPSC | IAS | IPS & State Civil Services Aspirants

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Rupee Depreciation & Measures for Currency Strengthening



Why in News?

In **December 2025**, the Indian Rupee (INR) hit a historic low, breaching the **90.43 per USD** mark. Driven by persistent **Foreign Portfolio Investment (FPI) outflows** (totaling over **Rs 1.6 lakh crore** in 2025) and uncertainty surrounding a potential **India-US trade deal**, the Rupee emerged as the worst-performing Asian currency of the year, depreciating nearly **5-6% year-to-date**.

I. Understanding Rupee Depreciation

Definition: A market-driven decrease in the value of the Rupee relative to foreign currencies (like the USD) under a **floating exchange rate system**.

Impact of Depreciation

Positive Impact	Negative Impact
Boosts Exports: Indian goods (IT, Textiles, Pharma) become cheaper for foreign buyers.	Imported Inflation: Cost of crude oil, electronics, and fertilizers rises, increasing the cost of living.
Remittances: NRIs receive more Rupees for every Dollar sent home.	Higher Debt Servicing: Repaying foreign-currency loans becomes more expensive for Indian firms.
Import Substitution: High import costs may push domestic industries to produce locally.	Trade Deficit: A surge in the import bill (especially oil and gold) widens the Current Account Deficit (CAD).

II. Devaluation Vs. Depreciation

While both result in a weaker currency, they differ in their origin:

- **Devaluation:** A **deliberate** downward adjustment by the government or Central Bank (RBI) under a **fixed** exchange rate system (e.g., India in 1991).
- **Depreciation:** A fall in value due to **market forces** (demand and supply) under a **flexible** exchange rate system.

III. Factors Driving Depreciation in 2025

1. **Relentless FPI Outflows:** Higher interest rates in the US have led global investors to move capital out of emerging markets like

India to seek "risk-free" returns in US Treasury bonds.

2. **Widening Trade Deficit:** A massive surge in **gold imports** (up nearly 200% in late 2025) and high crude oil prices have drained dollar reserves.
3. **Geopolitical Risk:** Global uncertainty has increased demand for the **US Dollar** as a "safe-haven" asset.
4. **Trade Deal Uncertainty:** Delays in finalizing strategic deals with the US have created market skepticism regarding future export tariffs.

IV. Strategies to Strengthen the Rupee

To counter volatility and reduce dollar-dependence, the RBI and Government are focusing on **Internationalisation of the Rupee**:

1. Rupee-Based Trade Settlement

- **SVRAs:** Expanding **Special Vostro Rupee Accounts** with over 22 countries (including Russia, UAE, and Sri Lanka) to settle trade directly in INR.
- **LCS Systems:** Strengthening the **Local Currency Settlement** system to bypass the dollar in bilateral trade.

2. Deepening Financial Markets

- **Index Inclusion:** The 2024-25 inclusion of Indian bonds in global indices (JP Morgan EMBI) is attracting passive inflows into the debt market (**Rs 59,000 crore** in 2025).
- **Masala Bonds:** Encouraging Indian entities to raise funds globally in Rupee-denominated bonds.

3. Globalizing UPI

- **Digital Reach:** Expanding **UPI** to countries like Singapore, UAE, France, and Mauritius ensures that Indian travelers and businesses can pay in Rupee-linked digital formats, reducing the immediate need for forex.

4. Structural Reforms

- **Gold Monetisation:** Reducing the physical demand for gold imports by promoting digital gold and sovereign gold bonds.
- **Forex Interventions:** The RBI uses its **Forex Reserves** (approx. \$550-600 billion) to intervene and curb excessive volatility in the exchange rate.

Conclusion: While the Rupee's fall in 2025 is largely driven by global external shocks, it serves as a wake-up call for India to reduce its import dependence and accelerate the **Internationalisation of the INR**. A strong, globally-accepted Rupee is essential for India's vision of becoming a **USD 5 trillion economy**.

CURRENT EVENTS OF INTERNATIONAL IMPORTANCE

Selection of the 10th UN Secretary-General & Role of the Office



Why in News?

The United Nations has officially initiated the selection process for the next **Secretary-General (SG)**. The incoming leader will succeed **António Guterres**, whose second term concludes on **December 31, 2026**. For the first time, the joint invitation letter from the UN General Assembly (UNGA) and Security Council (UNSC) explicitly encourages Member States to **strongly consider nominating women candidates**.

I. Key Facts: The UN Secretary-General

- **Chief Administrative Officer:** Defined under **Article 97** of the UN Charter as the head of the Secretariat.
- **Dual Role:** Functions as both a high-level diplomat (mediator) and the CEO of a global organization.
- **Symbolic Voice:** Acts as a spokesperson for the world's 8 billion people, prioritizing the vulnerable and marginalized.
- **Regional Rotation:** An informal convention where the post rotates among global regions (e.g., Africa, Asia, Latin America).
- **Gender Gap:** Since 1945, all nine Secretaries-General have been men. There is currently significant global momentum to elect the **first-ever woman SG**.

II. Selection and Appointment Process

The process is a blend of formal Charter rules and informal "straw polls."

The Selection Workflow

1. **Nomination:** Triggered by a joint letter from the UNGA and UNSC Presidents. Member States submit candidates with a **CV** and a **Vision Statement**.

2. **UNSC Screening:** The Security Council holds private meetings and "straw polls" to gauge support.
 - **Ballots:** The Five Permanent Members (**P5**) use color-coded ballots to signal potential vetoes.
3. **Threshold:** A candidate needs at least **9 votes** (out of 15) and **zero vetoes** from the P5.
4. **Recommendation:** The UNSC passes a resolution recommending a single name to the UNGA.
5. **Final Appointment:** The UNGA appoints the SG, usually through a simple majority or by acclamation.

Feature	Detail
Term Length	5 years (renewable once by convention).
P5 Veto Power	Any of the 5 permanent members can block a candidate.
Informal Rules	Candidates usually shouldn't be from a P5 nation and should speak English and French .

III. Constitutional Powers & Roles

The SG's authority is derived from specific articles of the UN Charter:

- **Administrative (Article 97):** Oversees the UN staff, budget, and global operations.
- **Coordination:** Chairs the **Chief Executives Board (CEB)**, ensuring all UN agencies (WHO, UNICEF, etc.) work together.
- **Political Initiative (Article 99):** The "most powerful" tool, allowing the SG to formally alert the Security Council to any matter threatening **international peace and security**.
- **Quiet Diplomacy:** Uses "Good Offices" to mediate conflicts behind the scenes, away from public scrutiny to maintain neutrality.

IV. Modern Challenges & Aspirations

- **First Woman SG:** Over 140 countries have expressed support for gender balance. Potential candidates frequently mentioned include **Michelle Bachelet** (Chile), **Mia Mottley** (Barbados), and **Rebeca Grynspan** (Costa Rica).

- **Regional Claims:** Latin America and the Caribbean (GRULAC) and Eastern Europe are currently seen as the regions "due" for the position under rotation norms.
- **Crisis Management:** The next SG must navigate a "polycrisis" world involving climate change, AI regulation, and escalating geopolitical conflicts.

Conclusion: The selection of the 10th Secretary-General is not just a personnel change but a signal of the UN's future direction. The push for a female leader and regional representation aims to enhance the institution's credibility and effectiveness in the 21st century.

Future of India-Bangladesh Relationship (Parliamentary Report 2025)



Why in News?

In December 2025, the **Parliamentary Standing Committee on External Affairs**, chaired by MP Shashi Tharoor, presented its 9th report titled '**Future of India-Bangladesh Relationship**'. The report warned that the current political churn in Bangladesh represents India's "greatest strategic challenge" since the 1971 Liberation War.

- **Strategic Context:** The report arrives amid a visible cooling of ties following the **August 2024 fall of the Sheikh Hasina government** and the subsequent rise of a new, more nationalistic political order in Dhaka.
- **New Flashpoint:** Tensions escalated in **late December 2025** after the killing of youth leader **Sharif Osman Hadi**, leading to protests at the Indian Assistant High Commission in Chattogram and a death sentence issued in absentia for Sheikh Hasina by a Bangladeshi tribunal in November 2025.

I. Recent Developments & Strategic Challenges

The report identifies a "generational discontinuity" where the emotional bond of the 1971 war is fading among the youth, replaced by skepticism toward India.

1. Fundamental Political Realignment

- **The "Hasina Factor":** India's decision to shelter the ousted PM has become a major **bilateral irritant**. Dhaka's interim government has accused her of inciting unrest from Indian soil, while India maintains she is a guest with no political platform.
- **New Political Forces:** The emergence of the **National Citizen Party (NCP)** and the return of the **Jamaat-e-Islami** (with restored electoral registration) have introduced actors often perceived as holding anti-India views.
- **February 2026 Elections:** The interim government has banned the **Awami League** from contesting the upcoming elections, raising concerns about the inclusiveness of the new democratic process.

2. External Influence: The China-Pakistan-Turkey Factor

- **Lalmonirhat Airfield:** The report flags concern over China's assistance in upgrading this airfield, located just **15 km from the Indian border**, potentially threatening the **Siliguri Corridor**.
- **Naval Presence:** The visit of the Pakistani frigate **PNS Saif** to Bangladesh and a **\$370 million expansion** of the Mongla Port by China signify a shrinking strategic space for India.
- **Turkish Influence:** A rising footprint in Bangladesh's defense and infrastructure sectors is also noted as a new competitive variable.

II. Critical Bilateral Issues in Limbo

- **Ganga Water Treaty (1996):** Set to expire in **December 2026**. While India has begun internal consultations with state governments, formal bilateral negotiations with Bangladesh have yet to commence.
- **Trade Imbalance:** Despite tensions, trade reached **\$13.46 billion in 2024-25**, though it remains heavily skewed in India's favor (**\$11.45 billion in exports**).

- Minority Protection:** The committee expressed grave concern over reports of attacks on religious minorities and the vandalism of Indian diplomatic missions.

III. India-Bangladesh: The Status Quo (A 2025 Overview)

Despite the political friction, the foundational pillars of the relationship remain deep-rooted.

Sector	Current Key Projects / Status
Connectivity	6 cross-border rail links; Use of Chattogram and Mongla ports for Indian transit to the Northeast.
Energy	India-Bangladesh Friendship Pipeline (Diesel); Maitree Super Thermal Power Plant (1320 MW).
Development	Bangladesh is India's largest partner with \$8 billion in Lines of Credit (Loc).
People-to-People	1.5 million+ visas issued annually (though currently restricted to medical/student categories).

IV. How to Revitalize the Relationship?

(Recommendations)

The committee urges a shift from "Legacy-based Diplomacy" to "Adaptability."

- Engage All Stakeholders:** India must move beyond its perceived "one-party" (Awami League) focus and engage with the **NCP, student leaders, and civil society**.
- Water Diplomacy:** Initiate renewal talks for the **Ganga Treaty** immediately to avoid a strategic vacuum in 2026.
- Modernize Borders:** Use **drones, motion sensors, and laser fences** to secure the 4,096-km border while ensuring "humane treatment" of detained individuals.
- Strategic Communication:** Create a **Dedicated Perception Management Unit** within the MEA to counter anti-India narratives and misinformation on social media.
- Accelerate CEPA:** Conclude the **Comprehensive Economic Partnership Agreement** to integrate the economies further and reduce the trade deficit.

Conclusion: The **2025 Parliamentary Report** is a "reality check" for India's Neighbourhood First policy. It suggests that while history connects the two nations, only a **competitive, transparent, and inclusive partnership** can prevent India from becoming "irrelevant" in a rapidly changing Bangladesh.

India-Ethiopia Strategic Partnership (December 2025)



Why in News?

In **December 2025**, Prime Minister Narendra Modi undertook a historic three-nation visit to **Jordan, Ethiopia, and Oman**. The visit to Ethiopia (December 16–17) marked a watershed moment as the first bilateral visit by an Indian PM to the country since 2011.

- Strategic Upgrade:** India and Ethiopia formally elevated their bilateral relations to a **Strategic Partnership**, signaling a new era of deep cooperation in defense, technology, and economic reform.
- Highest Civilian Honour:** In a rare gesture, Prime Minister Modi was conferred "**The Great Honor Nishan of Ethiopia**"—the country's highest civilian award—by PM Abiy Ahmed Ali. He became the **first global Head of State** to receive this prestigious honor.

I. Key Outcomes of the 2025 State Visit

The visit yielded **8 major agreements and MoUs** focused on digital infrastructure, healthcare, and economic stability.

- Economic Relief:** Signed an MoU on **Debt Restructuring** for Ethiopia under the **G20 Common Framework**, showcasing India's commitment to helping "Global South" partners manage financial stress.
- Digital Governance:** Agreement to establish a state-of-the-art **Data Centre** at Ethiopia's Ministry of Foreign Affairs.
- Healthcare Support:** India pledged to upgrade the **Mahatma Gandhi Hospital** in Addis Ababa, specifically focusing on maternal and neonatal care units.
- Human Capital:** India announced the **doubling of ICCR scholarships** for Ethiopian students and launched specialized short-term **AI courses** under the ITEC programme.

- **Defense & Peacekeeping:** Signed an arrangement for cooperation in **UN Peacekeeping Operations Training**, building on the shared history of both nations as top contributors to UN missions.

II. India–Ethiopia: The "Axumite" Connection

The relationship is rooted in over 2,000 years of shared history.

- **Ancient Trade:** Trade links date back to the **1st century AD (Axumite Empire)**, when the port of **Adulis** served as a hub for Indian silk, spices, and ivory.
- **Modern Military Bonds:** Indian soldiers played a decisive role in the 1941 liberation of Ethiopia from Italian occupation. Later, India helped establish the **Harar Military Academy**, Ethiopia's premier defense institution.
- **Diplomatic Pillar:** Formal ties established in **1950**. Ethiopia is home to a vibrant 2,500-strong Indian community, primarily composed of educators and industrialists.

III. Economic and Strategic Significance

- **Gateways of Trade:** Ethiopia serves as India's gateway to the **African Continental Free Trade Area (AfCFTA)**, while India offers Ethiopia a path to Asian markets.
- **Trade Figures (FY 2024-25):**
 - **Total Trade:** USD 550.19 million.
 - **India's Exports:** USD 476.81 million (Iron, steel, pharma, machinery).
 - **India's Imports:** USD 73.38 million (Pulses, oilseeds, precious stones).
- **Investment Powerhouse:** With over **USD 5 billion** in cumulative investments, Indian companies are among the top three foreign investors in Ethiopia, creating more than **75,000 local jobs**.

IV. Challenges and Future Opportunities

Challenge	Opportunity
Logistics: Landlocked status increases transit costs via Djibouti/Berbera.	Connectivity: Joint ventures in regional rail and port infrastructure projects.
Regional Instability: Conflicts in the Horn of Africa affect investment risk.	Strategic Cooperation: Enhanced maritime and counter-terrorism coordination.
Regulatory Gaps: Procedural delays in privatization.	BioE3 & Tech: Integrating Ethiopia into India's digital public infrastructure (UPI/Aadhaar models).

V. Multilateral Synergy: BRICS & G20

As a new **BRICS member** (joined 2024) and the host of the **African Union (AU)** headquarters, Ethiopia is a critical ally for India's leadership of the **Global South**.

- **Presidency 2026:** India will take over the **BRICS presidency in 2026**, making Ethiopia's strategic support vital for shaping the group's developmental agenda.
- **Sustainability:** Both nations are key partners in the **International Solar Alliance (ISA)** and the **Global Biofuel Alliance (GBA)**.

BRICS Presidency 2026 – India's "Humanity-First" Vision



Why in News?

In late December 2025, Brazil formally handed over the **BRICS Presidency** to India for the year **2026**. The symbolic transfer featured Brazil's Sherpa passing a gavel made of **recycled Amazonian wood** to India's Sherpa, **Sudhakar Dalela**, during the final Sherpa meeting in Brasília.

- **Historical Significance:** India will host the **18th BRICS Summit in 2026**. This marks the **fourth time** India will chair the group (previous presidencies: 2012, 2016, and 2021).
- **The "G20 Model":** India has announced it will follow its 2023 G20 blueprint, hosting approximately **100 meetings** across **60 cities** in all 28 States and 8 Union Territories to make the presidency a "People's BRICS."

I. India's Rebranded BRICS: The "BRICS" Acronym Redefined

During the 2025 Rio Summit, Prime Minister Narendra Modi proposed a new, action-oriented definition for the BRICS acronym to guide India's 2026 chairship:

- **B – Building**
- **R – Resilience**
- **I – Innovation**

- **C – Cooperation**
- **S – Sustainability**

This framework shifts the focus from purely geopolitical posturing to "**Humanity-First**" deliverables, emphasizing global health, climate action, and poverty eradication.

II. Key Priorities for the 2026 Presidency

India aims to transform tactical diplomatic gains into structural reforms for the Global South:

- **Digital Public Infrastructure (DPI):** India will lead the push for a "**BRICS Data Economy Governance Understanding**" to share its "India Stack" (Aadhaar, UPI, DigiLocker) with member nations.
- **Economic Resilience:**
 - **Independent Settlement System:** Streamlining intra-bloc trade using national currencies to build resilience against external trade shocks and sanctions.
 - **NDB Expansion:** Pushing to expand the capital base of the **New Development Bank (NDB)** to offer more concessional financing for green transitions.
- **Counter-Terrorism:** Re-energizing the **BRICS Counter-Terrorism Action Plan** and advocating for the **Comprehensive Convention on International Terrorism (CCIT)**.
- **Energy Security:** Hosting the "**BRICS Energy Gathering 2026**" to focus on ethanol blending, green hydrogen, and the **Global Biofuels Alliance**.

III. The 2025 Expansion: A "BRICS+" Reality

By the time India assumed the presidency in **January 2026**, the group had evolved significantly:

- **Current Full Members (11):** Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, UAE, Saudi Arabia (formalizing), and **Indonesia** (joined in 2025).
- **Partner Countries:** A new tier of **13 "Partner Countries"** (including Malaysia, Thailand, and Nigeria) will participate in the 2026 summits, giving the bloc a footprint that covers nearly **half the world's population**.

Category	BRICS+ Impact (2025-26)
Global Population	~45% of the world's people.
Economic Weight	~37.3% of Global GDP (PPP)—surpassing the G7 (29.3%).
Energy Power	Controls approximately 42% of global oil production.

IV. Challenges for India's Chairship

1. **Internal Divisions:** Balancing the Russia-China "anti-Western" tilt with India's own "non-Western but multi-aligned" foreign policy.
2. **Institutional Cohesion:** Integrating five new members and 13 partners without diluting the group's decision-making speed.
3. **Economic Dominance:** Addressing the asymmetry where **China accounts for ~70% of the bloc's GDP**, leading to concerns of single-country dominance.

Conclusion: India's 2026 Presidency is a "determining moment" for the Global South. By moving away from symbolic rhetoric toward a "**Resilience and Sustainability**" agenda, India seeks to prove that BRICS is not just a "talk shop" but a credible institutional alternative to traditional Western-led frameworks.

India-New Zealand Free Trade Agreement (FTA) 2025



India-New Zealand Free Trade Agreement (FTA) 2025

Why in News?

In **December 2025**, India and New Zealand (NZ) announced the successful conclusion of negotiations for a landmark **Free Trade Agreement (FTA)**. This agreement is India's **third major trade deal in 2025** (following the UK and Oman) and is considered one of its fastest-concluded pacts with a developed nation, finalized in just nine months.

- **Strategic Pivot:** The deal represents India's **7th trade pact since 2021** and its **3rd with a "Five Eyes" nation**, reflecting New Delhi's

strategy to diversify trade partners amid rising global protectionism.

- **Economic Scale:** The FTA aims to **double bilateral trade** from the current **USD 2.4 billion** to nearly **USD 5 billion** within five years.

I. Key Highlights of the FTA

The agreement is built on a "calibrated" approach that balances aggressive market access for exports with strict protection for domestic sensitive sectors.

1. Trade in Goods: The 100% Win

- **For India:** New Zealand will grant **zero-duty access to 100% of Indian exports** (8,284 tariff lines) immediately upon the pact entering into force.
- **For New Zealand:** India will liberalize duties across **70% of its tariff lines** (covering 95% of NZ exports by value).
 - **Immediate Elimination:** 30% of lines (wood, wool, sheep meat, raw hides).
 - **Phased Elimination:** 35.6% of lines over 3 to 10 years (machinery, petroleum oil, vegetable oils).

2. Investment: The USD 20 Billion Pillar

- **Investment Commitment:** New Zealand has committed to facilitating **USD 20 billion in FDI** into India over the next **15 years**.
- **Rebalancing Mechanism:** A unique provision allows India to **suspend certain FTA benefits** if these investment targets are not met within the stipulated timeline.

3. Services and Mobility: Beyond Trade

- **Professional Visas:** A new **Temporary Employment Entry (TEE)** visa pathway for up to **5,000 Indian professionals** at any given time (valid for up to 3 years), covering IT, engineering, healthcare, and traditional medicine.
- **Student Rights:** No numerical caps on Indian students in NZ; guaranteed **20 hours of work per week** while studying and post-study work visas (up to 4 years for PhDs).
- **Working Holiday:** 1,000 annual working holiday visas for young Indians.

II. Safeguarding Sensitive Sectors: The "Dairy Shield"

India successfully maintained a firm line on protecting its rural livelihoods, which was a primary reason for its 2019 exit from the RCEP.

- **Full Exclusions:** Nearly **30% of India's tariff lines** are excluded from any duty cuts.
- **Dairy Protection:** No concessions were given for milk, cream, cheese, or butter, protecting roughly **80 million Indian dairy farmers** from competitive NZ imports.
- **Agriculture:** Other excluded items include **rice, wheat, sugar, onions, and almonds**.
- **Calibrated Access:** For high-end items like **apples, kiwifruit, and wine**, India has used **Tariff-Rate Quotas (TRQs)** and seasonal access rather than full liberalization.

III. Recognition of Soft Power: AYUSH & GIs

- **AYUSH & Wellness:** The FTA includes a dedicated annex on **Traditional Medicine (AYUSH)**, promoting medical value travel and wellness services.
- **Intellectual Property:** NZ has committed to amending its laws within 18 months to grant **protection to Indian Geographical Indications (GIs)** (like Darjeeling Tea or Alphonso Mangoes) on par with the EU.
- **Maori Engagement:** The pact emphasizes cooperation with New Zealand's **indigenous Maori communities** to foster cultural exchange.

IV. Strategic Significance for India

Strategic Value	Benefit
Diversification	Reduces overdependence on traditional markets like the US and China.
Pacific Foothold	Acts as a gateway to the wider Oceania and Pacific Island markets .
MSME Boost	Zero-duty access for labor-intensive sectors like textiles, leather, and footwear .
Supply Chain	Strengthens integrated supply chains and standard-setting in the Indo-Pacific.

Conclusion: The **India–New Zealand FTA 2025** is less about immediate trade volume and more about a **framework for deep strategic cooperation**. By securing a USD 20 billion investment commitment and a robust mobility pathway for 5,000 professionals while keeping the dairy sector closed, India has created a "template" for future negotiations with other developed economies.

Appointment of Barham Salih as UN High Commissioner for Refugees (UNHCR)



Why in News?

In December 2025, the United Nations General Assembly (UNGA) elected former Iraqi President Barham Salih as the next UN High Commissioner for Refugees. He was elected by consensus following a nomination by UN Secretary-General António Guterres.

- **Historic Leadership:** Barham Salih is the **first UNHCR chief from the Middle East** since the late 1970s. His appointment is seen as a major shift toward inclusive leadership representation from regions most affected by displacement.
- **Tenure:** His five-year term begins on **January 1, 2026**, succeeding **Filippo Grandi** of Italy, who served a 10-year tenure (2016–2025).
- **Unique Perspective:** As a former refugee who fled persecution in the 1970s, Salih brings firsthand experience to the role at a time when global forced displacement has reached record highs of over **123 million people**.

I. Understanding the UNHCR

Established in the aftermath of World War II, the **United Nations High Commissioner for Refugees (UNHCR)** is the world's leading organization dedicated to saving lives and protecting the rights of displaced people.

1. Evolution and Legal Foundation

- **Founded:** 1950 by the UNGA with an initial three-year mandate to help millions of Europeans who had lost their homes.
- **1951 Refugee Convention:** This landmark treaty defined who a refugee is and set the minimum standards for their treatment. It established the **principle of non-refoulement**, which forbids states from returning refugees to territories where their lives or freedom are threatened.
- **Permanent Status:** While originally temporary, the persisting global crises led the

UNGA to make the UNHCR a **permanent institution** in 2003.

2. Funding Model

- **Voluntary Basis:** Unlike many UN agencies, the UNHCR is funded almost entirely by **voluntary contributions** (99%) from governments, intergovernmental organizations, and private donors.
- **Budget 2025-26:** For 2025, the budget stood at **\$10.604 billion**, though the agency continues to face a significant "funding gap" as global needs outpace available resources.

II. Mandate and Strategic Solutions

The UNHCR is mandated to provide international protection to **refugees, internally displaced persons (IDPs), and stateless persons**.

The Three Durable Solutions

The agency works to ensure that displacement is a temporary state by pursuing:

1. **Voluntary Repatriation:** Helping refugees return to their home country in safety and dignity.
2. **Local Integration:** Assisting refugees to stay and integrate within their host community.
3. **Resettlement:** Moving refugees from a host country to a third country that has agreed to admit them.

III. Global Recognition: Nobel and Nansen Awards

- **Nobel Peace Prize:** The UNHCR is one of the few organizations to have won the Nobel Peace Prize **twice** (1954 and 1981) for its humanitarian work.
- **The Nansen Refugee Award:** Established in 1954, it honors extraordinary service to the displaced. It is named after **Fridtjof Nansen**, the first High Commissioner for Refugees under the League of Nations.

2025 Nansen Refugee Award Winners

Category	Winner (2025)	Achievement
Global Laureate	Chief Martin Azia Sodea (Cameroon)	Integrated 36,000 refugees into his village by providing land and resources.
Middle East/MENA	Taban Shoresh (Iraq)	Genocide survivor who founded <i>The Lotus Flower</i> to support conflict survivors.
Asia-Pacific	Negara Nazari (Tajikistan)	Afghan refugee who founded the <i>Ariana Learning Centre</i> for displaced children.
Americas	Pablo Moreno Cadena (Mexico)	Business leader who pioneered refugee inclusion in the Mexican workforce.
Europe	Proliska (Ukraine)	A frontline organization providing life-saving aid to millions in war zones.

IV. Institutional Structure

The UNHCR operates with a decentralized model to ensure aid reaches the "last mile" of conflict zones.

- **Headquarters:** Geneva, Switzerland.
- **Governance:** Overseen by the **UN General Assembly** and an **Executive Committee (ExCom)**.
- **Personnel:** Over **20,000** staff working across **135 countries**, with nearly 90% of personnel stationed in the field.

Indian Foreign Policy 2025 – A Year of Shocks and Pragmatic Realism



Why in News?

- The year **2025** emerged as a period of **shock and surprise** for Indian foreign policy.
- While India recorded notable diplomatic successes, such as a reset with Canada and rapprochement with China, it simultaneously confronted unforeseen international challenges including **punitive U.S. tariffs**, regional instability in **Bangladesh and Pakistan**, and the rise of transactional right-wing global politics.

I. Major Diplomatic Challenges in 2025

1. Strained Relations with the United States

Despite early optimism, the return of the Trump administration introduced significant "strategic friction."

- **Economic Shocks:** The U.S. imposed **50% tariffs** on Indian goods (August 2025), citing India's profit from discounted Russian oil.
- **Visa Restrictions:** The H-1B visa fee was increased to **\$100,000**, accompanied by mandatory social media screening for applicants, impacting the Indian IT sector.
- **Strategic Trust Deficit:** U.S. claims of mediating **Operation Sindoor** (an Indian counter-terror operation) and the approval of **F-16 upgrades for Pakistan** eroded bilateral trust.

2. Regional Turmoil and Neighborhood Risks

- **Bangladesh Crisis:** The fall of the pro-India **Awami League** government in August 2024 led to an anti-India wave in 2025. Violent unrest following the killing of youth leader **Sharif Osman Hadi** resulted in attacks on Indian properties.
- **Pakistan Escalation:** Tensions peaked after the **Pahalgam terror attack** (April 2025). India responded with **Operation Sindoor**, leading to a military standoff.
- **West Asia Instability:** Continued conflict in Gaza and Israeli strikes on Iran stalled the **India–Middle East Economic Corridor (IMEC)** and complicated India's balancing act within **BRICS** and **SCO**.

3. Global Right-Wing Trends

The rise of conservative, "transactional" politics in the **US, Europe, Japan, and Chile** challenged India's traditional diplomatic playbook, favoring bilateral deal-making over multilateral norms.

II. Diplomatic Successes and Pragmatic Resets

1. Canada Reset (The "Carney" Factor)

Following the 2023 Nijjar killing strain, relations improved significantly after the election of **PM Mark Carney**.

- **G7 Outreach:** PM Modi visited **Calgary** in June 2025, leading to the restoration of full diplomatic staffing and visa services.
- **Focus:** Transitioned to "Energy Security" and ethical technology cooperation.

2. Strategic Engagement with the Taliban

In a major shift toward "pragmatic realism," India upgraded its technical mission to a **full embassy** in Kabul by October 2025.

- **Rationale:** Framing Kabul as "the enemy's enemy" to counter Pakistan's influence.
- **Leverage:** The Taliban's condemnation of the Pahalgam attack and their invitation for Indian mining investments signaled a deepening functional tie.

3. China Rapprochement

- **Kailash–Mansarovar Yatra:** In November 2025, both nations agreed to resume the pilgrimage for **Summer 2026** after a four-year gap.
- **Normalization:** Restoration of direct flights and tourist visas marked a cautious de-escalation of the 2020 border chill.

4. Humanitarian Leadership (Operation Sagar Bandhu)

Following **Cyclone Ditwah** in November 2025, India provided a **\$450 million aid package** to Sri Lanka, delivering 1,100 tonnes of relief material and restoring critical infrastructure.

III. Implications of the 2025 Geopolitical Shift

Impact Area	Consequences for India
Strategic Autonomy	High cost of balancing Russia/West; entities like Nayara Energy faced sanctions.
Neighborhood First	Shift from "Influence" to "Stability Management" as neighbors face internal turmoil.
Domestic Linkage	U.S. visa policies and oil price volatility directly impacted the Indian middle class and inflation.

IV. The Way Forward: India's 2026 Strategy

- Issue-Based Alignment:** Cooperating with the U.S. on **AI and Maritime Security** while insulating trade disputes.
- EU FTA:** Concluding the Free Trade Agreement with the **European Union** (expected January 2026) to diversify export reliance.
- Global Agenda Setting:** Leveraging the **2026 BRICS Presidency** and the **AI Impact Summit** to position India as a "Global Bridge-builder."

Conclusion: 2025 transformed India's foreign policy from **optimistic engagement to pragmatic realism**. By prioritizing national interest over normative positions, India is navigating a "fractured world" by building domestic resilience and flexible, issue-based alliances.

Israel's Historic Recognition of Somaliland (2025–26)



Why in News?

- On **December 26, 2025**, Israel became the **first UN member state** to formally recognize the **Republic of Somaliland** as a sovereign and independent nation.

- The historic move was formalized through a mutual declaration signed by Israeli Prime Minister Benjamin Netanyahu and Somaliland President Abdirahman Mohamed Abdullahi.
- The recognition is framed as an extension of the **Abraham Accords** and is seen as a strategic "anti-Iran gamble."
- While it has triggered celebrations in Hargeisa, it has drawn sharp condemnation from **Somalia, the African Union (AU), and the UN Security Council**, who view it as a violation of Somalia's territorial integrity.

I. Understanding Somaliland: The De Facto State

Somaliland has functioned as a stable, democratic entity for over three decades, despite lacking formal global recognition until now.

- Historical Timeline:**
 - 1960:** Gained independence from Britain; voluntarily merged with Italian Somaliland to form the **Somali Republic**.
 - 1991:** Unilaterally declared independence following the collapse of the **Siad Barre regime** and the subsequent civil war/genocide against the Isaaq clan.
- Governance:** Operates its own **currency (Somaliland Shilling)**, passports, military, and a democratically elected government in its capital, **Hargeisa**.
- Contrast:** While Somalia is often labeled a "functional failed state," Somaliland is recognized by observers for its grassroots state-building and relative internal peace.

II. Strategic Significance for Israel

Israel's move is driven by hard-power interests in the **Red Sea** and the **Gulf of Aden**.

- Countering Iranian Proxies:** A foothold in Somaliland provides a forward operating environment for intelligence and military missions to monitor **Houthi activity** in Yemen.
- Maritime Security:** Somaliland overlooks the **Bab el-Mandeb Strait**, a critical chokepoint for 30% of global trade. Recognition secures a stable partner for protecting Israeli commercial vessels bound for the **Port of Eilat**.

- The "Berbera" Hub:** Israel seeks access to the **Port of Berbera** (already hosting a UAE military base) for logistical support and surveillance technology deployment.
- Diplomatic Normalization:** Engaging with a Sunni-Muslim majority society reinforces the Abraham Accords' logic that pragmatic cooperation transcends the Palestinian issue.

III. Regional and Global Implications

The recognition has transformed the Horn of Africa into a new battleground for Middle Eastern rivalries.

Actor	Stance	Rationale
Somalia	Strong Opponent	Denounced the move as a "naked invasion" and "null and void" under international law.
African Union	Opponent	Fears a "dangerous precedent" that could embolden separatist movements across the continent.
Ethiopia	Potential Ally	Recently signed a port deal with Somaliland; likely to follow Israel in formal recognition to secure maritime access.
Turkey & Egypt	Opponents	View Israeli presence as an "expansionist" threat to their own influence in the Red Sea and Suez Canal.

IV. Controversies: The "Gaza Resettlement" Rumor

Following the recognition, reports emerged suggesting a "secret deal" to resettle Palestinians from Gaza in Somaliland.

- Denial:** Somaliland's Ministry of Foreign Affairs **flatly rejected** these claims on January 2, 2026, calling them "false and misleading" attempts by Mogadishu to undermine their diplomatic progress.
- Focus:** Both nations maintain that the partnership is strictly focused on **agriculture, health, and maritime security**.

Conclusion: Israel's recognition of Somaliland is a **paradigm shift** in the Horn of Africa. By rewarding "performance-based legitimacy," Israel has challenged the 34-year international status quo. However, the move risks further militarizing the Red Sea and could ignite a "security paradox" where regional rivals escalate hostile actions to counter the new Israeli-Somaliland-UAE axis.



EDITORIALS

Crux of The Hindu & Indian Express

International Issues

A Template for Security Cooperation in the Indian Ocean: Colombo Security Conclave (CSC)

Seychelles Joins Colombo Security Conclave (CSC)

7th NSA-level meeting held in New Delhi

- Seychelles becomes 6th full member of the CSC
- Strengthens security cooperation in the Indian Ocean Region



Date: 3 December 2025

1. Why in News?

- On **20 November 2025**, India hosted the **7th NSA-level Colombo Security Conclave (CSC)** summit.
- India's NSA Ajit Doval met his counterparts from:
 - Sri Lanka, Maldives, Mauritius, Bangladesh** (full members)
 - Seychelles** (observer, now to become full member)
 - Malaysia** (guest participant)
- The CSC is becoming an **important forum** for cooperation on **security in the Indian Ocean Region (IOR)**

2. What is the Colombo Security Conclave (CSC)?

- CSC is a **regional security platform** for Indian Ocean countries.
- It focuses mainly on **maritime safety, counterterrorism, cybersecurity, and fighting transnational crime**

How it evolved

- 2011:** Started as a trilateral group → India, Sri Lanka, Maldives
- Later slowed due to political changes
- 2020:** Revived as CSC focusing on maritime and non-traditional security
- 2022:** Mauritius joined

- **2024:** Bangladesh became a full member
- **2025:** Seychelles being inducted as full member; Malaysia showed interest

CSC Secretariat → **Colombo, Sri Lanka**

3. Why is the 2025 CSC Summit Important?

1. Expansion

- Seychelles joined as a **full member** → shows strong regional trust in CSC.

2. India's Deeper Engagement

- India is strengthening ties with maritime neighbours, especially as **China's presence in the Indian Ocean is rising**.

3. Security Focus

The summit highlighted growing importance of:

- maritime security
- joint cooperation
- protecting Indian Ocean trade routes

4. Future Growth

- Malaysia's participation indicates CSC may continue expanding.

4. Why is the Indian Ocean Important?

Geography

- Extends from Africa's east coast to Australia's west coast, including vital sea routes.

Key facts

- **1/3 of the world's population** lives around it
- **2/3 of global oil shipments** move through it
- It is India's **trade lifeline**
- India has a **2.4 million sq km EEZ** here

Choke Points

Important narrow passages like:

- Strait of Hormuz
- Strait of Malacca
- Bab-el-Mandeb
- These make the region strategically crucial.

5. India's Strategy in the Indian Ocean

A. Policy Frameworks

- **Neighbourhood First**
- **SAGAR** (Security and Growth for All in the Region)
- **MAHASAGAR Doctrine (2025)** → a broader, long-term vision

B. India as a Net Security Provider

India helps with:

- counter-piracy patrols
- fighting illegal fishing

- maritime terrorism
- information sharing (through IFC-IOR)

C. Close Ties with Littoral States

- Especially with Sri Lanka, Maldives, Mauritius, Seychelles.

D. Strong Regional Leadership

Active role in:

- IORA
- IONS
- BIMSTEC
- QUAD
- IPOI

E. HADR Leadership

- India responds first during disasters.
- Recent examples (2025):

- **Operation Sagar Bandhu** in Sri Lanka (floods)
- **Operation Sadbhav** in Myanmar, Laos, Vietnam (Typhoon Yagi floods)

6. CSC's Objectives

CSC focuses on **five security pillars** plus **marine pollution**:

1. Maritime Security
2. Counterterrorism & De-radicalisation
3. Combating Trafficking & Transnational Crime
4. Cybersecurity & Critical Infrastructure Protection
5. HADR (Humanitarian Assistance & Disaster Relief)
6. Marine Pollution Response (*additional area*)

7. Key Achievements of CSC

A. Stronger Institution

- Appointment of the first **CSC Secretary-General**
- Progress on a **CSC Training Academy**

B. Better Operational Capacity

- Joint exercises
- Simulation drills
- Training for coast guards
- Indian hydrographers helping members map their waters

C. Improved Maritime Domain Awareness

- Close integration with IFC-IOR
- Better real-time intelligence and surveillance

D. Blue Economy Initiatives

- **Virtual Centre of Excellence (2025)** to support sustainable use of marine resources

E. Growing Regional Trust

- More countries want to join the CSC framework

8. Major Challenges Ahead

1. Different Views on China

- India sees China's activities as a security challenge
- Many CSC members see China mainly as an economic partner

This difference affects coordination.

2. Weak Institutional Structure

- CSC works at **NSA level only**
- No joint budget or permanent operational mechanism yet

3. Domestic Political Changes

- Shifts in Maldives and Bangladesh affect stability
- Anti-India campaigns can disrupt cooperation

4. Overlap with Other Forums

CSC members also belong to:

- IORA
- IONS
- BIMSTEC

Lack of coordination reduces effectiveness.

9. Way Forward

A. Strengthen CSC Institution

- Hold meetings at Foreign Minister level
- Create clearer mandates and stronger political backing

B. Create a CSC Fund

To support joint patrols, training, and MDA systems.

C. Form Permanent Task Forces

Under each security pillar.

D. Boost Joint Maritime Operations

- Coordinated patrols
- Anti-IUU fishing missions
- HADR drills

E. Use Advanced Technology

- Satellite surveillance
- AI-based maritime tracking
- Better integration with IFC-IOR

F. Handle China Carefully

- Focus CSC on **non-traditional security issues** so the group stays united.

G. Link Development with Security

Work together on:

- blue economy
- climate resilience

- early warning systems

- fisheries management

H. Controlled Expansion

- Let new countries join gradually as observers first.

Conclusion

The Colombo Security Conclave is becoming one of India's **strongest and most reliable platforms** for shaping security in the Indian Ocean. It strengthens India's position as a **net security provider**, builds trust among neighbours, and offers a coordinated response to new regional challenges — including competition from China. CSC is now a central part of India's larger vision for a **safe, stable, and cooperative Indian Ocean Region**.

ITALY-INDIA BUSINESS FORUM 2025



Why in News?

- The **Italy-India Business Forum 2025** was held in **Mumbai** on **11 December 2025** during the official visit of **Italy's Deputy Prime Minister Mr. Antonio Tajani**.
- The Forum aimed to **strengthen bilateral trade, investment, innovation, and supply chain cooperation** between India and Italy.

Background and Context

- India and Italy share a growing economic relationship.
- In **March 2023**, bilateral ties were elevated to a **Strategic Partnership** during the visit of Italian Prime Minister **Giorgia Meloni** to India.
- The 2025 Business Forum builds on this momentum and focuses on converting the Strategic Partnership into **practical economic outcomes**.

About the Italy-India Business Forum 2025

- Date: 11 December 2025
- Venue: Mumbai

- Occasion: Official visit of Italian Deputy Prime Minister
- Participants:
 - Senior government officials
 - Industry associations
 - Startup and unicorn founders
 - Over 150 Indian and Italian companies

Mumbai was chosen to highlight the focus on **business-to-business engagement and investment flows**.

Focus Areas of Cooperation

The Forum highlighted collaboration in priority sectors aligned with **technology-led and sustainable growth**, including:

- Automotive and clean mobility
- Waste-to-energy and renewable energy
- Sports technologies and sports textiles
- Agri-food and food processing
- Connectivity and transportation systems

Bilateral Ministerial Meeting Outcomes

The discussions between the two Ministers focused on:

- Expanding bilateral trade
- Strengthening supply chain resilience
- Promoting technology partnerships
- Cooperation in:
 - Green energy
 - Clean mobility
 - Advanced manufacturing
 - Food processing

Sectoral Roundtables and Industry Engagement

The Forum began with **parallel sectoral roundtables and pitching sessions**, covering:

- Automotives
- Waste-to-energy and renewables
- Sports technologies and textiles
- Agri-food

These sessions enabled:

- Industry-to-industry dialogue
- Business pitching by Italian firms
- Identification of:
 - Joint ventures
 - Co-development projects
 - R&D partnerships
 - Value-chain integration opportunities

Plenary Session and Institutional Participation

In the Plenary Session, sector leaders presented outcomes of discussions.

Key institutions involved:

- Invest India
- ASSOCHAM
- FICCI
- CII
- Confindustria
- Italian Trade Agency
- CDP, SIMEST, SACE

This ensured alignment between **government policy and private sector priorities**.

Engagement with Indian Unicorns

The Ministers interacted with leading Indian unicorns to explore cooperation in:

- Digital innovation
- Startup ecosystems
- Artificial Intelligence
- Deep technology
- Fintech
- Industrial technology solutions

This reflects growing India–Italy cooperation beyond traditional manufacturing.

B2B Matchmaking

- Over 100 structured business meetings were held
- Sectors covered:
 - Manufacturing
 - Renewable
 - Food processing
 - Sports innovation
 - Transportation systems

This strengthened **direct commercial partnerships**.

Major Institutional Outcome: JCEC

The most important outcome was the **signing of the Agreed Minutes of the 22nd session of the India–Italy Joint Commission for Economic Cooperation (JCEC)**.

Significance:

- Converts dialogue into action
- Provides a roadmap for future economic cooperation
- Institutionalises trade and investment collaboration

Key MoUs and Business Agreements Signed

1. SIMEST and Indian Chamber of Commerce : Strategic MoU to support Italian companies in India and promote bilateral investment.
2. SAIL and Danieli Group (Italy): Danieli to supply green steel technology for major SAIL

plants. Capacity over 4 million tonnes per year. Contract value around 500 million euros.

3. PRADA, LIDCOM and LIDKAR : Collaboration to produce a limited-edition sandal line inspired by Kolhapuri chappals, combining Italian design with Indian craftsmanship.
4. Kuvera S.p.A. and Neopolis Brands Pvt. Ltd. : Agreement to expand Carpisa retail in India with a plan to open 100 stores by 2045.
5. Cavagna Group Joint Venture : Cavagna Group Ace Brass Tech Pvt. Ltd. established with 5 million euro investment. Cavagna holds 51 percent stake.

Strategic Importance of the Forum

For India

- Access to advanced European technology
- Investment in green manufacturing and clean energy
- Strengthening export and value-chain integration

For Italy

- Entry into India's large consumer and industrial market
- Partnership with Indian startups and unicorns
- Long-term manufacturing and retail expansion

Broader Significance

- Strengthens India-EU economic engagement
- Enhances resilient and diversified supply chains
- Supports sustainable and innovation-driven growth
- Deepens India-Italy Strategic Partnership

CONGRESS CRITICISES INDIA'S EXCLUSION FROM US-LED PAX SILICA INITIATIVE



Why in News?

The Congress party has criticised the government over **India's exclusion from the US-led "Pax Silica" initiative**, calling it a **missed strategic opportunity** and linking it to a **downturn in India-US relations**.

What is the Pax Silica Initiative?

Overview

What is Pax Silica?

Pax Silica is a US-led strategic initiative to build a secure, prosperous, and innovation-driven silicon supply chain

Participating countries

Japan, Republic of Korea, Singapore, the Netherlands, the UK, Israel, the UAE, and Australia



Aim: The initiative responds to the growing demand to deepen economic and technological cooperation with the US

Pax Silica is a **United States-led strategic initiative** aimed at:

- Reducing **Chinese dominance** in high-technology and semiconductor supply chains
- Building a **secure, trusted silicon ecosystem**
- Protecting critical inputs needed for:
 - Artificial Intelligence
 - Advanced computing
 - Emerging technologies

The name "Pax Silica" is seen as a counter to "**Pax Sinica**", symbolising resistance to China-centric supply chains.

Countries Included in Pax Silica

The initiative currently includes **nine countries**:

- United States
- Japan
- South Korea
- Singapore
- Netherlands
- United Kingdom
- Israel
- United Arab Emirates
- Australia

India is not included, even though all other **QUAD countries** are part of the grouping.

Congress Party's Stand

Congress General Secretary **Jairam Ramesh** stated that:

- India's exclusion is a **missed strategic opportunity**
- It could weaken India's role in:
 - Semiconductor supply chains
 - AI-driven industries
- The exclusion is linked to a **sharp downturn in Trump–Modi relations** since May 2025

He also questioned the contrast between the Prime Minister's positive public messaging on India–US ties and India's absence from the initiative.

US Government's View

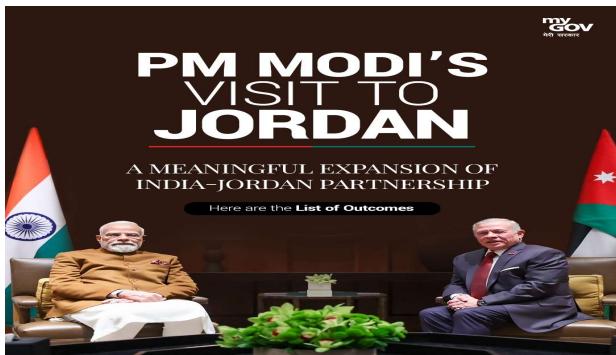
According to the **US State Department**, Pax Silica aims to:

- Reduce **coercive economic dependencies**
- Safeguard materials and capabilities critical for AI
- Enable trusted partners to:
 - Develop
 - Scale
 - Deploy advanced technologies

Why This Issue Matters for India

- Semiconductors and silicon are core to:
 - Digital economy
 - Defence manufacturing
 - Artificial Intelligence
- Exclusion raises concerns about India's:
 - Position in emerging technology alliances
 - Access to trusted high-tech supply chains

India–Jordan Relations & PM Modi's Visit (December 2025)



Why in News?

- Prime Minister Narendra Modi visited Jordan on 15–16 December 2025 as part of a three-nation tour (Jordan, Ethiopia, Oman).

- This was his **first full-fledged bilateral visit** to Jordan.
- The visit coincided with the **75th anniversary of India–Jordan diplomatic relations**.
- **Five MoUs** were signed to deepen cooperation.

- During Prime Minister Narendra Modi's **official visit to Jordan** (15–16 December 2025), Jordan's Crown Prince Al Hussein bin Abdullah II personally drove PM Modi to the **Jordan Museum** in his BMW.
- The moment attracted global attention and symbolised **warm personal diplomacy**.



Who is Crown Prince Al Hussein bin Abdullah II?

- **Full Name:** Hussein bin Abdullah Al-Hashimi
- **Born:** 28 June 1994, Amman (Jordan)
- **Age:** 31 years (in 2025)

Military Role

- Holds the rank of **Major** in the **Jordanian Armed Forces**
- Regularly participates in military exercises and defence-related duties

Becoming Crown Prince

- Appointed Crown Prince on **2 July 2009** by royal decree
- Appointment follows Jordan's constitution, where the **eldest son becomes heir**
- Took up official responsibilities in **2010**

Global and Diplomatic Role

- Represents Jordan at major international forums:
 - **United Nations General Assembly**
 - **UN Security Council**
 - **UN Climate Change Conferences**
 - **World Economic Forum**
- Accompanies King Abdullah II on:
 - Foreign visits
 - Diplomatic engagements
 - Military missions

Historic UN Achievement

- In April 2015, at just 20 years of age, he became:
 - Youngest person ever to chair a UN Security Council session
- That session led to adoption of **UN Resolution 2250**
 - Focus: Youth, Peace, and Security

Technology Leadership

- Leads National Council for Future Technology
- Promotes:
 - Digital innovation
 - Vocational training
 - Tourism development
- **Jordan's first satellite launched in 2018** under initiatives supported by him

Why His Gesture Matters

- Personally driving PM Modi showed:
 - Informal warmth in diplomacy
 - Strong personal engagement
 - Trust and friendship between leadership
- Reflects Jordan's **modern, youth-driven monarchy**
- Strengthens India–Jordan people-to-people connection

Introduction

- India–Jordan relations are rooted in **decades of diplomatic goodwill, mutual respect, and structured political dialogue**.
- Diplomatic ties were established in **1950**, building upon earlier cooperation agreements signed in **1947**.

Over the years, the relationship has matured into a **multi-sectoral partnership**, covering:

- Trade and investment
- Defence and security
- Technology and digital cooperation
- Education and capacity building
- Culture and people-to-people ties

PM Modi's 2025 visit gave **fresh strategic and economic momentum** to bilateral relations.

Background: India–Jordan Relations Over the Years

- Diplomatic relations formally established in **1950**

- Year **2025** marks **75 years** of diplomatic ties
- Relations characterised by:
 - Regular leadership-level engagements
 - Institutional mechanisms
 - Growing economic interdependence

High-Level Political Engagements

Key Visits and Meetings

- PM Modi visited Jordan (in transit) in **February 2018** en route to Palestine.
- King Abdullah II paid a **State Visit to India (Feb–Mar 2018)**:
 - Delegation-level talks
 - CEO Roundtable
 - Joint address on *Islamic Heritage*
 - **12 MoUs/Agreements signed**
 - Announcement of:
 - C-DAC Centre of Excellence in IT
 - US\$ 5 million in-kind assistance (pharma & vaccines)

Subsequent Leader Interactions

- UNGA, New York – **September 2019**
- Future Investment Initiative, Riyadh – **October 2019**
- COP-28, Dubai – **December 2023**
- G7 Summit, Italy – **June 2024**

Security & Crisis-Related Engagement

- **April 2025**: King Abdullah II condemned the **Pahalgam terror attack** and reiterated support for India.
- **October 2023**: Telephonic talks on **Gaza situation, terrorism, and civilian safety**.

Institutional & Diplomatic Mechanisms (2025)

- **4th Foreign Office Consultations** – Amman, **29 April 2025**
- **2nd Joint Working Group on Health** – Virtual, **2 September 2025**
 - Indian Pharmacopoeia
 - Pharmaceuticals & vaccines
 - Ayushman Bharat Digital Mission
 - Non-Communicable Diseases

- **Visit of Indian Secretary (South)** – **October 2025**, further advancing cooperation

Trade & Economic Cooperation

Trade Overview

- India is **Jordan's 3rd / 4th largest trading partner**
- Bilateral trade (2023–24): **US\$ 2.875 billion**
- India's exports: **US\$ 1.465 billion**

India Exports

- Cereals
- Petroleum products
- Frozen meat
- Animal fodder

India Imports

- Phosphates
- Potash fertilisers

Institutional Framework

- **Trade & Economic Joint Committee (TEJC)** under 1976 Trade Agreement
- Sector-specific and maritime cooperation mechanisms

Key Economic & Investment Initiatives

- **Jordan India Fertiliser Company (JIFCO):**
 - IFFCO + JPMC joint venture
 - Investment: **US\$ 860 million**
 - Major supplier of phosphoric acid to India
- **Indo-Jordan Chemical Company:**
 - Investment: **US\$ 169.5 million**
- **2022–2025 Fertiliser Agreements:**
 - MoUs worth **US\$ 1.5 billion**
 - Arab Potash Company–IPL MoU for **275,000–325,000 tonnes annually**
- **Garment Manufacturing:**
 - 15+ Indian-owned units in **QIZs**
 - Investment ~ **US\$ 500 million**
- **2025 Trade Promotion Activities:**
 - Tourism promotion event (Feb 2025)
 - Trade seminar with Jordanian Businessmen Association
 - Indian participation in Food & Food Tech Expo, Amman

Defence & Security Cooperation

- **MoU on Defence Cooperation (2018)**
- Indian tri-services delegation attended **SOFEX 2024**
- Jordanian Royal Navy delegation visited:
 - Southern Naval Command, Kochi
 - Indian Naval Academy, Ezhimala
- Shared commitment to:
 - Counter-terrorism
 - Regional stability

Science & Technology Cooperation

- **India–Jordan Centre of Excellence in IT (IJCoEIT):**
 - Located at Al-Hussein Technical University

- Inaugurated: **October 2021**
- Equipped with **PARAM Shavak supercomputer**

Focus areas:

- Cyber security
- Machine learning
- Big data
- Web development

- Target: **Train 3,000 Jordanian professionals**
- Fully funded by **Government of India**

Education & People-to-People Ties

- India is a preferred education destination for Jordanians
- **ITEC slots:** 50 annually
- **ICCR scholarships** available
- Over **2,500 Jordanians** educated in India
- **Indian diaspora in Jordan:** ~17,500
- Visa facilities:
 - Visa-on-Arrival (since 2009)
 - e-Visa (since 2023)

Direct flight: Amman–Mumbai

- Cooperation during evacuations (Operation Sindhu)

Cultural Relations

- Strong interest in **Indian culture** and **Bollywood**
- Regular:
 - Dance & music programmes
 - International Yoga Day events
- **July 2024:**
 - ICCR-sponsored Assamese folk dance troupe performed at **Jerash Festival**

Outcome of PM Modi's Visit (December 2025)

- Ceremonial welcome in Amman
- Extensive discussions with **King Abdullah II**
- Agreement to:
 - Raise bilateral trade to **US\$ 5 billion in 5 years**
 - Enhance cooperation in:
 - Defence & security
 - Renewable energy
 - Fertilisers & agriculture
 - Digital technologies & UPI linkage
 - Health, pharma & education
 - Tourism & heritage
- Strong condemnation of terrorism
- Shared views on **regional peace and stability**

MoUs Signed

1. Renewable Energy Cooperation
2. Water Resources Management & Development
3. Petra-Ellora Twinning Agreement
4. Cultural Exchange Programme (2025–2029)
5. Letter of Intent on Digital Solutions & DPI

Conclusion

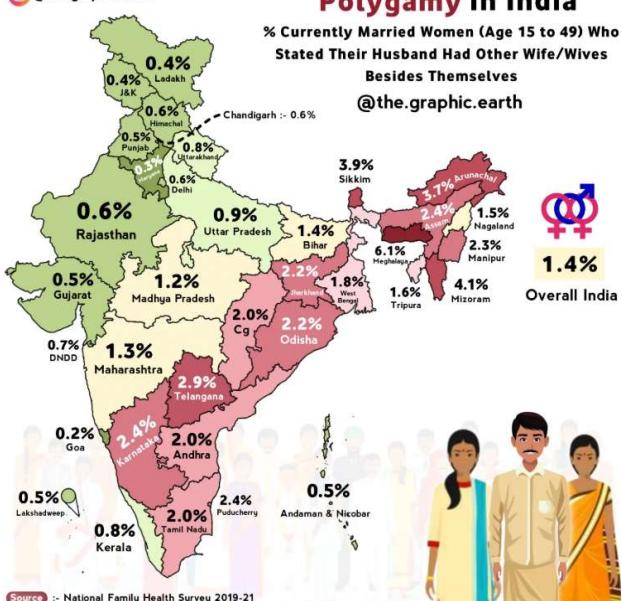
India–Jordan relations reflect the strength of **consistent diplomacy, strategic trust, and economic interdependence**. PM Modi's 2025 visit consolidated gains across **trade, technology, defence, culture, and people-to-people** ties. As India deepens its engagement with **West Asia**, Jordan remains a **reliable political and economic partner**, anchored in trust, shared interests, and long-term strategic alignment.



Indian Polity & Governance

Assam Prohibition of Polygamy Bill, 2025 & Status of Polygamy in India

 @the.graphic.earth



Why in News?

The Chief Minister of Assam introduced the **Assam Prohibition of Polygamy Bill, 2025** in the State Legislative Assembly. The bill aims to **criminalize polygamy** across the state, providing for stringent

punishments to ensure social reform and gender justice.

I. Key Provisions of the Bill (2025)

- **Criminalization:** Prescribes imprisonment of up to **7 years** and a **fine** for entering into or concealing a second marriage.
- **Exemptions:** * Does **not** apply to **Sixth Schedule areas** (where customary laws prevail).
 - Does **not** cover **Scheduled Tribes** under **Article 342** of the Constitution.
- **Jurisdiction:** Applies to all Assam residents, including those involved in polygamous marriages outside the state or those availing state welfare benefits.
- **Accountability:** Village heads, **qazis** (Muslim clerics), parents, and guardians can be held accountable for facilitating such marriages.
- **Impact on Convicts:** * Ineligible for **government jobs** and schemes.
 - Barred from **contesting elections**.
- **Grandfather Clause:** Marriages contracted **before** the law's enactment are protected if they comply with existing personal laws and have valid proof.

II. Understanding Polygamy

Definition: The practice of having more than one spouse simultaneously.

Types of Polygamy

Type	Description
Polygyny	A man having multiple wives (historically more common).
Polyandry	A woman having multiple husbands (rare; found in specific tribal contexts).
Bigamy	Entering a second marriage while the first is legally valid (a criminal offense for most in India).

III. Status of Polygamy in India

Data Insights (NFHS-5, 2019-21)

- **Assam Prevalence:** 2.4% overall (3.6% among Muslims; 1.8% among Hindus).
- **Highest State:** Meghalaya reports the highest rate at 6.1%.
- **Community-wise (National):** Christians (2.1%), Muslims (1.9%), Hindus/Buddhists (1.3%), and Sikhs (0.5%).

Legal Framework by Community

- **Hindus/Sikhs/Jains/Buddhists:** Prohibited under the **Hindu Marriage Act, 1955** (Section 11 declares such marriages void).
- **Parsis:** Outlawed by the **Parsi Marriage and Divorce Act, 1936**.
- **Muslims:** Governed by **Muslim Personal Law (Shariat) Application Act, 1937**, which permits up to four wives. However, it is subject to fundamental rights challenges.
- **Inter-religious:** The **Special Marriage Act (SMA), 1954** strictly mandates monogamy.

IV. Important Judicial Pronouncements

- **State of Bombay v. Narasu Appa Mali (1951):** Ruled that state legislatures have the authority to enact measures for **public welfare/reform**, even if they affect religious customs.
- **Parayankandiyal v. K. Devi (1996):** SC affirmed that **monogamy** is the standard ideology of Indian society.
- **Javed v. State of Haryana (2003):** SC held that while Muslim law *permits* four wives, it is **not mandatory**. Article 25 (Freedom of Religion) is subject to social harmony and health.

V. Implications & Challenges

- **Constitutional Conflict:** Different rules for different religions raise concerns regarding **Article 14** (Equality) and **Article 15** (Non-discrimination).
- **Gender Justice:** Polygamy often impacts a woman's dignity and mental well-being (**Article 21**).
- **Modern Norms:** Increasing social unacceptability of the practice due to a rise in individual rights and gender equality awareness.

VI. Suggested Measures

- **Uniform Civil Code (UCC):** Implementing a UCC to standardize marriage laws and ensure equal rights for all citizens regardless of religion.
- **Gradual Reform:** Amending personal laws to align with constitutional values of dignity.
- **Legal Enforcement:** Strengthening victim-relief frameworks and monitoring polygamous practices.

- **Awareness:** Using NGOs and community leaders to promote gender justice and change societal attitudes.

Conclusion: The Assam Anti-Polygamy Bill represents a significant step toward legal uniformity and gender justice, reflecting a broader national debate on balancing religious freedom with constitutional equality.

23rd Law Commission's Views on "One Nation, One Election" & Basic Structure Doctrine



Why in News?

- The **23rd Law Commission** has shared its initial views with the **Joint Parliamentary Committee (JPC)** regarding the **Constitution (129th Amendment) Bill, 2024**, and the **Union Territories Laws (Amendment) Bill, 2024**.
- These bills are designed to enable **One Nation, One Election (ONOE)**.
- The Commission concluded that these proposals **do not violate the Basic Structure** of the Constitution and advised against giving the **Model Code of Conduct (MCC)** statutory (legal) backing.

I. The 23rd Law Commission of India

- **Chairperson:** Justice (Retd.) **Dinesh Maheshwari** (appointed in April 2025).
- **Term:** Three years (**September 1, 2024 – August 31, 2027**).
- **Composition:** Includes a full-time Chairperson, four full-time members, ex-officio members (Legal Affairs/Legislative Secretaries), and up to five part-time members.
- **Mandate:** Reviewing obsolete laws, simplifying legal procedures, and advising the government on complex legal issues like globalization's impact.

Commission's Views on ONOE

- **Constitutional Validity:** Synchronizing elections affects only **timing and frequency**, not the democratic right to vote or federalism.
- **Ratification:** Argues that the Bills **do not require approval from 50% of State Assemblies** because they don't amend the specific protected subjects listed under **Article 368(2)** clauses (a) to (e).
- **Model Code of Conduct:** Advised **against codifying the MCC** into law. Statutory status would lead to judicial delays, whereas the current flexible system allows the Election Commission (ECI) to act swiftly.

II. The Basic Structure Doctrine

Origin: Established by the Supreme Court in the landmark **Kesavananda Bharati v. State of Kerala (1973)** case.

Core Principles

- **Limit on Power:** While Parliament can amend the Constitution under **Article 368**, it cannot destroy its "essential features."
- **Judicial Review:** Courts have the power to strike down amendments that damage the Constitution's identity.

Elements of Basic Structure (Identified Case-by-Case)

- **Supremacy of the Constitution**
- **Republican and Democratic form of Government**
- **Secularism and Federalism**
- **Separation of Powers** (Legislature, Executive, Judiciary)
- **Rule of Law and Independence of the Judiciary**
- **Free and Fair Elections**
- **Sovereignty and Unity** of the nation

III. What is "One Nation, One Election"?

Concept: Holding simultaneous elections for the **Lok Sabha, State Legislative Assemblies, and Local Bodies** (Panchayats/Municipalities).

Historical Context

- **1951–1967:** India successfully held synchronized elections for the first four cycles.
- **Divergence:** The cycle broke in **1968–69** due to premature dissolutions of State Assemblies and the Lok Sabha.

Rationale for Implementation

- **Governance Focus:** Reduces the "perpetual campaign mode" that distracts from development.
- **Policy Continuity:** Prevents frequent "policy paralysis" caused by the **Model Code of Conduct**.
- **Resource Optimization:** Reduces repeated deployment of security forces and administrative staff.
- **Cost Efficiency:** Significantly lowers the massive financial burden of holding separate elections every few months.

IV. Challenges and Concerns

- **Federalism:** Critics argue national issues might overshadow regional concerns, disadvantaging local parties.
- **Constitutional Complexity:** Requires amendments to **Article 83** (Duration of Houses) and **Article 172** (Duration of State Legislatures).
- **Logistics:** Massive requirement for Electronic Voting Machines (EVMs) and VVPATs for a single window of voting.

Conclusion: The 23rd Law Commission's support provides a legal pathway for ONOE, framing it as an administrative reform that preserves constitutional values while seeking to improve governance efficiency.

Italy's Femicide Law & Global Legal Recognition of Gender-Based Killings



Why in News?

In November 2025, the Italian Parliament unanimously passed **Law No. 181/2025**, a landmark legislation that officially criminalizes **femicide (femminicidio)** as a distinct crime. Coinciding with the International Day for the Elimination of Violence Against Women, the law mandates **life imprisonment** for gender-motivated killings, signaling a shift from

treating these as general homicides to recognizing them as acts of systemic discrimination and power.

I. Understanding Femicide

- **Definition:** The intentional killing of women and girls **because of their gender**. It is the most extreme manifestation of a continuum of violence against women (VAW).
- **UN Categorization:** Typically includes killings by **intimate partners or family members**, but also extends to gender-based hate crimes, "honor" killings, and deaths resulting from harmful practices like FGM.
- **Global Statistics (2024):** * Approximately **50,000** women and girls were killed by intimate partners or family members globally.
 - On average, **137 women/girls** are killed every day by someone in their own family.
 - **60%** of all intentional killings of women occur in the private sphere (home).

II. Italy's Landmark Law (Law No. 181/2025)

- **Legal Definition:** Defines femicide as a killing committed as an "act of hatred, discrimination, domination, control, or subjugation of a woman as a woman."
- **Mandatory Penalty:** Fixed sentence of **life imprisonment** (mandatory for the first time for this specific motive).
- **Scope:** Covers killings occurring when a woman attempts to break off a relationship or to repress her individual freedoms.
- **Comparison:** Italy joins **Cyprus, Malta, and Croatia** as the only EU nations with a specific legal definition of femicide.

III. The Indian Context

While India does **not** recognize "femicide" as a separate legal category in its penal code, several specialized laws address gender-based violence and killings:

Law	Objective
Dowry Prohibition Act, 1961	Targets "dowry deaths" (Section 304B IPC/BNS).
Protection of Women from Domestic Violence Act, 2005	Provides civil protection and emergency relief.
Prohibition of Child Marriage Act, 2006	Prevents harmful traditional practices leading to violence.
National Commission for Women Act, 1990	Established a statutory body to review constitutional and legal safeguards.

IV. Legal Rationale: Why Recognition Matters?

1. **Exposing Systemic Bias:** Highlights that these are not "crimes of passion" but results of **patriarchal violence** and power hierarchy.
2. **Targeted Policy:** Allows for better data collection (recording "femicide" vs. "homicide") to guide prevention strategies.
3. **Deterrence:** Symbolic and severe punishment (like life imprisonment) serves as a strong social and legal message.
4. **Visibility:** Counters the normalization of gender-based violence by giving it a specific legal name.

V. International Day for the Elimination of Violence Against Women

- **Date:** Observed annually on **25th November**.
- **Origin:** Commemorates the **Mirabal sisters**, political activists in the Dominican Republic who were assassinated in 1960.
- **UN Status:** Designated by the UN General Assembly in **1999** (Resolution 54/134).
- **Campaign:** Marks the start of the "**16 Days of Activism**" ending on Human Rights Day (December 10). The signature color is **Orange**, symbolizing a brighter future free of violence.

National Judicial Policy & The Revival of NJAC Vs. Collegium Debate



Why in News?

In November 2025, Chief Justice of India (CJI) **Surya Kant** proposed a **National Judicial Policy** to address the "unpredictable divergence" in legal rulings across India's 25 High Courts and the Supreme Court. Simultaneously, on **Constitution Day (Nov 26, 2025)**, the SC indicated it would consider a plea by advocate Mathews J. Nedumpara seeking the revival of the **National Judicial Appointments Commission (NJAC)**, once again bringing the "judges appointing judges" system under scrutiny.

I. Need for a National Judicial Policy

- Resolve Divergent Judgments:** Prevents different courts from delivering conflicting rulings on key issues like bail or reservations, which currently encourages "forum shopping" (litigants seeking favorable benches).
- Bridge Access-to-Justice Gaps:** Standardizes procedures to tackle over **5.4 crore pending cases**, reducing barriers of cost, distance, and language for marginalized groups.
- Address Structural Gaps:** The **India Justice Report 2025** highlights a **33% vacancy** in High Court judges' posts (1 judge for every 18.7 lakh people). A national policy would guide uniform capacity-building.
- Standardize Technology:** Ensures that e-filing, virtual hearings, and digital case management are consistent nationwide, avoiding unequal access between states.

II. The NJAC vs. Collegium Debate

The **NJAC (99th Amendment, 2014)** was an attempt to replace the Collegium but was struck down in **2015 (Fourth Judges Case)** for violating the "Basic Structure" of the Constitution.

Comparative Analysis

Aspect	Collegium System (Current)	NJAC (Proposed/Struck Down)
Primacy	Full primacy to the Judiciary.	Diluted; included Executive & Eminent Persons.
Composition	CJI + 4 senior-most SC judges.	CJI, 2 SC judges, Law Minister, 2 Eminent Persons.
Transparency	Criticized as opaque; no published criteria.	Envisaged as a more diverse/transparent body.
Veto Power	Decision by consensus among judges.	Any 2 members could veto a recommendation.
Risk Factors	Allegations of nepotism and secrecy.	Risk of political interference in the judiciary.

III. Constitutional Basis for Appointments

- Article 124:** Appointment of SC judges by the President in consultation with the CJI.
- Article 217:** Appointment of HC judges; involves the CJI, Governor, and HC Chief Justice.
- Article 126:** Appointment of **Acting CJI** (usually the senior-most judge).

- Article 127/128:** Provisions for **Ad hoc** and **Retired judges** to assist during high pendency or lack of quorum.

IV. Concerns & Challenges

- Federalism:** High Courts have administrative autonomy under **Articles 214–226**; a "one-size-fits-all" policy might face institutional pushback.
- Implementation Gaps:** Many courts lack the staff, funds, or digital tools needed for uniform national standards.
- Executive Influence:** Fears that a national policy framework might inadvertently allow the Executive to influence judicial functioning or independence.

V. Measures to Strengthen the Judiciary

- Flexible Federal Design:** National standards for consistency + regional flexibility for High Courts.
- Time-Bound Appointments:** A structured process (reform of Collegium or a "New NJAC") to ensure vacancies are filled without delays.
- Expanded ADR:** Investing in **Mediation and Arbitration** to reduce the burden on formal courts.

Conclusion: The call for a National Judicial Policy and the potential review of NJAC reflect a judiciary striving for **predictability** and **transparency**. The path forward lies in reforms that improve efficiency without compromising **judicial independence**—the cornerstone of the Constitution.

Governor's Role as Chancellor & State-Governor Tensions



Why in News?

In December 2025, the **Supreme Court (SC)** expressed strong dissatisfaction with the **Kerala Governor, Rajendra Arlekar**, for failing to act on the recommendations of a court-appointed committee regarding **Vice-Chancellor (VC)** appointments.

- The Deadlock:** A prolonged impasse existed between the Governor and **Chief Minister Pinarayi Vijayan** over appointing regular VCs for two technical universities: **APJ Abdul Kalam Technological University (KTU)** and the **University of Digital Sciences**.
- Judicial Intervention:** In August 2025, the SC formed a search committee led by **Justice (Retd.) Sudhanshu Dhulia** to shortlist candidates.
- The "Happy Ending":** Following the Court's warning that it would make the appointments itself if the deadlock continued, the Governor and CM reached a consensus in December 2025. **Dr. Saji Gopinathan** and **Dr. Ciza Thomas** were subsequently appointed as VCs.

I. Role of Governor as Chancellor of State Universities

- Statutory Role:** Unlike their constitutional role, the Governor's role as **ex-officio Chancellor** is a statutory one, granted by specific State University Acts.
- Independent Authority:** As Chancellor, the Governor is generally **not bound** by the "aid and advice" of the Council of Ministers, though they may consult them.
- Core Functions:** Appointing Vice-Chancellors from a panel recommended by a search committee.
 - Presiding over university convocations.
 - Inspecting university buildings/records and declaring proceedings invalid if they violate laws.

II. Key Controversies & Tensions

- VC Appointments:** Tensions arise when Governors reject government-recommended panels or appoint candidates perceived as being ideologically aligned with the Center.
- Withholding Assent to Bills:** Governors may delay or "sit on" state bills (Article 200), sometimes for months, leading to charges of sabotaging state legislation.
- Political Impartiality:** Since Governors are appointed by the **President** (on the Center's advice), they are often seen as "agents of the Center" in opposition-ruled states.
- Majority Crisis:** Discretionary powers in inviting a CM to form a government or ordering **floor tests** often lead to allegations of partisanship.

III. Commissions & Reform Recommendations

Commission	Key Recommendation
Sarkaria Commission (1988)	Governor should be an "eminent person" from outside the state and not be a member of the ruling party.
Venkatachaliah Commission (2002)	Governor should complete a 5-year term ; removal should only happen after consulting the Chief Minister.
Punchhi Commission (2010)	The Governor's Chancellor role should be abolished or restricted to avoid public controversy; a fixed 6-month timeline for deciding on bills.

IV. Major Judicial Pronouncements

- Nabam Rebia Case (2016):** SC ruled that the Governor's power to summon the Assembly is **not discretionary** and must follow the Cabinet's advice.
- Tamil Nadu Vs. Governor (2023):** Governors must grant assent to **re-passed bills** and cannot keep them pending indefinitely.
- 2025 Presidential Reference (Art 143):** The SC held that while it cannot impose **rigid timelines** on Governors for acting on bills, "prolonged, unexplained delays" may be subject to limited judicial review.
- Kerala VC Row (2025):** Reaffirmed that constitutional authorities must act in a spirit of **cooperation (Article 144)** to protect the interests of students and institutions.

V. Measures for Resolution

- Institutionalize Appointments:** Select Governors through a committee (PM, CJI, LS Speaker, and State CM) to ensure neutrality.
- Codify Discretion:** Clearly define the limits of "discretionary powers" under **Article 163** to minimize arbitrary action.
- Floor Test as Standard:** Mandate that a majority must **only** be proven on the floor of the House within a fixed 48-hour window.
- Adopt Punchhi Recommendations:** Decouple the Governor's office from university administration to maintain institutional autonomy.

Conclusion: The Governor-State friction in Kerala serves as a reminder that the "Chancellor" role is meant to insulate universities from politics, not become a tool for political deadlock. Strengthening constitutional conventions and following commission reforms are vital for healthy federalism.

Assam's Three-Tier ST Classification & Scheduled Tribes Notification



Why in News?

In late **November 2025**, a Group of Ministers (GoM) in Assam submitted an interim report recommending a unique **three-tier classification** for Scheduled Tribes (ST) in the state. The proposal aims to grant ST status to six major communities while protecting the interests of existing tribal groups. However, the move has sparked protests from current ST organizations fearing dilution of their constitutional rights.

I. Proposed Three-Tier ST Structure

To resolve long-pending demands, the GoM suggested dividing Assam's ST list into three distinct administrative categories:

Category	Target Communities	Status
ST (Plains)	Existing plains tribes (e.g., Bodos, Misings) + Moran, Matak, and Koch Rajbongshi (of undivided Goalpara).	Quota protected.
ST (Hills)	Existing hill tribes (e.g., Karbis, Dimasas).	Remains unchanged.
ST (Valley)	New Category: Tai Ahom, Chutia, Tea Tribes/Adivasis, and Koch-Rajbongshi (non-Goalpara areas).	Separate quota from state OBC pool.

Key Features of the Proposal

- Dual Quota System:** Separate reservation rosters for state-level jobs and education; however, all groups will compete as one unified pool for **Central Government** services.
- Political Safeguard:** Recommended a constitutional amendment to ensure Lok Sabha seats in **Sixth Schedule areas** remain reserved exclusively for existing "original" STs.
- Statutory Requirement:** The state government will request the Union to pass a special **Act of Parliament** to give this tiered structure legal recognition.

II. How are Scheduled Tribes Notified?

- Article 366(25):** Defines STs as tribes specified under Article 342.
- Article 342 (Notification):** The President specifies the ST list for each State/UT after consulting the Governor.
- Amendment (Parliamentary Power):** Once the initial list is notified, any addition, removal, or modification can be done **only by Parliament** through law.

III. Identification Criteria

While the Constitution mentions STs, it does not define them. Identification follows the **Lokur Committee (1965)** criteria:

- Primitive Traits:** Indications of pre-modern socio-cultural practices.
- Distinctive Culture:** Unique language, rituals, or social customs.
- Geographical Isolation:** Living in remote or difficult-to-access regions.
- Shyness of Contact:** Minimal interaction with the wider community.
- Backwardness:** Severe economic and educational disadvantage.

IV. Constitutional Provisions for Reservation

- Article 16(4):** Empowers the State to provide reservation in services for any "backward class" not adequately represented.
- Article 46:** Directive Principle to promote educational/economic interests of SCs and STs and protect them from exploitation.
- Article 335:** Mandates that claims of SCs/STs be considered in appointments while maintaining administrative efficiency.
- Davinder Singh Case (2024):** The Supreme Court (7-judge bench) held that states **can sub-classify** SCs and STs to ensure more equitable distribution of benefits among the "most backward" sub-groups.

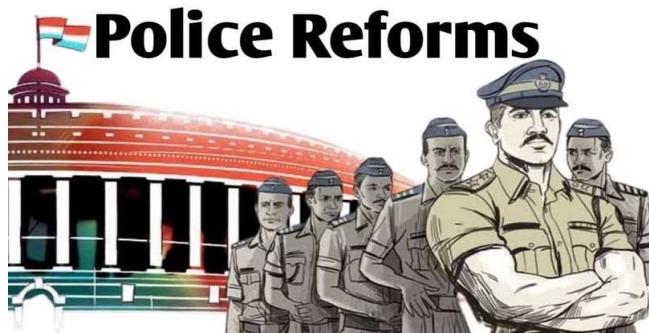
V. Challenges and Unrest

- Dilution Fears:** Existing tribes (Coordination Committee of Tribal Organisations of Assam) fear that the 40% population share of the six new communities will overwhelm current beneficiaries in jobs and land rights.
- OBC Transition:** The six communities currently hold **OBC status**; moving them to ST requires a proportionate deduction from

- the 27% OBC quota to create the ST (Valley) pool.
- **Constitutional Precedent:** Assam's three-tier model is unique in India; its acceptance by the Union and the Registrar General of India (RGI) remains a legal hurdle.

Conclusion: The three-tier model attempts a "middle path" to fulfill political promises without upsetting the existing tribal fabric. The success of this move depends on parliamentary approval and the state's ability to use empirical data to justify these new classifications.

Police Reforms in India & Challenges in Law Enforcement



Why in News?

- At the **60th All India Conference of Director Generals/Inspector Generals of Police** in Raipur (December 2025), the theme '**Viksit Bharat: Security Dimensions**' took center stage.
- Prime Minister Narendra Modi emphasized that for a developed India, the police must evolve from being a "ruling force" to a "**serving force**", focusing on professionalism, sensitivity towards marginalized groups, and technology-driven responsiveness.

I. Major Challenges Facing Indian Police

- **Colonial Legacy:** The **Police Act of 1861** was designed to suppress subjects, not serve citizens. This archaic framework still influences the frequent use of force (tear gas, lathis) and custodial practices.
- **Trust Deficit:**
 - **Custodial Issues:** The **Status of Policing in India Report (SPIR) 2025** reveals that **30%** of personnel justify "third-degree" methods (torture) for serious crimes.
 - **Marginalization:** Historical brutality has led to deep fear among Dalits,

Adivasis, and minorities. According to NCRB data, a significant majority of custodial death victims belong to these communities.

- **The "Overworked" Force:**
 - **Manpower:** India's actual police-to-population ratio is approximately **154.84 per 100,000 people**, far below the **UN-recommended 222**.
 - **Stress:** An average policeman works **14 hours a day**. About **24%** of personnel work over **16 hours daily**, leading to high stress and health issues.
- **Political Interference:** Operational autonomy is often compromised. A survey indicated that **72% of officers** feel political pressure while investigating cases involving "influential persons."
- **Infrastructure Gaps:** India has only **0.33 forensic scientists** per 100,000 people. Lack of modern labs leads to poor evidence collection and low conviction rates.

II. Key Committees & Reform Milestones

Committee / Judgment	Key Proposals
Gore Committee (1971)	Focused on training, human rights, and making police "service-oriented."
NPC (1977-81)	Recommended a New Model Police Act and separating "Investigation" from "Law & Order."
Prakash Singh Case (2006)	The SC issued 7 Directives (e.g., State Security Commissions, fixed 2-year tenure for DGP) to insulate police from politics.
Malimath Committee (2003)	Suggested a Witness Protection Program and central law enforcement for federal crimes.
SMART Policing (2015)	Sensitive, Mobile, Alert, Reliable, and Technologically savvy.

III. The 7 Directives of the Supreme Court (Prakash Singh)

1. **State Security Commission:** To ensure the state government does not exercise unwarranted influence.
2. **DGP Tenure:** Minimum **2-year tenure** for the Director General of Police.
3. **SP/SHO Tenure:** Minimum **2-year tenure** for field officers (SPs and SHOs).
4. **Separation of Functions:** Separate the "Investigation" wing from "Law and Order."
5. **Police Establishment Board (PEB):** To decide on transfers, postings, and promotions.

6. **Police Complaints Authority (PCA):** To inquire into public complaints of serious police misconduct.
7. **National Security Commission:** To prepare a panel for the selection and placement of Chiefs of Central Police Organisations.

IV. Proposed Measures for Modern Policing

- **Functional Specialization:** High-intensity specialization in **Cybercrime** and **Financial Fraud** units to tackle new-age threats.
- **Institutionalize Community Policing:** Scaling models like **Janamaithri** (Kerala) where police act as "local guardians."
- **Forensic-Led Investigation:** Implementing the **National Forensic Science University** model across states to improve the scientist-to-officer ratio.
- **Internal Accountability:** Using **Body-Worn Cameras** and digital case-flow tracking to reduce custodial high-handedness.
- **Filling Vacancies:** Addressing the **21% vacancy rate** to reduce the average workday to a healthy 8-hour shift.

Conclusion: Police reform is not just about new weaponry or technology; it is about changing the **institutional mindset**. Implementing the SC directives in letter and spirit is essential to transform the police into a modern, professional, and citizen-friendly force.

ECI's Authority on Citizenship Verification & Special Intensive Revision (SIR)



Why in News?

- In December 2025, the **Election Commission of India (ECI)** clarified its constitutional authority to verify the citizenship of electors during the ongoing **Special Intensive Revision (SIR)** of electoral rolls.
- Responding to a **Supreme Court** petition and opposition claims from states like West Bengal, Kerala, and Tamil Nadu, the ECI asserted that while the Union Government has powers under the **Citizenship Act**, the ECI has a mandate to ensure only citizens are enrolled as per the Constitution.

I. Legal & Constitutional Conflict

The core of the dispute lies in whether the ECI is conducting a "covert NRC" (National Register of Citizens) by asking for legacy documents.

The ECI's Clarification on Section 9

- **Section 9, Citizenship Act, 1955:** Grants the Central Government exclusive power to terminate citizenship *only* when an Indian voluntarily acquires foreign citizenship.
- **ECI's Stand:** This power is "**narrow**" and specific. It does not bar the ECI from verifying citizenship for the **sole purpose of voter eligibility**. Every other aspect of citizenship can be scrutinized by other authorities to maintain the "purity of rolls."

Constitutional & Statutory Pillars

- **Article 324:** Plenary powers of **superintendence and control** over elections.
- **Article 326:** Mandates **Indian citizenship** as a fundamental requirement to vote.
- **RPA, 1950 (Section 16):** Explicitly **disqualifies non-citizens** from being registered in an electoral roll.
- **RPA, 1950 (Section 21(3)): Empowers the ECI to conduct an **Intensive Revision** whenever it deems a "felt necessity" to maintain an error-free list.**

II. Special Intensive Revision (SIR) 2025

The **SIR** is a door-to-door, comprehensive verification process, different from the routine annual "Summary Revision."

Key Features of the 2025 SIR

- **Door-to-Door Verification:** Booth Level Officers (BLOs) visit every household with **Enumeration Forms (EFs)**.

- Target:** To remove deceased, permanently shifted, and ineligible (non-citizen) voters.
- Scope:** Covers major states including **Bihar, West Bengal, Assam, Tamil Nadu, and Uttar Pradesh** ahead of the 2026 assembly cycles.
- Legacy Linkage:** In states like Bihar and West Bengal, voters were initially asked to trace their eligibility back to the **2002/2003 SIR** records.

III. Opposition Concerns Vs. ECI Response

Opposition Claim	ECI Response
"Covert NRC": It is a citizenship test designed to exclude specific communities.	Sanitization: It is a "voter-friendly" exercise to remove ghost voters and duplicates; not a determination of national status.
Burden of Proof: It shifts the burden of proving citizenship onto the voter.	Minimal Requirement: Voters only need to sign pre-filled forms. Documents are sought only from " unmapped " voters (those not in the 2003 list).
Aadhaar Validity: Confusion over whether Aadhaar proves citizenship.	Identity Only: As per SC directions (Sept 2025), Aadhaar is a valid proof of Identity , but not of Citizenship .

IV. Recent Judicial & Technological Developments

- Aadhaar as 12th Document:** Following the **ADR Vs. ECI** case, the SC directed that Aadhaar must be accepted as identity proof for enrollment, though authorities can still seek further proof of citizenship if in doubt.
- Algorithm Controversy (Dec 2025):** Reports emerged that the ECI reactivated **de-duplication software** mid-way through SIR in 12 states, despite earlier telling the SC that the software was "defective," leading to concerns over "unmapped" voters.
- Revision Deadlines:** Draft rolls for many states were published in late **December 2025**, with final publication scheduled for **February 14, 2026**.

Karnataka Hate Speech and Hate Crimes (Prevention) Bill, 2025



Why in News?

In December 2025, Karnataka became the **first Indian state** to pass a specialized law targeting communal and social vitriol—the **Karnataka Hate Speech and Hate Crimes (Prevention) Bill, 2025**. The legislation was cleared by the State Assembly on **December 19, 2025**, aiming to provide a clear statutory definition of "hate speech," a term that has long remained legally ambiguous in India despite its frequent use.

I. Key Provisions of the Karnataka Bill, 2025

The Bill moves beyond traditional public order laws to address modern challenges like digital vitriol and institutional accountability.

- Broad Definition:** Includes any expression (spoken, written, signs, or electronic) intended to cause injury, disharmony, or feelings of enmity.
- Protected Categories:** Grounds include religion, race, caste, community, **gender, sexual orientation**, place of birth, residence, language, disability, or tribe. (Inclusion of sexual orientation is a significant expansion beyond central laws).
- Collective Liability:** If an organization is involved in a hate crime, the persons in charge (leadership) can be held criminally responsible, similar to corporate liability in financial crimes.
- Digital Takedown Powers:** Empowers a designated state officer to direct service providers or social media intermediaries to **block or remove** hateful content.
- Strict Penalties:**
 - First Offence:** Imprisonment from **1 to 7 years** + a fine of **Rs 50,000**.
 - Repetitive Offence:** Imprisonment from **2 to 10 years** + a fine of **Rs 1,00,000**.
- Victim Support:** Mandatory provision for **adequate compensation** to the victims based on the gravity of the injury.

II. Understanding "Hate Speech"

Definition: Per the **267th Law Commission Report (2017)**, hate speech is an expression used to stir hatred against groups based on specific attributes like ethnicity, religion, or sexual orientation.

Current Legal Status in India (BNS 2023)

Since "hate speech" is not a standalone crime in the **Bharatiya Nyaya Sanhita (BNS)**, police rely on:

- **Section 196 (BNS):** Promoting enmity between different groups (Formerly IPC 153A).
- **Section 299 (BNS):** Deliberate acts intended to outrage religious feelings (Formerly IPC 295A).
- **Section 353 (BNS):** Statements inciting public mischief.

III. Key Judicial Pronouncements

The Supreme Court has increasingly pushed for a "hand of iron" against hate speech:

- **Shaheen Abdulla Vs. Union of India (2022):** Directed states to take **suo motu action** (without waiting for a complaint) against hate speech.
- **Tehseen S. Poonawalla Vs. Union of India (2018):** Mandated the appointment of **Nodal Officers** in every district to monitor and prevent mob violence and hate crimes.
- **Shreya Singhal Vs. Union of India (2015):** Struck down **Section 66A of the IT Act** for being "vague" and overbroad, a precedent that critics now use to question the subjective terms in the new Karnataka Bill.

IV. Challenges and Criticisms

While the Bill is hailed as a necessary shield against communalism, it faces significant scrutiny:

1. **Vagueness:** Terms like "disharmony" and "ill-will" are subjective. Critics argue this could lead to **political vendetta** or the silencing of legitimate dissent.
2. **Freedom of Speech:** Concerns that the Bill might violate **Article 19(1)(a)** if not applied with the "clear and present danger" test (linking speech directly to imminent violence).
3. **Digital Censorship:** The power to block content without a judicial warrant is seen by some as a threat to press freedom and digital expression.

V. The Path Forward

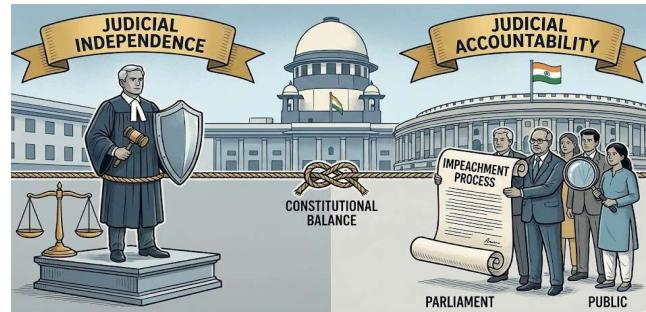
The Karnataka Bill represents a bold experiment in state-level criminal law. For it to be effective without being "draconian," the government must:

- **Ensure Transparency:** Create clear guidelines for what constitutes "incitement."
- **Judicial Oversight:** Ensure that arrests and digital takedowns are subject to quick judicial review.

- **Exemptions:** Maintain the "Public Good" clause for books, academic research, and artistic work as currently provided in the draft.

Conclusion: The **Karnataka Hate Speech Bill, 2025** is a response to the "epidemic of hate" visible in rising communal incidents (82 cases in 2024). While it provides the legal teeth needed for enforcement, the challenge remains in ensuring that the law targets those who spread hate, rather than those who speak truth to power.

Impeachment of High Court Judges & Judicial Accountability



JUDICIAL ACCOUNTABILITY VS. INDEPENDENCE: THE IMPEACHMENT OF JUDGES IN INDIA

Why in News?

- On **December 9, 2025**, MPs from the **INDIA bloc** submitted a formal letter to Lok Sabha Speaker Om Birla to initiate an impeachment motion against **Justice G.R. Swaminathan** of the Madras High Court.
- The notice, signed by over **120 MPs** (including leaders from DMK, Congress, and Samajwadi Party), follows a controversial order regarding the lighting of a lamp near a dargah during the **Thirupparankundram Karthigai Deepam** festival.
- **Allegations:** The opposition accused the judge of deciding cases based on **political ideology**, showing "undue favoritism," and acting against the **secular principles** of the Constitution.
- **Context:** The judge had ordered that a traditional lamp be lit at a specific pillar (*Deepathoon*) near a dargah, which the state government resisted citing law-and-order concerns.

I. The Impeachment Process (Removal of Judges)

While the Constitution uses the word "removal," the process is colloquially called "impeachment." The procedure is identical for both Supreme Court and High Court judges (**Article 218**).

Step-by-Step Procedure

1. **Initiation:** A motion must be signed by at least **100 members** in the Lok Sabha or **50 members** in the Rajya Sabha.
2. **Admission:** The Speaker (LS) or Chairman (RS) has the discretion to **admit or reject** the motion.
3. **Inquiry Committee:** If admitted, a **3-member committee** is formed:
 - A Supreme Court Judge (or the CJI).
 - A Chief Justice of a High Court.
 - An eminent jurist.
4. **The Report:** If the committee finds the judge guilty of **proved misbehaviour or incapacity**, the House takes up the motion for debate.
5. **Special Majority:** The motion must be passed in **each House** by:
 - A majority of the **total membership** of the House.
 - A majority of **not less than two-thirds** of the members present and voting.
6. **Presidential Order:** Once passed by both Houses, the President issues an order for removal.

II. Constitutional & Legal Framework

- **Article 124(4):** Outlines the grounds and voting requirements for removal of SC judges.
- **Article 217:** Deals with the appointment and tenure of HC judges.
- **Article 218:** Extends the removal process of SC judges to High Court judges.
- **Judges (Inquiry) Act, 1968:** Regulates the detailed procedure for investigation and proof of misconduct.

III. The "In-house" Inquiry Procedure (1999)

To address misconduct that does not reach the high threshold of "impeachment," the Supreme Court adopted an internal mechanism.

Category	Composition of Committee
High Court Judge	2 HC Chief Justices + 1 HC Judge.
HC Chief Justice	1 SC Judge + 2 HC Chief Justices.
SC Judge	3 SC Judges.

- **Outcome:** If misconduct is proved, the judge may be advised to resign. If they refuse, the CJI can recommend that the government initiate formal removal proceedings in Parliament.

IV. Historic Context: Why No Success So Far?

Despite several attempts, **no judge has been successfully impeached** in India's history.

- **Justice V. Ramaswami (1993):** The motion failed in the Lok Sabha as the ruling party (Congress) abstained from voting.
- **Justice Soumitra Sen (2011):** Resigned after the Rajya Sabha passed the motion but before the Lok Sabha could vote.
- **Justice P.D. Dinakaran (2011):** Resigned before the inquiry committee could complete its report.
- **Justice J.B. Pardiwala (2015):** The motion was dropped after the judge expunged controversial remarks from his judgment.

V. Challenges and Criticisms

- **Political Nature:** Critics argue that because the motion requires a parliamentary vote, it often turns into a political tool rather than a judicial one.
- **High Threshold:** The requirement for a "Special Majority" in the same session is extremely difficult to achieve.
- **Resignation Loophole:** Judges often resign mid-process to retain post-retirement benefits and avoid the "stigma" of removal.

Conclusion: The move against Justice Swaminathan in 2025 highlights the ongoing tension between judicial orders and political sensitivities. While the impeachment process is a vital check on judicial power, its "rigidity" ensures that it is used only as a last resort to protect the independence of the judiciary from frequent political interference.

Vacancies in National Commission for Minorities (NCM) & Minority Rights



Why in News?

In December 2025, the Ministry of Minority Affairs informed the Rajya Sabha that it has not yet committed to a fixed timeline for filling the long-pending vacancies in the **National Commission for Minorities (NCM)**. This follows a Delhi High Court order (October 15, 2025) which described the issue as "very, very important" and criticized the "systematic incapacitation" of the body.

- **The Crisis:** The NCM has been entirely headless since April 22, 2025, when the last Chairperson demitted office.
- **Current Status:** All seven key posts—Chairperson, Vice-Chairperson, and five Members—remain vacant as of late 2025, rendering the statutory body largely defunct.

I. What is the National Commission for Minorities (NCM)?

The NCM is a **statutory body** established to protect the rights of India's notified minority communities.

Historical Background & Composition

- **Origin:** Initially set up as the "Minorities Commission" in **1978**. It became a statutory body under the **NCM Act, 1992**, and the first statutory Commission was formed in **1993**.
- **Structure:** Consists of a **Chairperson**, a **Vice-Chairperson**, and **five Members**.
- **Selection:** All members are **selected by the Central Government** for a term of **3 years**.
- **Requirement:** At least five members, including the Chairperson, must belong to the **notified minority communities**.

II. Minorities in India: Population & Safeguards

India does not have a single constitutional definition of 'minority', but the Central Government notifies specific communities under Section 2(c) of the NCM Act.

Notified Communities (Based on 2011 Census)

Currently, **six religious communities** are notified as minorities:

Community	Population (approx. 2011)	% of Total Population
Muslims	17.22 Crore	14.2%
Christians	2.78 Crore	2.3%
Sikhs	2.08 Crore	1.7%
Buddhists	0.84 Crore	0.7%
Jains (notified 2014)	0.45 Crore	0.4%
Parsis (Zoroastrians)	57,264	<0.1%

Constitutional Safeguards

- **Article 29:** Right to conserve distinct language, script, or culture.
- **Article 30:** Right of minorities (religious and linguistic) to establish and administer educational institutions.
- **Article 350-B:** Provides for a **Special Officer for Linguistic Minorities**, appointed by the President.
- **Article 15 & 16:** Prohibition of discrimination and equality of opportunity in public employment.

III. Major Challenges Faced by the NCM

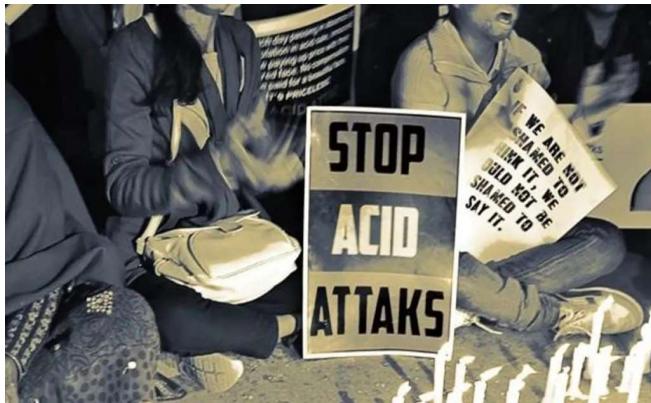
1. **Chronic Vacancies:** As seen in 2025, the government's failure to appoint members has led to a "**headless commission**", causing a backlog of thousands of complaints.
2. **Lack of Constitutional Status:** Unlike the NCSC (Scheduled Castes) or NCST (Scheduled Tribes), the NCM is only a **statutory body**, making its recommendations **non-binding** on the government.
3. **Advisory Nature:** The NCM can investigate and recommend, but it lacks the power to **penalize** or enforce its decisions.
4. **Selection Transparency:** There are no open, rule-based criteria for appointments; they are often seen as "political placements," which can compromise the commission's independence.

IV. Measures to Strengthen the NCM

- **Grant Constitutional Status:** Upgrading the NCM through a Constitutional Amendment would give it more weight and autonomy, similar to the **National Commission for Backward Classes (NCBC)**.
- **Timely Appointments:** Establishing a mandatory timeline (e.g., within 3 months of a vacancy) to ensure the body never remains defunct.
- **Binding Recommendations:** Amending the 1992 Act to ensure the government must provide a formal, time-bound explanation if it rejects a commission recommendation.
- **Sub-state Recognition:** Implementing the Supreme Court's suggestions to identify minorities at the **State level** where certain communities may be numerically small (e.g., Hindus in Punjab or Kashmir).

Conclusion: A functional NCM is vital for India's secular and pluralistic fabric. The current 2025 crisis of total vacancy not only stalls the redressal of grievances for **20% of India's population** but also risks international scrutiny over India's commitment to minority protection.

Justice for Acid Attack Survivors & Implementation of SC Directives



Why in News?

- In the landmark **Shaheen Malik v. Union of India case (2025)**, the **Supreme Court (SC)** expressed deep shock over the **16-year delay** in the trial of an acid attack survivor from 2009.
- The Bench, led by the Chief Justice of India, termed the delay a "**mockery of the system**" and a "**national shame**."
- The Court has now decided to examine why its key directives from the **Laxmi v. Union of India (2015)** case remain largely unimplemented.
- It has ordered all High Courts to furnish data on pending acid attack trials and proposed the establishment of **Special Courts** for day-to-day hearings to ensure swift justice.

I. The 2015 Laxmi Verdict: Key Directives

The 2015 judgment was intended to create a protective and rehabilitative shield for survivors. Its failure on the ground is the primary focus of the 2025 hearing.

1. Victim Compensation

- Minimum Amount:** Mandated a minimum of **Rs 3 lakh** per survivor.
- Timeline:** **Rs 1 lakh** must be paid within **15 days** for immediate surgery, and the remaining **Rs 2 lakh** within **2 months**.
- Publicity:** State Legal Services Authorities (SLSA) must widely publicize these schemes.

2. Regulation of Acid Sales

- Restrictions:** Over-the-counter sales are prohibited. Sellers must maintain a **logbook** with the buyer's ID, address, and purpose of purchase.
- Age Limit:** Sales to anyone **under 18** are strictly banned.
- Penalty:** Non-declaration of stock to the Sub-Divisional Magistrate (SDM) attracts a fine of up to **Rs 50,000**.

3. Free Medical Treatment

- Mandatory Care:** Both **public and private hospitals** are legally bound to provide 100% free treatment, including medicines, bedding, and reconstructive surgeries.
- Liability:** Denying treatment to a survivor is a punishable offense under **Section 357C of the CrPC**.

II. Key Barriers to Justice (2025 Observations)

- Judicial Backlog:** Approximately **88% of acid attack cases** remain pending in Indian courts. Shaheen Malik's case, pending since 2009, epitomizes this systemic failure.
- Compensation Gap:** Many survivors receive only **Rs 1 lakh**, with states like Uttar Pradesh and Maharashtra reporting significant delays in disbursing the full amount.
- Weak Regulation:** Acid remains easily accessible for domestic use (as cleaning agents), often bypassing the mandatory ID and logbook requirements.
- Internal Injuries:** The SC highlighted a "new form of brutality" where victims are **forced to ingest acid**, causing internal organ damage that is not currently covered under standard disability categories.

III. Evolving Legal Framework

Statute	Key Provision
Section 326A (BNS/IPC)	Minimum 10 years to Life Imprisonment for causing grievous hurt using acid.
Section 326B (BNS/IPC)	Minimum 5 to 7 years for attempting to throw acid.
RPwD Act, 2016	Acid attack survivors are recognized as having a " specified disability ," but the 2025 case seeks better categorization for internal injuries.

IV. Proposed Interventions for a Robust Ecosystem

The Supreme Court and activists like Shaheen Malik (founder of *Brave Souls Foundation*) have proposed:

1. **Specialized Burn Centers:** A national network of clinics specifically for long-term reconstructive and plastic surgeries.
2. **Digital Tracking:** Implementing **GST-based tracking** for industrial and retail acid sales to monitor the supply chain.
3. **Rehabilitation Cess:** A proposal to levy a cess on acid manufacturers to fund a **National Survivor Support Fund**.
4. **Socio-Economic Quotas:** Providing survivors with government job quotas and interest-free loans for self-employment.
5. **Sensitization:** Training police and judicial officers to prevent **re-victimization** during investigation and trial.

Conclusion: The Shaheen Malik case of 2025 serves as a "Wake-Up Call." While India has stringent laws on paper, the lack of ground-level implementation turns a survivor's life into a perpetual struggle. True justice requires moving from "symbolic compensation" to a **holistic rehabilitation ecosystem** that restores dignity and economic independence.

Supreme Court Ruling on Forced Narco Tests (Amlesh Kumar Case)



Why in News?

- In December 2025, the Supreme Court of India delivered a landmark judgment in **Amlesh Kumar v. State of Bihar**, declaring that any forced or involuntary narco-analysis test is **unconstitutional**.
- The apex court set aside a 2025 order by the **Patna High Court** that had allowed the police to conduct such tests on all accused persons and witnesses during a bail hearing for a dowry-related kidnapping case.
- The ruling serves as a stern reminder to the lower judiciary that investigative convenience cannot override the fundamental rights of an individual.

I. What is a Narco Test?

Mechanism: A narco-analysis test involves the administration of a "truth serum"—typically **Sodium Pentothal** (a barbiturate). This drug induces a hypnotic, semi-conscious state where the subject's mental inhibitions are lowered, making them more likely to divulge concealed information.

- **Scientific Accuracy:** It is not 100% accurate; some subjects can still provide false information even under the drug's influence.
- **Non-Violent but Intrusive:** While classified as a non-violent investigative tool (like polygraph and brain mapping), it is considered "mental violence" when conducted without consent as it intrudes upon cognitive autonomy.

II. Constitutional Protections Reaffirmed

The Supreme Court linked the protection against forced narco tests to the **Golden Triangle** of the Constitution (**Articles 14, 19, and 21**).

- **Article 20(3) (Self-Incrimination):** The Court held that a forced narco test produces "compelled testimony." Forcing a person to speak in a drug-induced state violates their right to remain silent and not be a witness against themselves.
- **Article 21 (Right to Privacy & Liberty):** Every individual has a right to "cognitive freedom" and mental privacy. Involuntary testing breaches bodily and mental integrity.
- **Due Process:** The Court emphasized that any investigative procedure must be **fair, just, and reasonable** (Maneka Gandhi case principle).

III. Key Judicial Principles and Guidelines

Precedent	Judicial Ruling
<i>Selvi Vs. State of Karnataka (2010)</i>	The foundational case that first prohibited involuntary narco, polygraph, and brain-mapping tests.
<i>Amlesh Kumar Vs. State of Bihar (2025)</i>	Struck down the High Court's attempt to use narco tests as a condition during bail hearings .
<i>Vinobhai Vs. State of Kerala (2025)</i>	Reaffirmed that narco reports cannot form the sole basis of conviction ; they lack independent evidentiary value.

IV. Voluntary Testing and BNSS, 2023

While forced tests are banned, the law allows for **voluntary participation** with strict safeguards:

- **Section 253 of BNSS:** An accused may voluntarily request a narco test at the **defence stage** of a trial to prove innocence.
- **No Absolute Right:** Even if a person volunteers, they do not have an "indefeasible right" to demand the test. The trial court must assess if the consent is truly free and if the test is necessary for justice.
- **Magisterial Oversight:** Consent must be recorded before a **Judicial Magistrate**, and the accused must have access to a lawyer during the process.

V. Evidentiary Value of Narco Tests

Under Indian law, the results of a narco test (even if voluntary) are **not admissible as substantive evidence**.

- **Limited Admissibility:** Only specific information or physical facts "discovered" as a result of the test can be used in court under **Section 27 of the Evidence Act** (now part of **Bharatiya Sakshya Adhiniyam, 2023**).
- **Example:** If an accused reveals the location of a hidden weapon during the test, the *recovery of the weapon* is evidence, but the *statement made during the test* is not.

PC&PNDT Act in the Digital Age : Challenges of Online Sex Selection



Why in News?

- In **December 2025**, a series of investigations and reports highlighted a disturbing "Digital Shift" in India's illegal sex-selection market.
- While traditional clinics remain under the scanner of the **PC&PNDT Act, 1994**, the practice has migrated to social media and encrypted apps.
- Influencers and self-styled "medical experts" are increasingly circumventing the law by promoting unscientific gender-prediction myths, rituals, and "medicines" to millions of

followers, creating a new, anonymous threat to India's **Sex Ratio at Birth (SRB)**.

- **Key Trend:** In **October 2025**, fresh crackdowns in **Karnataka, Haryana, and Delhi** exposed cross-border rackets using portable machines and online referrals.
- **Judicial Focus:** The **Supreme Court (SC)** and the **National Commission for Women (NCW)** have called for urgent reforms in cyber laws to address the indirect promotion of son preference online.

I. Understanding the PC&PNDT Act, 1994

The **Pre-Conception and Pre-Natal Diagnostic Techniques (PC&PNDT) Act** was enacted to stop female foeticide and stabilize the declining child sex ratio.

Key Provisions

- **Prohibition of Sex Selection:** Section 3A bans any procedure (pre- or post-conception) aimed at determining or selecting the sex of a fetus.
- **Mandatory Registration:** Every genetic center, lab, or clinic using ultrasound/imaging technology must be registered.
- **Strict Advertisement Ban:** Section 22 prohibits any form of advertisement (print, electronic, or **internet**) regarding sex determination.
- **Penalties:** Offences are **cognizable, non-bailable, and non-compoundable**. Convictions carry 3–5 years of imprisonment and fines up to **Rs 100,000**.

II. The "Digital Twist": Modern Challenges

The 2025 review identifies several technological gaps:

1. **Influencer Ecosystem:** Content creators use "vague language" to bypass keyword filters, sharing home remedies or "scientific-sounding" myths for gender prediction that normalize son preference.
2. **Encrypted Messaging:** Illegal services move through WhatsApp and Telegram groups, making it difficult for law enforcement to trace the origin of the rackets.
3. **Portable Technology:** Compact, battery-operated ultrasound machines and **Non-Invasive Prenatal Testing (NIPT)** kits are being used in homes or moving vehicles, outpacing traditional regulatory inspections.

4. **Jurisdictional Issues:** Influencers may host content from servers outside India, complicating the enforcement of the **Section 22** advertisement ban.

III. Son Meta-Preference and "Missing Females"

India faces a dual challenge: the direct elimination of female fetuses and the "subtle" neglect of unwanted girls.

- **Son Meta-Preference:** This refers to the "Fertility Stopping Rule," where parents continue to have children until a son is born. This results in millions of "**unwanted**" girls (estimated at **21 million**) who often face neglect in nutrition and education.
- **Missing Females (Amartya Sen's Concept):** In 2025, the estimated number of missing women in India reached nearly **63 million**.
- **Sex Ratio at Birth (SRB) 2025 Data:**
 - **SRB (SRS 2023):** 917 females per 1,000 males (up from 904 in 2019).
 - **Natural Ratio:** 952 females per 1,000 males (Highlighting that India is still far from the biological norm).

IV. Reasons for Lax Implementation

- **Low Conviction Rates:** Only **617 convictions** have been recorded in 25 years.
- **Regulatory Asymmetry:** Enforcement often focuses on "procedural lapses" (like clerical errors in Form F) of registered doctors, while unlicensed illegal networks thrive in the shadows.
- **Collusion:** Since both the "demande" (parents) and "provider" (unscrupulous clinics) benefit from the secrecy, reporting is extremely rare.

V. The Way Forward: PROSPER Strategy

To combat the digital and social roots of this issue, the 2025 review suggests a **PROSPER** strategy:

- **P – Platform Accountability:** Legally requiring tech giants (Meta, Google) to **auto-block** and remove sex-selection content within **24 hours**.
- **R – Real-time Tracking:** Mandating online submission of **Form F** and linking it with the **Birth Registration System**.
- **O – Outreach 2.0:** Shifting from old-school posters to **behavioral nudges** through local health influencers who value the girl child.

- **S – Swift Justice:** Establishing **Fast-Track Courts** specifically for PC&PNDT cases to ensure high-visibility deterrence.
- **P – Parental Liability:** Rebalancing enforcement to include accountability for families who drive the demand.
- **E – Economic Empowerment:** Linking girl-child outcomes to property rights and school-to-skilling pipelines.
- **R – Rural Surveillance:** Using "Decoy Operations" and time-bound monthly inspections at the district level.

Rejection of Mercy Petition & Capital Punishment in India



Why in News?

In December 2025, the **President of India**, Droupadi Murmu, rejected the mercy petition of **Ravi Ashok Ghumare**, a convict found guilty of the kidnapping, rape, and murder of a two-year-old girl in **Jalna, Maharashtra**, in 2012.

- **The Case:** The incident occurred in March 2012 when Ghumare lured the toddler with a chocolate before committing the brutal crime.
- **The Verdict:** The Supreme Court affirmed the death sentence in **October 2019**, describing the act as a "monstrous burial of dignity."
- **Significance:** This marks the third mercy petition rejected by President Murmu since assuming office, reinforcing the executive's

stance on "rarest of rare" heinous crimes against children.

I. What is a Mercy Petition?

A Mercy Petition is the final constitutional "safety valve" available to a convict after exhausting all judicial remedies (Trial Court, High Court, and Supreme Court).

Constitutional Basis

- **Article 72 (President):** Grants power to pardon, commute, remit, or suspend sentences. This includes cases of **Court Martial** and death sentences.
- **Article 161 (Governor):** Grants similar powers to State Governors. However, a Governor **cannot** pardon a death sentence; they can only suspend, remit, or commute it.

Types of Clemency

Term	Meaning
Pardon	Completely absolves the convict of the crime and the penalty.
Commutation	Substituting a harsher punishment with a lighter one (e.g., Death to Life Imprisonment).
Remission	Reducing the duration of the sentence without changing its character (e.g., 10 years to 7 years).
Respite	Awarding a lesser sentence due to special facts (e.g., pregnancy or physical disability).
Reprieve	A temporary stay on the execution of a sentence (usually to allow time for a mercy plea).

II. New Framework under BNSS, 2023

The **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**, which replaced the CrPC, introduced a highly structured and time-bound process for mercy petitions to prevent "unending delays."

- **Strict Timelines:** Convicts must file the petition within **30 days** of being informed about the dismissal of their final judicial appeal.
- **Role of the Centre:** Upon receiving a petition, the Central Government must seek comments from the State and make its recommendation to the President within **60 days**.
- **Multiple Convicts:** If there are multiple co-accused in a case, they must all file petitions within **60 days** of each other. The President decides all such petitions together to ensure consistency.
- **Non-Justiciability:** Section 472(7) of the BNSS states that the President's decision is **final**

and cannot be questioned in any court regarding its "merit."

III. Judicial Oversight & Limitations

While the executive has broad powers, the Judiciary remains a watchdog to ensure the process isn't arbitrary.

- **Aid and Advice:** Per the **Maru Ram Case (1981)**, the President does not act on personal discretion but on the binding advice of the **Council of Ministers**.
- **Limited Judicial Review:** Per the **Kehar Singh Case (1988)**, courts cannot examine the *merits* of the President's decision but can review it if the decision was made without considering relevant material, was *mala fide* (bad faith), or was based on irrelevant grounds.
- **Undue Delay:** Per **Shatrughan Chauhan v. Union of India (2014)**, an inordinate, unexplained delay by the President in deciding a mercy petition can be a ground for the Supreme Court to commute a death sentence to life imprisonment.

IV. Philosophical Rationale

Pardoning power is based on the philosophy that "**Humanity is higher than Law.**"

1. **Correcting Fallibility:** It serves as a check against possible judicial errors or "miscarriages of justice."
2. **Public Trust:** It allows the state to show mercy in cases where rehabilitation is evident or where execution would cause public unrest.
3. **Humanitarian Grounds:** It accounts for the age, health, or mental state of the convict that the strict letter of the law might ignore.

Full Constitution of the Central Information Commission (2025)



Why in News?

In December 2025, President Droupadi Murmu appointed **Raj Kumar Goyal** as the **Chief Information Commissioner (CIC)**. Alongside him, **8 new Information Commissioners (ICs)** were sworn in, marking a historic milestone: for the **first time in 9 years**, the Central Information Commission is functioning at its **full sanctioned strength** (1 CIC and 10 ICs).

- **The Vacancy:** The post had been vacant since **September 13, 2025**, after the previous CIC, Heeralal Samariya, demitted office.
- **The New Team:** The new ICs include notable figures like **Jaya Varma Sinha** (former Railway Board Chief), **Swagat Das** (former IPS), and senior journalists **P.R. Ramesh** and **Ashutosh Chaturvedi**.
- **Selection Panel:** The appointments were recommended by a committee comprising **PM Narendra Modi**, Home Minister **Amit Shah**, and Leader of Opposition **Rahul Gandhi** (who notably recorded a dissent note regarding the selection criteria).

I. Central Information Commission (CIC):

Institutional Profile

The CIC is the highest appellate authority under the **RTI Act, 2005**, acting as the "watchdog" of transparency in India.

- **Status:** A **statutory body** (not constitutional) established under **Section 12** of the RTI Act.
- **Composition:** One Chief Information Commissioner and up to **10 Information Commissioners**.
- **Appointment:** By the President on the recommendation of a three-member committee (PM, LoP in Lok Sabha, and a Union Cabinet Minister).
- **Quasi-Judicial Powers:** It has the powers of a **Civil Court**, including summoning officials and inspecting any public record without restriction.

II. Key Provisions & 2019 Amendments

The legal landscape of the CIC changed significantly following the **RTI (Amendment) Act, 2019**.

Feature	Original RTI Act (2005)	After 2019 Amendment
Tenure	Fixed at 5 years or 65 years of age.	Prescribed by the Centre (currently 3 years).
Salary/Status	Equivalent to CEC/Election Commissioners.	Prescribed by the Central Government.
Independence	Protected through fixed statutory terms.	Concerns over "administrative dependence" on the executive.

III. Challenges & Concerns (2025 Perspective)

Despite being at full strength, the Commission faces several structural hurdles:

- **Massive Backlog:** As of late 2025, approximately **22,000 to 25,000 cases** are pending, leading to significant delays in justice.
- **Low Penalty Enforcement:** Penalties are imposed in only about **2.2%** of cases where they are applicable, reducing the deterrent effect for non-compliant officers.
- **Selection Transparency:** Critics argue that the dominance of **retired bureaucrats** in the commission (9 out of 11 in the 2025 batch) limits diverse perspectives from civil society or law.
- **Technical Barriers:** Frequent use of "Exemption Clauses" (Section 8) related to **privacy or national security** often results in the denial of information.

IV. Strengthening the Transparency Framework

To make the 2025 full constitution meaningful, several reforms are recommended:

1. **Digital Judiciary:** Universalizing video-conferencing for hearings to assist appellants from remote areas.
2. **Section 4 Compliance:** Enforcing "**Proactive Disclosure**" by departments so that citizens don't need to file RTIs for basic data.
3. **Automatic Penalties:** Implementing a system where delays beyond 30 days trigger automatic show-cause notices to Public Information Officers (PIOs).
4. **Specialized Benches:** Creating sectoral benches (e.g., Banking, Environment, Defense) to handle complex, domain-specific appeals.

Conclusion: The appointment of Raj Kumar Goyal and a full team of commissioners in December 2025 is a vital "re-boot" for the RTI regime. However, filling seats is only the first step; the true test lies in reducing the 22,000-case backlog and reclaiming the Commission's independence in the eyes of the public.

Reforming State Public Service Commissions (SPSCs)



Why in News?

In December 2025, the Vice-President of India, Shri C. P. Radhakrishnan, addressed the **25th National Conference of Chairpersons of State Public Service Commissions (SPSCs)** in Hyderabad. He highlighted that while SPSCs are the "constitutional watchdogs of merit," they are currently facing a severe **crisis of credibility** due to paper leaks, political interference, and prolonged recruitment delays.

- The Call for Reform:** The Vice-President urged state governments to ensure that appointments to these commissions are not driven by "patronage or favoritism" but by proven integrity.
- Zero Tolerance:** He advocated for a "zero-tolerance policy" toward malpractices, noting that even isolated irregularities can destroy the dreams of millions of young aspirants.

I. State Public Service Commission (SPSC): Constitutional Framework

The SPSC is an independent **constitutional body** established under **Articles 315–323 (Part XIV)** to manage recruitment for state-level civil services.

1. Composition and Appointment

- Appointment:** The **Governor** of the state appoints the Chairman and other members.
- Strength:** The Constitution does not specify the exact number of members; it is left to the **discretion of the Governor**.
- Tenure:** Members serve for **6 years** or until they attain the age of **62 years** (whichever is earlier). In contrast, UPSC members serve until **65 years**.

2. Removal and Resignation

- Removal Power:** Although appointed by the Governor, members can be removed **only by the President of India**.
- Grounds for Removal:** Insolvency, infirmity of mind/body, engaging in paid employment outside duties, or **proven misbehavior**.
- Misbehavior Inquiry:** In cases of misbehavior, a **Supreme Court inquiry** is mandatory, and its advice is **binding** on the President.

II. Key Challenges in 2025

The 2025 conference highlighted several structural and procedural flaws that have led to a "trust deficit":

- The "Spoils System":** Concerns over appointments being used to reward political loyalty rather than administrative excellence.
- Paper Leak Industry:** The Indian Express reported that over **70 recruitment exams** were compromised in the last 7 years, affecting nearly **1.7 crore students**.
- Litigation Loops:** Complexities in calculating vertical, horizontal, and zonal reservations often lead to court stays, stalling recruitment for years.
- Technological Gaps:** Many SPSCs still rely on manual processes for question-setting and evaluation, making them vulnerable to AI-aided cheating and leaks.

III. Comparison: UPSC vs. SPSC

Feature	UPSC	SPSC
Appointment	President	Governor
Removal	President	President (Not Governor)
Age Limit	65 Years	62 Years
Financial Support	Consolidated Fund of India	Consolidated Fund of State
Advisory Role	Recommendations are generally accepted.	Recommendations are often rejected/ignored.

IV. Proposed Reform Measures: The 2025 Roadmap

To restore public trust, the Vice-President and various expert panels suggested the following:

- Collegium System:** Moving away from unilateral appointments by the Governor toward a **collegium** including the Chief Justice of the State High Court and the LoP.

- **SPSCs Secretariat:** Strengthening the administrative wing with senior educationists to ensure exam quality and confidentiality.
- **Recruitment Calendar:** Mandating a **5-year recruitment roadmap** to ensure regular vacancy notifications and predictable exam cycles.
- **Digital Shield:** Adopting **end-to-end encryption** and blockchain-based question distribution to eliminate paper leaks.
- **Symmetry in Evaluation:** Implementing a mix of objective and descriptive papers with technology-assisted translation to avoid "regional bias" or errors.

Conclusion: The **2025 National Conference** underscored that SPSCs are the "permanent executive" backbone of India's states. As India moves toward **Viksit Bharat @ 2047**, the quality of its administrators will be decisive. Transforming SPSCs from "politically osmotic" entities into "islands of excellence" is no longer optional—it is a constitutional necessity.

Suspension of Sentence and Public Servant Definition (Unnao Rape Case)



Why in News?

In late December 2025, the Supreme Court (SC) stayed a controversial order by the **Delhi High Court (HC)** that had suspended the life sentence of former MLA Kuldeep Singh Sengar in the **2017 Unnao rape case**. The stay has reignited a national debate on the **suspension of sentences** for heinous crimes and the precise legal definition of a "**public servant**" under the **POCSO Act, 2012**.

- **SC Order (Dec 29, 2025):** A three-judge bench led by **CJI Surya Kant** stayed the High Court's bail order, observing that an interpretation where a constable is a "public servant" but an MLA is not creates a legal anomaly.

- **Survivor's Response:** The survivor welcomed the stay, expressing faith in the apex court after the High Court's decision had triggered widespread public outrage.

I. The Legal Conflict: Who is a "Public Servant"?

The core of the dispute revolves around whether an elected legislator (MLA) attracts the "aggravated" penalty under **Section 5(c)** of the POCSO Act.

Statutory Basis	Interpretation for MLAs	Key Argument
Section 21 IPC	Excluded	The IPC list includes judges and military officers but does not explicitly mention "MLAs."
Prevention of Corruption Act (1988)	Included	Defines public servant as anyone holding office and performing a public duty.
POCSO Act, 2012	Ambiguous	POCSO imports the IPC definition via Section 2(2), leading the Delhi HC to take a narrow, literal view.

Supreme Court Observation: The SC emphasized a "**purposive interpretation**," noting that child protection laws are intended to penalize the abuse of **dominance and authority**, which a legislator clearly wields.

II. Suspension of Sentence: Exception vs. Norm

Under **Section 430 of the Bharatiya Nyaya Sanhita (BNS) 2023** (formerly Section 389 CrPC), courts have discretionary power to stay a sentence during an appeal.

- **Serious Offences:** For life imprisonment cases, suspension is an **exception**, not a right.
- **The "Palpable Error" Test:** In *Chhotelal Yadav vs. State of Jharkhand* (2025), the SC ruled that life sentences should only be suspended if there is a **gross error** in the trial court judgment that makes acquittal highly likely.
- **Prolonged Incarceration:** While *Kashmira Singh* (1977) allowed bail for long jail terms, the SC noted in 2025 that for heinous crimes, **gravity and manner of commission** outweigh the time served.

III. Key Precedents Highlighted (2025)

- **Bhagwan Rama Shinde Gosai (1999):** Established that **fixed-term** sentences should be suspended liberally to prevent the appeal from becoming infructuous.

- **Shivani Tyagi Case (2024):** Reaffirmed that life imprisonment requires a much higher threshold for bail compared to minor offences.
- **Jamna Lal vs. State of Rajasthan (2025):** Held that trial court findings on a victim's **minor status** cannot be easily unsettled at the suspension stage.

IV. Implications of the 2025 Stay

The SC's intervention prevents the release of a powerful convict who still faces a **10-year sentence** for the custodial death of the victim's father.

- **Legislative Gap:** The case highlights the need for the **POCSO Act** to explicitly define "public servant" to include elected representatives.
- **Victim-Centric Jurisprudence:** The SC directed that the survivor be provided continued **legal aid** and security, prioritizing her safety over the convict's claim to liberty.

Conclusion: The Supreme Court's 2025 stay serves as a vital check on judicial discretion. It clarifies that technical definitions in the IPC cannot be used to grant relief to those convicted of "acts of depravity," reinforcing that special laws like POCSO must be interpreted to protect the vulnerable rather than shield the powerful.

Addressing Systemic Failures in the SC/ST (PoA) Act, 1989



Why in News?

- In December 2025, a series of audit reports and civil society reviews from **Tamil Nadu** exposed deep-seated systemic failures in the implementation of the **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989**.
- Despite a 6% overall dip in cases, heinous crimes like murder and sexual assault against Dalit communities have risen.
- The report highlights that the law is being rendered "toothless" due to procedural

neglect, low conviction rates (~12% in TN vs. 32% nationally), and the disturbing trend of authorities favoring informal "peace meetings" over legal justice.

I. What is the SC/ST (PoA) Act, 1989?

Enacted to give effect to **Article 17** (Abolition of Untouchability), this Act provides a robust framework to prevent atrocities against marginalized communities.

Key Provisions

- **Defined Atrocities:** Lists specific crimes such as forced consumption of obnoxious substances, public humiliation, land grabbing, and sexual exploitation.
- **Special Courts:** Mandates the establishment of **Exclusive Special Courts** in each district for speedy trials.
- **Public Servant Accountability:** Under **Section 4**, non-SC/ST public servants can be punished for "willful neglect of duties" (e.g., refusing to file an FIR).
- **Enhanced Penalties:** Punishments range from 6 months to life imprisonment; subsequent convictions carry even harsher penalties.
- **Relief and Rehabilitation:** Mandates immediate financial relief (**Rs 85,000 to Rs 8.25 lakh**) and long-term support like land and employment.

II. Systemic Implementation Failures

The 2025 reports identify five major bottlenecks:

1. **Procedural Neglect:** FIRs are often delayed, and chargesheets—which must be filed within **60 days**—are frequently held back, weakening the case.
2. **Informal Settlements:** Authorities often bypass the court by organizing "peace committee meetings," which pressure victims into extra-legal compromises.
3. **Low Conviction Rate:** In Tamil Nadu, for every 1,000 cases, only about **114 lead to convictions**, while over **1,000 result in acquittals** due to witnesses turning hostile under pressure.
4. **Apathy of Officials:** Section 4 (neglect of duty) is almost never invoked against police officers, fostering a culture of impunity.

5. **Weak Witness Protection:** Accused individuals often belong to dominant castes and live in the same vicinity as the victims, leading to intimidation that forces victims to withdraw complaints.

III. Impact on Social Justice

The ineffective implementation of the Act has profound socio-political consequences:

- **Erosion of Deterrence:** Premature release of convicts (e.g., the **Melavalavu massacre** case where 16 convicts were freed early for "good conduct") signals that the law is flexible.
- **Psychological Warfare:** The "process becomes the punishment." Victims end up fighting a long, exhausting battle against both the perpetrators and the state bureaucracy.
- **Caste Terror:** Acts like the **Sennagarampatti** murders are designed to terrorize entire communities into silence.
- **Hollow Constitutional Promises:** Without the "teeth" of the PoA Act, the abolition of untouchability remains a distant dream for many.

IV. The Way Forward

To restore the Act's integrity, the following measures are essential:

- **Active Monitoring:** Replacing defunct monitoring committees with high-level teams that track cases from **FIR to Rehabilitation**.
- **Exclusive Judiciary:** Ensuring that **Special Courts** have dedicated judges who are not burdened with other non-SC/ST cases.
- **Mandatory Section 4 Prosecution:** Filing cases against investigating officers who fail to meet the 60-day chargesheet deadline.
- **Social Democracy Manuals:** As recommended by activists, integrating **Social Democracy** education in schools to address the root cause—ingrained caste prejudice.

Conclusion: The PoA Act was designed to be a shield for the most vulnerable. However, when the state prioritizes "social harmony" over "legal justice," it reinforces the very caste hierarchies the Constitution seeks to destroy. True social justice requires not just a strong law, but a strong and unbiased will to enforce it.

EDITORIALS

Crux of The Hindu & Indian Express

Indian Polity & Governance

Omar Cabinet Panel Clears New Plan to Fix J&K Quota Issue



1. Background

- In Jammu & Kashmir, reservation quotas for government jobs and college seats suddenly went up to **70%** after the Centre added new groups under **ST** and **OBC** categories in 2024.
- This left only **30% seats** for the **general/open merit** category.
- Most people in J&K fall under the general category. So this created anger among many young people.
- Opposition parties and even some leaders from Omar Abdullah's own National Conference (NC) protested.

2. Why did quotas jump to 70%?

What changed in 2024?

- Parliament added many new groups to the **Scheduled Tribe (ST)** category.
- ST quota in J&K increased from **10% to 20%**.
- New groups were also added to **OBC**, increasing the OBC quota.
- Together, total reservations rose from **43% → 70%**.

This is why youth felt that open merit seats had become "too few".

3. The protests

- Many young people came out on the streets.
- NC MP **Aga Ruhulla Mehdi** joined the protest—even though his own party was in power.

- Mehdi said he would protest again after Parliament's Winter Session if the government did not review the quota structure.

The pressure on the Omar Abdullah government kept increasing.

4. Government dilemma

The NC government promised earlier that reservations would reflect **population numbers**. But now they were stuck.

Why?

- **ST quotas cannot be reduced**, because they were changed by Parliament.
- Cutting ST seats would break the law.
- Changing quotas for newly included groups could also create backlash.

So the government needed another way to increase open merit seats **without touching ST and SC quotas**.

5. What the Cabinet Sub Committee decided

A Cabinet Sub Committee studied the situation and gave a solution.

The Cabinet has accepted this plan.

What the plan does:

- **SC and ST quotas stay the same. Not touched.**
- More seats/jobs will be taken from **RBA (Residents of Backward Areas)** and **EWS (Economically Weaker Sections)**.
- These seats will be added to **open merit/general category** to bring it back closer to 50%.

Why RBA was chosen?

A senior official explained:

- Most of the population that earlier fell under RBA in J&K is now in **Ladakh** after the 2019 reorganisation.
- So the RBA share inside J&K is much smaller now.
- That means shifting some seats from RBA to open category "makes sense".

6. Why the committee avoided touching ST quota

- Parliament created two new sub-groups: **ST-I** and **ST-II**.
- Many communities were added.
- This change is protected by law.
- State or UT government cannot reduce these percentages.

So the only flexible categories were **RBA** and **EWS**.

7. Expected outcome

- Open merit seats are expected to rise again, possibly close to **50%**.
- Youth anger may reduce.
- The government avoids a direct clash with newly included ST and OBC communities.
- But political debates may continue, because all groups want their share protected.

Academics Protest Against New Bill to Restructure the Indian Statistical Institute (ISI)



1. Why in News?

- More than **1,500 academics** have raised strong objections to a Central government plan to **repeal the Indian Statistical Institute Act, 1959**.
- The government wants to replace it with a **new Bill** that, according to critics, will **reduce the academic autonomy** of the ISI.
- Large demonstrations were held in **Kolkata**, where the ISI headquarters is located.

2. About the Indian Statistical Institute (ISI)

- Founded by P.C. Mahalanobis
- Known globally for excellence in statistics and quantitative research
- Declared an Institution of National Importance
- Offers courses in:
 - Statistics
 - Mathematics
 - Quantitative Economics
 - Computer Science
 - Cryptology & Security
 - Library Science
 - Quality Management
 - Operations Research

ISI has :

- Around 1,200 students
- Multiple centres across India
- A major role in India's leadership in statistical science

3. What Are Academics Protesting Against?

- A written petition was sent to **Rao Inderjit Singh**, Minister of State for Statistics & Programme Implementation.
- They argue that the new Bill

A. Undermines Academic Autonomy

- The **Board of Governors** will get power to **override** the Academic Council.
- Academic Council, currently the key academic authority, may become only an **advisory body**.
- Faculty say this threatens **academic freedom**.

B. Disturbs Federal Structure

- ISI is a national institution with centres across India.
- Petitioners say the Bill **breaks the spirit of cooperative federalism**.
- The Bill allows the headquarters to be **shifted away from Kolkata**, affecting:
 - ISI's historical identity
 - Its link to founder P.C. Mahalanobis
 - The federal balance between centres

C. Commercialisation Concerns

The Bill encourages:

- Higher **student fees**
- Revenue generation
- Commercialisation of research

Petitioners say this will:

- End ISI's tradition of **free education with stipends**
- Reduce **social inclusiveness**
- Harm long-term research focused on **public good** rather than profit

D. Lack of Consultation

- Changes were made **without consulting faculty**.
- No clear explanation was given for why the existing governance model must be replaced.

E. Leadership Appointment Issues

- The Bill gives the **government full control** over appointing the ISI Director.
- This bypasses the current **search-cum-selection system**.
- Critics say this may lead to a **politicised leadership**.

This is particularly worrying because the institute is already undergoing a **leadership transition with no permanent Director**.

4. Protests and Reactions

- Academics organised a **large street march in Kolkata** with nearly 1,000 participants.
- Multiple meetings were held, but they say the government is not responding.
- Prof. Partha Majumder, a senior ISI academic, said:
 - The Bill removes autonomy
 - It introduces an "autocratic regime"
 - The timing is destabilising

5. Government's View

The Ministry says:

- ISI has been reviewed **four times** in past years.
- The latest review (R.A. Mashelkar Committee, 2020) suggested **major reforms** to:
 - Strengthen governance
 - Expand academic programmes
 - Make ISI globally competitive
 - Help ISI "reimagine and reinvent" itself before completing **100 years in 2031**

The Ministry has uploaded the Bill for **public comments**, though academics say changes so far are "cosmetic".

6. What Is the Core Issue?

- At the heart of the debate is a **tension between autonomy and control**.

Academics fear:

- Loss of academic independence
- Commercial pressure
- Centralisation of power
- Weakening of ISI's identity and heritage

Government argues:

- ISI needs restructuring to stay modern and competitive

Conclusion

The proposed Bill to reshape the ISI has triggered a strong pushback from academics who believe the changes threaten the institute's autonomy, legacy, and academic freedom. The debate highlights a larger question for India: **How should national research institutions be governed—by academic bodies or by government-controlled structures?** As the Bill remains open for public comments, the future of ISI's governance continues to be a key issue in India's higher education landscape.

SC Seeks Centre's Reply on Immigration Order in Assam



1. Why is this issue in the news?

- The Supreme Court of India has sought a reply from the Union Government on a petition challenging a recent immigration order related to Assam.
- The order allows persecuted religious minorities from Afghanistan, Pakistan, and Bangladesh to stay in India, including Assam, even if they entered without valid travel documents.
- The benefit applies to those who entered India on or before 31 December 2024.
- The petition argues that this order violates the Assam Accord, 1985 and Section 6A of the Citizenship Act, 1955.

2. Who filed the petition and why is it important?

- The petition has been filed by Asom Gana Parishad (AGP).
- AGP is a regional political party of Assam formed after the Assam Movement.
- It is a signatory to the Assam Accord, making its role legally and politically significant.
- The party aims to protect Assamese demographic, cultural and linguistic identity.
- The petition is argued by Senior Advocate Jayant Bhushan and Advocate Rahul Pratap.

3. Supreme Court bench hearing the case

- The case is being heard by a bench headed by Chief Justice of India Justice Surya Kant.
- The Supreme Court has issued notice to the Union Government.
- The Court will examine the matter in detail after the Centre files its reply.
- **Important fact:** Justice Surya Kant was also part of the Constitution Bench that upheld Section 6A in October 2024.

4. Which law or order is being challenged?

A. *Immigration and Foreigners (Exemption) Order, 2025*

- Issued by the Ministry of Home Affairs (MHA).
- The challenge is focused on Clause 3(l)(e) of this order.

5. What does Clause 3(l)(e) provide?

- Clause 3(l)(e) allows religious minorities to stay in India, including Assam, even if they entered without passport or valid visa.
- The clause applies to the following communities:
 - Hindus
 - Sikhs
 - Buddhists
 - Jains
 - Parsis
 - Christians
- These minorities must have come from:
 - Afghanistan
 - Pakistan
 - Bangladesh
- The entry cut-off date is 31 December 2024.

6. Second law challenged – Immigration and Foreigners Act, 2025

- AGP has also challenged Section 33 of this Act.
- Section 33 gives the Central Government wide powers to:
 - Exempt certain foreigners from immigration laws.
 - Allow them to stay in India for an indefinite period.
- AGP argues that these powers are unrestricted and unchecked, which threatens constitutional balance.

7. What is the Assam Accord (1985)?

Background

- Assam faced large-scale migration, mainly from present-day Bangladesh.
- People feared:
 - Change in population structure.
 - Loss of land and employment.
 - Threat to Assamese language and culture.
- This led to the Assam Movement (1979–1985).

8. Assam Accord – key features

- Signed in **1985**.
- Parties involved:
 - **Government of India**
 - **Government of Assam**
 - **AASU (All Assam Students' Union)**
- Main objectives:
 - **Stop illegal migration.**
 - **Protect Assamese identity.**

Most crucial decision

- **25 March 1971** was fixed as the **final cut-off date**.
- Anyone entering Assam **after this date** was to be:
 - Identified as illegal.
 - Declared a foreigner.
 - Deported.
- The date marks the **start of the Bangladesh Liberation War**.

9. Section 6A of the Citizenship Act, 1955

- Section 6A was added by the **Citizenship Amendment Act, 1985**.
- It was enacted to **implement the Assam Accord legally**.
- **Special nature of Section 6A:**
 - Applies **only to Assam**.
 - Deals only with migration from **Bangladesh**.
 - Recognises Assam's **unique historical context**.

10. How Section 6A classifies immigrants

First category

- Persons who entered Assam **before 1 January 1966**.
- They are treated as **Indian citizens with full rights**.

Second category

- Persons who entered Assam between 1 January 1966 and 25 March 1971.
- They are allowed to stay.
- Citizenship granted after **10 years**.
- No voting rights during the initial 10 years.

Third category

- Persons who entered Assam **on or after 25 March 1971**.
- They are **illegal immigrants**.
- They are **not entitled to citizenship**.
- They must be **detected and deported**.

11. Supreme Court judgment on Section 6A (October 2024)

- A **five-judge Constitution Bench** examined Section 6A.
- The verdict was **4:1 majority**.
- The Court held that **Section 6A is constitutional**.
- It does not violate:
 - **Article 14 (Right to Equality)**
 - **Article 29 (Cultural Rights)**
- The Court stated that the issue lies in **poor enforcement**, not in the law.
- It clearly held that immigrants entering after **25 March 1971 are illegal**.

12. Section 6B and Citizenship Amendment Act, 2019

- **Section 6B** was introduced through **CAA, 2019**.
- Reason given by the government: **religious persecution** in neighbouring countries.

Who is covered under Section 6B?

- Religious minorities:
 - Hindus, Sikhs, Buddhists, Jains, Parsis, Christians.
- Countries:
 - Pakistan, Bangladesh, Afghanistan.

- Entry cut-off date: **31 December 2014**.

13. Why is this controversial in Assam?

- **Section 6A cut-off:** 25 March 1971.
- **Section 6B cut-off:** 31 December 2014.
- Both deal with immigration in Assam, but with **different dates**.
- Assam groups argue that **Section 6A must prevail in Assam**.

14. Key arguments raised by AGP

- Extension of cut-off date destroys the **purpose of the Assam Accord**.
- Clause 3(l)(e) makes the **1971 cut-off meaningless**.
- The 2025 order conflicts with **Section 6A upheld by Supreme Court**.
- Section 33 allows the Centre to legalise illegal immigrants.
- This violates **federalism** and **constitutional limits**.

15. Constitutional issues involved

- **Federalism:** Dilution of a Centre–State agreement.

- **Separation of powers:** Executive order overriding parliamentary law.

16. Current status of the case

- The Supreme Court has **issued notice** to the Centre.
- The case will be heard in detail later.
- It may be heard along with **CAA-related matters**.

Goa Nightclub Fire (2025): Interpol Issues Blue Corner Notice



What happened?

- A major fire broke out at a nightclub called "**Birch by Romeo Lane**" in Arpora, Goa.
- This happened in the early hours of 7 Dec.
- **25 people died** in the accident.
- It became one of the worst fire tragedies in Goa.
- The nightclub is owned by two brothers:
 - **Gaurav Luthra**
 - **Saurabh Luthra**
- Both of them went missing after the incident.
- Because of this, the Goa Police asked Interpol to help track them.

Why is the Interpol notice big news?

- Interpol normally takes a week or more to issue such notices.
- But in this case, the notice was issued **within 48 hours**.
- This shows that central agencies and Goa Police worked very fast due to the seriousness of the tragedy.
- The notice will help police:
 - find the owners
 - know their movement
 - stop them from leaving their current location
- Local authorities also **partially demolished** the Romeo Lane outlet in Vagator, saying there were violations.

A government panel is now checking:

- how the fire started
- what safety lapses happened
- who is responsible

What is a Blue Corner Notice?



Interpol issues different types of notices to help police forces around the world.

A **Blue Corner Notice** is used when:

- police want **information** about a person
- they want to know **where the person is**
- they want to track the **person's activities**
- the person is **connected to an investigation**, but not necessarily proven guilty yet
- So, a Blue Notice does **not** mean arrest. It means: "Help us find this person and share any information about them."

Other Interpol Notices

Notice Colour	Purpose	What It Is Used For	Examples
● Red Notice	Most serious notice	To find and arrest a person wanted for a crime	Fugitive who escaped to another country
● Yellow Notice	To find missing people	Helps trace missing persons or identify people who cannot say who they are	Missing children, lost adults
● Black Notice	For unidentified dead bodies	Helps countries share details to identify the body	If a body is found with no identity
● Green Notice	Warning notice	Alerts countries about a criminal who may be dangerous	A person with past violent behaviour
● Orange Notice	Danger warning	Warns about things or people that may be unsafe	Explosives, weapons, dangerous persons
● Purple Notice	Criminal technique notice	Shares information on how criminals commit crimes	Methods of hiding weapons, new tools used in crime
○ Silver Notice (pilot project)	Tracks criminal assets	Helps identify and follow money or property linked to crime	Vehicles, bank accounts, stolen property

Why is the Blue Notice important in this case?

- Because the nightclub owners went missing right after the fire tragedy.
- Police need to know:
 - Where they went
 - Whether they travelled abroad
 - Whether they are trying to escape responsibility

The Blue Notice alerts **all Interpol member countries**, so immigration and police in any country can immediately share information if the owners are found.

President Murmu Releases Constitution of India in Santhali Language



1. Why In News :

- Droupadi Murmu released the **Constitution of India in the Santhali language**.
- The event was held on **December 25, 2025**, at **Rashtrapati Bhavan**, New Delhi.
- The Constitution has been published in **Santhali language using the Ol Chiki script**.

2. Key Statements by the President

- The President said this is a **moment of pride and happiness** for the Santhali-speaking people.
- She said the translated Constitution will help people **read and understand the Constitution in their own language**.
- This step will strengthen **inclusion, awareness, and constitutional values** among tribal communities.

3. Role of Union Government

- The President appreciated **Arjun Ram Meghwal**, Union Minister of Law and Justice.
- She also praised his team for publishing the Constitution in **Ol Chiki script**.
- The release was done during the **centenary year related celebrations of the Constitution**.

4. Dignitaries Present

- Vice President **C. P. Radhakrishnan** was present at the function.
- Senior officials and other dignitaries also attended the event.

About the Santhali Language

1. Constitutional Status

- Santhali was included in the **Eighth Schedule of the Constitution**.
- This was done through the **92nd Constitutional Amendment Act, 2003**.

2. Geographical Spread

- Santhali is spoken mainly in **Jharkhand, Odisha, West Bengal, and Bihar**.
- It is also spoken in **Nepal and Bangladesh**.
- In India, around **7 million people** speak Santhali.

3. Community Association

- The language is primarily used by the **Santhal tribal community**.
- It plays an important role in preserving **tribal culture, traditions, and identity**.

4. Language Family

- Santhali belongs to the **Munda branch of the Austroasiatic language family**.
- This language family is **very ancient** and spread across South and Southeast Asia.
- Santhali is different from the **Indo-European languages** spoken in most parts of India.
- It is closely related to **Ho, Mundari, and Korku** languages.

5. Linguistic Features

- Santhali is an **agglutinative language**, where words are formed by joining smaller units.
- It also uses **tones**, which affect meaning.
- The language has a **rich oral tradition**, including folk songs, stories, and rituals.

6. Ol Chiki Script

- Santhali is written in the **Ol Chiki script**.
- The script was developed in **1925** by **Raghunath Murmu**, a Santhali scholar and writer.
- Ol Chiki is unique and specially designed to suit the **sounds and structure of Santhali**.

Significance (Why This Matters)

- Promotes **linguistic diversity and inclusion**.
- Helps tribal communities connect better with **constitutional rights and duties**.
- Strengthens the idea of **constitutional democracy at the grassroots level**.





World AIDS Day 2025 & India's National AIDS Control Programme (NACP)

Core Goals of NACP-V (2021-26)

GOAL

- 01** Reduce annual new HIV infections by 80% (from 2010 baseline)
- 02** Reduce AIDS-related mortalities by 80% (from 2010 baseline)
- 03** Eliminate vertical transmission of HIV and syphilis (mother-to-child)
- 04** Promote universal access to Quality STI/RTI services for at-risk and vulnerable populations
- 05** Eliminate HIV/AIDS-related stigma and discrimination

In operational targets, this includes aiming for 95-95-95 coverage: 95% of people at risk prevention, 95% of HIV-positive know their status, 95% of those are on treatment, 95% of those achieve viral suppression.

Also, for pregnant and breastfeeding women living with HIV—ensuring suppressed viral to enable elimination of vertical transmission.

Source : National AIDS and STD Control Programme Phase-V (2021-26) Booklet

Why in News?

- The Ministry of Health and Family Welfare observed **World AIDS Day 2025** (December 1) under the theme "**Overcoming disruption, transforming the AIDS response.**"
- Union Health Minister Shri J.P. Nadda highlighted India's progress in significantly reducing new infections and mortality rates compared to global averages.

I. Understanding HIV/AIDS

- HIV (Human Immunodeficiency Virus):** A virus that attacks **CD4 cells** (white blood cells), weakening the immune system.
- AIDS (Acquired Immunodeficiency Syndrome):** The advanced and final stage of HIV infection where the body can no longer fight off **opportunistic infections** (e.g., TB, fungal meningitis).
- Transmission:** Direct contact with infected bodily fluids—blood, semen, vaginal fluids, and breast milk. It is **not** spread via casual contact like hugging or sharing food.
- Treatment:** No cure exists, but **Antiretroviral Therapy (ART)** allows people to live long,

healthy lives and prevents transmission (U=U: Undetectable = Untransmittable).

II. India's National AIDS Control Programme (NACP)

Managed by the **National AIDS Control Organisation (NACO)**, the programme has evolved through five distinct phases since **1992**.

Phases of NACP

Phase	Duration	Focus
NACP I	1992–1999	Launching the national response; slowing the spread.
NACP II	1999–2006	Strengthening long-term national capacity.
NACP III	2007–2012	Scaling up prevention; establishing DAPCUs (District Units).
NACP IV	2012–2021	50% reduction goal in new infections; Mission Sampark launched.
NACP V	2021–2026	Central Sector Scheme aiming to end AIDS by 2030 (SDG 3.3).

III. Key Achievements (2010–2024)

India has outperformed many global averages in epidemic control:

- New Infections:** Declined by **48.7%** (from 1.25 lakh in 2010 to ~64,000 in 2024).
- AIDS-Related Deaths:** Declined by **81.4%** (compared to the global decline of 54%).
- Prevalence:** National adult HIV prevalence stands at **0.20%** (2024), well below the global average of 0.70%.
- Vertical Transmission:** Mother-to-child transmission has dropped by **74.6%**.
- Burden:** 74% of India's **25.61 lakh PLHIV** (People Living with HIV) are concentrated in nine states, including Maharashtra, Andhra Pradesh, and Karnataka.

IV. Major Policies and Initiatives

- HIV/AIDS (Prevention and Control) Act, 2017:** A landmark law prohibiting discrimination in employment, healthcare, and education; mandates informed consent and confidentiality.
- Mission Sampark:** Dedicated to tracing and re-engaging PLHIV who are "lost to follow-up" back into ART.
- Test and Treat Policy:** Mandatory initiation of ART immediately upon diagnosis, regardless of CD4 count.
- 95-95-95 Targets (by 2030): 1. 95% of PLHIV know their status. 2. 95% of those diagnosed

are on ART. 3. 95% of those on ART achieve viral suppression.

V. The Path Ahead: NACP Phase V

- Funding:** Outlay of over **Rs 15,000 crore**.
- Testing Expansion:** Aiming to conduct **27 crore HIV tests** over five years.
- Elimination of Vertical Transmission:** Focus on dual elimination of both HIV and Syphilis from mother to child.
- Stigma Reduction:** Appointment of **Ombudsmen** in 34 States/UTs to address complaints of discrimination.

Samagra Shiksha Scheme & Compliance with NEP 2020



Why in News?

- In December 2025, the Union Ministry of Education clarified that states must fulfill all scheme conditions to receive pending **Samagra Shiksha** funds.
- This includes submitting **Utilisation Certificates (UCs)**, audit reports, and specifically, demonstrating compliance with the **National Education Policy (NEP) 2020**.
- States like **Tamil Nadu, Kerala, and West Bengal** have faced delays in central share releases due to non-compliance with certain guidelines, such as the implementation of the **PM SHRI** school scheme or linguistic disagreements over NEP.

I. Understanding Samagra Shiksha

Definition: An overarching, integrated programme for the school education sector extending from **pre-school to Class 12**.

- Unified Framework:** Subsumes three earlier Centrally Sponsored Schemes:
 - Sarva Shiksha Abhiyan (SSA)** – Elementary Education.
 - Rashtriya Madhyamik Shiksha Abhiyan (RMSA)** – Secondary Education.

3. **Teacher Education (TE)** – Strengthening Teacher Training Institutes (DIETs/SCERTs).

- Implementation:** Executed as a **Centrally Sponsored Scheme (CSS)** through a single State Implementation Society (SIS) at the State/UT level.
- Duration:** The scheme has been extended for a five-year period from **2021-22 to 2025-26**.

II. Funding Pattern & Compliance

The release of funds is conditional upon strict administrative and policy adherence:

Region / Category	Central Share	State Share	Compliance Requirements
NE & Himalayan States	90%	10%	Utilisation Certificates (UCs)
Other States (with Legislature)	60%	40%	Audit & Progress Reports
UTs (without Legislature)	100%	0%	NEP 2020 Compliance

Key Compliance Issues (2025)

- NEP 2020 Alignment:** States must adopt the **5+3+3+4** pedagogical structure and the **Three-Language Formula**.
- PM SHRI Scheme:** The Centre has linked Samagra Shiksha funds to the signing of MoUs for the **PM SHRI** (Pradhan Mantri Schools for Rising India) project.
- Purity of Funds:** The Centre has flagged concerns over the "diversion" of funds in some states for non-educational activities.

III. Objectives & Major Interventions

The scheme views school education as a **continuum** (unbroken sequence) rather than fragmented segments.

- Quality & Learning:** Focuses on the "Two Ts"—**Teacher and Technology**. Initiatives like **NISHTHA** (Teacher Training) and **DIKSHA** (Digital Infrastructure) are central.
- Equity & Inclusion:** * Upgrading **Kasturba Gandhi Balika Vidyalayas (KGBVs)** to Class 12.
 - Provision of stipends for girls with special needs (CwSN) via **Direct Benefit Transfer (DBT)**.
- Vocationalisation:** Integration of vocational subjects from Class 6 onwards to align with 21st-century skills.

- **RTE Implementation:** Supports states in fulfilling the **Right to Education (RTE) Act, 2009**, including reimbursements for 25% private school seats for disadvantaged groups.

IV. Vision & Alignment with Global Goals

Samagra Shiksha serves as India's primary vehicle to achieve **Sustainable Development Goal (SDG) 4:**

- **SDG 4.1:** By 2030, ensure all boys and girls complete free, equitable, and quality primary and secondary education.
- **SDG 4.5:** Eliminate gender disparities in education and ensure equal access for vulnerable groups, including children with disabilities.
- **Holistic Progress Card (HPC):** A new assessment tool introduced in 2024-25 that tracks a child's 360-degree development, moving away from rote-learning based marks.

Disability Rights in India : Progress Towards an Inclusive Society



Why in News?

- On **International Day of Persons with Disabilities (December 3, 2025)**, the Government of India highlighted its vision for a "**Viksit Bharat**" where inclusion is a fundamental principle.
- The day was marked by the launch of the revamped **Sugamya Bharat App** and the success of **Purple Fest 2025** (the 3rd edition of the International Purple Fest held in **Goa**), which celebrated the talent and resilience of the **Divyangjan** community.
- **Demographic Snapshot:** As per **Census 2011**, India is home to **2.68 crore PwDs (2.21% of the population)**, though current estimates suggest this number has grown significantly, reflecting the need for robust, data-driven policy.

I. Legal Framework and International Commitments

India has transitioned from a medical/charity model to a **rights-based model** of disability.

- **RPwD Act, 2016:** The landmark legislation that expanded the types of disabilities from 7 to 21. It mandates **4% reservation** in government jobs and **5%** in higher education.
- **UNCRPD:** India was one of the early ratifiers (2007) of the **UN Convention on the Rights of Persons with Disabilities**, committing to provide equal legal capacity and non-discrimination.
- **National Trust Act, 1999:** Specifically addresses severe disabilities like **Autism, Cerebral Palsy, and Multiple Disabilities**.

II. Key 21 Categories of Disability (RPwD Act, 2016)

The Act covers a wide range of impairments, including:

- **Physical:** Locomotor disability, Leprosy cured, Dwarfism, Muscular Dystrophy, Acid Attack victims.
- **Sensory:** Blindness, Low-vision, Hearing impairment (Deaf/Hard of hearing), Speech and language disability.
- **Neurological/Blood:** Multiple Sclerosis, Parkinson's disease, Hemophilia, Thalassemia, Sickle Cell disease.
- **Intellectual/Psychosocial:** Autism Spectrum Disorder, Specific Learning Disabilities, Mental Illness.

III. Major Government Initiatives

1. Universal Accessibility: Sugamya Bharat Abhiyan

- **Goal:** To make the built environment, transport, and ICT (Information & Communication Technology) barrier-free.
- **Milestone (2025):** The revamped **Sugamya Bharat App** now features an **accessibility mapping tool** where users can report and rate the accessibility of public spaces in real-time.
- **Digital Reach:** Over **770+ State and Central government websites** have been made accessible with screen-reader support.

2. Identity & Benefits: UDID & ADIP

- **UDID (Unique Disability ID):** A national database aimed at providing a single document to access all benefits, eliminating the need for multiple certificates.

- **ADIP Scheme:** Provides high-tech assistive devices like **motorized wheelchairs**, smart canes, and **cochlear implants** for children.

3. Skilling & Employment: PM-DAKSH-DEPwD

- **One-Stop Portal:** Launched as a digital destination for skilling.
- **Divyangjan Rozgar Setu:** A module that connects trained PwDs with corporate partners like Amazon and Youth4Jobs.
- **Divya Kala Mela:** A recurring national fair (e.g., Jammu, 2025) that provides a platform for **Divyang entrepreneurs** to sell indigenous products.

IV. Challenges Confronting PwDs

- **Accessibility Gap:** Despite the 2016 Act, a significant portion of **rural infrastructure** remains inaccessible. Only **~6% of public buses** are fully accessible.
- **Educational Exclusion:** Only **19.3%** of PwDs (aged 15+) have attained secondary education or higher, largely due to a lack of special educators and inclusive materials.
- **Employment Disparity:** Out of an estimated **1.3 crore employable PwDs**, less than **30%** are currently in the workforce, often facing wage discrimination in the informal sector.
- **Health Inequity:** PwDs face double the risk of developing conditions like depression or diabetes due to barriers in the healthcare system.

V. The Path Forward

- **Early Intervention:** Expanding **Cross-Disability Early Intervention Centres** (currently being scaled in 2025) to provide therapy to children aged 0-6.
- **Inclusive Innovation:** Promoting **AI-based assistive tech** (e.g., motion-based controls and sign-language-to-speech apps).
- **Sign Language Integration:** Scaling the **Indian Sign Language (ISL)** dictionary (now with **10,000+ terms**) to mainstream education.

Conclusion: Inclusion is not an act of charity but a "**Principle of Governance**." To achieve the **Viksit Bharat 2047** vision, India must move from "formal equality" (laws on paper) to "substantive equality"—where the last person in the society is empowered to live with dignity and independence.

National Education Policy (NEP) 2020 & India's Innovation Ecosystem



Why in News?

- India's education system is undergoing a profound transformation as **NEP 2020** enters its fifth year of implementation.
- Key milestones in **2025** include the launch of the **Viksit Bharat Buildathon**, the expansion of **Atal Tinkering Labs (ATLs)** to 50,000 schools, and the debut of **twice-a-year board exams** starting with the **2025-26 academic session**.
- These initiatives mark a decisive shift from rote memorization toward a "learning-by-doing" culture aimed at achieving the **Viksit Bharat 2047** vision.

I. National Education Policy (NEP) 2020: The Transformation

- **Background:** Replaces the 1986 policy; based on the **Dr. K. Kasturirangan Committee (2019)** report.
- **The 5+3+3+4 Structure:** * **Foundational (5 years):** Ages 3-8; focuses on play-based learning and literacy.
 - **Preparatory (3 years):** Ages 8-11; introduces basic subjects and discovery-based learning.
 - **Middle (3 years):** Ages 11-14; **Coding** and **vocational crafts** (carpentry, pottery, etc.) begin in Grade 6.
 - **Secondary (4 years):** Ages 14-18; multidisciplinary study (e.g., Physics with Fashion) and critical thinking.

Assessment & Board Reforms

- **PARAKH:** The new National Assessment Centre established to standardize testing across all school boards.

- **Twice-a-Year Exams:** Confirmed by the Education Minister for the **2025-26 session**, allowing students to retain their best scores and reduce academic stress.
- **Holistic Progress Card (HPC):** A 360-degree assessment including **self-assessment, peer-assessment, and teacher-assessment** of 21st-century skills.

II. Scaling the Innovation Pipeline: Atal Innovation Mission (AIM)

Operated under **NITI Aayog**, AIM is the backbone of school-level entrepreneurship.

- **Atal Tinkering Labs (ATLs):** * Over **10,000** labs established by late 2025, reaching **1.1 crore** students.
 - Union Budget 2025-26 set a target to establish **50,000 new ATLs** over five years to universalize innovation access.
- **Mega Tinkering Day 2025:** Set a **world record** on August 12, 2025, when **4.73 lakh students** from 9,467 schools simultaneously built DIY vacuum cleaners to support *Swachh Bharat*.
- **Atal Incubation Centres (AICs):** Currently **72+** centres have incubated **3,500+ startups**, including over 1,000 women-led ventures.

III. Flagship Innovation Initiatives of 2025

Initiative	Purpose / Target	Impact / Key Stats
Viksit Bharat Buildathon	India's largest school hackathon (Classes 6-12) launched in Sept 2025.	Engaged 1 crore students; award pool of Rs 1 crore .
INSPIRE Awards – MANAK	To nurture one million original ideas from students.	Top innovations receive Rs 10,000 and mentorship from NIF.
SIATP (Ambassador Training)	Training teachers in Design Thinking and IPR.	Over 1.5 lakh teachers trained as "Innovation Ambassadors."
School Innovation Councils	Establishing start-up-like cells within schools.	Ranked using a 5-star credit system for engagement.

IV. Institutional & Global Targets (2030–2047)

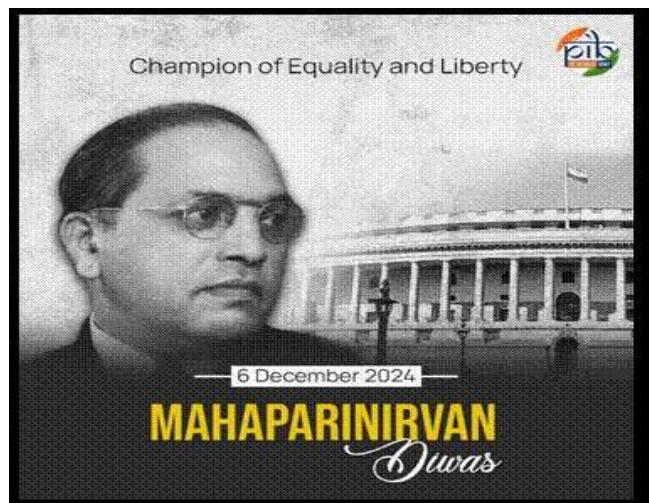
- **GER Targets:** Reach **100% Gross Enrollment Ratio (GER)** in school education by **2030**.
- **Teacher Training:** A **4-year integrated B.Ed.** will be the minimum qualification for teachers by **2030**.
- **Higher Education:** Aiming for **50% GER** by **2035**, adding **3.5 crore seats**.

- **Global Hub:** Positioning India as a **Global Innovation Capital** by 2047 through the seamless integration of research, skilling, and industry needs.

V. Challenges and Opportunities

- **Infrastructure Gap:** While ATLs are booming, basic infrastructure in remote tribal regions needs continuous support.
- **Language Barrier:** Implementing the **Mother Tongue** as the medium of instruction (up to Grade 5) requires localized digital content.
- **Faculty Readiness:** Transitioning teachers from "lecturers" to "mentors" through programs like SIATP is essential for the policy's success.

Mahaparinirvan Diwas & The Legacy of Dr. B.R. Ambedkar



Why in News?

India observed **Mahaparinirvan Diwas** on December 6, 2025, marking the **69th death anniversary** of **Bharat Ratna Baba Saheb Dr. B.R. Ambedkar**. Prime Minister Narendra Modi and other national leaders paid floral tributes at **Prerna Sthal** in Parliament and **Chaitya Bhoomi** in Mumbai, where a million "Bhim Sainiks" gathered to honor the architect of the Indian Constitution.

I. Understanding "Mahaparinirvan"

- **Buddhist Context:** In Buddhist philosophy, **Mahaparinirvana** refers to the ultimate liberation (Nirvana) from the cycle of birth and death.
- **Symbolism:** Because Dr. Ambedkar converted to Buddhism in **October 1956** (just weeks before his death), his passing is revered as "Mahaparinirvan," symbolizing his

spiritual and ideological departure from social oppression.

- **Chaitya Bhoomi:** Located in Dadar, Mumbai, this is the site of his cremation and remains the primary memorial and pilgrimage site for followers.

II. Major Contributions of Dr. Ambedkar

1. Chief Architect of the Constitution

- **Drafting Committee:** As Chairman, he skillfully integrated diverse interests to ensure a robust democratic framework.
- **Key Provisions:** * **Article 17:** Abolition of Untouchability.
 - **Article 32:** The "Heart and Soul" of the Constitution (Right to Constitutional Remedies).
 - **Preamble:** Enshrined the values of **Liberty, Equality, and Fraternity.**

2. Social Reformer & Anti-Caste Leader

- **Mahad Satyagraha (1927):** Asserted the right of Dalits to use water from the public **Chowdar Tank.**
- **Kalaram Temple Satyagraha (1930):** Movement to gain entry into the Kalaram Temple in Nashik.
- **Poona Pact (1932):** An agreement with Mahatma Gandhi that abandoned separate electorates for Dalits in exchange for **reserved seats** in provincial legislatures.

3. Labour and Economic Reforms

- **Viceroy's Executive Council (1942–46):** As Labour Member, he introduced the **8-hour workday** (reduced from 12 hours), **Employees' Provident Fund (EPF)**, and maternity benefits.
- **Financial Vision:** His thesis, "*The Problem of the Rupee: Its Origin and Its Solution,*" provided the conceptual basis for the **Reserve Bank of India (RBI).**

III. Navayana Buddhism (The "New Vehicle")

- **Foundation:** On October 14, 1956, at **Deekshabhoomi** (Nagpur), Ambedkar and **500,000 followers** embraced Buddhism.
- **The 22 Vows:** He prescribed 22 vows for his followers, which included a complete rejection of Hindu deities and rituals to achieve social equality.

- **Primary Text:** His posthumous work, ***The Buddha and His Dhamma (1957)***, serves as the core scripture for Navayana Buddhists.

IV. Literary and Organizational Legacy

Dr. Ambedkar used journalism and institutional building as tools for awakening the "silent" masses.

Category	Key Examples
Newspapers	<i>Mooknayak</i> (1920), <i>Bahishkrit Bharat</i> (1927), <i>Janata</i> (1930).
Organisations	<i>Bahishkrit Hitkarini Sabha</i> (1924), <i>Independent Labour Party</i> (1936).
Major Books	<i>Annihilation of Caste</i> (1936), <i>Who Were the Shudras?</i> (1946).

V. Modern Developments (2025)

- **Indu Mills Memorial:** The Maharashtra government announced that the world-class **350-foot statue of Dr. Ambedkar** at the Indu Mills site in Dadar is 50% complete and expected to be inaugurated by the next Mahaparinirvan Diwas.
- **"Jai Bhim" Greeting:** 2025 marked the 87th anniversary of the official adoption of the "Jai Bhim" slogan (first used in Makranpur, 1938).
- **PM e-VIDYA Integration:** Under the NEP 2020, new digital modules on Ambedkarite thought were launched in 2025 to educate the youth on constitutional morality.

India's Transport Sector : Challenges, Safety, and Strategic Reforms (2025)



Why in News?

- In **2025**, India's transportation network faced a year of "growth vs. grit."
- While the sector expanded with record highway construction and high-speed rail milestones, it was also tested by systemic disruptions.
- Severe overcrowding in trains during the **Maha Kumbh** and festive seasons, mass flight

cancellations due to new pilot rest-hour regulations, and the tragic **Air India crash in Ahmedabad** highlighted the urgent need for safety-first infrastructure.

I. Challenges Hindering India's Transport System

India's transport ecosystem currently navigates a "capacity Vs. demand" trap, complicated by market and policy constraints.

1. Infrastructure and Safety Failures

- Urban Congestion:** Cities like Delhi and Bengaluru continue to lose billions in productivity due to traffic bottlenecks and inadequate "First and Last Mile" connectivity.
- Rail Overburdening:** Despite 43,000+ special train trips in 2025, unreserved compartments remain hazardous during peak demand.
- Aviation Safety:** The **June 2025 Air India Flight AI171 crash** (260 deaths) renewed focus on maintenance standards and the mental health of flight crews.
- Road Accidents:** India maintains one of the world's highest road fatality rates, with poor pedestrian and non-motorized transport (NMT) infrastructure.

2. Neoliberal and Market Constraints

- Under-funded Public Utilities:** Strict fiscal deficit limits often cap the state's ability to subsidize public transport, leading to a "low fare, low quality" cycle.
- Oligopolies:** The aviation sector is increasingly dominated by a few players (e.g., **IndiGo's ~60% market share**), leading to price volatility and consumer vulnerability during supply shocks.

3. Environmental & Digital Gaps

- Pollution:** Transport contributes **14%** to India's energy-related CO₂ emissions.
- Climate Risk:** Infrastructure is increasingly vulnerable to extreme weather (floods/heatwaves).
- Nascent Tech:** Smart traffic lights and AI-based logistics optimization are still limited to a few "Smart Cities."

II. Strategic Importance of the Sector

The transport sector is the **circulatory system** of the Indian economy:

- Logistics Hub:** Aiming to reduce logistics costs from **13% to 9% of GDP** by 2030 to compete globally.

- Manufacturing Support:** Essential for the success of **PLI schemes** and "Make in India."
- National Integration:** Connecting remote border areas (Kashmir/Mizoram) to economic centers.
- Social Equity:** Provides the only affordable mobility for the elderly, students, and low-income workers.

III. Key Government Initiatives (2025 Update)

Initiative	2025 Milestone / Purpose
PM Gati Shakti	Integrating 16 ministries on the Unified Logistics Interface Platform (ULIP) for real-time freight tracking.
Kavach 5.0	The latest Automatic Train Protection (ATP) system deployed to reduce "train headway" (gap) by 30%, allowing more trains on high-density routes.
Amrit Bharat Station	155 stations fully modernized in 2025 with world-class amenities; 1,182 more underway.
UDAN Scheme	Expanded regional connectivity; new Guwahati airport terminal inaugurated to serve the North-East.
PM e-Bus Sewa	Deployment of 10,000+ electric buses to decarbonize urban public transport.
Vande Bharat Sleeper	The first sleeper variant set for 2025-end operations, enhancing long-distance comfort.

IV. Measures to Strengthen the System

- Safety First:** Accelerate the rollout of **Kavach 5.0** and implement the "**Safe System Approach**" (WHO standards) for road design.
- Fiscal Flexibility:** Adopt the **N.K. Singh Committee** recommendations to allow higher public investment in core transport infrastructure during economic stress.
- Multimodal Shift:** Move freight from road (currently 72%) to **Rail and Waterways** (target 50% by 2035) to improve sustainability.
- Data-Driven Governance:** Universalize **Intelligent Transport Systems (ITS)** for real-time congestion management and AI-led accident prediction.
- Universal Access:** Enforce strict compliance with the **RPwD Act 2016** for tactile paths, ramps, and low-floor buses.

Conclusion: The year 2025 has been a "Year of Reckoning" for India's transport sector. While the hardware (roads and tracks) is being built at record speed, the "software"—safety protocols, market competition, and social equity—must catch up to ensure that mobility in India is not just fast, but safe and inclusive for all.

India's Success in Eliminating Extreme Poverty (2011–2024)



Why in News?

- In December 2025, a landmark research paper titled "*Mapping Poverty across Social, Religious, and Economic Groups in India*" was published in the **Economic and Political Weekly (EPW)**.
- Authored by **Arvind Panagariya** (Chairman of the 16th Finance Commission) and **Vishal More**, the study finds that India has "virtually eliminated" extreme poverty between 2011–12 and 2023–24.
- The paper, based on the **Household Consumption Expenditure Survey (HCES) 2023–24**, provides empirical evidence of a "substantial and broad-based" decline in poverty across all social and religious groups, signaling a historic transition for the Indian economy.

I. Key Highlights of the Panagariya-More Study

- **Near-Elimination of Extreme Poverty:** The national extreme poverty rate plummeted from **21.9% in 2011–12** to just **2.3% in 2023–24**.
- **Faster Rural Recovery:** Rural poverty declined by **22.5 percentage points**, significantly outperforming the urban reduction of **12.6 points**.
- **Narrowing Religious Gaps:** For the first time, rural poverty among **Muslims (1.6%)** was recorded as lower than that among **Hindus (2.8%)**, challenging long-held perceptions of higher deprivation in the community.
- **Social Group Convergence:** While **Scheduled Tribes (STs)** still have the highest poverty rate at **8.7%**, they saw the most dramatic decline from the 45.3% recorded in 2011.

- **Double-Digit Poverty Ends:** Not a single State or Union Territory in India now reports a poverty rate in double digits.

II. Understanding Poverty Measurements

Poverty in India is measured using various benchmarks. The Panagariya study specifically uses the **Tendulkar Poverty Line** (updated for inflation).

Type of Poverty	Benchmark/Criteria	Current India Status (2025)
Extreme Poverty	Living on < USD 3.00/day (2021 PPP).	2.3% (Virtually eliminated)
Multidimensional (MPI)	Deprivations in health, education, & living standards.	11.28% (NFHS-5 data)
Consumption-Based	Based on Monthly Per Capita Expenditure (MPCE).	Rural: ₹4,247; Urban: ₹7,078

III. Evolution of Poverty Estimation in India

India's journey in measuring poverty has evolved through several expert committees:

1. **Alagh Committee (1979):** Defined poverty based on calorie intake (2400 kcal rural / 2100 kcal urban).
2. **Lakdawala Committee (1993):** Introduced state-specific poverty lines based on CPI-IW and CPI-AL.
3. **Tendulkar Committee (2009):** Moved away from calories to a broader "Poverty Line Basket" including health and education.
4. **Rangarajan Committee (2014):** Suggested higher expenditure thresholds, but its recommendations were not officially adopted.
5. **National MPI (NITI Aayog):** A holistic 12-indicator model used to track the exit of **24.82 crore people** from poverty over the last decade.

IV. The PRESSURE Framework: Why Poverty Exists

Despite the "virtual elimination" of extreme poverty, structural challenges remain under the **PRESSURE** model:

- **P – Persistent Inequality:** The Gini Index has improved (28.8 to 25.5), but wealth remains concentrated.
- **R – Rural Dependence:** High workforce in agriculture with low GDP contribution.
- **E – Education Deficits:** Foundational learning gaps (ASER 2024) limit upward mobility.
- **S – Social Exclusion:** Barriers for women and certain marginalized clusters in high-paying jobs.

- **S – Slum Expansion:** Growing urban vulnerability due to migration.
- **U – Unemployment:** High youth and graduate unemployment rates.
- **R – Regional Disparities:** Success in Kerala/Goa vs. slower progress in Bihar/UP.
- **E – Environmental Stress:** Climate-induced disasters disproportionately affect the poor.

V. The PROSPER Strategy: The Road to 2047

To move from "elimination of extreme poverty" to "universal prosperity," India is following the **PROSPER** model:

- **P – Public Services:** Scaling **Ayushman Bharat** and **Samagra Shiksha**.
- **R – Rural Livelihoods:** Promoting non-farm jobs through **PM-KUSUM** and Fisheries.
- **O – Opportunities:** Using **PM-KVY** for high-tech skilling.
- **S – Safety Nets:** Strengthening **PMAY-U 2.0** and **One Nation One Ration Card**.
- **P – Participation:** Enhancing the role of **Self-Help Groups (SHGs)**.
- **E – Environmental Resilience:** Implementing climate-adaptive farming.
- **R – Regional Focus:** Developing **Aspirational Blocks** to bridge the gap.

Conclusion: The findings by Panagariya and More highlight that India's model of "Rapid Growth with Targeted Welfare" is working. By bringing the extreme poverty rate down to 2%, India has met a major milestone. The focus must now shift to addressing **Relative Poverty** and **Multidimensional Vulnerabilities** to ensure that no citizen is left behind as India approaches its centenary of independence.

Chenchu Tribe and the Sacred Ahobilam Link



Why in News?

In December 2025, the **National Sanskrit University (NSU)** in Tirupati, in collaboration with **IGNCA** and **INTACH**, organized a symposium and exhibition on the '**Ahobila Paruveta Utsavam**'. The event highlighted the "unique privilege" of the **Chenchu tribal community**, focusing on their deep-rooted kinship with **Lord Narasimha** at the Ahobilam shrine.

- **The Kinship Myth:** According to local tradition, Lord Narasimha (in his *Ugra* or fierce form) was pacified by a Chenchu girl named **Chenchu Lakshmi**, whom he eventually married. Consequently, the Chenchu tribe considers the Lord their **son-in-law**.
- **Global Recognition:** During the symposium, experts discussed a proposal to seek **UNESCO Intangible Heritage** status for the *Ahobila Paruveta Utsavam*, a 45-day folk festival that bridges the gap between tribal traditions and orthodox temple rituals.

I. About the Chenchu Tribe

The Chenchus are one of India's oldest aboriginal tribes, maintaining a lifestyle that has remained largely unchanged for centuries.

- **Status:** Designated as a **Particularly Vulnerable Tribal Group (PVTG)**.
- **Habitat:** Primarily inhabit the **Nallamala Forest** range in Andhra Pradesh and Telangana. They are also found in parts of Karnataka and Odisha.
- **Language:** They speak **Chenchu**, a member of the Dravidian family with a distinct Telugu accent.
- **Social Structure:**
 - *** Penta:** The name for a Chenchu village or settlement.
 - **Peddamanishi:** The village elder who acts as the supreme authority in social and familial disputes.
 - **Gender Equality:** Unlike many traditional societies, Chenchu women hold equal rank with men and have the freedom to choose their partners.

II. Livelihood: Guardians of the Forest

The Chenchus are quintessentially **food-gatherers and hunters**, showing little interest in material wealth or settled agriculture.

- **Forest Economy:** They collect Minor Forest Produce (MFP) such as **honey, gum, tamarind, and Mahua flowers**.
- **Tools of Survival:** Their primary possessions are a **bow, arrows, and a small knife**.
- **Symbiotic Relationship:** They live inside the **Nagarjunasagar Srisailam Tiger Reserve (NSTR)** and are often employed as "Tiger Protection Watchers" by the forest department.

III. Religious and Cultural Privileges

The Chenchus hold a rare and honored position in the major Hindu shrines of the Nallamala region.

1. The Ahobilam Connection (Lord Narasimha)

- **The Paruveta Utsavam:** During this festival, the deity is taken to **32 Chenchu villages**.
- **The Ritual Protectors:** Chenchus shoot arrows in front of the Lord's palanquin to symbolize that their "son-in-law" is under their protection.
- **Deeksha:** During the festival, Chenchus observe a strict **Narasimha Deeksha**, wearing yellow robes and practicing celibacy.

2. The Srisailam Connection (Lord Mallikarjuna)

- **Son-in-Law Status:** Similar to Ahobilam, they consider Lord Shiva (Mallikarjuna) as their son-in-law.
- **Vaikunta Ekadasi 2025:** In a historic move in December 2025, the temple trust facilitated '**Sparsha Darshan**' (permission to touch the deity) for the Chenchus, recognizing their ancient spiritual bond.

IV. Socio-Economic Challenges in 2025

Challenge	Impact
Conservation-Displacement	The strict enforcement of Tiger Reserve rules often limits their traditional access to forest roots and tubers.
Livelihood Shift	Government projects like the Chenchu Special MGNREGS (2025) are attempting to transform them into farmers to ensure food security.
Health & Nutrition	Chronic anemia and malnutrition remain high due to the shift from forest-based diets to processed grains.

Conclusion: The 2025 NSU Symposium emphasizes that the Chenchu tribe is a living bridge between India's ancient forest culture and mainstream spirituality. Their unique "in-law" relationship with the divine ensures that they are not just forest dwellers, but respected stakeholders in India's intangible cultural heritage.

Dandami Madia Tribe – Cultural Heritage and the Bison Horn Dance



Why in News?

In December 2025, the **Dandami Madia** tribal community gained national attention during a vibrant village festival at **Judiya Para** in **Jagdalpur** (Bastar district, Chhattisgarh). Members of the tribe performed their iconic **Bison Horn Maria dance**, a rhythmic spectacle that underscores the resilience of their ancestral Gond heritage in the face of modern change.

- **Iconic Symbolism:** To honor this culture, a towering sculpture of Bison Horn Maria dancers stands at the entrance of **Jagdalpur**, serving as a landmark for the region's indigenous identity.
- **Cultural Spotlight:** The 2025 festival highlighted the tribe's nature-centric worldview and the continued vitality of their oral and ritualistic traditions within the **Central Asian Flyway** of tribal arts.

I. About the Dandami Madia Tribe

The Dandami Madia (also spelled **Maria**) are a sub-group of the broader **Gond** ethnic group, tracing their roots to the historic **Gondwana** region.

- **Nomenclature:** They are popularly known as "**Bison Horn Maria**" due to their signature ceremonial headgear that mimics the horns of a wild bison. They also call themselves **Khalpati Maria**.
- **Habitat:** Primarily found in the dense forests of **Southern Chhattisgarh**, specifically in Dantewada, Jagdalpur, Darbha, Tokapal, and Lohandiguda.
- **Language:** They speak **Dandami Maria**, a Dravidian oral language. Many also use Gondi dialects for inter-tribal communication.
- **Status:** In Odisha and parts of Andhra Pradesh, related sub-groups are recognized

as **Particularly Vulnerable Tribal Groups (PVTGs)**, though in Chhattisgarh, they are a prominent Scheduled Tribe.

II. The Bison Horn Maria Dance (Gaur Maria)

This dance is the hallmark of their cultural expression, traditionally performed during harvests, weddings, and the **Bastar Dussehra**.

Costume and Gear

- **Men:** Wear elaborate bamboo-framed headgear adorned with **authentic bison or cattle horns**, peacock feathers, and cowrie shells. They carry large, heavy drums called **Mandar** or play bamboo flutes.
- **Women:** Dress in bright handwoven saris and heavy silver or brass jewelry. A distinct feature is the use of **rupee-coin necklaces** (ranging from **1 to 10** denominations) and brass crowns.
- **Symbolism:** The dance mimics the majestic movements of the **Gaur (wild bison)** and was originally a ritual used to "round up" animals before a hunt. Today, it serves as a celebration of unity and forest deities like **Budhadev** and **Danteshwari Mai**.

III. Society and Social Institutions

The tribe is known for its egalitarian and progressive social structure.

- **The Ghotul:** A central social institution for unmarried youth (boys and girls). It acts as a **socialization center** where young members learn tribal ethics, music, dance, and life skills.
- **Social Norms:** The society allows **divorce and widow remarriage**, reflecting a flexible and gender-balanced approach to kinship.
- **Livelihood:** Primarily dependent on **agriculture** (including shifting cultivation), supplemented by the collection of **minor forest produce**, hunting, and fishing.
- **Belief System:** A unique blend of **Animism** (nature worship) and **Hinduism**. They have deep faith in traditional healers and shamans.

IV. Material Culture: Unique Objects

- **Tobacco Boxes:** Men often carry intricately carved wooden or metal tobacco boxes as a mark of adulthood.
- **Traditional Combs:** Men frequently keep a special type of comb tucked into their

loincloths or hair, often gifted by their partners.

- **Tattoos:** Women typically have extensive tattoos on their arms and faces, which are believed to be the only "jewelry" that accompanies them after death.

EDITORIALS

Crux of The Hindu & Indian Express

Indian Society & Social Justice

New Labour Codes Give Strong Protection to Bidi & Cigar Workers

1. Why in News?

- The Government has brought in **new Labour Codes**.
- These codes bring **better wages, safer working conditions, social security, and more rights** for bidi and cigar workers across India.

The new laws include:

- Code on Wages (2019)
- Occupational Safety, Health & Working Conditions Code (2020)
- Social Security Code (2020)
- Industrial Relations Code (2020)

Together, they upgrade protection for lakhs of workers in this traditionally informal sector.

2. What Has Changed? (Old vs New System)

Improved Provisions for Bidi & Cigar Workers



Aspect	Before (Bidi and Cigar Workers Conditions of Employment Act, 1966)	After (OSHWC Code, 2020)
Working Hours	9 hrs/day; Max 48 hrs/week	Uniformly fixed at 8 hrs/day & 48 hrs/week (Overtime at double wages)
Leave with Wages	Annual leave with wages after 240 days work in a calendar year	Annual leave with wages after 180 days work in a calendar year More worker-friendly
Medical Examination	No such provision	Free annual health check-ups

Old law (1966 Act):

- Working day could go up to **9 hours**.
- Annual leave only after **240 days** of work.
- **No medical check-ups**.
- Limited protections.

New Labour Codes:

- **8-hour working day** (weekly limit still 48 hours).
- **Overtime must be paid at double rate.**
- Annual leave available after **180 days**, not 240.
- **Free annual health check-up** for every worker.
- Much stronger safety and welfare rules.

3. Key Improvements for Workers



A. Wage Protection

1. Minimum Wages for All

- No employer can pay below **government-notified minimum wage**.
- Earlier, minimum wage applied only to “scheduled jobs”.
- Now, it covers **all employees**, including bidi and cigar workers.

2. Floor Wages

- Central government will set a **floor wage** based on cost of living.
- States cannot go below this floor wage.
- This helps reduce migration caused by wage differences across states.

3. Overtime Pay

- Any work beyond normal hours must be paid **2 times** the normal wage.

4. Time-bound Payment of Wages

Clear deadlines:

Sl.	Type of Employee	Time Limit for Payment of Wages
1.	Daily-wage employee	End of the shift
2.	Weekly-rated employee	Before the weekly holiday
3.	Fortnightly-rated employee	Within 2 days of the end of the fortnight
4.	Monthly-rated employee	Within 7 days of the next month
5.	On termination or resignation	Within 2 working days

Also, rules on wage deductions now apply to **all employees**, not only those earning below ₹24,000.

5. Employer's Responsibility

If the employer fails to pay, the **owner/proprietor/company** is fully responsible for unpaid wages.

6. Wage Slips

Every worker must get **wage slips**, either digital or paper.

B. Better Working Hours Rules

- Normal working hours can be structured as:
 - 8 hours/day with 1 weekly holiday
 - 9.5 hours/day with 2 weekly holidays
 - 12 hours/day with 3 weekly holidays
- Total weekly hours remain 48.
- Overtime requires **worker's consent**.

4. Social Security Improvements

A. ESIC Coverage Expanded

- ESIC now covers **all of India**, ending the old “notified area” system.
- Even establishments with **less than 10 workers** can join voluntarily.

B. Larger Time Window for Claims

- Workers now get **3 years** to file claims (earlier 6 months to 2 years).

C. Improved Bonus Rules

- Workers earning within the government-set limit get a bonus.
- Bonus must be **minimum 8.33%** of yearly wages, and can go up to **20%**.
- Worker must have worked at least **30 days** in the year.

D. Appointment Letters for All

- Every worker will get a **formal appointment letter** with details of wages, social security, job role, etc.

E. Wider Definition of “Family” for Women

- For female workers, **parents-in-law** are now included in the “family” definition if they fit the income limits.

5. Safer & Healthier Workplaces

A. Accident Coverage

- Includes accidents during **travel to and from work**.

B. Free Annual Health Check-ups

- Every worker is entitled to a free yearly health test.

C. Better Leave Rules

- Paid leave after **180 working days**, instead of 240.

D. Welfare Facilities

Government will set standards for:

- Cleanliness
- Drinking water
- Toilets
- Rest rooms
- Canteens
- Occupational safety rules for bidi/cigar units

E. No Gender Discrimination

- Employers cannot discriminate in hiring, wages, or working conditions.
- Same work = same pay, regardless of gender.

Conclusion

The new Labour Codes bring **big improvements** for bidi and cigar workers. They ensure **better wages, safer workplaces, social security, regular health check-ups, formalization, and gender equality**. These reforms give workers more dignity, stability, and protection, helping them lead safer and more secure lives.

Bonda Tribe – Transition to Pucca Houses under PM-Janman Scheme



Primitive Bonda Tribe Set To Receive Pucca Houses Under PM-Janman

1. Why in News?

- Members of the **Bonda tribe** in Odisha's **Malkangiri district** will soon shift from **fragile thatched huts** to **permanent pucca houses** under the **PM-Janman scheme** of the Union government.
- This is an important step because the Bonda community is one of India's **most vulnerable tribal groups**

2. About the Bonda Tribe

A. Location

- Found **only** in **Malkangiri district, Odisha**.
- Mostly in **Khairaput block**.
- Live in both **hilly** and **remote** terrain.

3. Who Are the Bondas?

- They are a **Particularly Vulnerable Tribal Group (PVTG)**.
- Considered one of the **oldest tribes** in India.
- Their ancestry traces back to the **Austroasiatic race**.
- Also known as **Bondo, Bonda Paraja, Bhonda**.

4. Language

- They speak **Remo**, an Austroasiatic language.
- Very different from mainstream Indian languages → outsiders face difficulty communicating.

5. Social Structure

- The tribe is divided into:
 - **Lower Bondas** → near Andhra Pradesh & Chhattisgarh borders
 - **Upper Bondas** → deeper in the hills, very remote
- They have a **council of elders** who take major decisions.
- Villages are organised around **communal spaces** used for meetings, rituals, and ceremonies.

6. Housing & Art

- Traditional houses:
 - Made of **mud**
 - **Thatched roofs**
 - Built to suit the **mountain climate**
- Art is seen in:
 - **Decorative tools and utensils**
 - **Colorful fabrics and jewelry**

7. Dressing Style

Bondas have a very unique dressing tradition.

• Women:

- Semi-clad
- Wear many rings, beads, and ornaments
- Their jewellery is a major part of identity

- **Men:**
 - Wear traditional hunting attire
 - Carry bows and arrows historically

8. Religion

- **Animistic beliefs**
- **Worship:**
 - Nature
 - Forest spirits
 - Ancestors

9. Occupation & Economy

Their lifestyle is based on **subsistence living**.

- Practice **shifting cultivation** (*dangar chas*)
- Grow:
 - Paddy
 - Millet
 - Pulses
 - Vegetables
- Also depend on:
 - Hunting
 - Forest gathering

10. Key Challenges

- **Very low literacy** → only about 6%
- **Very low life expectancy**
- Community is **nearly on the verge of extinction** due to health, isolation, and poverty issues.

What is PM-JANMAN?

- **Full form:** *Pradhan Mantri Janjati Adivasi Nyaya MahaAbhiyaan*
- Launched by the Prime Minister on **15 November 2023 (Janjatiya Gaurav Divas)**.

Purpose

To improve the **socio-economic conditions** of **75 PVTG communities** living across:

- **18 States**
- **1 Union Territory**

These communities are the most vulnerable among India's tribal groups.

Main Goals of PM-JANMAN (Simple Points)

The mission aims to provide all basic facilities within **3 years**, including:

1. **Safe, permanent housing (pucca houses)**
2. **Clean drinking water**
3. **Better access to education**
4. **Improved health and nutrition services**

5. **Road connectivity**
6. **Telecom/mobile network connectivity**
7. **Electrification of homes**
8. **Sustainable livelihoods**

To achieve these targets, **11 interventions** are being carried out by **9 different Ministries**.

Budget of the Scheme

Total budget: **₹24,104 crore**

- **Central Government share:** ₹15,336 crore
- **State Government share:** ₹8,768 crore

Outlay for key infrastructure

- Housing → ₹11,711 crore
- Roads → ₹8,000 crore
- Hostels → ₹1,375 crore
- Anganwadi Centres (AWCs) → ₹300 crore

These sectors directly support education, health, and mobility for PVTGs.

How Is the Scheme Being Implemented?

A. Mapping PVTG Habitations

The **Ministry of Tribal Affairs**, along with States and UTs, has:

- Collected village-level and habitation-level data
- Used the **PM Gati Shakti mobile application**
- Identified population numbers and infrastructure gaps

This helps the government cover **all** PVTG families and villages under PM-JANMAN.

B. Example: Baran District, Rajasthan

- Based on State data, **Baran district** has a PVTG population.
- Benefits under PM-JANMAN have already been provided there since the scheme began.

Why PM-JANMAN Matters

Many PVTG communities still lack:

- basic services,
- stable livelihoods,
- quality education,
- access to healthcare,
- proper roads, electricity, or drinking water.

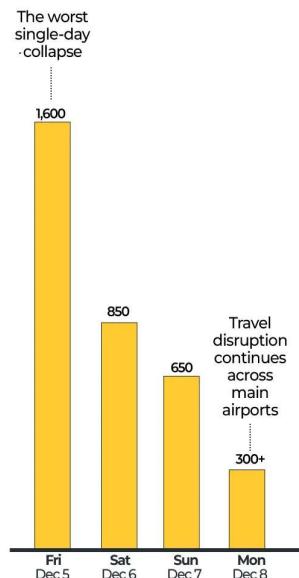
PM-JANMAN aims to bring these communities into the mainstream while **protecting their culture and dignity**.

Why IndiGo Faced a Major Flight Crisis (December 2025)

INDIA

IndiGo cancels over 3,400 flights in 4 days

IndiGo has cancelled more than 3,400 flights since December 5, stranding thousands of passengers across the country. The crisis began after India's largest airline failed to adapt to new pilot rest and duty regulations.



Travellers sit with their luggage at India's Bengaluru airport on December 6, 2025 [Priyanshu Singh/Reuters]



IndiGo is the largest private airline controlling nearly 60 percent of the domestic market [File: AP Photo]

- IndiGo, India's biggest airline, faced a huge crisis in early December 2025.
- More than **2,000 flights were cancelled**, thousands were delayed, and passengers across India were left stranded.
- This crisis did not happen because of one single reason.
- It was the result of **many problems happening at the same time**.

1. WHY DID THE CRISIS START? (Core Reason)

New Pilot Duty Rules → Not Enough Pilots Ready to Fly

- From **November 1, 2025**, India introduced **new FDTL rules** (Flight Duty Time Limitations).
- These rules were made to **reduce pilot tiredness** and **improve flying safety**.
- But IndiGo **did not prepare well** for these changes.
- Because of the new rules:
 - Pilots needed **more rest hours**
 - Pilots could **fly fewer hours**
 - Fewer **night flights** could be operated by the same pilot

- More pilots were required to run the same timetable
- IndiGo already had a **tight crew schedule**.
- So when the rules changed, **they simply did not have enough pilots** to run all flights.
- Other airlines had fewer night flights or hired more pilots, so they managed better.

2. WHAT EXACTLY DID THE NEW RULES CHANGE?

New FDTL Rules:

- 1 **Weekly rest increased from 36 → 48 hours**
→ Pilots had fewer working days every week.
- 2 **Night landings cut from 6 → 2 per week**
→ IndiGo had many night flights, so this rule hit them the hardest.
- 3 **Night duty window extended to 6 AM**
→ Early morning flights also became "night flights", needing fresh crew.
- 4 **Pilots could not do more than 2 night duties in a row**
→ Many schedules had to be rebuilt.
- 5 Stricter limits on flying hours DGCA limits:
 - 8 hours/day
 - 35 hours/week
 - 125 hours/month
 - 1000 hours/year

All this means **more pilots are needed**. IndiGo did **not hire enough**, so the problem exploded.

3. OTHER TRIGGERS THAT MADE IT WORSE

Even though the root cause was the new rules, **three other problems hit at the same time**.

A. System Breakdown at Airports (Dec 2–3)

- A global Microsoft Windows outage slowed check-in at major airports.
- Flights got delayed.
- Delayed flights meant pilots crossed their allowed time limits.
- Those pilots could not fly again → more cancellations.
- Other airlines recovered quickly.
- IndiGo did not because they had **no backup crew**.

B. Winter Traffic + Fog + Crowded Airports

December is:

- Wedding season
- Holiday travel season
- Fog season

Even small delays created **big chain reactions** in IndiGo's network because it is very tightly scheduled.

C. IndiGo's Business Model

IndiGo runs:

- 400+ aircraft
- 2,200+ flights every day
- 60% of India's domestic market

This means:

- **One small mistake → big national impact**
- No time gaps, no buffer crews
- High-speed operations break down quickly

They chose **efficiency over safety buffers**, so when the new rules kicked in, everything collapsed.

4. WHAT HAPPENED DURING THE CRISIS?

(Chronology)

- **Dec 2–3** : Airport systems fail → delays → pilots cross limits → first cancellations.
- **Dec 4** : Over 550 flights cancelled. Government calls for investigation.
- **Dec 5** : Worst day: 1,000+ flights cancelled in 24 hours. On-time performance dropped to 8.5% (almost every flight delayed).
- **Dec 6–8** : Some stability returns after DGCA relaxes rules (temporary exemption).

5. HOW WERE PASSENGERS AFFECTED?

The crisis created **real-life hardships**:

- **Thousands stranded inside airports** : Some families spent 24–48 hours waiting without clear information.
- **Wedding travellers stuck** : Several brides, grooms, and wedding parties missed ceremonies.
- **Hospital and medical patients impacted** : Some missed surgeries and transplant appointments.
- **Ticket prices shot up** : Other airlines increased fares suddenly because IndiGo had massive cancellations. Government had to **put price caps** to stop overcharging.
- **Refund chaos** : IndiGo processed ₹610 crore in refunds. 3,000+ bags were delayed.

6. WHAT DID THE GOVERNMENT DO?

To control the situation:

- Ordered a **high-level inquiry**
- Set up **24x7 helplines**

- Added **extra train coaches** for stranded passengers
- Told airlines to **reduce fares**
- Forced IndiGo to give refunds quickly
- Allowed temporary **relaxation in pilot rules** till February 10, 2026
- Issued a **show-cause notice** to IndiGo's CEO

Pilot unions opposed the relaxation, saying **safety should not be compromised**.

7. WHY WERE OTHER AIRLINES NOT HIT SO BADLY?

Because

1. They have **smaller network**, easier to manage
2. Fewer **night flights**
3. Better **crew buffers**
4. They hired more pilots earlier (example: Akasa Air, Air India)

IndiGo relies heavily on:

- tight schedules
- maximum aircraft use
- minimum spare manpower

When rules changed, this model could not survive.

8. WHEN WILL THINGS RETURN TO NORMAL?

IndiGo said:

- Operations will return to normal between **10–15 December**
- They increased flights from 1,500 → 1,650 within a day
- 137 out of 138 destinations are running
- Free rescheduling & cancellation allowed till **15 December**

9. BIGGER LESSONS FROM THE CRISIS

A. Efficiency without backup = risky

- IndiGo runs flights with almost no spare time or extra crew.
- Great in normal days, disastrous in crisis.

B. Fatigue rules must be respected

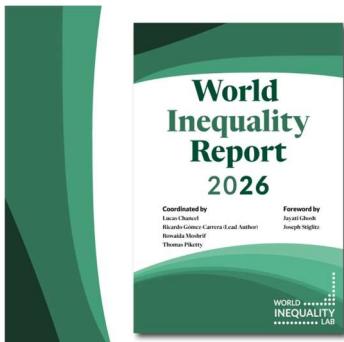
- Pilot tiredness = safety risk.
- Regulators will not compromise.

C. Market concentration is dangerous

- IndiGo controls **60%** of domestic aviation.
- If it fails, the whole country suffers.

D. Airlines must choose safety over cost-cutting

World Inequality Report 2026



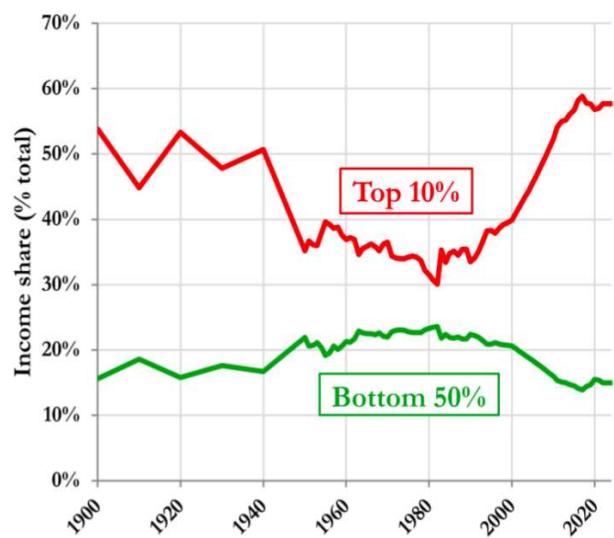
WORLD INEQUALITY LAB

WHY IN NEWS?

- The **World Inequality Report 2026** has been released.
- It shows that **income and wealth inequality in India are among the highest in the world**.
- Key finding: **Top 10% earn 58% of India's income; bottom 50% earn only 15%**.

1. What the Report Says About India

Figure 1: Top 10% and bottom 50% income shares in India, 1900-2024



Interpretation: The Top 10% income share is equal to 58% in 2024. Income is measured after the operation of pensions and unemployment insurance systems and before income tax.

Sources and series: wir2026.wid.world/methodology.

Income Inequality

- Top 10% earners → 58% of national income**
- Bottom 50% → only 15%**
- Earlier Report 2022: top 10% had 57%, bottom 50% had 13%.
- inequality is **not improving much**.

Wealth Inequality (even worse)

- Top 10% hold 65% of total wealth**
- Top 1% hold around 40% of all wealth**

- Bottom 50% hold only tiny share.

Average Income & Wealth (PPP terms)

- Average income per person: **6,200 euros**
- Average wealth per person: **28,000 euros**

Gender Inequality

- Female labour participation: 15.7%** — almost no improvement in last decade.
- Women earn:
 - 61% of men's income per working hour** (excluding unpaid work)
 - 32%** when unpaid household work is included
- Women's share in labour income:
 - South & Southeast Asia → **20%**
 - MENA (Middle East & North Africa) → **16%**
 - Europe/North America → around **40%**

2. Global Trends Highlighted

Extreme Global Wealth Concentration

- Top 0.001%** (about 60,000 rich people **globally**) own **3x more wealth** than the bottom 50% of humanity.
- Global top **10%** own **75%** of all wealth.
- Global bottom **50%** own **only 2%**.
- Top 1%** alone hold **37% of world wealth**.

Ultra-rich Inequality

- Top 0.001% average wealth** → **~1 billion euros**
- Top 1 in 100 million** (56 people worldwide) → **53 billion euros each**

This shows inequality exists **not only between rich and poor**, but also **within the rich**.

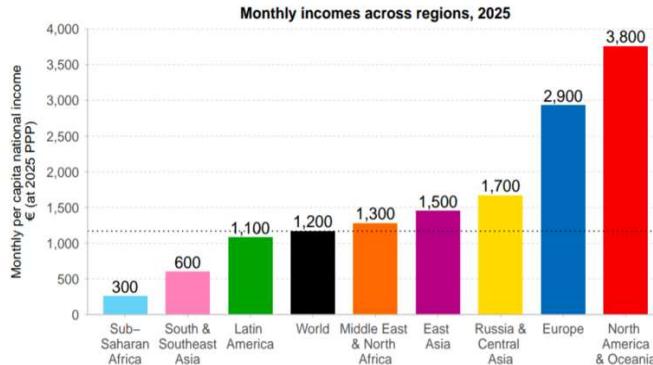
3. India's Position in Global Income Distribution

• 1980 Vs. 2025 Comparison

- 1980:**
 - India was mostly in the bottom half of global income ranks.
 - China was also at the bottom.
- 2025:**
 - China moved upward** → large population entered global middle class.

- India slipped backward → most people now in **bottom 50%** globally.
- Sub-Saharan Africa also remains in lowest brackets.

Figure 7. Inequality between regions is also immense



Interpretation. There are huge disparities, in terms of income, between regions. A person in South & Southeast Asia has an average monthly income of €601, while a person in Europe has an average monthly income of €2,934. This is 4.9 times larger. Sources and series: wdr2026.wid.world/methodology.

4. Climate Inequality Findings

- Bottom 50% of world → **only 3%** of emissions from private capital.
- Top 10% → **77%** of emissions.
- Top 1% → **41%** of emissions alone.
- This shows **climate crisis is driven mainly by the rich**, not the poor.

5. Why Inequality Persists (According to the Report)

a) Policy Failures in Taxation

- Ultra-rich often **pay lower effective taxes** than middle-class groups.
- Billionaires & centi-millionaires avoid tax through loopholes.
- Governments lose money needed for:
 - education
 - healthcare
 - climate action
 - welfare programmes

b) Low Public Investment

- Weak investment in:
 - schools
 - healthcare
 - nutrition
 - childcare

→ causes lifelong inequality.

c) Weak Social Security

- Cash transfers, pensions, and unemployment benefits are **limited**.

6. Possible Solutions (Suggested in Report)

1. Progressive Taxation

- Rich pay more, poor pay less. Helps reduce extreme gaps.

2. Strong Public Services

Free or affordable:

- schools
- hospitals
- nutrition programmes
- childcare

→ reduces early-life inequality.

3. Social Support

- Pensions
- Unemployment benefits
- Direct cash transfers → helps poorest households.

SANCHAR MITRA SCHEME

Sanchar Mitra
Youth Power for a Digitally Safe India

A DoT initiative to connect youth with community service and digital empowerment.

Student volunteers from across India join as Sanchar Mitras – raising awareness on cyber frauds, financial scams, identity theft, data misuse, and digital literacy for citizen safety.

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Why in News?

- The **Sanchar Mitra Scheme**, launched by the **Department of Telecommunications (DoT)**, was discussed in the **Lok Sabha** on **10 December 2025**.

- In addition, DoT rolled out the scheme **nationwide**, expanding it from a pilot initiative into a **full-scale national programme** to empower youth as **digital ambassadors**.

Background of the Scheme

- The Sanchar Mitra Scheme was **initially piloted in select institutions**.
- After a positive response and visible impact, it has now been **scaled up for nationwide implementation** across all States and Union Territories.
- The scheme aims to harness **India's Yuva Shakti** to strengthen **digital literacy, telecom awareness, and cyber safety** at the grassroots level.

What is the Sanchar Mitra Scheme?

The Sanchar Mitra Scheme is a **volunteer-based digital outreach programme** of the DoT.

Under this scheme

- University and college students are nominated as **Sanchar Mitras**.
- These students act as **digital ambassadors**.
- They bridge the gap between:
 - Government telecom initiatives
 - Telecom service providers
 - Citizens

Vision and Philosophy

The scheme reflects India's broader vision of leadership in:

- Democracy
- Demography
- Digitization
- Delivery

As described by the Union Minister for Communications, the scheme transforms youth energy into **responsible digital participation**

Objectives of the Scheme

The main objectives are to:

- Promote **digital empowerment and literacy**
- Create awareness about **citizen-centric telecom services**
- Prevent **telecom and cyber frauds**
- Promote **mobile security and cyber hygiene**
- Address public concerns related to **EMF radiation**
- Encourage **responsible and safe telecom usage**

Three Pillars of the Scheme

The Sanchar Mitra Scheme is built on three pillars:

1. **Connect** : Linking citizens with telecom services and government initiatives
2. **Educate** : Creating awareness about digital safety, cyber fraud prevention, and telecom rights
3. **Innovate** : Encouraging youth-driven solutions and awareness models

Role of Sanchar Mitras

Sanchar Mitras are expected to:

- Conduct awareness drives in:
 - Communities
 - Educational institutions
 - Public spaces
- Educate citizens on:
 - Digital safety
 - Cyber fraud prevention
 - Mobile security practices
 - EMF radiation awareness
- Engage with:
 - Local communities
 - NGOs
 - Grassroots institutions

They act as **catalysts for informed and responsible digital behaviour**.

Eligibility and Participation

The scheme is open to students from institutions that:

- Offer courses in:
 - Telecom
 - Electronics
 - Computer science
 - Cyber security or related fields
- Are identified in consultation with **local DoT field units and LSA offices**

Current status:

- Implemented across **all States and Union Territories**
- **222 institutions** are participating nationwide
- **Implementation Mechanism**
 - Nodal Ministry: Department of Telecommunications
 - Execution: Through **LSA field offices of DoT**
 - Training support:
 - National Communications Academy – Technology (NCA-T)
 - DoT Media Wing

Training and Capacity Building

Sanchar Mitras receive structured training in:

- Digital safety and cyber hygiene
- Telecom fraud prevention
- EMF radiation standards and awareness
- Emerging technologies such as:
 - 5G
 - 6G
 - Artificial Intelligence
 - Cyber security

This training prepares students for **real-world digital outreach**

Youth Exposure and Opportunities

To encourage excellence, Sanchar Mitras are:

- Periodically assessed on:
 - Outreach impact
 - Innovation
 - Consistency

Outstanding performers may receive:

- Internship opportunities
- Participation in national telecom projects
- Exposure through India Mobile Congress
- Engagement with international bodies such as the International Telecommunication Union (ITU)

Assam Outreach Programme Example

As part of the first major outreach:

- **Assam LSA partnered with 18 engineering institutions**
- Institutions included IIT, IIIT, NIT, and other engineering colleges
- An interactive session was held at **BSNL Bhawan, Guwahati**
- Senior DoT officials briefed institutions on the scheme's structure and goals

This shows the **state-level rollout model** of the scheme

Strategic Importance of the Scheme

For Citizens

- Better awareness of telecom services and rights
- Reduced vulnerability to cyber and telecom frauds
- Improved digital safety

For Youth

- Leadership and community engagement
- Exposure to emerging telecom technologies
- Skill development aligned with Digital India

For India

- Strengthens digital governance
- Supports secure and inclusive digitization
- Builds a skilled telecom and research-ready workforce

Centre to Replace MGNREGA with New Job Guarantee Scheme : VB-G RAM G Bill, 2025

VB—G RAM G Bill at a glance

HT

A look at the key provisions of the **Viksit Bharat—Guarantee for Rozgar and Ajeevika Mission (Gramin)** or **VB—G RAM G Bill, 2025**, being brought by the Centre to replace the Mahatma Gandhi National Rural Employment Guarantee Act, or MGNREGA:

What's the bill?

VB—G RAM G Bill, 2025 proposes to establish a modern statutory framework aligned with Viksit Bharat 2047, guaranteeing 125 days of employment per rural household whose adult members volunteer to do unskilled manual work.

How will it benefit...

The rural economy?

- It aims to strengthen rural economy by productive asset creation, higher incomes, and better resilience.
- It seeks to improve water security, core rural infra, livelihood infra, climate resilience, higher employment and consumption, and reduced distress migration.

The Farmers?

- The bill mandates 60 days of no-work during peak sowing/harvesting period, preventing labour shortages during critical farm operations.
- It also prioritises water works to improve irrigation, groundwater and multi-season cropping potential.

The Labourers?

- The guaranteed 125 days of wage work means 25% more potential earnings than MGNREGA.
- The bill also mandates states to pay unemployment allowance if no work is provided to an applicant.



What makes it better than MGNREGA?

- The new bill represents a major upgrade over MGNREGA, fixing structural weaknesses while enhancing employment, transparency, planning, and accountability.
- It proposes guaranteed 125 days of wage employment a year, up from 100 days under MGNREGA, giving rural households higher income security.
- While MGNREGA works were scattered across many categories, the new bill focuses on four major types of works: ensuring durable assets that directly support water security, core rural infrastructure, livelihood-related infrastructure creation and climate adaptation.

Why shift to normative funding?

- A demand-based model leads to unpredictable allocations and mismatched budgeting. Normative funding uses objective parameters, ensuring predictable, rational planning while still guaranteeing that every eligible worker receives employment or unemployment allowance.

Will cost sharing burden states financially?

- No. The structure is balanced and sensitive to state capacity. It will be 60:40 (Centre: state) for all states, except Northeastern and Himalayan states as well as UTs
- States can seek extra support during disasters.

What transparency measures are built into the new bill?

- AI-based fraud detection; central and state steering panels for oversight; focus on four key verticals for rural development; enhanced monitoring role for panchayats; GPS/mobile-based monitoring; real-time MIS dashboards; weekly disclosures; and stronger social audits.

What happens to workers during the no-work period?

- Workers shift to agriculture, which pays higher seasonal wages, benefitting both farmers and labourers.
- 60 days is aggregated, not continuous, and workers still get 125 guaranteed days in the remaining ~300 days.

1. Introduction

- The Union government introduced **The Viksit Bharat—Guarantee for Rozgar and Ajeevika Mission (Gramin) Bill, 2025**, also known as the **VB—G RAM G Bill**, in the Lok Sabha on December 16, 2025.
- The Bill was moved by **Union Rural Development and Agriculture Minister Shivraj Singh Chouhan** during the Winter Session of Parliament.
- The legislation seeks to replace the **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005**.

- The Bill was taken up for discussion and debate in the Lok Sabha on **December 17, 2025**.

- The most significant change introduced by the Bill is the shift from a **demand-driven, rights-based employment guarantee** to a **supply-driven, allocation-based framework**.

2. Background: What Was MGNREGA?

- The **National Rural Employment Guarantee Act (NREGA)** was enacted in **2005** and was renamed **MGNREGA** in **2009**.
- The Act provided a **legal and enforceable right to work** for rural households.
- Every rural household whose adult members were willing to perform unskilled manual work was entitled to **at least 100 days of wage employment** in a financial year.
- If employment was not provided, the worker was entitled to an unemployment allowance.
- The scheme applied to **all rural areas across India**, ensuring universal coverage.
- The Union government paid **100 percent of unskilled labour wages** and **75 percent of material costs**, which effectively resulted in a **90:10 cost-sharing ratio** between the Centre and the States.

3. Performance Issues Under MGNREGA

- In **2022**, the Ministry of Rural Development constituted a committee to examine governance and performance issues related to MGNREGS.
- The committee submitted its report in **2024**.
- The report revealed a substantial gap between the statutory guarantee of employment and actual employment provided.
- During **2024–25**, the average employment generated per household was only **around 50 days**, despite a legal guarantee of 100 days.
- Only **40.70 lakh households** completed the full 100 days of work in 2024–25.
- In the current financial year, only **6.74 lakh households** have reached the 100-day employment limit.

4. Demand by States to Increase Workdays

- Several States, including **Andhra Pradesh, Madhya Pradesh, Chhattisgarh, and**

Rajasthan, have repeatedly demanded an increase in the 100-day work limit.

- Existing rules permit States to provide employment beyond 100 days.
- However, any employment beyond the guaranteed limit must be **fully funded by the States themselves**.
- Due to financial constraints, only a few States have been able to meaningfully extend employment beyond the statutory limit.

5. State Contribution to Employment Generation

- In **2024–25**, MGNREGA generated **290 crore person-days** of employment nationwide.
- Out of this total, only **4.35 crore person-days** were funded by States using their own budgets.
- States that financed employment from their own resources include **Maharashtra, Chhattisgarh, Odisha, Himachal Pradesh, Kerala, Rajasthan, Madhya Pradesh, and Telangana**.
- This highlights the heavy dependence of rural employment generation on **central funding**.

6. Core Structural Changes Under the VB-G RAM G Bill

- The Bill increases the statutory guarantee of wage employment from **100 days to 125 days per rural household per financial year**.
- Employment under the new law will be governed by **pre-determined budgetary allocations** rather than worker demand.
- The scheme moves away from a rights-based entitlement toward a **normative allocation system** controlled by the Union government.

7. Change in Cost-Sharing Pattern

- The Bill introduces a major shift in funding responsibility between the Centre and the States.
- For **north-eastern States and Himalayan States or Union Territories**, including Uttarakhand, Himachal Pradesh, and Jammu and Kashmir, the cost-sharing ratio will remain **90:10**.
- For **all other States and Union Territories with legislatures**, the cost-sharing ratio will be **60:40**.
- This change significantly increases the financial burden on State governments compared to MGNREGA.

8. Increased Central Control Over Implementation

- **Section 4(5)** of the Bill empowers the Union government to decide **State-wise normative allocations** for each financial year.
- These allocations will be based on parameters prescribed by the Centre.
- States will no longer have the flexibility to seek additional funds even if employment demand increases.
- **Section 5(1)** authorises the Centre to **notify specific rural areas** where the scheme will be implemented.
- This provision ends the **universal rural coverage** that existed under MGNREGA.

9. Provision for Seasonal Pause in Employment

- The Bill allows the government to **pause the employment guarantee for up to 60 days** during peak agricultural seasons such as sowing and harvesting.
- The stated objective is to ensure adequate labour availability for agricultural activities.
- Critics argue that this provision may deprive rural workers of income support during critical periods.

10. Thematic Focus and Infrastructure Orientation

- Public works under the new scheme will be integrated into a **Viksit Bharat National Rural Infrastructure Stack**.
- The focus areas include **water security, core rural infrastructure, livelihood infrastructure, and climate mitigation**.
- This represents a shift toward infrastructure-oriented employment rather than purely wage support.

11. Mandatory Use of Technology

- The Bill legally mandates the use of **biometric authentication, mobile app-based attendance, and geospatial tracking of worksites**.
- These technological measures were earlier implemented administratively under MGNREGA.
- While intended to improve transparency and efficiency, concerns remain about **digital exclusion, surveillance, and payment delays**.

12. Government's Justification for the New Law

- The government argues that rural India has undergone major socio-economic transformation since 2005.
- It cites improvements in **roads, housing, electrification, financial inclusion, and digital connectivity**.
- The government also highlights changing aspirations of rural youth and the need for **higher incomes, sustainable livelihoods, infrastructure creation, and climate resilience**.
- On this basis, it claims that MGNREGA needs to be replaced by a modern and growth-oriented framework.

13. Criticism and Political Opposition

- Mazdoor Kisan Shakti Sangathan criticised the Bill, stating that it dismantles the legal right to work built over two decades.
- They argued that the Bill centralises power, weakens worker entitlements, and places an impractical financial burden on States.
- The **NREGA Sangharsh Morcha** demanded the immediate withdrawal of the Bill.
- It accused the government of excessive centralisation, fixed allocations, technocratic surveillance, reduced accountability, and erosion of democratic and constitutional guarantees.
- The removal of "**Mahatma Gandhi**" from the title has also triggered political backlash from opposition parties.

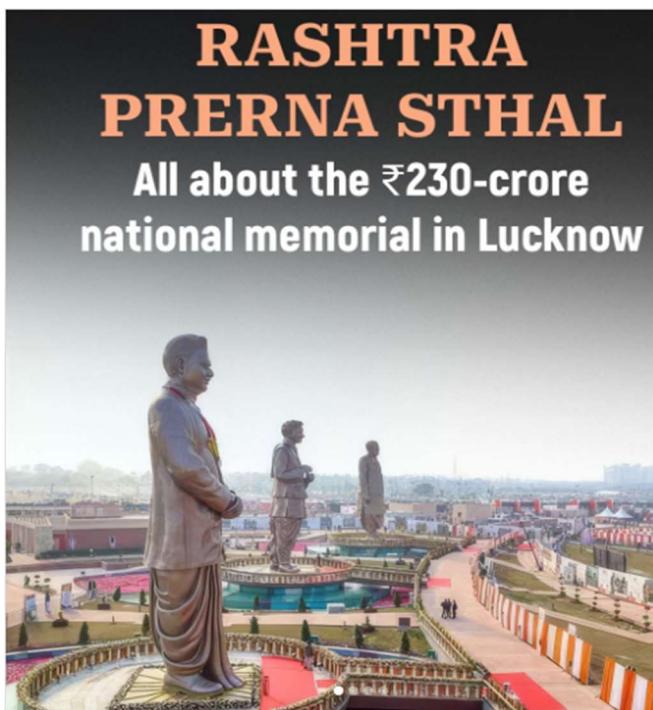
14. Other Legislative Developments

- Alongside the VB-G RAM G Bill, the government will introduce the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India Bill, 2025** in the Lok Sabha.

Conclusion

The VB-G RAM G Bill represents a **fundamental transformation** in India's rural employment policy. While it increases the number of guaranteed workdays, it weakens the **rights-based nature** of employment. The Bill raises critical questions related to **social justice, federalism, centralisation, and accountability**. Its final impact will depend on parliamentary scrutiny and the manner in which it is implemented across States.

Inauguration of Rashtra Prerna Sthal in Lucknow



1. Why in News?

- Prime Minister Narendra Modi inaugurated the **Rashtra Prerna Sthal** in Lucknow, Uttar Pradesh.
- The inauguration took place on **25 December 2025**, marking the **101st birth anniversary of Atal Bihari Vajpayee**.
- The day is also observed as **Good Governance Day** in India.

2. Occasion and Background

- The memorial was inaugurated to honour **Atal Bihari Vajpayee**, one of India's most respected statesmen.
- December 25 is observed as **Good Governance Day** to promote accountability, transparency, and citizen-centric administration.
- The event highlighted the legacy of leaders who shaped India's political and ideological foundations.

3. Purpose of Rashtra Prerna Sthal

- Rashtra Prerna Sthal is a **national memorial and inspirational complex**.
- It aims to promote the ideals of:
 - Nationalism,
 - Good governance, and
 - Public service.

- The memorial is designed to inspire citizens, especially youth, through leadership values and national vision.

4. Core Message of the Memorial

- The site symbolises the path of **self-respect, unity, and service**.
- It reflects the values that guided India's democratic and governance journey.
- The memorial encourages collective responsibility towards nation-building.

5. Statues at the Complex

- The memorial features **65-feet tall bronze statues** of:
 - Atal Bihari Vajpayee,
 - Syama Prasad Mookerjee, and
 - Deendayal Upadhyaya.
- These leaders represent India's traditions of **national unity, cultural identity, and ethical politics**.

6. Museum and Knowledge Infrastructure

- The complex houses a **lotus-shaped, state-of-the-art museum**.
- The museum includes:
 - Digital galleries,
 - Immersive exhibitions, and
 - Interactive displays.
- It showcases the leadership legacy of national icons and **India's historical and democratic journey**.

7. Area and Project Cost

- Rashtra Prerna Sthal is spread over approximately **65 acres**.
- The project has been developed at a cost of around **₹230 crore**.
- The scale reflects the importance of the site as a national landmark.

8. Significance for Uttar Pradesh

- The memorial strengthens **cultural and heritage infrastructure** in Uttar Pradesh.
- It positions Lucknow as a **national centre of inspiration and remembrance**.
- The project supports tourism, civic pride, and urban renewal in the state.

9. Overall Significance

- Rashtra Prerna Sthal connects **India's political legacy with modern governance ideals**.
- It reinforces the values of good governance, ethical leadership, and national service.

- The memorial serves as a long-term educational and inspirational space for citizens.

10. Conclusion

- The inauguration of Rashtra Prerna Sthal marks an important step in preserving **India's leadership heritage**.
- By commemorating Atal Bihari Vajpayee and other national thinkers, the site promotes **unity, integrity, and democratic values**.
- The memorial reflects India's commitment to combining **heritage, governance, and public inspiration**.

Ho Tribal Group Calls for 'Black Day' Observance



1. Background of the News

- The **Adivasi Ho Samaj Yuva Mahasabha (AHSYM)** has called for observing 'Black Day' on **January 1 and 2, 2026**.
- The organisation has urged tribal people **not to celebrate picnics** on these days.
- Instead, they have asked people to **pay tribute to Ho tribal martyrs**.

2. Call for Tribute March

- Tribal people have been urged to **march to Kharsawan, Jagannathpur, and Rajabasa**.
- These places are linked with **historic killings and repression of the Ho community**.
- The aim is to **remember the sacrifices made to protect land, culture, and rights**.

3. Awareness Campaign

- AHSYM has started **nukkad natak** (street plays) and village meetings.
- The purpose is to **spread awareness about the sacrifices of Ho freedom fighters**.
- The campaign highlights resistance against **British rule, land acquisition, and outside attacks**.

4. Statements by Leaders

- **Govind Birua**, State President of AHSYM, said these days should be used to **honour tribal martyrs**, not for picnics.
- **Epil Samad**, National President of AHSYM, said picnic celebrations are an **insult to the martyrs**.
- **Gabbar Singh Hembram**, National General Secretary, said many Ho people were **killed, hanged, or jailed** for resisting injustice.

5. Historical Significance

- Large-scale killings of Ho tribals took place in:
 - **Kharsawan**
 - **Jagannathpur**
 - **Serengasiya** (Jharkhand)
 - **Kalinganagar** (Odisha)
- These events are remembered as **historic sacrifices** for both the Ho community and the nation.

About the Ho Tribe

6. Identity

- The **Ho** (also called **Kolha**) are an **Austroasiatic Munda tribal group** of India.
- They call themselves **Ho, Hodoko, or Horo**, meaning 'human' in their language.

7. Geographical Distribution

- The Ho people are mainly found in the **Kolhan region of Jharkhand and Odisha**.
- They form about **10.7% of the ST population in Jharkhand** and **7.3% in Odisha** (2011 Census).
- They also live in **West Bengal, Bihar, Bangladesh, and Nepal**.

8. Language

- Ho people speak the **Ho language**.
- It belongs to the **Austroasiatic language family**.
- It is closely related to **Mundari**.

9. Occupation

- Most Ho people are engaged in **agriculture**.
- Some work as **agricultural labourers**.
- Others are involved in **mining and allied activities**.

10. Social and Cultural Features

- Clothing is **simple and minimal**.
- Women wear **traditional tribal jewellery**.
- Women enjoy a **higher social status** compared to many other tribes.

11. Dance and Music

- Dance is central to Ho culture.
- Every village usually has an **akhra** (traditional dancing ground).
- Common musical instruments include:
 - **Dama** (drum)
 - **Dholak**
 - **Dumeng / Mandar**
 - **Rutu** (flute)

12. Religion

- Most Ho people follow **Sarnaism**, a **nature-based tribal religion**.
- It is distinct from mainstream Hinduism.
- The village priest is known as a **Deuri**.



Economics

Fully Accessible Route (FAR) & FPI Participation in India



Fully Accessible Route (FAR)

Why in News?

Foreign Portfolio Investment (FPI) through the **Fully Accessible Route (FAR)** eligible bonds reached **Rs 5,760 crore** in November 2025. This activity highlights the growing importance of India's debt market, particularly following its integration into major global bond benchmarks, which has shifted the focus of foreign investors toward Indian sovereign debt.

I. What is a Fully Accessible Route (FAR)?

Introduced by the **Reserve Bank of India (RBI)** in 2020, the FAR is a special investment channel designed to attract long-term foreign capital into the sovereign debt market.

Key Features

- **No Quantitative Caps:** Foreign investors can buy and sell designated Government of India securities (**G-Secs**) without any upper limits on investment.
- **Open Access:** Unlike other routes, these bonds offer unrestricted "buy-sell" liquidity, similar to the access available to domestic investors.
- **Eligible Investors:** Open to **Foreign Portfolio Investors (FPIs)**, Non-Resident Indians (NRIs), and Overseas Citizens of India (OCIs).

Significance of Index Inclusion

- **JP Morgan EMBI:** In 2024, JP Morgan added 29 Indian FAR bonds to its **Emerging Market Bond Index (EMBI)**. This inclusion is being phased in over 10 months (ending March 2025), targeting a maximum weight of **10%**.
- **Global Visibility:** Inclusion in indices like JP Morgan and Bloomberg (scheduled for 2025) forces passive global funds to automatically allocate capital to Indian bonds.

II. Other Routes for Foreign Investment in Indian Debt

To maintain macroeconomic stability, the RBI manages three distinct entry points for foreign debt capital:

Route	Target Asset	Restrictions / Features
FAR Route	Central G-Secs	No limits. Best for large global index funds and high-liquidity seekers.
General Route (GR)	Corporate & Govt Bonds	Subject to limits. FPIs face quantitative caps and maturity restrictions.
Voluntary Retention Route (VRR)	Debt Securities	Retention Requirement. FPIs get regulatory relaxations if they commit to keeping 75% of their investment in India for at least 3 years .

III. Foreign Portfolio Investment (FPI) 2025 Trends

FPI refers to the purchase of financial assets like stocks and bonds by foreign entities. Unlike FDI, it is **passive** and does not involve direct management control.

FPI Status in India (Year-to-Date 2025)

- Debt Market Strength:** While equities saw record outflows in 2025 (Rs 1.6 lakh crore), the debt market remained a "bright spot," receiving over **Rs 69,000 crore** (up to Oct 2025), largely driven by FAR bonds.
- Investment Limit:** An FPI can hold up to **10%** of a company's paid-up capital. Crossing this threshold reclassifies the investment as **Foreign Direct Investment (FDI)**.

IV. Factors Influencing FPI Participation

- Interest Rate Differential:** The gap between Indian bond yields (approx. 7%) and US Treasury yields. Higher Indian rates attract "carry trade" investors.
- Exchange Rate Stability:** FPIs are highly sensitive to the **Rupee-Dollar (\$)** rate. A volatile or depreciating Rupee erodes their dollar-denominated returns.
- Monetary Policy:** Anticipation of **RBI rate cuts** or liquidity measures (like Open Market Operations) often triggers front-loaded inflows into bonds.
- Sovereign Rating:** Positive outlooks from agencies (S&P, Moody's) encourage long-term institutional players like pension funds to enter the FAR.

V. Challenges and Risks

- Hot Money Risk:** FPIs are considered "volatile capital." Sudden global shocks (e.g., US Fed rate hikes) can lead to rapid outflows, destabilizing the local currency.
- Market Volatility:** Unrestricted inflows can lead to sharp fluctuations in bond yields, affecting the government's borrowing costs.
- Exclusion of Long-term Bonds:** In August 2024, the RBI strategically excluded new **14-year and 30-year bonds** from the FAR to prevent excessive volatility in long-term infrastructure funding rates.

Conclusion: The FAR framework is the primary engine integrating India into the global financial architecture. While 2025 has seen cautious global sentiment, the continued inflow into FAR bonds demonstrates India's resilience as a preferred sovereign debt destination among emerging markets.

Global Trade Protectionism & The Impact of Rising Tariffs



Why in News?

The **World Trade Organization (WTO)**, in its latest **Trade Monitoring Report (November 2024–2025)**, revealed a staggering surge in trade barriers. Global imports worth **USD 2,640 billion** (11.1% of world merchandise imports) were hit by new tariffs and restrictive measures—a **four-fold increase** compared to the previous year. This marks the highest level of trade restrictions documented in over 15 years.

I. Factors Driving the Surge in Tariffs

- Rising Protectionism:** Major economies are increasingly shifting toward "inward-looking" policies to shield domestic industries.
- Geopolitical Tensions:** The "America First" agenda and reciprocal tariff regimes (notably the **50% US tariff** on several categories of Indian goods) have sparked retaliatory cycles.
- National Security & Strategic Materials:** Countries are imposing restrictions on "critical minerals" (e.g., gallium, germanium) and semiconductor technology to secure supply chains.
- Industrial Subsidies:** A move toward non-financial interventions in sectors like Green Energy and AI has led to trade friction among global leaders.

II. Impact on India (2025 Analysis)

- **The US Tariff Shock:** In August 2027, US tariffs on India effectively rose to **50%** on key sectors. This targets nearly **66%** of India's exports to its largest trading partner.
 - **Worst Hit Sectors:** Textiles & apparel, gems & jewellery, leather, and marine products.
 - **Exempted Sectors:** Pharmaceuticals (generic drugs) and critical minerals remain shielded to protect US supply chain stability.
- **Widening Trade Deficit:** Slower export growth in labor-intensive sectors threatens to widen the trade gap despite strong domestic resilience.
- **Rupee Volatility:** Increased trade risks caused the Rupee to hit record lows (around **88.78 per USD**) in late 2025, raising costs for imported raw materials.
- **Supply Chain Diversification:** India is responding by accelerating deals like the **India-UK FTA** (signed July 2025) and seeking new markets in Europe and the Gulf to reduce US-dependence.

III. Understanding Tariffs

Definition: A tariff is a tax or duty imposed by a government on imported goods. It serves as a tool for:

1. **Revenue Generation:** Providing a source of income for the government.
2. **Domestic Protection:** Making imports more expensive to encourage consumers to "Buy Local."
3. **Trade Diplomacy:** Used as leverage in negotiations or as a retaliatory measure during trade wars.

Feature	GATT (1948–1994)	WTO (1995–Present)
Status	A set of rules; no institutional body.	A permanent international institution.
Scope	Only goods.	Goods, Services, and Intellectual Property (TRIPS).
Disputes	Slow; based on consensus.	Binding dispute settlement mechanism.

IV. World Trade Organization (WTO)

- **Origin:** Born from the **Uruguay Round** (1986–94) and established via the **Marrakesh Agreement** in **1995**.

- **Role:** Only global international organization dealing with the rules of trade between nations.
- **Structure:** * **Ministerial Conference:** Highest decision-making body (meets every two years).
 - **General Council:** Manages day-to-day operations in Geneva.
- **Current Challenges:** The **Appellate Body** (Dispute Settlement) remains paralyzed due to lack of member consensus on appointments, leading to a rise in unilateral trade actions.

Conclusion: The year 2025 is being termed a "Tariffed" year for global trade. While the WTO reports a rise in trade-facilitating measures for AI and tech, the overarching trend of protectionism poses a risk to India's **USD 1 trillion export goal**. Resilience will depend on India's "domestic execution"—upgrading product quality and lowering logistics costs.

Masala Bonds Controversy & FEMA Regulations



Why in News?

- In December 2025, the **Enforcement Directorate (ED)** issued show-cause notices to Kerala Chief Minister **Pinarayi Vijayan**, former Finance Minister **T.M. Thomas Isaac**, and the CEO of the **Kerala Infrastructure Investment Fund Board (KIIFB)**.
- The notice, amounting to **Rs 466.91 crore**, alleges violations of the **Foreign Exchange Management Act (FEMA)** and **RBI** guidelines regarding the end-use of funds raised through **Masala Bonds** in 2019.
- The ED's primary allegation is that KIIFB used a portion of the funds to **purchase land**, an activity specifically prohibited under the RBI's **External Commercial Borrowing (ECB)** framework.

I. What are Masala Bonds?

Definition: Rupee-denominated bonds issued by Indian entities (government or corporate) to overseas investors to raise capital.

Key Characteristics

- Currency Risk:** Unlike traditional foreign loans (ECBs) where the Indian borrower bears the risk of rupee depreciation, in Masala Bonds, the **foreign investor bears the exchange rate risk**.
- Denomination:** The bond is expressed in **Indian Rupees (INR)**, but interest and principal are settled in foreign currency at the prevailing exchange rate.
- Objective:** To help Indian entities access foreign capital markets without exposure to forex volatility and to **internationalize the Rupee**.
- Regulatory Body:** Governed by the **RBI** under the ECB framework and **SEBI** for market listing.

II. Regulations and Maturity Norms

Feature	Requirement
Minimum Maturity	3 years (for bonds up to USD 50 million) 5 years (for bonds above USD 50 million)
Eligible Issuers	Indian corporates, NBFCs, and government-affiliated bodies (like KIIFB).
Eligible Investors	Qualified foreign investors from FATF-compliant jurisdictions.
Listing	Typically listed on the London Stock Exchange (LSE) or Singapore Exchange.

III. Permitted vs. Restricted End-Uses

To prevent speculation and financial instability, the RBI restricts how Masala Bond proceeds can be used:

- Permitted Uses:**
 - Infrastructure development.
 - Affordable housing and integrated townships.
 - Working capital for companies.
 - Refinancing existing rupee-denominated debt.
- Restricted Uses (The "Negative List"):**
 - Real Estate activities** (buying land or commercial property for investment).
 - Investing in domestic equity/capital markets.
 - On-lending to other entities for prohibited activities.

IV. Comparison: Global Local-Currency Bonds

Bond Type	Origin / Currency	Key Feature
Masala Bond	India / INR	Issued outside India but denominated in Rupees.
Dim Sum Bond	China / RMB	Renminbi-denominated bonds issued in Hong Kong.
Samurai Bond	Japan / JPY	Yen-denominated bonds issued in Japan by foreign entities.
Yankee Bond	USA / USD	Dollar-denominated bonds issued in the US by foreign entities.
Kangaroo Bond	Australia / AUD	AUD-denominated bonds issued in Australia by foreign firms.

V. Significance of Masala Bonds

- Cheaper Credit:** Allows Indian firms to tap into global markets where interest rates (2-3%) are often lower than domestic rates.
- Macro-Stability:** Reduces the "original sin" of emerging markets (borrowing in foreign currency), which can lead to a debt crisis if the local currency crashes.
- Liquidity:** Deepens the offshore market for the Rupee, supporting India's goal of making the INR a global reserve currency.

Health Security se National Security Cess Bill, 2025



Why in News?

- In December 2025, the Parliament passed the **Health Security se National Security Cess Bill, 2025**, after it was cleared by the Lok Sabha (Dec 5) and returned by the Rajya Sabha (Dec 8).
- The Bill introduces a unique **capacity-linked excise cess** on **pan masala** and other notified demerit goods.
- This move is designed to replace the revenue stream lost by the phase-out of the **GST Compensation Cess** on "sin goods," ensuring

stable funding for India's strategic and healthcare needs.

I. Highlights of the Bill 2025

- **Purpose:** To create a "dedicated and predictable" revenue stream for:
 - **National Security:** Funding capital-intensive modern warfare tech like precision weapons, autonomous systems, and space/cyber capabilities.
 - **Public Health:** Strengthening health infrastructure to combat tobacco-related diseases (which cause over **13 lakh deaths** annually in India).
- **Nature of Levy:** It is a **Special Excise Cess** levied on the **production capacity** (machinery) rather than actual output/sales. This is to curb tax evasion often seen in the unorganized pan masala sector.
- **Goods Covered:** Initially applies only to **pan masala**, but the Centre can notify other "sin goods" (like tobacco or additional demerit products) later.
- **Proceeds:** Credited to the **Consolidated Fund of India**. Notably, Finance Minister Nirmala Sitharaman clarified that this revenue **will be shared with states**, as health is a State subject.

II. Basis of Calculation: Capacity-Linked Levy

Unlike standard taxes based on sales value, this cess is calculated based on the **factory's manufacturing capacity**:

Production Type	Basis of Calculation	Illustrative Monthly Cess Rate
Machine-Based	Based on maximum rated speed (pouches/min) and pack weight .	Rs 1.01 crore/month (for machines <500 pouches/min) up to Rs 25.47 crore/month for high-speed units.
Manual Process	Fixed flat monthly rate per unit.	Rs 11 lakh/month per factory unit.

- **Abatement:** If a machine/unit remains inoperative for **15 or more continuous days**, the manufacturer is eligible for a proportionate reduction (abatement) in the monthly cess.

III. Enforcement & Compliance Framework

- **Registration:** Mandatory for any person owning or controlling machinery used for manufacturing specified goods.

- **Filing:** Self-declaration of machines and monthly returns must be filed by the **7th of every month**.
- **Penalties:** Includes seizure of undeclared machinery and recovery of dues.
- **Prosecution:** Severe violations (evasion >Rs 1 crore) can lead to imprisonment for **1 to 5 years**.
- **Appeals:** A three-tier structure starting from the **Appellate Authority** to the **CESTAT (Tribunal)**, and eventually the High Court/Supreme Court.

IV. What is Cess?

Definition: A "tax on tax" levied for a **specific, earmarked purpose**.

- **Earmarked Use:** Unlike a general tax, the funds from a cess can *only* be used for the purpose it was collected (e.g., Swachh Bharat Cess only for sanitation).
- **Constitutional Basis:** Recognized under **Articles 270 and 271**.
- **Divisible Pool:** Historically, cesses were excluded from the divisible pool (not shared with states). However, the 2025 Bill explicitly allows for sharing this specific revenue with states due to the "Health" component.

V. Tax Vs. Cess vs. Surcharge

Feature	Tax (e.g., GST)	Cess	Surcharge
Purpose	General revenue for government.	Specific, earmarked purpose.	Extra tax on high-income earners.
Revenue Sharing	Shared with states (Divisible Pool).	Generally not shared (but this Bill is an exception).	Not shared with states.
Duration	Permanent.	Temporary (until objective is met).	No fixed period.
Example	Income Tax, Customs.	Education Cess, Health Cess.	10% on income >Rs 50 lakh.

Conclusion: The **Health Security se National Security Cess Bill, 2025** is a strategic fiscal tool that aligns "demerit consumption" with national welfare. By taxing production capacity, it ensures tax transparency while providing the capital needed for India's high-tech military modernization and public health resilience.

Export Promotion Mission (EPM) & India's Trade Resilience



Why in News?

- In November 2025, the Union Cabinet approved the **Export Promotion Mission (EPM)**, a flagship initiative originally announced in the **Union Budget 2025–26**.
- With an outlay of **Rs 25,060 crore** (FY 2025–26 to 2030–31), the mission aims to unify fragmented export schemes and shield Indian industries—particularly MSMEs—from global trade shocks, such as the **50% tariffs** recently imposed by the US on certain categories.

I. What is the Export Promotion Mission (EPM)?

Definition: A six-year, mission-mode project that consolidates several existing export-support initiatives (like the Interest Equalisation Scheme and Market Access Initiative) into a single, digitally driven framework.

The Two Pillars of EPM

The mission operates through two integrated sub-schemes to provide holistic support:

Sub-Scheme	Focus Area	Key Interventions
Niryat Protsahan	Financial Support	Affordable trade finance, interest subvention, export factoring, and credit cards for e-commerce exporters.
Niryat Disha	Non-Financial Enablers	Quality compliance, international branding, logistics support, and district-level capacity building.

- Implementing Agency:** Directorate General of Foreign Trade (DGFT) via a dedicated, paperless digital platform.
- Target Groups:** MSMEs, first-time exporters, and labor-intensive sectors (Textiles, Leather, Gems & Jewellery).

II. Status of India's Export Industry (2024–25)

India's export sector has demonstrated remarkable resilience despite global headwinds.

- Record Highs:** Total exports (merchandise + services) hit an all-time high of **USD 825.25 billion** in 2024–25.
- Composition Shift:** A visible upgrade from low-value goods to high-value manufacturing.
 - Electronics:** Mobile phone exports reached **Rs 2 lakh crore** in 2024–25 (a 127-fold increase in a decade).
 - Services:** Now contributes nearly **44–48%** of total exports, showcasing India's knowledge-economy strength.
- Top Markets:** USA (13.3%), UAE (9.3%), China, Netherlands, and the UK.

III. RBI Trade Relief Measures 2025

To complement the EPM, the **Reserve Bank of India (RBI)** issued the **Trade Relief Measures Directions, 2025** on November 14, to mitigate debt-servicing burdens caused by global disruptions.

- Moratorium:** Banks may grant a moratorium on term-loan installments and defer interest on working capital falling due between **Sept 1 and Dec 31, 2025**.
- Extended Tenure:** Maximum period for pre-shipment and post-shipment export credit extended to **450 days** (from 365 days) for credit disbursed until March 2026.
- Repatriation Ease:** Time limit to realize and repatriate export value extended from 9 months to **15 months**.

IV. Major Initiatives to Promote Exports

Initiative	Purpose / Impact
PM Gati Shakti	Reduces logistics costs via multimodal connectivity.
RoDTEP / RoSCTL	Refunds embedded taxes; extended in 2025 to cover SEZs and EOUs.
PLI Schemes	Attracts large-scale manufacturing in 14 strategic sectors.
Districts as Export Hubs	Identifies and brands specific products from all 780+ districts.
Credit Guarantee (CGSE)	Provides 100% government guarantee to lenders for export credit.

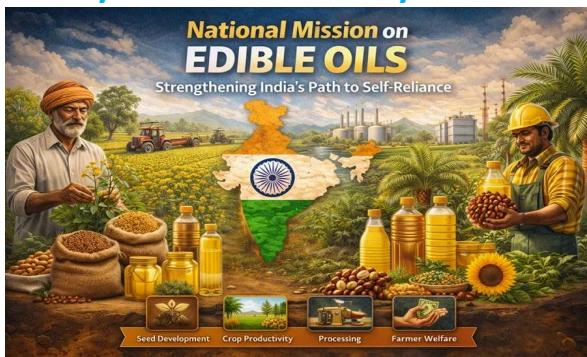
V. Challenges and Future Strategy

- Regional Concentration:** Export growth is currently concentrated in coastal states (Gujarat, Maharashtra, Tamil Nadu). EPM aims to bridge this "decoupling" by focusing on **interior and low-export districts**.

- **Tariff Walls:** As major economies (like the US) increase protectionism, India is diversifying into the Global South and finalizing FTAs with **Oman and the UK (CETA 2025)**.
- **Logistics Cost:** Aiming to reduce costs from 13% to **8% of GDP** by 2030 through the National Logistics Policy.

Conclusion: The Export Promotion Mission is a strategic pivot from "fragmented incentives" to "integrated empowerment." By combining financial liquidity (Niryat Protsahan) with global market readiness (Niryat Disha), India is building the structural resilience needed to reach its **USD 2 trillion export goal by 2030**.

National Mission on Edible Oils (NMO) – Pathways to Self-Sufficiency



Why in News?

The Government of India has intensified its push for **Atmanirbarta (self-reliance)** in edible oils through the **National Mission on Edible Oils (NMO)**. This comprehensive strategy addresses India's heavy reliance on imports, which currently meet approximately **57%** of domestic demand.

- **NMO-Oil Palm (2021):** Focused on expanding the cultivation of high-yielding oil palm, particularly in the North-East.
- **NMO-Oilseeds (2024):** A newer initiative (outlay of **Rs 10,103.38 crore**) targeting nine primary oilseed crops to bridge the **60% yield gap**.
- **Status (Dec 2025):** Oil palm coverage has reached **6.20 lakh hectares**, and Crude Palm Oil (CPO) production has doubled over the last decade.

I. NMO – Oil Palm (NMO-OP)

Definition: A Centrally Sponsored Scheme launched in 2021 to reduce the import bill of palm oil, which accounts for nearly **60%** of India's total edible oil imports.

Strategic Interventions

- **Viability Price (VP):** A historic price assurance mechanism that protects farmers from volatile international CPO prices. If market prices fall below the VP, the government provides **Viability Gap Funding** via DBT.
- **Input Subsidies:** Assistance for planting material was hiked from Rs 12,000 to **Rs 29,000 per hectare**.
- **Focus on the North-East:** To encourage the industry, the Centre provides a **capital assistance of Rs 5 crore** for setting up processing units in NE states and the Andaman & Nicobar Islands.

Key Targets (By 2025-26)

- **Area Expansion:** Target of **6.5 lakh hectares** additional area (Total target: 10 lakh ha).
- **Production:** Increase CPO output to **11.20 lakh tonnes** (Current: 3.80 lakh tonnes).

II. NMO – Oilseeds (NMO-OS)

Definition: Approved in 2024 (2024-25 to 2030-31), this mission aims to increase the production of primary oilseeds (Mustard, Groundnut, Soybean, etc.) from **39 MT** to **69.7 MT**.

Implementation Pillars

- **Seed Systems:** Establishing **65 new seed hubs** and 50 storage units to ensure the availability of climate-resilient, high-yielding varieties.
- **Value Chain Clusters:** Identifying **1,000+ clusters** across 500 districts where farmers get free high-quality seeds and training in Good Agricultural Practices (GAPs).
- **Secondary Sources:** A dedicated sub-mission to improve oil extraction from **Rice Bran, Cottonseed, and Tree-Borne Oilseeds (TBOs)** like Neem and Mahua.

III. The Oilseed Scenario in India

India is the **4th largest** edible oil economy in the world, yet it remains vulnerable due to its reliance on rainfed agriculture.

Metric	Status (2024-25)	Target (2030-31)
Area Under Oilseeds	29 million ha	33 million ha
Edible Oil Production	12.7 million tonnes	25.45 million tonnes
Self-Sufficiency %	~44%	72%
Primary Driver	Rainfed (76% area)	Irrigated & Intercropping

IV. Major Producing States & Specialization

Palm Oil Producing States



Source: Ministry of Agriculture and Farmers Welfare

- **Oilseeds Hub:** Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra contribute 77% of the total output.
- **Mustard:** Rajasthan leads the production.
- **Soybean:** Madhya Pradesh remains the "Soybean Bowl."
- **Oil Palm:** Andhra Pradesh and Telangana dominate current production (98%), while the North-East (Assam, Mizoram, Arunachal) is the designated expansion frontier.

V. Why India Faces Import Dependence

1. **WTO Impact:** Post-1990s, the reduction in import duties led to a surge in cheap imported oils (Palm and Soya), hurting domestic farmers.
2. **Low Productivity:** Indian oilseed yields are only one-third of global averages.
3. **Consumption Surge:** Per capita intake has risen sharply due to urbanization and dietary shifts (reaching ~19 kg/year).

Conclusion: The dual missions of NEMO are designed to secure India's **Nutritional Security** and conserve foreign exchange (approx. **Rs 1.5 lakh crore** annually). By integrating technology (Krishi Mapper), price security (VP), and community support (Krishi Sakhis), India aims to turn the "Yellow Revolution 2.0" into a permanent state of self-reliance.

Surge in Cryptocurrency Transactions & VDA Taxation in India



Why in News?

- In December 2025, the Ministry of Finance reported in the Rajya Sabha that cryptocurrency transactions in India witnessed a massive **41% surge** during the financial year **2024–25**.
- Total transaction values crossed **Rs 51,180 crore**, a sharp rise from the Rs 36,270 crore recorded in the previous fiscal year. This data is derived from the **Rs 511.8 crore** collected as **1% Tax Deducted at Source (TDS)** on Virtual Digital Asset (VDA) transfers.
- **Top States:** Maharashtra and Karnataka emerged as the hubs of crypto activity, collectively accounting for over **80%** of India's total transaction volume.
- **Compliance Crackdown:** The Income Tax Department recently detected **Rs 888.82 crore** in undisclosed income related to VDA transactions through search and seizure operations.

I. Understanding Cryptocurrency

Definition: A decentralized digital or virtual currency secured by cryptography, making it nearly impossible to counterfeit. It operates on **Blockchain technology**—a distributed ledger enforced by a disparate network of computers.

Core Functionalities

- **Mining:** The process by which new units are created and transactions are verified by solving complex mathematical puzzles.
- **Storage:** Held in digital "wallets," which can be **Hot** (connected to the internet for quick trading) or **Cold** (offline hardware for high security).

- **Blockchain:** A public, chronological record of all transactions that ensures transparency and prevents "double-spending."

II. Legal and Taxation Framework (2025)

India does not recognize cryptocurrency as **legal tender**, but trading and holding it is legal and subject to a strict tax regime under the **Income Tax Act, 2025**.

Tax Component	Rate / Condition	Purpose
Flat Income Tax	30% (plus 4% cess)	Levied on profits from the transfer of any VDA (Section 115BBH).
TDS	1%	Deducted at the time of transfer to create a transaction trail (Section 194S).
Loss Adjustment	Prohibited	Losses from one VDA cannot be offset against gains from another or any other income.
Deductions	None	No expense (except cost of acquisition) can be claimed as a deduction.

III. Regulatory Environment & Enforcement

As of late 2025, India follows a "Regulation through Taxation" approach while developing a formal legislative framework.

- **PMLA Coverage:** All Virtual Asset Service Providers (VASPs)—domestic and offshore—must register with the **Financial Intelligence Unit (FIU-IND)** under the Prevention of Money Laundering Act.
- **Asset Classification:** Cryptos are legally classified as **Virtual Digital Assets (VDAs)**.
- **Offshore Compliance:** The government has issued notices to non-compliant offshore exchanges, requiring them to follow TDS norms if they serve Indian users.
- **The "Grey Zone":** While trading is legal, using crypto to pay for goods/services remains prohibited to protect the stability of the Indian Rupee.

IV. Why are Transactions Surging Despite High Taxes?

1. **Market Maturity:** After the initial shock of the 2022 tax laws, retail investors have adapted by shifting toward long-term holding (**HODLing**) rather than high-frequency day trading.
2. **Global Bull Cycles:** Rising global prices for Bitcoin and Ethereum in 2024–25 have attracted new retail participation seeking high returns.

3. **Institutional Entry:** Growing interest from fintech firms and the expansion of the **Digital Rupee (CBDC)** have increased general trust in digital ledger technologies.

V. Risks and Challenges

- **Volatility:** Crypto remains a highly speculative asset class with no underlying physical value.
- **Lack of Redressal:** In the absence of a dedicated regulator (like SEBI or RBI for crypto), investors have no formal grievance mechanism for exchange hacks or fraud.
- **Security Threats:** ICMR and other agencies have flagged rising cases of crypto-related money laundering and "pig butchering" scams.

Conclusion: The jump to **Rs 51,000+ crore** in transactions proves that cryptocurrency has moved from a "grey-zone experiment" to a high-volume taxable asset class. However, the detection of nearly **Rs 889 crore** in undisclosed income highlights the urgent need for a comprehensive **Crypto Regulation Bill** to balance innovation with financial security.

Hybrid Mutual Funds : Growth, Stability & Strategic Asset Allocation

HYBRID FUNDS

The Perfect blend of **Growth** and **Stability**



Why in News?

- In **December 2025**, hybrid mutual funds emerged as the "safety net of choice" for Indian retail investors amidst significant market volatility.
- While the Nifty 50 saw a sharp **17.25% correction** earlier in the year, hybrid schemes attracted record net inflows of **Rs 20,765 crore** in May alone.
- Wealth managers are increasingly pushing these funds to manage the "fear of heights" as equity markets touch new peaks, specifically targeting the **51% of senior citizen investors** who prioritize capital preservation.

I. What are Hybrid Mutual Funds?

Definition: Investment schemes that allocate capital across two or more asset classes—primarily **Equity (stocks)** for growth and **Debt (bonds)** for stability. Some variants also include **Gold, Silver, and REITs** (Real Estate Investment Trusts).

Core Working Mechanism

- **Dual Exposure:** They combine the high-return potential of stocks with the steady income of fixed-income instruments.
- **Automatic Rebalancing:** The fund manager sells high-performing assets and buys underperforming ones to maintain a pre-decided ratio. This "sell high, buy low" happens without any tax burden or effort for the investor.
- **Risk Mitigation:** When stock markets crash, the debt portion acts as a cushion, significantly reducing **drawdowns** (the peak-to-trough decline).

II. Major Types of Hybrid Mutual Funds (2025 Categorization)

Type of Fund	Equity Allocation	Debt / Other Allocation	Best For
Aggressive Hybrid	65–80%	20–35%	Long-term wealth with lower volatility than pure equity.
Conservative Hybrid	10–25%	75–90%	Retirees seeking better returns than FDs with low risk.
Balanced Advantage (BAF)	0–100% (Dynamic)	0–100% (Dynamic)	Investors who want to "automate" market timing.
Multi-Asset Allocation	Min. 10% in each	Equity, Debt, & Gold/Silver	All-weather diversification across 3+ assets.
Arbitrage Fund	Min. 65%	0–35%	Low-risk parking of funds; taxed like equity.

III. Tax Benefits: The 2025 Landscape

The **July 2024 Budget** significantly altered the taxation of mutual funds, making certain hybrid categories more attractive than traditional debt.

1. Equity-Oriented Hybrids (Equity \geq 65%)

Includes Aggressive Hybrids and Arbitrage Funds.

- **Short-Term (STCG):** Held < 12 months – Taxed at **20%**.
- **Long-Term (LTCG):** Held > 12 months – Taxed at **12.5%** (Exemption up to **Rs 1.25 lakh** per year).

2. Debt-Oriented & Other Hybrids (Equity $<$ 65%)

Includes Conservative Hybrids and Multi-Asset funds with low equity.

- **Taxation:** Gains are added to your income and taxed at your **applicable slab rate** (up to 30% + cess).
- **Indexation:** Indexation benefits (adjusting for inflation) have been largely removed for new investments.

IV. Market Trends & Performance (2025)

- **Outperforming Large Caps:** In the five-year period ending Dec 2025, several **Multi-Asset Allocation Funds** delivered a CAGR of **26.8%**, outperforming pure large-cap equity funds (~21%) with much lower risk.
- **Systematic Investment Plans (SIPs):** Monthly SIP contributions to hybrid funds rose by **16%** year-on-year, highlighting their role in long-term asset accumulation.
- **Tier-2 & Tier-3 Growth:** According to ICRA, the majority of new inflows into equity-hybrid funds are now coming from smaller cities, signaling a maturing retail investor base.

V. Why Choose Hybrid Funds Over Direct Investing?

1. **Professional Expertise:** Managing a 60:40 split between stocks and bonds manually involves high transaction costs and constant monitoring.
2. **Tax Efficiency:** Fund managers can rebalance the portfolio *internally* without triggering capital gains tax for the investor.
3. **Lower Psychological Stress:** The presence of debt and gold ensures that the portfolio doesn't "bleed" as much as the Nifty or Sensex during market crashes.

Conclusion: Hybrid mutual funds have transitioned from "niche products" to the "**core portfolio**" for most Indian households in 2025. By blending growth, stability, and tax efficiency, they offer a disciplined path to wealth creation that can withstand the unpredictable "ebbs and flows" of the global economy.

India's Structural Shift to Domestic-led Capital Markets



Why in News?

- India's capital markets are undergoing a historic transformation where **domestic household savings** are increasingly replacing **Foreign Portfolio Investment (FPI)** as the primary source of liquidity.
- In **2025**, this shift reached a milestone as FPI ownership in Indian equities hit a **15-year low of 16.9%**, while domestic retail and institutional investors (DIIs) stepped in to provide an unprecedented cushion against global volatility.
- This "Financialization of Savings" has insulated the Indian market from external shocks like the **October 2025 global sell-off**, but it also brings new challenges regarding investor safety, valuation excesses, and inclusive wealth creation.

I. How Domestic Money is Transforming the Market

- Market Power Shift:** For the first time in decades, market influence has shifted from "globally mobile capital" to "stable domestic savers." Retail and mutual fund investors now own **nearly 19%** of the equity market.
- SIP Resilience:** Monthly inflows through **Systematic Investment Plans (SIPs)** hit record highs, with the mutual fund industry's AUM (Assets Under Management) crossing **Rs 81 trillion** in November 2025.
- IPO Boom:** Domestic risk appetite fueled a record-breaking primary market. In 2025, over **365 IPOs** (110 mainboard and 255+ SME) raised nearly **Rs 2 lakh crore**, the highest on record.
- Monetary Autonomy:** With less fear of "capital flight" by foreigners, the **RBI** has gained greater freedom to manage interest rates and protect the Rupee, which touched a historic low of **91 per US dollar** in December 2025.

II. Key Challenges: The "Growth Pains"

- Financial Literacy Gap:** Millions of new, young investors (under 30 years old) now make up **39%** of the base) are entering markets with a "quick-gain" mindset, often ignoring fundamentals.
- Valuation Excesses:** Many new-age tech companies and SMEs are trading at **stretched price-to-earnings (P/E) multiples**, far above their actual profit potential.

- The "Passive" Paradox:** Most active mutual funds are struggling to beat the market after fees, yet low-cost **passive index funds** remain under-utilized by retail savers.
- Unequal Participation:** Market gains are still heavily concentrated in urban centers (T30 locations). Broadening this to **B30 (Beyond top 30 cities)** locations remains a hurdle for "Viksit Bharat."

III. Strengthening the Ecosystem: SEBI Reforms 2025

In its December 17, 2025 board meeting, **SEBI** approved a sweeping set of reforms to safeguard this new class of domestic investors:

Reform Area	Key Action
Broker Regulations	Replaced 30-year-old rules with the SEBI (Stock Brokers) Regulations, 2025 to modernize oversight.
Mutual Fund Costs	Mandated AUM-based expense slabs to ensure economies of scale are passed to investors.
IPO Transparency	Introduced a standardized, abridged prospectus to make complex offer documents easier to read.
Investor Service	Reduced security credit timelines from 150 days to 30 days via direct demat credits.
Passive Investing	Capped exit loads and adjusted distributor incentives to promote Index Funds and ETFs .

IV. Financial Markets: The Structural Pillars

To understand this shift, it is essential to look at the four components of India's financial system:

- Money Market:** Short-term lending (<1 year).
- Capital Market:** Long-term equity and debt (IPOs and Bonds).
- Forex Market:** Currency trading (Rupee vs Dollar).
- Derivatives Market:** Options/Futures (where India now accounts for **~60% of global volumes**).

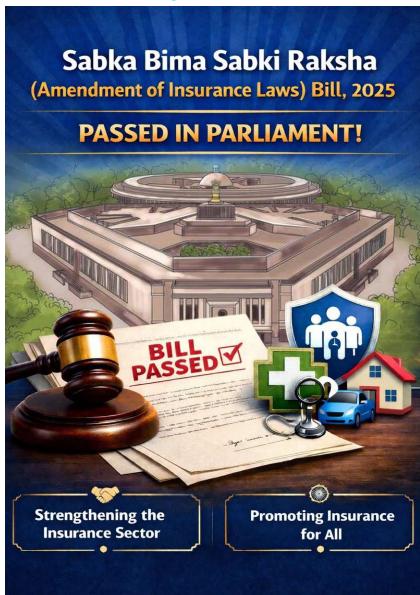
V. The Path to Viksit Bharat 2047

To sustain this domestic-led momentum, experts suggest:

- "Suitability" Selling:** Ensuring financial products match the investor's actual risk profile, moving away from "miss-selling."
- Governance First:** Strengthening the **Companies Act, 2013** and **LODR norms** to prevent "opportunistic exits" by promoters as their shareholding declines.
- Climate Resilience:** Integrating ESG (Environmental, Social, and Governance) data to protect long-term savings from climate-related financial risks.

Conclusion: The year 2025 marked the end of India's dependence on foreign capital for market survival. While the "Financialization of Savings" provides a stable anchor, the long-term success of this shift depends on building a culture of **informed investing** rather than **speculative trading**.

Sabka Bima, Sabki Raksha (Amendment of Insurance Laws) Bill, 2025



Why in News?

- In December 2025, the Lok Sabha passed the **Sabka Bima, Sabki Raksha (Amendment of Insurance Laws) Bill, 2025**. The legislation marks a watershed moment in India's financial history by raising the **Foreign Direct Investment (FDI) limit in insurance from 74% to 100%**.
- The move is the center-piece of the government's "**Insurance for All by 2047**" vision, aiming to attract global capital and expertise to bridge the massive protection gap in one of the world's most populous nations.

I. Key Provisions of the 2025 Bill

The Bill amends three foundational acts: the **Insurance Act 1938**, the **LIC Act 1956**, and the **IRDAI Act 1999**.

- **100% FDI (Automatic Route):** Foreign companies can now fully own and operate insurance subsidiaries in India.
 - **Safeguard:** To maintain domestic oversight, the Bill mandates that at least **one top official** (Chairman, MD, or CEO) must be an **Indian citizen**.

- **Composite Licensing:** (Proposed in drafts, currently debated) Aims to allow a single insurer to sell **Life, General, and Health** products under one roof, reducing capital overheads for companies.
- **Reinsurance Reforms:** The **Net Owned Fund (NOF)** requirement for foreign reinsurers has been slashed from **Rs 5,000 crore to Rs 1,000 crore**, aiming to make India a global reinsurance hub.
- **Policyholders' Education and Protection Fund:** A dedicated fund under **IRDAI** to promote awareness and resolve grievances, funded primarily through penalties imposed on insurers.
- **Empowered IRDAI:** The regulator now has enhanced powers for **Search and Seizure**, and the authority to **disgorge wrongful gains** from insurers who violate norms.

II. State of the Indian Insurance Market (2025)

India is currently the **10th largest insurance market** in the world and is projected to reach the **6th position by 2032**.

Metric	Status (FY 2024-25)	Goal (2047)
Total Premium	Rs 11.93 Lakh Crore	Universal Coverage
Insurance Penetration	~4.0% of GDP	Global Average (~7%)
Life Insurance Rank	5th Globally	Top 3
FDI Inflow (Total)	Over Rs 82,000 Crore	Projected to Double

III. Challenges and Limitations

- **Rural-Urban Divide:** While FDI flows into metros, critics worry that foreign players may ignore the "Social Sector" and **rural households** where profitability is lower.
- **Data Sovereignty:** 100% foreign ownership raises concerns about the cross-border transfer of sensitive health and financial data. Compliance with the **DPDP Act, 2023** is mandatory.
- **Trust Deficit:** Despite private growth, **LIC** still holds nearly **60%** of the life insurance market share, reflecting a deep public trust in state-backed institutions that foreign firms must work to earn.

IV. Major Government Safety Nets

The Bill complements existing flagship schemes designed for the "uninsured":

- **Ayushman Bharat (PM-JAY):** Providing **Rs 5 lakh** annual health cover to 55 crore people.

- **PMJJBY & PMSBY:** Low-cost Life and Accident insurance for the unorganized sector.
- **PM Fasal Bima Yojana (PMFBY):** Protecting farmers against crop loss due to climate disasters.

V. The Way Forward: Insurance for All

To achieve the 2047 target, the 2025 reforms suggest:

1. **Hyper-personalization:** Using AI and Big Data to offer "Pay-as-you-go" and niche insurance (like Cyber or Climate insurance).
2. **Bima Sugam:** An "online marketplace" or "Amazon for Insurance" to simplify buying and claim settlements.
3. **Last-Mile Distribution:** Leveraging Self-Help Groups (SHGs) and Post Offices to penetrate rural "shadow" zones.

Conclusion: The **Sabka Bima, Sabki Raksha Bill, 2025** is a bold bet on global capital to solve a local crisis. By shifting from a restrictive 74% to a liberalized 100% FDI regime, India is signaling that it is ready to integrate its risk-management sector with the world, provided that the benefits of this "capital fuel" reach the last man in the queue.



EDITORIALS

Crux of The Hindu & Indian Express

Economics

**Repo Rate Cut by 25 bps to 5.25%,
RBI Calls It a "Rare Goldilocks Period"**



Repo rate cut 25 bp to 5.25%; 'rare Goldilocks period', says RBI Governor



1. Why is this issue in the news?

- The Reserve Bank of India (RBI) has **cut the repo rate by 25 basis points (bps)**, reducing it from **5.50% to 5.25%**.
- This decision was taken by the **Monetary Policy Committee (MPC)** in its **December 2025 policy meeting**.
- The RBI Governor described the current situation as a "**rare Goldilocks period**", where **economic growth is strong and inflation is low and stable**.
- This move is expected to **reduce loan interest rates, lower EMIs, and support economic growth**.

2. What is the repo rate?

- The **repo rate** is the **interest rate at which RBI lends money to commercial banks**.
- When the **repo rate is cut**:
 - Banks can borrow at a lower cost.
 - Lending rates usually come down.
 - Loans become cheaper for consumers and businesses.
- Therefore, a repo rate cut is a **growth-supporting monetary policy tool**.

What is the Monetary Policy Committee (MPC)?

- The **Monetary Policy Committee (MPC)** is the **body responsible for deciding India's monetary policy**, especially **interest rates**.
- It was established under the **RBI Act, 1934**, through an amendment in **2016**.

Composition of the MPC

- The committee has **six members**.
- **Three members are from the RBI:**
 - The **RBI Governor** (Chairperson)
 - One **Deputy Governor**
 - One RBI official nominated by the Central Board of the RBI
- **Three members are external experts** appointed by the **Central Government**.

How does MPC take decisions?

- Each member has **one vote**.
- Decisions are taken by **majority voting**.
- In case of a tie, the **RBI Governor has a casting vote**.

Main objectives of the MPC

- To maintain **price stability**, meaning **control inflation**.
- To support **economic growth**, without allowing inflation to rise uncontrollably.

- To achieve the **inflation target of 4% ± 2%** under the **inflation targeting framework**.

3. Key decision of the RBI MPC

- The **repo rate was cut by 25 bps to 5.25%**.
- This decision was taken **unanimously by the MPC**.
- This was the **first repo rate cut after two consecutive policy pauses**.
- The previous rate cut took place in **June 2025**, when the repo rate was reduced by **50 bps**.
- **Total repo rate cut in FY 2025–26 so far: 100 bps (from 6.25% to 5.25%)**

4. Why did RBI cut the repo rate now?

The RBI cited **two main reasons**:

A. Strong economic growth

- India's economy performed **better than expected**.
- The RBI increased its **GDP growth projection for FY26**.

B. Cooling inflation

- Inflation has continued to **decline steadily**.
- The inflation outlook is now considered **benign and well-anchored**.

Because of this **favourable growth–inflation balance**, RBI felt it had **policy space** to support growth.

5. What is meant by a “Goldilocks period”?

- A **Goldilocks period** refers to an economic situation that is **neither too hot nor too cold**.
- In simple terms, it means:
 - **High growth**
 - **Low and stable inflation**

RBI Governor Sanjay Malhotra stated:

- Inflation is at **2.2%**.
- Growth is close to **8%** in the first half of FY26.
- This combination creates a rare and ideal policy environment.

6. RBI's revised GDP growth projections

FY26 GDP Growth

- Revised upward by **50 bps**.
- New projection: **7.3%**.
- Earlier projection: **6.8%**.

Quarter-wise GDP growth estimates

- **Q3 FY26 (Oct–Dec): 7.0%** (earlier 6.4%).
- **Q4 FY26 (Jan–Mar): 6.5%** (earlier 6.4%).

However:

- Growth in Q3 and Q4 FY26 remains **lower than 8.2% growth recorded in Q2 (July–September 2025)**.
- RBI expects some **softening due to high base effect**.

7. Explanation of high base effect

- **High base effect** means current growth rates look lower because the **previous year's performance was very strong**.
- RBI Deputy Governor **Poonam Gupta** clarified that:
 - Growth is softening only from **very high levels**.
 - The outlook remains **resilient across all sectors**.

8. RBI's revised inflation projections

Overall CPI Inflation

- FY26 CPI forecast reduced from **2.6% to 2.0%**.

Quarter-wise inflation estimates

- **Q3 FY26:** Reduced to **0.6%** from 1.8%.
- **Q4 FY26:** Reduced to **2.9%** from 4.0%.
- **Q1 FY27:** Reduced to **3.9%** from 4.5%.

This shows **sharp disinflation**, especially in the near term.

9. RBI's view on future rate cuts

- The **policy stance remains “Neutral”**.
- MPC voted **5:1** in favour of maintaining the **neutral stance**.
- External MPC member **Ram Singh** voted for a shift to an **accommodative stance**.

RBI Governor's position:

- The Governor clearly stated that **any discussion on future rate cuts would be speculative**.
- RBI will make decisions **meeting by meeting**, based on data.

10. Impact of repo rate cut on common people and businesses

- **EMIs are expected to fall on:**
 - Home loans
 - Vehicle loans
 - Personal loans
 - Corporate loans
 - MSME and small business loans
- Lower borrowing costs are expected to:
 - **Boost consumption**.
 - **Encourage private investment**.

- Overall, the move supports a **growth-friendly environment**.

11. RBI's view on the rupee depreciation

- The Indian rupee breached the **psychological 90-mark** against the US dollar.
- RBI Governor stated that:
 - RBI does **not target any specific exchange rate level**.
 - Currency value is determined by **market forces**.

Important clarification:

- RBI intervenes only to **prevent excessive or abnormal volatility**, not to fix a rate.
- The rupee closed at **₹89.95 per dollar**, compared to **₹89.89** the previous day.

12. RBI on forex market intervention

- The Governor stated that there has been **no change in RBI's tolerance to volatility**.
- RBI continues to follow a **market-determined exchange rate regime**.

13. Liquidity measures announced by RBI

- To ensure **adequate liquidity** in the financial system, RBI announced:

Open Market Operations (OMO)

- Purchase of **government securities** worth **₹1 lakh crore**.
- USD/INR Buy-Sell Swap**
 - Three-year swap** worth **USD 5 billion**.
 - Aimed at injecting **durable liquidity**.

RBI's ₹ 1 Trillion OMO Purchase to Add Liquidity: What It Is and Why It Matters



1. Why is this issue in the news?

- During the **December 2025 monetary policy review**, the **Reserve Bank of India (RBI)** announced measures to **inject durable liquidity** into the financial system.
- The RBI will conduct:
 - Open Market Operation (OMO) purchases of government securities** worth **₹1 trillion**, and

- A **three-year USD-INR buy/sell swap** amounting to **\$5 billion**.

- These steps were announced to **support market stability** and to **strengthen monetary policy transmission**.
- RBI Governor **Sanjay Malhotra** stated that these actions would ensure **adequate and durable liquidity** in the banking system.

2. What is liquidity and why is it important?

- Liquidity** refers to the **availability of money in the banking system**.
- When liquidity is adequate:
 - Banks can lend smoothly.
 - Interest rates stay close to the RBI's policy rate.
 - Monetary policy decisions are transmitted effectively to the economy.
- When liquidity is tight:
 - Borrowing costs rise.
 - Policy transmission becomes weak.

3. What is an Open Market Operation (OMO)?

- Open Market Operations (OMOs)** are a **major monetary policy tool** used by the RBI.
- Through OMOs, the RBI **buys or sells government securities** in the open market to **manage liquidity**.

How OMOs work

- OMO purchase:**
 - RBI buys government securities from banks.
 - RBI pays money to banks.
 - Liquidity increases** in the banking system.
- OMO sale:**
 - RBI sells government securities to banks.
 - Banks pay money to RBI.
 - Liquidity decreases** in the system.

In December 2025, RBI announced **OMO purchases**, which means **liquidity injection**.

4. Why did RBI announce a ₹1 trillion OMO purchase?

- The RBI's decision is linked to **currency pressure and financial market conditions**.

A. Pressure on the Indian rupee

- The Indian rupee crossed the **psychological 90-mark** against the **US dollar**.

- Sharp depreciation often signals:
 - **Foreign investor outflows**, and
 - Higher demand for dollars.

B. Foreign outflows and liquidity drain

- When foreign investors pull out money:
 - Rupee liquidity reduces.
 - Banking system faces liquidity stress.
- **OMO purchases replenish liquidity** by injecting durable funds into banks.

5. How do OMOs help during rupee depreciation?

- Periods of currency stress often lead to:
 - Tight money-market conditions.
 - Higher **call money rates** and **short-term yields**.

Role of OMO purchases

- Increase **rupee liquidity** in banks.
- Ease pressure on short-term interest rates.
- Ensure smoother **inter-bank lending**.
- Support stability during volatile market conditions.

6. How do OMOs help monetary transmission?

- **Monetary transmission** means how effectively RBI's policy decisions reach banks, borrowers, and markets.
- Uneven liquidity across banks can:
 - Distort interest rates.
 - Reduce the impact of repo rate cuts.
- **Durable liquidity through OMOs:**
 - Creates uniform liquidity conditions.
 - Helps banks align lending rates with the **policy repo rate (5.25%)**.
 - Improves the efficiency of RBI's policy actions.

7. OMOs vs Repo operations: RBI Governor's explanation

- RBI Governor **Sanjay Malhotra** clearly explained the difference between OMOs and repo operations.

Open Market Operations (OMOs)

- Objective: **Provide or absorb durable liquidity**.
- Impact: **Long-term** liquidity management.

Repo operations

- Objective: **Manage short-term or transient liquidity**.
- Impact: Usually **overnight or very short period**.

Operating target of RBI

- RBI uses these tools to align the **Weighted Average Call Rate (WACR)** with the **policy repo rate**.
- The repo rate currently stands at **5.25%**.

8. Use of multiple tools together

- RBI stated that it can:
 - Inject **durable liquidity** through **OMO purchases**, and
 - Withdraw **short-term liquidity** simultaneously through **Variable Rate Repo (VRR) operations**, if required.

This flexible approach allows RBI to **fine-tune liquidity conditions** without creating instability.

9. What is the broader economic backdrop?

- RBI Governor highlighted that despite a **challenging global environment**, India's economy remains **resilient**.
- Global uncertainties include:
 - Slowing global growth.
 - Geopolitical tensions.
 - Financial market volatility.
- Despite these factors:
 - India is expected to maintain **strong growth momentum**.
 - A favourable **inflation outlook** has given RBI the space to remain **growth-supportive**.

10. Why this decision matters

- Supports **banking system liquidity**.
- Prevents excessive tightening in money markets.
- Strengthens **monetary policy transmission**.
- Helps manage volatility caused by **rupee depreciation**.
- Reinforces market confidence during uncertain global conditions.

Is India's 8.2% Growth Rate Sustainable?



WHY IN NEWS?

- India recorded **8.2% GDP growth**, one of the fastest in the world.
- But **IMF gave India a “Grade C” rating** for the quality of its GDP data and national accounts.
- This raised a big question: “**Is India truly growing strongly, or are there deeper structural problems?**”

India's Current Economic Situation:

1. GDP Growth — 8.2%

- Shows strong economic momentum, not just a post-COVID bounce.
- Total output in one quarter: **₹48.63 lakh crore** (very high).

2. Manufacturing Up — 9.1%

- Factories running closer to full capacity.
- Good sign for industrial demand.

3. Services Sector Strong — 9.2% (60% of GDP)

- Finance sector growing at **10.2%** → more loans, more transactions.

4. GVA Growth Also Strong

- GVA rose from **₹82.88 lakh cr** → **₹89.41 lakh cr**.
- This means real production increased, not just prices.

5. Low Inflation

- Nominal GDP increased only slightly more than real GDP → inflation under control.

6. Consumption Rising

- **PFCE up 7.9%** → households spending more.

7. Agriculture Growth — 3.5%

- Better due to full reservoirs + improved horticulture.

8. Banking Sector Healthy

- Banks have clean balance sheets.
- Credit (loans) growing strongly.

9. Government Finances Stable

- GST + direct taxes remain strong.
- Spending quality better (more capital spending).

10. External Sector Stable

- Low current account deficit
- Strong services exports
- Good forex reserves

- Overall: Data shows strong momentum. India is growing even as many other countries slow down.

IMF's "GRADE C" — Why Did It Become a Controversy?

- The IMF's rating shocked many because India is growing fast but received a low grade.

IMF's Main Concerns

IMF said India's data system has several **technical weaknesses**, such as:

1. **Old base year – still 2011-12**
2. **Still uses wholesale price index (WPI)** for some calculations instead of Producer Price Index
3. **Single deflation used too much** → may create errors
4. **Mismatch between production data & expenditure data**
5. **No seasonally adjusted GDP**
6. **State-level data weak or missing after 2019**

Meaning: India grows fast, but the **data quality and institutional systems** behind GDP need improvement.

Hidden Weaknesses in the Economy

- Even with strong numbers, some sectors dragged:

1. Mining Almost Flat — 0.04%

- A long monsoon disturbed mining work.

2. Electricity/Utilities Weak — 4.4%

- Milder winter reduced power demand.

3. Uneven Recovery

- Agriculture: **14% of GVA**, but employs **~45% of workforce**.
- India's workforce is stuck in **low-productivity sectors**.

4. Structural Issues

- Too many workers in agriculture & informal jobs.
- Goods exports still weak.
- Rupee stable but under pressure from high global dollar.
- Productivity still low in many sectors.

RBI's Concerns — Long-Term Risks

1. Global Trade Protectionism Rising

- Makes exporting goods harder for India.

2. Geopolitical tensions

- Affect global demand → affect India's exports.

3. Institutions still need strengthening

- Better data systems
- Better coordination between states and centre
- Better labour productivity policies

What Does This All Mean?

India is growing FAST in the short term.

- GDP of 8.2% is a big achievement.

But long-term stability needs STRONG FOUNDATIONS.

- The IMF is not doubting the growth rate — it is questioning the **quality of systems** behind the growth.

Growth is not evenly spread.

- Services booming
- Manufacturing improving
- Mining + utilities weak
- Agriculture growth still small but employs millions

India must fix:

- Data quality
- Labour productivity
- Institutional capacity
- Export competitiveness

So... Is the 8.2% Growth Sustainable?

- **YES in the short term, because:**

- Demand strong
- Manufacturing up
- Services booming
- Inflation under control
- Banks healthy

BUT NOT GUARANTEED in the long term, because:

- Structural issues remain
- Weak exports
- Low productivity
- Data system concerns
- Sectoral imbalance

In short:

- ◆ *India is running fast, but*
- ◆ *its road needs repairs if it wants to keep running for long.*

NATIONAL STEERING COMMITTEE FOR PM VISHWAKARMA SCHEME



PM Vishwakarma

Empowering
traditional artisans
and crafts-people



Why in News?

- The **National Steering Committee (NSC)** for the **PM Vishwakarma Scheme** approved several **policy and operational measures** to improve **loan sanctions, disbursements, and beneficiary outreach**.
- This information was provided by the **Minister of State for MSME**, in a written reply in the **Lok Sabha on 11 December 2025**.

What is the National Steering Committee (NSC)?

The **National Steering Committee (NSC)** is the **apex decision-making body** for the implementation of the **PM Vishwakarma Scheme**.

PM Vishwakarma Scheme was launched on **17 September, 2023** on the occasion of Vishwakarma Day, with a financial outlay of **₹ 13000 crores** starting from **FY 2023-24 to FY 2027-28**.

- The **Pradhan Mantri Vishwakarma Kaushal Samman Yojana** was launched to uplift the lives of these artisans and craftsperson by enhancing their skills and increasing the reach of their products and services.
- It aims to provide end-to-end holistic support to artisans and craftspeople for their respective trades.
- It emphasises **encouraging the trades in rural and urban areas**, with special attention to **women empowerment and marginalised or underserved groups like the Scheduled Castes, Scheduled Tribes, OBCs, Specially Abled, Transgenders, residents of NER states, Island Territories, and Hilly Areas**.
- The scheme is being jointly implemented by the **Ministry of Micro, Small, and Medium**

Enterprises (MoMSME), the Ministry of Skill Development and Entrepreneurship (MSDE), and the Department of Financial Services (DFS) under the Ministry of Finance (MoF), Government of India.

Composition

The NSC meetings are **co-chaired** by:

- Secretary, Ministry of Skill Development and Entrepreneurship
- Secretary, Ministry of Micro, Small and Medium Enterprises
- Secretary, Department of Financial Services

Recent NSC Meeting

- Date: 10 October 2025
- Key focus:

- Improving loan approvals
- Reducing rejection rates
- Strengthening beneficiary support
- Enhancing implementation efficiency

Key Decisions and Policy Measures Approved

1. Skill Training Eligibility

- Finalised **eligibility criteria for Advanced Skill Training**
- Ensures targeted upskilling of artisans and craftspeople

2. Measures to Improve Loan Sanctions

The NSC approved multiple steps to improve loan access:

- Revisiting **pending loan applications**
- Introducing **smaller loan sizes**:
 - Rs. 50,000 to Rs. 1,00,000
 - Helps reduce EMI burden
- Encouraging wider bank participation

3. Bank Involvement at the Ground Level

- Banks to participate in **awareness camps** across:
 - 716 districts
 - Till March 2026
- Mandatory presence of **bank officials at skill training centres** for at least one day during training
- Objective:
 - Provide financial guidance
 - Build beneficiary confidence

Loan Application Verification Process

Applications undergo a **three-step verification**:

1. Verification at:
 - Gram Panchayat or Urban Local Body level
2. Vetting and recommendation by:
 - District Implementation Committee
 - Chaired by the District Collector
3. Final approval by:
 - Screening Committee
 - Includes members from:
 - MSME Development and Facilitation Office
 - State or UT Level Bankers' Committee
 - Ministry of Skill Development and Entrepreneurship

Progress Under the Scheme

- Target:
 - 30 lakh beneficiaries
 - Time period: FY 2023–24 to FY 2027–28
- Status:
 - Verification and registration of **30 lakh artisans and craftspeople completed**
- Enables timely delivery of:
 - Skill training
 - Loans
 - Toolkit incentives
 - Marketing support

Marketing and Market Linkage Support

Offline Marketing

- Participation in:
 - Trade fairs
 - State-level exhibitions
- National-level exhibition planned at:
 - Delhi Haat
- Focus:
 - Product display and sales
 - B2B and B2C engagement
 - National and international visibility

Online Marketing

PM Vishwakarma beneficiaries supported through:

- ONDC
- Fabindia
- Meesho
- Government e-Marketplace

Value Addition and Branding

To enhance product quality and market appeal, MSME Ministry plans collaboration with:

- National Institute of Design
- Indian Institute of Packaging
- Institute of Rural Management Anand

Focus areas:

- Product design
- Diversification
- Branding
- Packaging

PM Vishwakarma Emporium

- Ministry plans to set up **PM Vishwakarma Emporium or Haat**
- Locations:
 - Prominent cities across India
- Purpose:
 - Dedicated sales outlets for PM Vishwakarma products

Importance of These Measures

For Artisans and Craftspeople

- Easier access to affordable loans
- Better marketing opportunities
- Skill upgradation and income security

For Financial Inclusion

- Reduced loan rejection rates
- Improved last-mile banking outreach

For MSME Ecosystem

- Strengthens traditional crafts
- Promotes self-employment
- Supports sustainable livelihoods



Science & Technology

Discovery of Alaknanda Galaxy & Early Universe Evolution



Why in News?

- Researchers at the **National Centre for Radio Astrophysics (NCRA-TIFR)** in Pune discovered a massive, mature spiral galaxy named **Alaknanda**.

- Using NASA's **James Webb Space Telescope (JWST)**, they observed the galaxy as it existed just **1.5 billion years** after the Big Bang.
- This discovery challenges the "hierarchical merger" model, which suggests that well-structured galaxies should take several billion years to form.

I. Key Facts: Alaknanda Galaxy

- **Identity:** A "grand-design" spiral galaxy with two symmetrical arms and a bright central bulge.
- **Distance:** Located approximately **12 billion light-years** away.
- **Maturity:** Formed when the universe was only **10%** of its current age.
- **Star Formation:** It is a cosmic powerhouse, forming stars at a rate of **60-63 solar masses per year** (20-30 times faster than the Milky Way).
- **Naming:** Named after the Himalayan river **Alaknanda**, the sister stream to the **Mandakini** (which is also the Hindi name for the **Milky Way**). This symbolizes its status as a "distant sister" to our own galaxy.

II. Scientific Significance

- **Challenging Models:** Conventional theories predicted the early universe to be **chaotic, hot, and clumpy**. Alaknanda's orderly structure proves that sophisticated galactic assembly can happen far more rapidly.
- **Gravitational Lensing:** The discovery was made possible by the galaxy cluster **Abell 2744 (Pandora's Cluster)**, which acted as a "cosmic magnifying glass," amplifying Alaknanda's light.
- **Efficient Evolution:** It suggests that physical processes like **gas accretion** and **disk settling** operate more efficiently in the early universe than previously thought.

III. Basics of Galaxies & Their Evolution

Galaxies are massive systems of stars, gas, dust, and dark matter bound by gravity.

Galaxy Classification

Type	Characteristics
Spiral	Flat, rotating disks with a central bulge and spiral arms (e.g., Milky Way, Alaknanda).
Elliptical	Shaped like stretched circles; usually contain older stars and less gas/dust.
Irregular	No definite shape; often the result of galactic collisions or mergers.

Key Evolutionary Processes

- **Galactic Cannibalism:** Larger galaxies absorbing smaller "satellite" galaxies.
- **Mergers:** Two galaxies colliding to form a new, often larger, elliptical or ring galaxy.
- **Cosmic Web:** The large-scale structure of the universe where galaxies and clusters are linked by filaments of dark matter, separated by vast **voids**.

IV. Our Home: The Milky Way

- **Structure:** A barred spiral galaxy about **100,000 light-years** across.
- **Solar System:** Located in the **Orion Arm**, taking **240 million years** to complete one orbit around the galactic center.
- **Neighborhood:** Part of the **Local Group** (50+ galaxies), which is a member of the **Laniakea Supercluster**.

Conclusion: The discovery of Alkanda by Indian astronomers highlights a "fast-tracked" early universe. It forces a re-evaluation of the cosmic timeline, suggesting that the conditions for stable, disk-dominated environments appeared much sooner than expected.

Lunar Nuclear Power & The Future of Space Energy



Why in News?

- The United States has announced an ambitious plan under its **Lunar Fission Surface Power Project** to deploy a **small nuclear reactor** on the Moon by the **early 2030s**.
- This initiative is a cornerstone of **NASA's Artemis Base Camp** strategy, marking the first time a permanent nuclear power source will be established beyond Earth's orbit.
- It aims to provide the continuous, high-density energy required for long-term human

habitation and industrial activity on the lunar surface.

I. Nuclear Technologies for Space Exploration

Different mission requirements call for different nuclear energy solutions:

- **Radioisotope Thermoelectric Generators (RTGs):**
 - **How it works:** Converts heat from the natural decay of **Plutonium-238** into electricity.
 - **Capacity:** Produces a few hundred watts (low power).
 - **Use Case:** Ideal for robotic instruments and deep-space probes (e.g., *Voyager*, *Curiosity Rover*).
- **Compact Fission Reactors:**
 - **How it works:** Uses controlled nuclear fission (splitting atoms) to generate heat.
 - **Capacity: 10 to 100 kilowatts (kW)** (scalable to megawatts).
 - **Use Case:** Powers entire habitats, life support systems, and mining units.
- **Nuclear Thermal Propulsion (NTP):**
 - **How it works:** Heats a propellant (like liquid hydrogen) in a reactor and exhausts it for thrust.
 - **Advantage:** Twice as efficient as chemical rockets; could shorten a Mars trip by **25% or more**.
- **Nuclear Electric Propulsion (NEP):**
 - **How it works:** Uses reactor electricity to ionize and accelerate propellant.
 - **Advantage:** Provides low but extremely steady thrust for years, perfect for heavy cargo transport to deep space.

II. Why Space Missions Need Nuclear Power

1. **Solar Limitations:** A lunar night lasts **14 Earth days** with temperatures hitting **-170°C**. Solar panels cannot function in the dark, and batteries are too heavy for such long durations.
2. **Reliability:** Mars experiences planet-wide **dust storms** that can last for months, blocking sunlight and rendering solar-powered rovers (like *Opportunity*) inoperable.
3. **Location Flexibility:** Nuclear power allows bases to be built in **permanently shadowed**

craters at the lunar poles, where water ice is located.

4. **Scalability:** Large-scale **In-Situ Resource Utilization (ISRU)**—turning Moon dust into oxygen or water ice into rocket fuel—requires megawatt-level energy that only fission can provide.

III. Legal Framework & "Safety Zones"

Existing Laws

- **Outer Space Treaty (OST) 1967:** Bans the placement of **nuclear weapons** in space but permits nuclear-powered equipment for peaceful exploration.
- **UN Principles (1992):** Provides procedural safeguards for the safe use of nuclear power sources in space.

The "Safety Zone" Dilemma

NASA's Artemis Accords suggest establishing "**Safety Zones**" around lunar equipment to avoid interference. However, critics argue that a 2-kilometer exclusion zone around a nuclear site could become a **de facto territorial claim**, violating the OST's prohibition on national appropriation of celestial bodies.

IV. Challenges & Risks

- **Environmental Contamination:** A launch failure or reactor meltdown could scatter radioactive material across pristine lunar or Martian environments, destroying scientific records.
- **Geopolitical Friction:** The race to deploy reactors could lead to a "space nuclear arms race" or accusations of weaponization if monitoring is not transparent.
- **Liability Gaps:** The **1972 Liability Convention** is unclear about who pays for "environmental damage" on the Moon versus damage caused to another nation's spacecraft.

V. Towards a Responsible Framework

- **International Oversight:** Establishing an IAEA-like body for space to certify reactor designs and verify safety compliance.
- **Binding Standards:** Updating the 1992 UN Principles to include specific rules for **Nuclear Thermal Propulsion** and end-of-life disposal (e.g., moving reactors to "graveyard orbits").
- **Transparency:** Engaging in multilateral data-sharing to ensure that "safety zones" are non-discriminatory and temporary.

ANEEL Thorium Fuel & India's Nuclear Energy Mission



Why in News?

- US-based **Clean Core Thorium Energy (CCTE)** is set to introduce **ANEEL (Advanced Nuclear Energy for Enriched Life)**, a next-generation thorium-based fuel, to India's nuclear sector.
- The fuel is designed as a "drop-in" solution for India's **Pressurized Heavy Water Reactors (PHWRs)**.
- This collaboration gained momentum following the granting of a **Part 810 export license** by the US Department of Energy in late 2025, enabling the transfer of fuel technology to India's Department of Atomic Energy (DAE).

I. What is ANEEL Fuel?

- **Composition:** A proprietary blend of **Thorium** and **HALEU** (High Assay Low Enriched Uranium, enriched between 5% and 20%).
- **Naming:** Named in honor of **Dr. Anil Kakodkar**, a legendary Indian nuclear scientist and architect of India's self-reliance in thorium technology.
- **Compatibility:** Specifically designed for **PHWRs** (the backbone of India's fleet). It requires minimal structural changes to existing reactors, acting as a "plug-and-play" fuel.

Significance of ANEEL for India

- **Waste Reduction:** Generates over **85% less nuclear waste** compared to conventional natural uranium fuel.
- **Efficiency:** Achieves a burn-up of **60,000 MW-days per tonne**, nearly **9 times** more efficient than natural uranium (7,000 MW-days/tonne).
- **Cost Savings:** Expected to reduce the Levelized Cost of Electricity (LCOE) by **20-30%**.

(bringing it down from Rs 6/kWh to approx. Rs 4.2–4.8/kWh).

- **Proliferation Resistance:** Spent ANEEL fuel is extremely difficult to weaponize, easing international regulatory and safety concerns.

II. Thorium-Based Nuclear Power

Thorium (Th-232) is a "fertile" material, meaning it cannot sustain a nuclear chain reaction on its own; it must be "driven" by a fissile material like Uranium or Plutonium.

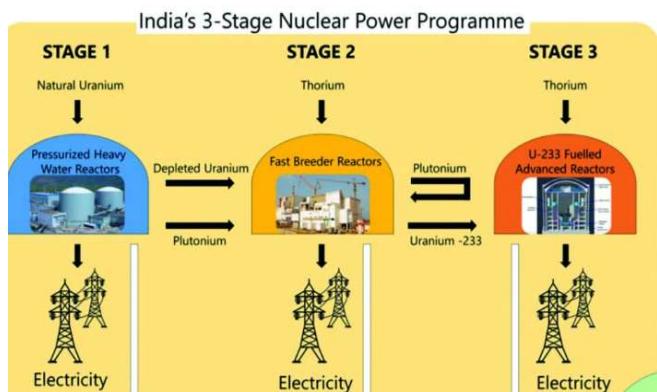
Why Thorium?

- **Abundance:** India holds the world's largest thorium reserves (approx. 25%), mostly found in **monazite sands** along the coasts of Kerala, Odisha, and Andhra Pradesh.
- **Safety:** Thorium reactors like **Molten Salt Reactors (MSRs)** have passive safety features, such as "freeze plugs" that melt to drain fuel and stop reactions during overheating.
- **Energy Density:** 1 ton of Thorium can produce as much energy as **200 tons of uranium**.

III. India's 3-Stage Nuclear Power Program

Formulated by **Dr. Homi Bhabha**, this strategy is designed to achieve energy independence by eventually using India's vast thorium reserves.

Stage	Reactor Type	Fuel Used	Key Output
Stage I	PHWRs	Natural Uranium	Electricity + Plutonium
Stage II	Fast Breeder (FBR)	Plutonium	Electricity + Uranium-233 (from Thorium)
Stage III	Thorium Reactors	Thorium + U-233	Long-term, sustainable clean energy.



IV. New Initiatives: BSRs and the SHANTI Act 2025

- **Bharat Small Reactors (BSRs):** Under the **Nuclear Energy Mission (Budget 2025-26)**, India is developing 220 MW BSRs for **captive**

use by heavy industries (Steel, Cement). These are ideal candidates for ANEEL fuel.

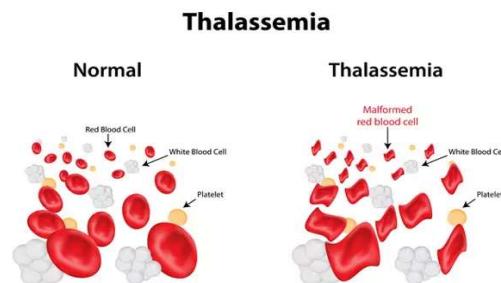
- **SHANTI Act, 2025:** Parliament recently passed the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act**.

- It replaces older laws to allow **private sector participation** in nuclear power.
- It introduces a **graded liability system** based on plant size, resolving long-standing "supplier liability" hurdles for international partners like CCTE.

V. Future Outlook (2032–2047)

- **Capacity Goal:** India aims to triple its nuclear capacity from **8.8 GW to 22 GW by 2031-32**, and eventually hit **100 GW by 2047**.
- **Decarbonization:** Nuclear power is seen as the primary "base-load" partner for renewables to meet India's **Net Zero 2070** target.
- **SMR Boom:** Small Modular Reactors (SMRs) are being prioritized for data centers and remote industrial hubs.

Thalassemia Burden in India & Blood Safety Protocols



Why in News?

- In a tragic incident in December 2025, five children with **Thalassemia** in Jharkhand tested positive for **HIV** after receiving contaminated blood transfusions.
- This highlights a critical failure in blood safety screening and the high vulnerability of Thalassemia patients who rely on regular transfusions for survival.

I. What is Thalassemia?

Definition: An inherited **genetic blood disorder** where the body produces an abnormal form or

inadequate amount of **hemoglobin**, the protein in red blood cells that carries oxygen.

Types of Thalassemia

Basis	Type	Characteristics
Globin Chain	Alpha Thalassemia	Reduced production of alpha globin chains.
	Beta Thalassemia	Reduced production of beta globin chains.
Severity	Minor / Trait	Person is a carrier; mild or no symptoms.
	Intermedia	Moderate symptoms; may need occasional transfusions.
	Major	Severe; requires lifelong regular blood transfusions (e.g., Cooley's Anemia).

- **Special Named Types:** * **Cooley's Anemia:** Beta Thalassemia Major.
 - **Hemoglobin Bart's:** The most severe form of Alpha Thalassemia, often fatal before birth.

II. Symptoms and Complications

- **Anemia Symptoms:** Chronic fatigue, paleness, weakness, and shortness of breath.
- **Structural Changes:** Bone marrow expansion (trying to compensate for lack of RBCs) can lead to **skeletal deformities**, especially in the face and skull ("Chimpunk facies").
- **Organ Damage:** Enlarged spleen (splenomegaly) and iron overload (from frequent transfusions) which can damage the heart and liver.

III. Thalassemia Burden in India

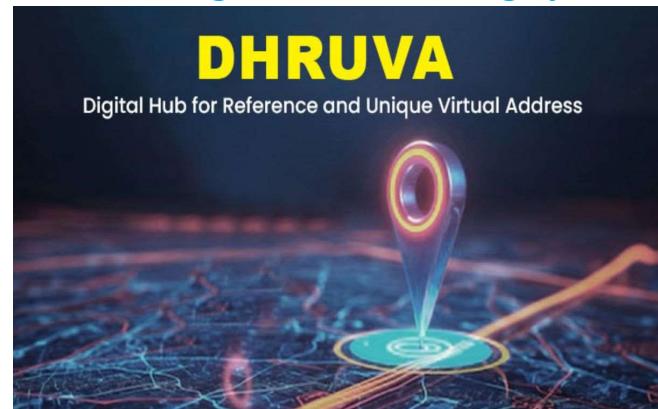
- **Global Capital:** India has the highest number of children with Thalassemia Major in the world (**1 lakh – 1.5 lakh patients**).
- **Annual Incidence:** Approximately **10,000 – 15,000 babies** are born with Thalassemia Major every year.
- **Carrier Rate:** The beta-thalassemia carrier rate is **3–4%** (about 42 million people).
- **Tribal Prevalence:** Tribal communities show a significant burden, with a carrier rate of nearly **8%** in certain groups due to endogamy (marrying within the same community).
- **Legal Status:** Recognized as a **disability** under the **Rights of Persons with Disabilities (RPwD) Act, 2016**.

IV. Government Initiatives & Control Measures

1. **Hemoglobinopathies Guidelines (2016):** A national policy for the prevention and management of Thalassemia and Sickle Cell disease.
2. **National Health Mission (NHM):** Provides funding for **Day Care Centres**, free blood transfusions, and iron chelation medicines.
3. **Thalassemia Bal Sewa Yojana (TBSY):**
 - A flagship **CSR project by Coal India Limited (CIL)**.
 - Provides financial assistance up to **Rs 10 lakh** for **Bone Marrow Transplants (BMT)**—the only permanent cure.
 - **Phase II (2021):** Expanded to cover Aplastic Anemia and increased the number of empanelled hospitals.
4. **e-RaktKosh:** A centralized blood bank management system that provides real-time information on blood availability across the country.
5. **Project MUKTA:** A recent nationwide initiative (2025) to make Thalassemia screening a routine part of **antenatal (pregnancy) care**.

Conclusion: The Jharkhand incident underscores the urgent need for **Nucleic Acid Testing (NAT)**—a highly sensitive blood screening method—to be made mandatory across all Indian blood banks. While policies for treatment are evolving, the "purity" of the blood supply remains the most critical safety net for India's 1.5 lakh Thalassemia warriors.

DHRUVA Framework & DIGIPIN : Transforming India's Addressing System



Why in News?

- The Department of Posts (Ministry of Communications) has released draft

amendments to the **Post Office Act, 2023**, to provide statutory backing for the **Digital Hub for Reference and Unique Virtual Address (DHRUVA)** framework.

- By amending the Act, the government aims to establish a secure, interoperable, and standardized digital addressing ecosystem as part of India's **Digital Public Infrastructure (DPI)**.

I. What is the DHRUVA Framework?

DHRUVA is envisioned as a national-level digital addressing system, similar in scale and utility to **Aadhaar** (Identity) and **UPI** (Payments). It introduces the concept of "**Address-as-a-Service**" (**AaaS**).

- Core Concept:** It allows users to create a **Unique Virtual Address (UVA)** or "label" (e.g., *user@dhruva*).
- Mechanism:** Instead of sharing a long, descriptive physical address, users share this digital label with e-commerce, logistics, or gig platforms.
- Consent-Based:** Once the user authorizes the request, the service provider can access the verified descriptive address and its precise geo-coded **DIGIPIN**.

II. The Foundational Layer: DIGIPIN

DIGIPIN (Digital Postal Index Number) is the geospatial engine that powers DHRUVA. It was developed by India Post in collaboration with **IIT Hyderabad** and **NRSC-ISRO**.

Technical Specifications

- Grid System:** It divides the entire territory of India into a uniform grid of **4m x 4m** (or approx. 12-14 sq. metre) blocks.
- The Code:** A **10-digit alphanumeric code** derived directly from latitude and longitude coordinates.
- Character Set:** Uses 16 unique characters (2-9 and C, J, K, L, M, P, F, T) to avoid phonetic confusion and ensure hierarchical precision.
- Permanence:** Unlike traditional addresses, a DIGIPIN is **permanent** and does not change even if street names or administrative boundaries do.

III. DHRUVA Institutional Ecosystem

The proposed amendments outline a structured governance model similar to the **NPCI**:

Institution	Role
Address Service Providers (ASPs)	Registered entities that generate and manage the digital address labels.
Address Validation Agencies (AVAs)	Authorized bodies that verify the authenticity of a physical address.
Address Information Agents (AIAs)	Intermediaries that manage user consent and sharing settings.
Network Administrator	A central governing entity to regulate standards, registration, and grievance redressal.

IV. Significance of the Framework

- Privacy by Design:** Users no longer need to repeatedly disclose full address details. They can grant **time-bound** or **one-time** access to their address information.
- Last-Mile Efficiency:** * Reduces **delivery failures** and "misrouting" caused by vague or non-standardized addresses.
 - Crucial for **rural areas** and informal settlements where formal street names are absent.
- Seamless Relocation:** When a user moves, updating their address in the DHRUVA ecosystem can automatically reflect across all linked platforms (banks, e-commerce, etc.).
- Emergency Services:** Enables ambulances, fire, and police services to navigate to an exact **4m x 4m spot**, saving critical time.

V. Legal and Regulatory Safeguards

- Post Office Act Amendment:** The draft includes provisions for **penalties (up to Rs 10 lakh)** for unauthorized generation of address identifiers or submitting false information.
- DPDP Act Alignment:** The consent mechanism is designed to be fully compliant with the **Digital Personal Data Protection Act, 2023**, ensuring data minimization and purpose limitation.

Conclusion: DHRUVA and DIGIPIN represent a leap from "descriptive addressing" to "digital geocoding." By treating addresses as core public infrastructure, India is set to solve a multi-billion dollar logistics problem while significantly enhancing the "Ease of Living" for its citizens.

Financial Burden of IVF & Assisted Reproductive Technology (ART) Regulations



Why in News?

- In December 2025, a groundbreaking report by the ICMR-NIRRCH (National Institute for Research in Reproductive and Child Health) revealed that nearly **90% of Indian couples** undergoing **In-vitro Fertilization (IVF)** are pushed into "catastrophic debt."
- The study highlighted that even in public hospitals, a single IVF cycle costs upward of **Rs 1.1 lakh**, while in private facilities, it averages **Rs 2.3 lakh**.
- In response, the health ministry has requested an assessment to include IVF under the **Ayushman Bharat (PM-JAY)** scheme with a recommended reimbursement rate of **Rs 81,332** per cycle.

I. What is In-vitro Fertilization (IVF)?

Definition: A complex series of procedures used to help with fertility or prevent genetic problems and assist with the conception of a child. It is the most effective form of **Assisted Reproductive Technology (ART)**.

The Process

- Stimulation:** The woman is given injectable medications to produce multiple eggs.
- Retrieval:** Eggs are collected from the ovaries.
- Fertilization:** Eggs are fertilized by sperm in a laboratory dish.
- Transfer:** The resulting embryo is placed in the woman's uterus.

Economic Reality (2025 Data)

- Global Comparison:** One ART cycle in India costs approximately **166%** of an average Indian's yearly income.

- Catastrophic Expenditure:** Defined as treatment costs exceeding **10%** of a household's annual income.
- Public Health Spending:** Public facilities currently spend only **Rs 6,822 to Rs 11,075** per patient annually on infertility, leaving the bulk of the cost to the patient.

II. Assisted Reproductive Technology (Regulation) Act, 2021

This Act provides the legal framework to ensure safety and ethical standards in fertility treatments.

Eligibility Criteria

Category	Age Limit (Women)	Age Limit (Men)
Commissioning Parties	21–50 Years	21–55 Years
Gamete Donors	23–35 Years (Eggs)	21–55 Years (Sperm)

- Who can avail?** Infertile married couples and single women (divorced/widowed). Single men are **prohibited** from using ART services.
- Donor Rules:** A woman can donate eggs **only once** in her lifetime, and a maximum of 7 eggs can be retrieved.
- Insurance:** The commissioning party must provide **12 months of insurance coverage** for the egg donor.

III. Key Regulatory Safeguards

- National Registry:** All ART clinics and banks must be compulsorily registered.
- Rights of the Child:** Children born via ART have the same legal rights as biological children. Donors have **no parental rights**.
- Prohibitions:**
 - * **Sex selection** is strictly forbidden.
 - Commercial surrogacy** and the sale of human embryos/gametes are punishable by law.
 - Mixing of semen** from two or more individuals is prohibited.

IV. Current Financial Support Mechanisms

- CGHS (Central Government Health Scheme):**
 - Offers a one-time reimbursement of **Rs 65,000** or actual cost (whichever is lower).
 - Covers up to **three fresh IVF cycles** for eligible beneficiaries.
- PM-JAY (Proposed):**
 - The 2025 report recommends including IVF at a rate of **Rs 81,332** per cycle.

- This would require a policy shift to cover **OPD (Out-Patient Department) expenses**, where the majority of IVF costs (medicines/investigations) occur.

V. Infertility Trends in India (2025)

- **Prevalence:** Affects between **3.9% and 16.8%** of Indian couples (approx. 2.8 crore couples).
- **Leading Causes:** * **Female Factors (46%):** Polycystic Ovary Syndrome (PCOS) and tubal blockages.
 - **Male Factors (20%):** Low sperm count (oligospermia).
- **Psychological Impact:** The ICMR study found significantly higher rates of **anxiety and depression** among couples undergoing IVF compared to those using other treatments.

Conclusion: While India is a global hub for affordable IVF, the treatment remains a luxury for the average citizen. The move to include IVF under PM-JAY and regulate the surging costs is a critical step toward ensuring that "the right to family" is not limited by one's financial status.

Google's Quantum Echoes Breakthrough & the Road to Q-Day



Why in News?

- In **October 2025**, Google Quantum AI announced a historic milestone in quantum physics with its **Quantum Echoes** algorithm.
- While previous achievements focused on "Quantum Supremacy" (performing tasks classical computers cannot do), this breakthrough demonstrates **Verifiable Quantum Advantage**—a repeatable computation that can be checked by other quantum systems.
- The experiment, performed on Google's **105-qubit Willow chip**, has reignited urgent global discussions on **Q-Day**, the point at

which quantum computers will render modern encryption obsolete.

I. Understanding Google's Quantum Echoes Experiment

- **The "Willow" Chip:** A state-of-the-art superconducting processor featuring 105 qubits. It achieved an "exponential reduction" in errors, a "Holy Grail" in quantum research pursued for nearly 30 years.
- **The Mechanism (OTOC):** Scientists used **Out-of-Time-Order Correlators (OTOC)** to observe a quantum "butterfly effect."
 - **Step 1:** A quantum signal is sent into the system.
 - **Step 2:** One qubit is "poked" (perturbed).
 - **Step 3:** The system's time-evolution is **reversed**.
 - **Step 4:** Scientists listen for the "echo" that returns.
- **Results:** Willow performed a calculation in **5 minutes** that would take a classical supercomputer (like *Frontier*) **10 septillion years** to complete—a timeframe vastly exceeding the age of the universe.

II. The Imminent Threat: Q-Day & Encryption

Q-Day is the theoretical date when a quantum computer becomes powerful enough to break **RSA-2048 encryption**, which currently secures global banking, military data, and personal communications.

The "Harvest Now, Decrypt Later" Risk

Adversaries are currently intercepting and storing highly sensitive encrypted data (e.g., state secrets, nuclear codes). While they cannot read it today, they plan to use future quantum computers to unlock it. This makes the transition to **Post-Quantum Cryptography (PQC)** an immediate priority, not a future one.

Requirement	Current Capability (2025)	Needed for Q-Day
Qubit Count	~100–1,000 "Noisy" Qubits	~20 Million Physical Qubits
Error Rate	Improving (Willow milestone)	Fault-Tolerant (Near Zero)
Timeline	Active Labs (Google, IBM)	5–8 Years (Optimistic Est.)

III. Global and Indian Preparedness

As the "Quantum Gap" narrows, global regulators are setting hard deadlines for a cryptographic transition.

- **NIST Standards (USA):** The National Institute of Standards and Technology finalized three quantum-resistant algorithms: **ML-KEM** (for encryption), **ML-DSA**, and **SLH-DSA** (for digital signatures).
- **Timeline for Migration:** NIST has set a **2030 deadline** to deprecate RSA/ECDSA, with a total transition by **2035**.
- **India's National Quantum Mission (NQM):** Approved with an outlay of **Rs 6,003.65 crore**, India is developing its own quantum-secure products via **C-DOT** and the **Indian Army's Quantum Lab**.
- **RBI Advisory:** The Reserve Bank of India is urging financial institutions to adopt **Quantum-Safe Systems** for UPI and Aadhaar-based transactions by the end of the decade.

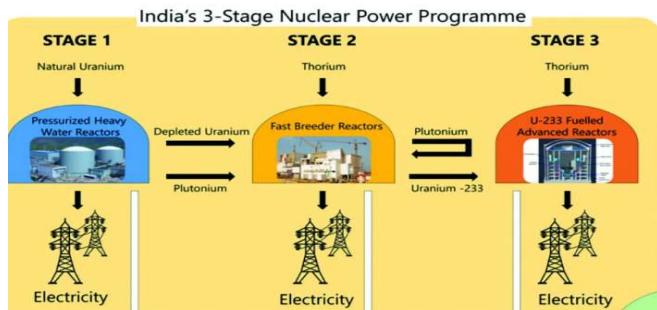
IV. Practical Applications Beyond Cryptography

The Quantum Echoes breakthrough isn't just about security; it opens doors to "Feynman's Dream" of simulating nature.

1. **Drug Discovery:** Determining exactly how a potential medicine binds to its target molecule in 3D space.
2. **Material Science:** Developing more efficient batteries for EVs and room-temperature superconductors.
3. **Nuclear Fusion:** Modeling plasma interactions to help make clean, unlimited fusion energy a reality.
4. **Molecular Ruler:** Using "quantum-enhanced NMR" to measure distances between atoms that are invisible to current microscopes.

Conclusion: Google's Quantum Echoes experiment proves that quantum hardware is finally moving out of the "Noisy" era into the "Verifiable" era. While Q-Day is not here yet, the "**Harvest Now, Decrypt Later**" strategy means that the digital war for the next decade is already being fought in the archives of today.

DAE Year-End Review 2025 – Nuclear Power & Strategic Autonomy



Why in News?

The **Department of Atomic Energy (DAE)** released its **Year-End Review for 2025**, marking a historic peak in nuclear power generation and technological self-reliance. The year was defined by a transition toward a "fleet mode" expansion of reactors and the launch of the **Nuclear Energy Mission** to achieve **100 GW** of nuclear capacity by 2047.

- **Power Record:** NPCIL achieved its highest-ever generation of **56,681 million units** (FY 2024–25), avoiding approximately **49 million tons of Co2** emissions.
- **Operational Excellence:** Indian reactors achieved over **50 instances** of year-long continuous operation, reflecting world-class reliability.

I. Key Achievements of 2025

1. Nuclear Power Expansion

- **Mahi Banswara NPP:** Prime Minister Narendra Modi laid the foundation stone for the **4-unit (2,800 MW) Mahi Banswara Nuclear Power Project** in Rajasthan in **September 2025**. It is the first project executed by **ASHVINI** (Joint Venture between NPCIL and NTPC).
- **"Fleet Mode" Approvals:** The AEC approved pre-project activities for an additional **10 units of 700 MWe PHWRs**, accelerating the plan to reach **22.48 GW** capacity by **2031–32**.
- **Rajasthan Unit-7:** The indigenously built **700 MWe PHWR (RAPP-7)** commenced commercial operations in March 2025.

2. Strategic Materials & High-Tech

- **Rare Earths (REEs):** India released its first indigenously developed **Certified Reference Material (CRM)** for REEs titled **Ferrocyanatite (BARC B1401)**. This standardizes the exploration and processing of critical minerals for defense and semiconductors.
- **Semiconductor Grade Boron:** Commissioned the world's first **Electronics-grade (99.8% purity) Boron-11** enrichment facility at Talcher, Odisha, a critical input for high-end chips.
- **Space & Defense:** DAE entities developed weapon control systems for the **Astra Missile** and critical power relay units for **Agni Missiles**.

II. Healthcare and Societal Impact

DAE has significantly expanded its footprint in "Atomic Energy for Human Welfare":

- **Cancer Care:** The 150-bed Homi Bhabha Cancer Hospital and Research Centre was inaugurated in Muzaffarpur, Bihar.
- **Global Recognition:** Tata Memorial Hospital (TMC) was recognized by the IAEA as a "Rays of Hope" Anchor Center, confirming its status as a global leader in oncology.
- **Food Security:** Released two new mutant crop varieties (TBM-9 banana and RTS-43 Sorghum), taking the total BARC-developed varieties to 72.
- **Medical Sterilization:** The ISOMED-2 facility was commissioned—the world's only high-intensity stationary gamma irradiator for medical device sterilization.

III. India's Nuclear Energy Ecosystem & 3-Stage Program

India follows a unique, state-led **3-Stage Nuclear Power Programme** designed by Dr. Homi J. Bhabha to utilize the country's vast thorium reserves.

Stage	Reactor Type	Fuel Used	Key Feature
Stage I	PHWRs	Natural Uranium	Currently the backbone; produces Plutonium-239.
Stage II	FBRs	Plutonium-239	"Breeds" more fuel than it consumes; uses Thorium to create U-233.
Stage III	Thorium-based	Uranium-233	Ultimate goal for Thorium-based self-sufficiency.

IV. Small Modular Reactors (SMRs) & Future Targets

The 2025–26 Union Budget launched the **Nuclear Energy Mission for Viksit Bharat** with an allocation of ₹20,000 crore.

- **Target:** Develop and deploy 5 indigenous SMRs by 2033.
- **Models:** BARC is leading the design for the 200 MWe Bharat Small Modular Reactor (BSMR-200) and a 55 MWe SMR.
- **Advantage:** SMRs offer smaller footprints and lower capital costs, making them ideal for **captive power** in industrial clusters like steel and chemical plants.

Conclusion: The year 2025 has transitioned India from "capacity addition" to "strategic technology leadership." By integrating private sector financing (via the **SHANTI Bill**) and indigenous innovation

(SMRs and REE-CRMs), the DAE is positioning nuclear energy as a central pillar of India's **Net Zero 2070** commitment.

National Supercomputing Mission 2.0 & the Roadmap to Exascale



Why in News?

In December 2025, the Government of India launched **National Supercomputing Mission (NSM) 2.0** at the "Supercomputing India 2025" event. This new phase officially transitions India from building infrastructure to achieving **strategic autonomy** by integrating High-Performance Computing (HPC), Artificial Intelligence (AI), and Quantum technologies into a single unified architecture.

- **The Goal:** Achieving **100% indigenisation** by **2030** and deploying **Exascale** systems (capable of a quintillion calculations per second).
- **Current Status:** Indigenous content has reached **50%** (via Rudra servers and Trineta interconnects) and is projected to cross **70%** by 2027.
- **Immediate Target:** Reaching **90–95 Petaflops** of cumulative capacity by **March 2026**.

I. NSM 2.0: The Unified Compute Roadmap

Unlike the first phase which focused on fragmented installations, **NSM 2.0** (2025–2030) aims for a "sovereign compute stack."

- **Unified Architecture:** Merging HPC for foundational physics/math with AI for data analytics and **Quantum** as an accelerator for complex optimization.
- **The "AUM" Processor:** India's first indigenous **96-core ARM-based CPU** (AUM) is expected by **2026-27**, built on a **5nm node**. This will replace imported Intel/AMD chips in future "PARAM" systems.

- **Indigenous GPU:** C-DAC confirmed development of a **2000+ core RISC-V GPU** designed for HPC-AI fusion workloads.
- **Exascale Milestone:** Plans to deploy **PARAM Shankh**, India's first exascale supercomputer (10¹⁸ operations per second), by **2029-30**.

II. Key Technological Components of NSM 2.0

Component	Technology	Significance
Server	Rudra 3.0	Fully indigenous server nodes at par with global HPC standards.
Interconnect	Trinetra-B	200 Gbps indigenous high-speed network for zero-bottleneck data transfer.
Processor	AUM (Arm-based)	Transitioning from "Assembly" to "Silicon Design" in India.
Software	Pinaka Studio	A unified software stack for managing hybrid HPC-AI-Quantum workloads.
Cooling	Direct Liquid Cooling	Achieves 20% better power efficiency (PUE of 1.2) compared to air cooling.

III. Convergence: HPC, AI, and Quantum

Under NSM 2.0, these three domains are no longer treated as separate silos:

1. **HPC (The Foundation):** Used for massive simulations like **sub-kilometre flood modelling** and **astrophysics**.
2. **AI (The Brain):** **AIRAWAT** and **PARAM Siddhi** AI provide the platform for Large Language Models (LLMs) and genomics.
3. **Quantum (The Accelerator):** Integrating **Quantum Processing Units (QPUs)** to solve specific problems in cryptography and drug discovery that are too complex for classical bits.

IV. Major Installations & Achievements (2025 Update)

- **PARAM Rudra:** Three units dedicated in 2024 at Pune, Delhi, and Kolkata for physics and cosmology.
- **PARAM Pravega:** Remaining the strongest academic supercomputer at **IISc Bangalore (3.3 PF)**.
- **AIRAWAT:** Ranked **75th** globally in AI computing, with a peak performance of **410 AI Petaflops**.

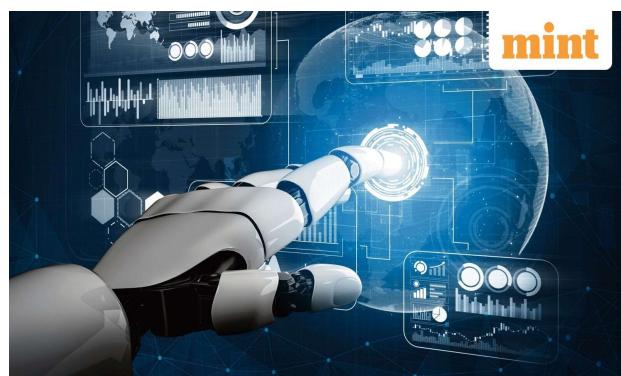
- **Global Standing:** India is currently among the **Top 5** nations globally for AI supercomputing readiness.

V. Future Targets: Viksit Bharat 2047

- **Exascale Leap:** Targeting a total national capacity of **2 Exaflops** by 2030.
- **Sovereign AI:** Building a **10,000-GPU** sovereign AI facility to reduce dependence on global cloud providers.
- **HPC Marketplace:** A proposed platform where MSMEs and startups can "rent" supercomputing power for engineering simulations.

Conclusion: India's National Supercomputing Mission has evolved from "importing muscle" to "building the spine and brain." With NSM 2.0, the focus on indigenous CPUs (AUM) and GPUs ensures that India's digital future is not just powered by compute, but by **sovereign compute**.

Copyright Overhaul – India's Hybrid Model for Generative AI



Why in News?

In December 2025, the Department for Promotion of Industry and Internal Trade (DPIIT) released a landmark working paper proposing a "Hybrid Model" to amend the **Copyright Act, 1957**. This move is a strategic response to the growing legal friction between AI giants (like OpenAI and Google) and content creators (including news publishers like ANI and the Digital News Publishers Association).

- **The Core Proposal:** A "One Nation, One License, One Payment" framework.
- **The Goal:** To ensure Indian AI firms have "sovereign access" to high-quality datasets while ensuring creators receive **statutory royalties** for their work.

I. Understanding the "Hybrid Model"

The model is called "hybrid" because it combines **Mandatory Access** for developers with **Guaranteed Remuneration** for creators.

1. Mandatory Blanket License

- **Universal Access:** AI developers will have a statutory right to use all **lawfully accessed** copyrighted works (text, images, music, etc.) for training Large Language Models (LLMs).
- **No Opt-Out:** Unlike the EU or UK models, creators in India will **not** have the right to withhold their works from being used in AI training. This is designed to prevent "data scarcity" and reduce AI bias.
- **No Individual Negotiations:** Eliminates the high transaction costs and "unequal bargaining power" of small creators negotiating with Big Tech firms.

2. Statutory Remuneration Right

- **Pay-to-Train:** While developers can use the data freely, they must pay **royalties** once their AI systems are **commercialized**.
- **Revenue-Linked:** Royalties will likely be a fixed percentage of the revenue generated by the AI model.
- **Retroactive Payments:** The policy suggests that AI firms must also pay for data they have *already* ingested in the past for their current commercial models.

II. The Institutional Framework: CRCAT

To manage this massive scale of licensing, the government proposes a new centralized body:

- **Name:** Copyright Royalties Collective for AI Training (CRCAT).
- **Role:** A non-profit "umbrella" organization that will collect royalties from AI firms and distribute them to **Copyright Societies** and individual registered creators.
- **Rate Setting:** A government-appointed committee (including technical, legal, and economic experts) will fix and review royalty rates every **three years**.

III. Why Current Laws are Inadequate

The **Copyright Act, 1957** was designed for a world of "human authors" and "physical reproduction."

Legal Gap	Context
Section 2(d)	Defines "author" as a natural person . It is silent on whether an AI can be an author or co-author.
Section 14	Grants "exclusive rights" to the owner. AI training involves "intermediate copying," which currently falls into a legal gray

	area.
Section 52	"Fair Dealing" exceptions are too narrow. It is unclear if commercial "Text and Data Mining" (TDM) qualifies as fair use.
Burden of Proof	Traditionally, the creator must prove infringement. The 2025 proposal reverses this , requiring AI firms to prove they <i>did not</i> use a creator's work if a claim is made.

IV. Global Comparison (2025 Landscape)

- **European Union:** Focuses on **transparency**. AI firms must disclose training data summaries, and creators have an **opt-out** right.
- **United States:** Relies on the "**Fair Use**" doctrine. Courts (e.g., *NYT v. OpenAI*) are currently deciding if commercial AI training is "transformative."
- **United Kingdom:** Grants 50-year copyright for "**computer-generated works**" without a human author, but the law is considered vague for Generative AI.
- **India:** Moving toward a **Statutory Licensing** regime, similar to how music is played on the radio, to balance "Innovation" with "Inclusion."

V. Implementation and Next Steps

- **Public Consultation:** The DPIIT working paper is currently in a 30-day public feedback phase (ending January 2026).
- **Part 2 of the Paper:** Will specifically address the "**Copyrightability**" of AI-generated content—i.e., whether a prompt is enough to claim ownership of an image or article.
- **Legislative Timeline:** Formal amendments to the Copyright Act are expected to be tabled in Parliament within the next **three years**.

Year-End Review 2025 – India's Biotech Surge & BioE3 Policy



Why in News?

- The **Department of Biotechnology (DBT)** released its **Year-End Review for 2025**,

highlighting a decade of transformative growth.

- India's bioeconomy expanded from **USD 10 billion in 2014** to over **USD 165.7 billion in 2024**, with a target of **USD 300 billion by 2030**.
- In **2025**, India cemented its position as the **world's 12th largest biotech hub** and the **3rd largest in the Asia-Pacific**.
- The year was marked by the launch of the **National Biofoundry Network** and significant breakthroughs in **Space Biomanufacturing**, signaling India's shift toward high-performance, sustainable biomanufacturing.

I. Strategic Policy and Infrastructure Initiatives

- BioE3 Policy:** Approved in late 2024 and implemented throughout 2025, this policy focuses on **Economy, Environment, and Employment**. It prioritizes six thematic sectors: bio-based chemicals, functional foods, precision biotherapeutics, climate-resilient agriculture, carbon capture, and futuristic marine/space research.
- National Biofoundry Network (2025):** India's first such network was launched to provide a "one-stop" ecosystem for the design, prototyping, and scaling of biotech innovations. It links six premier institutions to reduce dependency on imported enzymes and APIs.
- D.E.S.I.G.N for BioE3 Challenge:** A nationwide competition launched to empower youth and school students to conceptualize biotech solutions for real-world challenges.
- Guidelines on Stacked Plants (2025):** New regulations for **Genetically Engineered (GE) plants** containing "stacked events" (combining multiple traits like pest resistance and herbicide tolerance) were notified to streamline biosafety approvals.

II. Understanding the "Colors" of Biotechnology

Type	Focus Area	Key 2025 Application
Red	Healthcare	Indigenous AI models for preterm birth prediction.
Green	Agriculture	Gene-edited high-yield rice (20% increase).
White	Industrial	Engineered yeast for 50% more efficient ethanol production.
Blue	Marine	Development of bioactive compounds from deep-sea microbes.

III. Key Achievements of 2025

1. Healthcare & Genomic Research

- GenomeIndia Project:** Successfully completed in **January 2025**, creating a public database of **10,000 whole genome sequences** representing 83 diverse Indian populations.
- One Day One Genome:** A 2024-25 initiative that releases one fully annotated microbial genome daily to highlight India's unique bacterial diversity.
- Pregnancy Dating AI:** Developed the first indigenous AI model using **66 genetic markers** to predict preterm births with high accuracy.

2. Agricultural Breakthroughs

- Gene-Edited Rice:** Developed a cultivar with the **DEP1 mutation**, showing a **20% yield increase** over traditional varieties.
- Climate Resilience:** Released **ADT 39-Sub1** (submergence tolerant) and **Arun** (drought-resistant) rice varieties.
- Chickpea Success:** Two new drought-tolerant varieties (**ADVIKA** and **SAATVIK**) contributed to 30% of the total breeder seed indent in 2025.

3. Space Biomanufacturing (Gaganyaan Era)

- Urea-to-Nutrition:** Proved that **cyanobacteria** can grow on urea in microgravity, allowing future astronauts to recycle human waste into nutritional supplements.
- Muscle Aging:** Conducted India's first **human muscle stem-cell experiment** in space, revealing that microgravity accelerates the aging process (sarcopenia), aiding research for the elderly on Earth.

IV. Technology Transfer & Commercialization

- E-YUVA Scheme:** Scaled to **19 pre-incubation centers** across 15 states, supporting over 460 biotech fellows.
- Bio-RIDE:** Consolidated previous DBT schemes into a single **₹1,500 crore framework** to bridge the gap between academic research and industrial application.
- Startup Ecosystem:** India now hosts over **10,000 biotech startups** (up from just 50 in 2014), making it the **3rd largest ecosystem** globally.

Scheme for Rare Earth Permanent Magnets (REPM) Ecosystem

The Hidden Magnets Powering Our World

Sintered rare earth permanent magnets are essential components in a vast range of modern technologies.

Electric Vehicles (EVs)



1-2 kg used in every car

Powering traction motors



A single 3-MW turbine can contain up to 600 kg of magnets.

Powering traction motors with 1-2 kg used in every car.



Aerospace & Defense

Critical for components in missiles and advanced jets like the F-35.



Advanced Technology

Essential for medical MRI machines, robotics, and industrial automation.



Consumer Electronics

Found in everyday devices like smartphones, laptops, and headphones.

Why in News?

- In late 2025, the Union Cabinet approved a landmark ₹7,280 crore scheme to establish India's first integrated domestic manufacturing ecosystem for **Sintered Rare Earth Permanent Magnets (REPM)**.
- The initiative aims to break the near-total import dependency on **China**, which currently supplies **60–90%** of India's permanent magnets. With India's REPM demand expected to **double by 2030**, this scheme is critical for the "Atmanirbhar Bharat" vision in high-tech sectors like electric vehicles (EVs), wind energy, and defense.

I. The REPM Scheme: Key Pillars

The scheme is designed to build a **6,000 Metric Tonnes Per Annum (MTPA)** integrated capacity over a **7-year period** (2025–2032).

- **Financial Outlay:** Total ₹7,280 crore.
 - **Sales-linked Incentives:** ₹6,450 crore provided over 5 years based on actual production.
 - **Capital Subsidy:** ₹750 crore to support the setting up of high-tech integrated facilities.
- **Integrated Value Chain:** The scheme covers the **entire flow**:

Rare Earth Oxides, Metals, Alloys, Finished Sintered Magnets.

- **Beneficiaries:** Up to **five beneficiaries** will be selected via global competitive bidding, each allotted a capacity of **1,200 MTPA**.
- **Timeline:** 2-year gestation (construction) + 5-year incentive phase.

II. What are Rare Earth Permanent Magnets (REPM)?

REPMs are high-strength magnets made from alloys of rare-earth elements. They are essential for modern technology due to their **high magnetic density and compact size**.

Key Types & Elements

- **NdFeB (Neodymium-Iron-Boron):** The most common type, used in EV motors and electronics.
- **SmCo (Samarium-Cobalt):** Highly resistant to temperature and corrosion; used in aerospace and missiles.
- **Critical Elements:** Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy), and Terbium (Tb).

Strategic Applications

- **Green Tech:** Essential for **Permanent Magnet Synchronous Motors (PMSM)** in EVs and generators in **offshore wind turbines**.
- **Defense & Aerospace:** Vital for missile guidance systems, radar actuators, and satellite communication.
- **Electronics:** Found in hard disk drives (HDDs), high-end speakers, and smartphones.

III. India's Resource Wealth Vs. Production Gap

India holds the world's **third-largest reserves** of rare earth elements, yet its production has historically been marginal.

- **Monazite Reserves:** India has **13.15 million tonnes** of monazite, containing approximately **7.23 million tonnes of Rare Earth Oxides (REO)**.
- **Geographical Spread:** Coastal beach sands and inland alluvium in **Andhra Pradesh, Odisha, Tamil Nadu, Kerala, West Bengal, and Gujarat**.
- **The "Thorium" Challenge:** Most Indian rare earths are found in monazite, which also contains **Thorium** (a radioactive element).

This requires complex processing under strict regulatory oversight by **IREL (India) Limited**.

IV. Supporting Missions and Legal Frameworks (2025)

The REPM scheme is a key component of India's broader **Critical Minerals Strategy**.

1. National Critical Minerals Mission (NCMM), 2025:

- Approved with an outlay of **₹34,300 crore** (including PSU investments).
- Focuses on the full cycle: Exploration, Mining, Processing, and **Recycling** (target: 270 kilo ton recycling capacity).

2. MMDR Act Amendment (2023):

- Removed 6 minerals (including Lithium and Titanium) from the "atomic minerals" list to allow **private sector mining**.
- Introduced **Exploration Licences (EL)** for deep-seated minerals.

3. Global Alliances:

- **KABIL (Khanij Bidesh India Ltd)**: Currently exploring lithium and cobalt assets in **Argentina and Australia**.
- **Minerals Security Partnership (MSP)**: India's participation in this US-led "critical minerals club" ensures supply chain resilience against geopolitical shocks.

Conclusion: The REPM Scheme 2025 is the final piece of the puzzle in India's quest for technological sovereignty. By linking its vast **monazite resources** to a high-value manufacturing ecosystem, India aims to transform from a "net importer" to a "global provider" of the magnets that will power the 21st-century green economy.

IndiaAI Mission – Building a Sovereign AI Ecosystem



Why in News?

In late 2025, the Government of India announced that the **IndiaAI Mission** has surpassed its initial targets, deploying **38,000 Graphics Processing Units (GPUs)** to provide affordable computing power to startups and researchers. With an outlay of **₹10,372 crore**, the mission is the cornerstone of India's strategy to achieve "Sovereign AI" and technological self-reliance.

- **Global Ranking:** According to Stanford University's **2025 Global AI Vibrancy Tool**, India has secured the **3rd position globally** in AI competitiveness, trailing only the US and China. India leaped from 7th place in 2023, overtaking the UK, South Korea, and Japan.
- **Economic Outlook:** AI is projected to add **\$1.7 trillion** to the Indian economy by 2035.

I. Pillars of the IndiaAI Mission

The mission is implemented by **IndiaAI**, an independent division under **MeitY**, and is structured around seven key functional pillars.

1. IndiaAI Compute Capacity

- **Outlay:** Significant portion of the ₹10,300+ crore.
- **GPU Deployment:** Surpassed the initial 10,000 target to reach **38,000 GPUs**.
- **Affordability:** These high-end GPUs are made available to the domestic ecosystem at a subsidized rate of approximately **₹65 per hour**.

2. IndiaAI Foundation Models (BharatGen AI)

- **Objective:** Developing indigenous Large Multimodal Models (LMMs).
- **BharatGen:** India's first government-funded sovereign AI stack. It supports **text, speech, and vision** across **22 Indian languages**.
- **Consortium:** Led by **IIT Bombay** along with other premier academic institutions.

3. AIKosh (National Dataset Platform)

- **Data Repository:** A central platform hosting over **5,500 datasets** and **251 AI models** across 20 sectors.
- **Usage:** Streamlines the development process for startups by providing ready-to-use, India-centric data.

4. IndiaAI Application Development Initiative

- Focus:** Developing scalable AI solutions for social sectors like **Agriculture, Healthcare, and Sustainable Cities**.
- Impact:** Over 30 sector-specific applications were approved by mid-2025.

II. India's AI Landscape (2025–26)

Metric	Status (Dec 2025)
Startup Integration	89% of new startups launched in 2025 use AI in their core products.
Enterprise Adoption	87% of Indian enterprises are actively using AI solutions.
Talent Pool	Over 6 million people are now employed in the tech and AI ecosystem.
Innovation Hubs	India hosts 500+ AI-focused Global Capability Centres (GCCs).

III. Upcoming Landmark: India AI Impact Summit 2026

India is set to host the first-ever global AI summit in the Global South from **February 15–20, 2026**, at Bharat Mandapam, New Delhi.

- The Three Sutras:** The summit is anchored in **People, Planet, and Progress**.
- The Seven Chakras:** Deliberations will be structured around seven working groups, including **Human Capital, Safe & Trusted AI, and Democratizing AI Resources**.
- Flagship Initiatives:**
 - UDAAN (AI Pitch Fest):** A platform for global startups with a focus on **women-led** and differently-abled innovators.
 - AI Impact Expo:** Showcasing ethical AI with **300+ exhibitors** from 30+ countries.
 - YUVAI:** A global challenge for young innovators (ages 13–21) to solve real-world problems using AI.

IV. Key Sovereign AI Projects

- Bhashini:** An AI-led language translation platform enabling digital services in **20+ languages**.
- Sarvam AI:** Developing sovereign LLMs tailored for public service delivery, including **Aadhaar-integrated AI assistance**.
- AI Competency Framework:** A capacity-building program to train government officials in AI-driven policymaking.

Conclusion: The **IndiaAI Mission** represents a shift from being a "consumer of AI" to a "creator of AI." By combining massive compute infrastructure with culturally contextual models like BharatGen, India is building an AI ecosystem that is inclusive, ethical, and tailored to its unique socio-economic needs.

EDITORIALS

Crux of The Hindu & Indian Express

Science & Technology

CSIR–NAL Unveils Production-Grade Hansa-3 (NG) Aircraft



1. Why in News?

The **CSIR–National Aerospace Laboratories (NAL)**, Bengaluru, has launched the production version of the indigenous **Hansa-3 (NG)** two-seater trainer aircraft.

- Manufacturing Partner:** Production has commenced by **Pioneer Clean Amps**, which has set up a **₹150 crore** facility in **Kuppam, Andhra Pradesh**.
- Production Target:** The facility aims to produce **100 aircraft per year**, marking a major boost for India's indigenous aviation sector.
- Date:** The launch event was held on **29 November 2025**.

2. About Hansa-3 (NG) Trainer Aircraft

The Hansa-3 Next Generation (NG) is a modern, cost-effective solution designed for pilot training.

- Origin:** The first Hansa-3 model was developed by **CSIR-NAL** in the early **1990s**. The version now unveiled is a significantly **upgraded and digitized** model.
- Key Features:**

- **Airframe:** Features an **all-composite airframe**, making the aircraft lightweight, fuel-efficient, durable, and resistant to corrosion.
- **Training Purpose:** Designed specifically for acquiring both **PPL (Private Pilot Licence)** and **CPL (Commercial Pilot Licence)** training.
- **Modernization:** Includes a **modern glass cockpit** and is powered by a fuel-efficient, digitally controlled **Rotax engine**.
- **Strategic Importance:**
 - **Pilot Demand:** India is projected to require nearly **30,000 pilots** in the next **15–20 years**. Hansa-3 (NG) aims to fulfill this domestic requirement using Indian technology.
 - **Self-Reliance:** Reduces the nation's reliance on **imported trainer aircraft** and saves valuable foreign exchange.

3. Manufacturing and Government Endorsement

The production and launch were highlighted as a key success story of the **Atmanirbhar Bharat** initiative.

- **Manufacturing Partnership:** In **April 2025**, CSIR-NAL formalized a **Transfer of Technology (ToT)** agreement with **Pioneer Clean Amps** to begin manufacturing the aircraft.
- **Government Statement:** Science Minister **Jitendra Singh** presided over the event, highlighting that the Hansa-3 (NG) supports **aviation entrepreneurship** and job creation while building a **stronger indigenous aviation ecosystem**.

4. Other CSIR-NAL Aviation Projects

CSIR-NAL is simultaneously developing other major platforms for India's civilian and defence needs.

(a) SARAS Mk 2 – 19-seater Light Transport Aircraft (LTA)

- **Purpose:** Developed for **civilian and military short-haul operations** and aims to bolster **regional connectivity** under the **UDAN** scheme.
- **Key Improvements:** Features include a **pressurized cabin, digital avionics, glass cockpit, autopilot, and command-by-wire flight controls**. It has also achieved significant weight and drag reduction optimizations.

Iron Bird Facility for SARAS Mk 2
Inauguration: The facility was inaugurated by the Minister to support the SARAS Mk 2 program.
Purpose: It serves as a crucial platform for full-system integration, ground testing, and validation of all major aircraft subsystems.
Benefit: It reduces flight-testing risks and accelerates development timelines by enabling engineers to identify and resolve design and software issues early .

(b) High Altitude Platforms (HAPs)

- **Facility:** A new dedicated manufacturing facility for HAPs was inaugurated.
- **Technology:** HAPs are **solar-powered unmanned aircraft** capable of flying at altitudes **above 20 km** (in the stratosphere) for **long-duration missions**.
- **Significance:** India is now part of a select group of nations developing this technology. HAPs offer a cost-effective alternative to satellites for **surveillance, telecommunication, and environmental monitoring**.

Conclusion

The rollout of the **production-grade Hansa-3 (NG)** is a major milestone for India's aerospace sector, demonstrating successful Public-Private Partnership (PPP). Coupled with the progress on the **SARAS Mk 2** regional transport aircraft and the development of **High Altitude Platforms (HAPs)**, the launch signals India's rapidly growing capability in **indigenous aircraft technology** and advanced aerospace systems, strengthening both civil and defence aviation objectives.

Sanchar Saathi App : What It Is & Why the Government Wants It Pre-Installed



1. Why in News?

The Department of Telecommunications (DoT) has ordered all smartphone companies to **pre-install the**

Sanchar Saathi app on new phones starting **March 2026**.

This move has triggered:

- strong criticism from digital-rights groups
- Opposition claims of possible surveillance
- questions about legality and privacy

2. What is the Sanchar Saathi App?

Launched in **2023**, Sanchar Saathi is an official telecom-related safety app.

Main features:

- Report suspicious phone calls
- See all SIMs/phone numbers linked to your ID
- Block a stolen phone by entering its IMEI number
- IMEI blocking tells telecom companies to stop that device from working

Government's stated reason

The government says

- **Fake or duplicate IMEI numbers** on phones are a major cyber-security risk
- Pre-installation will help users identify and report such devices quickly

3. Has the government ever mandated apps earlier?

Very few times:

- Emergency contact apps during COVID
- There was talk of mandatory **Aarogya Setu**, but no official order
- TRAI once pushed for its spam-reporting app (DND), but even then **pre-installing** was not required

So, forcing an app to be pre-installed is **very rare** in India.

4. Is it legal to mandate the app?

This is where the controversy begins.

A. The law used

The DoT relies on:

- **Telecommunications Act, 2023**
- **Telecom Cyber Security Rules, 2024 (amended)**

The 2024 amendment created a new term:

- **TIUE (Telecommunication Identifier User Entity)**
 - This can include anything that

identifies a user by phone number: smartphones, apps, messaging platforms like WhatsApp.

B. Why experts worry

- If phones and apps are treated like "telecom entities,"
- DoT gains more power over them.

C. Possible constitutional issue

Experts say the order could face **privacy challenges**, especially under:

- **Puttaswamy Judgment (2017)** → Right to privacy is a fundamental right.

Meghna Bal (Esha Center) says:

- Aadhaar survived legal challenge partly because it was **voluntary** at first
- But forcing Sanchar Saathi on every phone makes participation **compulsory**, which may not pass legal scrutiny

5. Can users uninstall the app? Is it safe?

The government says:

- Users can delete the app
- Or keep it unregistered so it remains "dormant"

But the official order says something else:

- The app must be **visible** from the first use
- Its features **cannot be disabled**
- It must remain accessible

This suggests:

- It may be a **system-level app**
- It may not be fully uninstallable

Why is this risky?

Pre-installed apps often get:

- **higher permissions**
- **root-level access** in the operating system

Cybersecurity experts warn:

- Root access means the app can later receive an update and get **more intrusive permissions**
- Access to phone, SMS, and camera (used for spam reporting) may become automatic
- If the app is ever hacked, **millions of phones** would be exposed instantly

So the risk is not just privacy → it's also cybersecurity.

6. Why are activists and the Opposition concerned?

They fear:

- Possible surveillance
- Increased government control over smartphones
- Misuse of permissions
- No clarity on data use, storage, or oversight

The core worry:

If an app has system-level access, even a small misuse or breach can affect the entire population of smartphone users.

UPDATE:

- The Indian government **recently withdrew an order** that would have made the pre-installation of the Sanchar Saathi app mandatory on all new smartphones following **widespread criticism and privacy concerns**.
- **Installation is voluntary**, and users can choose to download or delete the app at any time.
- The app is **designed solely to protect mobile consumers** and is not intended for surveillance.

Conclusion

Sanchar Saathi has useful safety features — especially for tracking stolen phones and fake IMEIs. But the **mandatory pre-installation**, the **expanded telecom rules**, and the **root-level permissions** have raised strong privacy, safety, and legal concerns. Whether users can truly delete the app or whether the mandate survives legal challenge remains unclear.

DoT to Mandate Display of KYC-Registered Names on Incoming Calls (CNAP)



CNAP: India's caller ID system

1. Why in News?

- The Department of Telecommunications (DoT) will soon make it **mandatory** for telecom operators to show the **KYC-registered name** of every caller on incoming calls made from Indian numbers.
- A pilot test is currently running in **Haryana**.
- This feature is called **Caller Name Presentation (CNAP)**.

2. What is CNAP?

- CNAP means the phone will display **the name used during SIM KYC registration** when someone calls you.
- Right now, telecom operators show labels like "**Suspected**" or "**Suspicious**" for risky calls.
- CNAP will go a step further by showing the **actual registered name**.

Example:

If a number is registered as "Rohan Kumar", that name will appear on your screen when Rohan calls.

3. Why Is This Being Done?

- To reduce **fraud and spam** by allowing people to know **who** is calling before picking up.
 - It will help users:
 - avoid scam calls
 - screen unknown callers
 - identify fake or spoofed numbers
- Countries like **Qatar** use CNAP, but only for **corporate calls**.
- India will apply it **much more widely**

4. How Will CNAP Work for Users?

- It will be **enabled by default** on phones.
- Users may get an option to **turn off** seeing others' names, but...
- Only **top officials** (Ministers, intelligence agencies, etc.) can hide their own names from recipients using a special facility.

This special facility is called **Caller Line Identification Restriction (CLIR)**.

5. Privacy Concerns Raised

Who raised concerns?

- COAI (industry body for Airtel, Jio, Vi)
- Civil society groups, including the **Internet Freedom Foundation**
- Some women users and academics

Main concerns raised:

- Some people may not want to reveal their KYC names
- Women could face privacy risks
- Identity disclosure may be harmful in sensitive situations

Government's response:

DoT said:

- Only the **caller's identity** is shown
- The identity of the **call receiver** remains private
- Apps like **Truecaller** already reveal identities, often without consent

6. What Did TRAI Recommend?

- TRAI had suggested an **opt-in model** (users choose if they want CNAP).
- But DoT disagreed and asked for **default activation**.

TRAI accepted this request after a “back-reference”, clearing the way for nationwide rollout.

7. Issues Still Being Worked Out

- Feature phones (basic phones) may face technical problems
- MeitY will handle those practical challenges
- Haryana pilot is underway, testing whether names can be fetched from telecom databases quickly enough

8. Why CNAP Matters

- India gets a huge number of **fraud calls, scam calls, and spam calls**.
- CNAP aims to make mobile identity **more transparent and accountable**.
- It could significantly reduce:
 - financial scams
 - phishing attempts
 - harassment calls
 - fake caller IDs

Conclusion

The DoT's new CNAP rule marks a major step in **fighting spam and fraud**. By showing the **KYC-registered caller name**, users gain more control and safety. However, privacy concerns remain, and the final rollout must balance:

- **user protection**,
- **data privacy**, and
- **smooth telecom functioning**.

This will be one of the biggest changes in India's mobile calling system since KYC rules were introduced.

INDIA SEEING STRONG MOMENTUM IN AI AND AGENTIC AI DEPLOYMENTS



Why in News?

- **Satya Nadella**, Chairman and CEO of **Microsoft**, stated that **India is witnessing strong momentum in Artificial Intelligence (AI) and agentic AI deployments**.
- He made these remarks during his **AI Tour in India** while delivering a keynote address in **Bengaluru on 11 December 2025**.

Context of the Statement

Satya Nadella's India visit began in **New Delhi**, where he announced **Microsoft's largest-ever investment in Asia**, worth **17.5 billion dollars**, focused on AI infrastructure and digital growth in India.

The Bengaluru event was attended by:

- Developers
- AI researchers
- Technology professionals

What is Agentic AI? (Very Simple)

Agentic AI refers to **AI systems that can act independently** to perform tasks.

Unlike traditional AI that only responds to commands, **agentic AI can**:

- Plan tasks
- Make decisions
- Work with other AI agents
- Complete complex workflows

In simple terms, agentic AI works like a **digital assistant that can think, decide, and act**.

Key Observations by Satya Nadella

India's Growing AI Ecosystem

- India is seeing rapid deployment of AI and agentic AI applications.

- Bengaluru and other Indian tech hubs are producing advanced and impactful AI projects.
- Developer participation and innovation levels in India are very high.

India and GitHub Community

- India is expected to become the **largest GitHub developer community in the world by 2030**.
- GitHub is being developed as an **agentic platform**, described by Nadella as an “Agent HQ”.
- This platform will allow multiple AI agents to work together in software development.

Impact on Software Development

Shift in Software Development Life Cycle

Satya Nadella highlighted the need for a **new mindset in software development**.

- The traditional Software Development Life Cycle is changing.
- A new **AI-driven SDLC** is emerging.
- Developers will increasingly collaborate with AI agents during coding, testing, and deployment.

Empowering Builders and Organisations

Microsoft's core focus is on empowering:

- Software developers
- Engineers
- Technology organisations

Agentic AI allows builders to:

- Assign intelligent tasks to AI agents
- Generate actionable insights
- Scale innovation faster
- Deliver better real-world outcomes

Purpose-Driven Technology Development

Satya Nadella emphasised that Microsoft is not building technology for its own sake.

Key idea:

- Technology must create impact.
- Focus is on improving:
 - Customer experience
 - Employee productivity
 - Operational efficiency

Microsoft's Investment Focus in India

- Microsoft announced an investment of **17.5 billion dollars** in India.

- This is the **largest investment made by Microsoft in Asia**.
- Focus areas include:
 - AI infrastructure
 - Cloud services
 - Developer ecosystem
 - Digital transformation

Cyber Resilience and Digital Sovereignty

Key Insight

Satya Nadella stressed that **cyber resilience is a core part of digital sovereignty**.

Important points:

- Cybersecurity is an intelligence-driven activity.
- Complete sovereignty without global intelligence can increase vulnerability.
- Microsoft processes trillions of global threat signals daily.
- These signals are used to protect systems like:
 - Azure
 - Windows

AI Co-pilot and Agent-Based Tools

Microsoft has embedded intelligent AI agents across major applications:

- Word
- Excel
- Outlook
- Teams

Examples:

- AI-assisted deep research using Co-pilot
- Complex spreadsheet analysis using agent mode in Excel
- Multiple AI agents handling entire business workflows

These tools help in:

- Faster decision-making
- Better productivity
- Measurable business outcomes

Concept of Agent Factories

Satya Nadella introduced the idea of **agent factories**.

Agent factories allow organisations to:

- Create AI agents
- Deploy AI agents
- Manage AI agents for specific tasks

These operate under Microsoft's **IQ Factory framework**, which includes:

- Work IQ
- Fabric IQ
- Foundry IQ

Significance for India

For India's Digital Economy

- Strengthens India's position as a global AI hub.
- Encourages large-scale AI adoption across industries.
- Boosts startup and developer ecosystems.

For Global Technology Leadership

- Positions India as a key contributor to next-generation AI systems.
- Deepens collaboration between global tech firms and Indian talent.

IN-SPACe Invites Proposals to Establish Space Labs Across Academic Institutions



1. Introduction

- The **Indian National Space Promotion and Authorisation Centre (IN-SPACe)** has invited proposals to establish **Antariksh Prayogshala (Space Labs)** in selected academic institutions across India.
- The initiative aims to strengthen India's space technology ecosystem and develop future-ready human resources.
- A **Request for Proposal (RfP)** has been issued for this purpose.

2. About Antariksh Prayogshala Initiative

- **Antariksh Prayogshala** is a **first-of-its-kind initiative** to create **state-of-the-art space laboratories** within Indian academic institutions.
- The labs are designed to provide **hands-on training and practical exposure** to students pursuing space technology and related courses.
- The initiative bridges the gap between **academic knowledge and real-world space applications**.

3. Objectives of the Scheme

- The initiative aims to **translate academic learning into deployable space capabilities**.
- It promotes **applied research, early-stage innovation, and skill development**.
- It strengthens **industry-academia collaboration** in the space sector.
- It supports India's long-term goal of becoming a **leading global space economy**.

4. Coverage and Regional Representation

- Up to **seven academic institutions** will be selected under the scheme.
- Selection will be carried out in a **phased manner**.
- To ensure **balanced regional representation**, one Space Lab will be established in **each geographical zone** of India.
- The labs will also be available for use by **Non-Governmental Entities (NGEs)** in the respective zones.

5. Financial Support by IN-SPACe

- IN-SPACe will provide **financial support of up to 75 percent** of the total project cost.
- The maximum financial assistance is capped at **₹5 crore per institution**.
- Funds will be released on a **milestone-linked basis**.

6. Selection Process

- The selection process will be conducted in **two stages**.

- In the first stage, institutions will be screened based on **eligibility criteria** mentioned in the RfP.
- In the second stage, shortlisted institutions will be **evaluated and ranked by an Empowered Committee**.
- Final selection will be done on a **zone-wise basis**.

7. Role in Industry–Academia Collaboration

- Antariksh Prayogshala will function as a **shared platform for students, researchers, and industry stakeholders**.
- The labs will support **collaborative research aligned with industry needs**.
- This will improve the **practical relevance of academic research** in the space sector.

8. Skill Development and Innovation

- The initiative focuses on **hands-on and experiential learning**.
- It supports **early-stage innovation and experimentation** by students and researchers.
- The labs will help create a **skilled workforce** ready for the space industry.

9. Statement by IN-SPACe Official

- According to the Director of the Promotion Directorate at IN-SPACe, the initiative is designed to build **depth, scale, and sustainability** in India's space ecosystem.
- He highlighted that the labs align academic efforts with **real industry requirements**.

10. Key Facts about IN-SPACe :

- IN-SPACe is a **single-window, independent, nodal agency** functioning as an **autonomous body under the Department of Space (DoS)**.
- It was established following **space sector reforms** to enable and facilitate **private sector participation**.
- IN-SPACe is responsible for **promoting, enabling, authorising, and supervising space**

activities of **Non-Governmental Entities (NGEs)**.

- Its responsibilities include:
 - Authorising NGEs to build **launch vehicles and satellites** and provide **space-based services**.
 - Facilitating **sharing of space infrastructure and facilities** under the control of DoS and ISRO.
 - Enabling the establishment of **new space infrastructure and facilities**.
- IN-SPACe acts as an **interface between ISRO and private entities**.
- It assesses how India's space resources can be **optimally utilised** to expand space-based activities.
- It also evaluates the **needs of private players, academic institutions, and research bodies** and works with ISRO to accommodate these requirements.

11. Significance of the Initiative

- Antariksh Prayogshala strengthens India's **institutional capacity in space education and research**.
- It enhances the participation of **private and academic institutions** in the space sector.
- The initiative contributes to **self-reliance, innovation, and global competitiveness**.

12. Conclusion

- The Antariksh Prayogshala initiative represents a major step toward **integrating education, research, and industry** in India's space ecosystem.
- By providing funding, infrastructure, and collaborative platforms, it supports the creation of a **robust and future-oriented space workforce**.
- The initiative aligns with India's ambition to emerge as a **major global space power**.

SHANTI Bill, 2025: What It Is, What It Changes, and Why It Raises Concerns

INSIDE THE SHANTI BILL

WHAT CHANGES FOR INDIA'S NUCLEAR POWER INDUSTRY

WHAT IS OPENED UP

- Private Indian companies and joint ventures can build, own, operate and decommission nuclear power plants
- Fuel fabrication permitted under licence



WHAT STAYS WITH THE GOVERNMENT

- Uranium and thorium mining
- Ownership and accounting of nuclear fuel
- Enrichment and isotopic separation
- Spent fuel reprocessing
- High-level radioactive waste management
- Heavy water production

LIABILITY FRAMEWORK

Operator liability capped at **₹3,000 crore** per incident (~\$400 million)

Government to step in beyond the cap
Provision for a Nuclear Liability Fund

Limited recourse against suppliers

REGULATORY CHANGES

- Statutory backing for Atomic Energy Regulatory Board
- Expanded inspection, enforcement and emergency powers



WHAT COMES NEXT

Projects depend on government notifications, licensing terms, tariffs and fuel supply arrangements



moneycontrol

1. What Is the SHANTI Bill?

- The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India Bill, 2025, known as the SHANTI Bill, was passed by Parliament on December 18, 2025.
- The Bill aims to modernise and expand India's nuclear power sector.
- The government states that the Bill is necessary to achieve 100 GW of nuclear power capacity by 2047.

2. Laws Replaced by the SHANTI Bill

- Once notified, the SHANTI Bill will replace two major existing laws:

- The Atomic Energy Act, 1962.
- The Civil Liability for Nuclear Damage Act, 2010 (CLNDA).

- By replacing these laws, the SHANTI Bill redraws India's entire nuclear governance framework.

3. Why the SHANTI Bill Is Important :

- The Bill introduces private sector participation in nuclear power operations.
- It changes rules related to:
 - Who can build and operate nuclear plants.
 - How liability is fixed after a nuclear accident.
 - The structure and independence of the nuclear safety regulator.
 - Compensation, penalties, and dispute resolution mechanisms.

- These changes mark the **biggest reform in India's nuclear sector** since independence.

4. Entry of Private Players into the Nuclear Sector

- For the first time since Independence, the Bill allows:
 - Private Indian companies
 - Joint ventures
 - Foreign entities permitted by the Central Government
- These entities can **build, own, operate, and decommission nuclear power plants**.
- Private entities can now participate in:
 - Transport and storage of nuclear fuel.
 - Import and export of nuclear fuel, technology, and equipment.
 - Handling of nuclear minerals and materials.
- Earlier, these activities were restricted only to **public sector entities**.
- This ends the operational monopoly of the **Nuclear Power Corporation of India Limited (NPCIL)**.

5. Role of Foreign Investment

- The Bill does not directly mention **foreign direct investment (FDI)** in nuclear power.

- It allows participation by “any other person” authorised by the Central Government.
- The government has indicated that foreign equity participation will follow **DPIIT and Commerce Ministry guidelines**.
- Detailed clarity will be provided through **rules and notifications** issued later.

6. Activities Still Reserved for the Central Government

- Despite opening the sector, the Bill retains **exclusive government control** over sensitive activities.
- These include:
 - Enrichment and isotopic separation of nuclear material.
 - Reprocessing of spent nuclear fuel.
 - Management of high-level radioactive waste.
 - Production and upgradation of heavy water.
- This ensures **national security and strategic control**.

7. Nuclear Safety and Regulatory Framework

- All entities involved in nuclear activities must obtain safety approval from the **Atomic Energy Regulatory Board (AERB)**.
- Safety authorisation is mandatory for:
 - Manufacture, possession, transport, and disposal of radioactive substances.
 - Import and export of nuclear materials.
 - Establishment, operation, and decommissioning of nuclear facilities.

8. Statutory Status to the Nuclear Regulator

- The SHANTI Bill grants **statutory status** to the AERB.
- Earlier, the AERB functioned as a subordinate authority under the Department of Atomic Energy.
- In 2012, the **CAG** highlighted conflicts of interest due to lack of regulatory independence.
- The new law separates **regulatory and executive roles**, improving autonomy and credibility.

9. New Institutions for Accountability and Redressal

- The Bill establishes an **Atomic Energy Redressal Advisory Council**.
- The Council will address grievances, facilitate dispute resolution, and review government orders.
- A **Nuclear Damage Claims Commission** will handle cases involving severe nuclear damage.
- The **Appellate Tribunal for Electricity** will act as the appellate authority under the law.

10. Changes in Nuclear Accident Liability

- The earlier CLNDA allowed plant operators to seek compensation from suppliers if defective equipment caused an accident.
- The SHANTI Bill removes this provision related to **supplier liability for defective equipment**.
- Operators can now seek recourse only if:
 - The contract explicitly allows it, or
 - The damage was caused deliberately.
- This change has raised concerns about **reduced accountability of equipment suppliers**.

11. Revised Liability Caps and Insurance Rules

- The earlier flat liability cap of **₹1,500 crore** has been replaced with **graded liability limits** based on reactor size.
- Private operators must maintain **insurance or financial security** to cover liability.
- Nuclear installations owned by the Central Government are exempt from mandatory insurance.
- The Centre may create a **Nuclear Liability Fund** to meet its compensation obligations.

12. Penalties and Punishment Provisions

- The SHANTI Bill introduces **monetary penalties** for less serious violations.
- It also provides for **imprisonment** in cases of serious offences.
- Earlier nuclear laws did not provide for financial penalties.

13. Section 39: Secrecy and RTI Exclusion

- Section 39 allows the Central Government to classify certain nuclear-related information as **“restricted”**

- Restricted information includes details related to nuclear materials, plant design, operations, and regulatory submissions.
- Section 39 explicitly states that **restricted information is outside the scope of the RTI Act, 2005**.
- Once classified, such information cannot be requested, appealed, or disclosed under RTI.

14. Why Section 39 Raises Transparency Concerns

- The RTI Act already allows withholding sensitive information related to national security.
- However, RTI exemptions are **conditional and reviewable**, and allow a **public interest override**.
- Section 39 removes this framework entirely.
- There is no justification requirement, no appeal mechanism, and no public interest test.
- Activists argue that this weakens transparency and discourages whistleblowing.

15. Overall Assessment

- The SHANTI Bill aims to expand nuclear capacity, attract investment, and modernise regulation.
- At the same time, it raises concerns related to **accountability, transparency, and public safety**.
- The Bill highlights the challenge of balancing **national security, private participation, safety, and democratic oversight** in a strategic sector.

16. India's Current Nuclear Energy Landscape

- As of 2025, India's nuclear power capacity stands at **8.18 GW**.
- India has set a target of **100 GW of nuclear capacity by 2047**.
- More than **20 nuclear reactors** are currently operational, all managed by NPCIL.
- Over a dozen new nuclear projects are in the pipeline.

17. Nuclear Energy Mission and Technology Push

- The **Nuclear Energy Mission** was announced in the Union Budget 2025–26.
- The mission focuses on **research and development of Small Modular Reactors (SMRs)**.

- India aims to develop at least **five indigenously designed SMRs by 2033**.
- Key technologies under development include:
 - Bharat Small Reactors (BSRs)
 - Small Modular Reactors (SMRs)
 - Molten Salt Reactors
 - High-Temperature Gas-Cooled Reactors

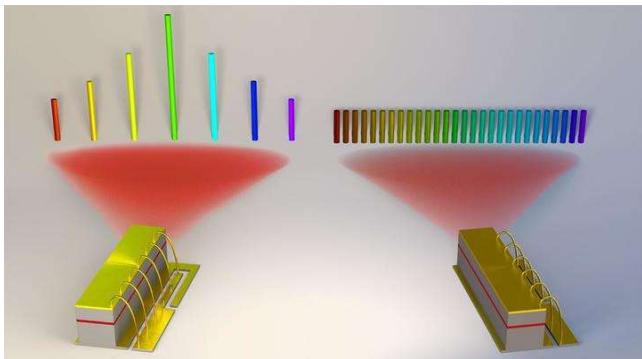
18. Why Reforms in Nuclear Governance Are Needed

- India's ambitious capacity targets cannot be met by NPCIL alone due to limited capital and manpower.
- Achieving 100 GW of capacity requires investment of nearly **₹15 lakh crore**, while Budget 2025–26 allocation is only **₹20,000 crore**.
- Many NPCIL projects face chronic delays, highlighting execution challenges.
- Private participation can improve **project management, EPC efficiency, and technology adoption**.
- Weak domestic uranium supply and reliance on imports require broader participation for fuel security.
- Nuclear power is essential for **energy security, grid stability, and net-zero 2070 goals**.

19. Measures Required to Strengthen Nuclear Governance

- The operational independence of the AERB must be reinforced through transparent appointments and financial autonomy.
- Liability caps should be periodically reviewed and indexed to risk and inflation.
- Public trust must be built through transparency in safety audits, accident reporting, and emergency preparedness.
- Clear Centre–State coordination mechanisms are needed for nuclear emergency response.
- Robust frameworks for waste management and plant decommissioning must be established before large-scale private expansion.

What is a Frequency Comb?



Frequency combs have gained significant attention due to breakthroughs in miniaturization and new sensing applications.

1. Basic Meaning

- A **frequency comb** is a special type of **laser light**.
- Its spectrum looks like the **teeth of a comb**.
- Instead of one single colour (frequency), it emits **many evenly spaced frequencies**.
- The spacing between these frequencies is **extremely regular and precise**.

2. How a Frequency Comb is Produced

- A frequency comb is created using a **mode-locked laser**.
- This laser emits **very short pulses of light**.
- These pulses repeat at a **fixed and steady rate**.
- Because of this regular repetition, the output forms a **comb-like pattern of frequencies**.

3. How a Frequency Comb Works

- A frequency comb is used as a **very stable reference of known frequencies**.
- When an **unknown laser light** is compared with a frequency comb:
 - Both lights are sent to a **common light sensor**.
 - If the unknown light is close to one “tooth” of the comb, their waves interact.
 - Sometimes the waves match and the signal becomes stronger.
 - Sometimes they do not match and the signal becomes weaker.
- From this pattern, scientists can find:
 - The **nearest comb frequency**, and
 - The **exact difference** from it.
- This allows the **exact frequency of unknown light** to be measured.

4. About Frequency Comb (Concept)

- It is a **compact and highly precise tool**.
- It connects:
 - **Radio frequency domain** (below ~100 GHz), and
 - **Optical frequency domain** (above ~200 THz).
- This connection was very difficult before the development of frequency combs.

5. Key Characteristics of Frequency Comb

- Emits **many frequencies**, not just one.
- Frequencies are **equally spaced and highly regular**.
- Offers **very high stability and precision**.
- Widely used for **accurate measurement of light frequencies**.

6. Applications of Frequency Comb

6.1 Precision Measurement

- Helps scientists compare **unknown light frequencies** with great accuracy.

6.2 Atomic Clocks

- Used to **calibrate atomic clocks**.
- Improves time measurement accuracy to an extreme level.

6.3 Gravity and Relativity Studies

- Used to measure **tiny shifts in light caused by gravity**.
- Supports experiments related to **Einstein's theory of relativity**.

6.4 Astronomy

- Helps in **detecting exoplanets** by measuring small changes in starlight.

6.5 Spectroscopy

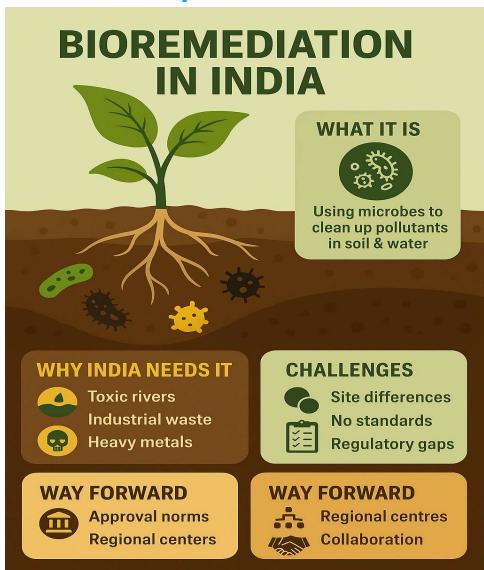
- Used in **high-speed and high-resolution spectroscopy**.
- Helps study atoms, molecules, and chemical reactions in detail.

7. Significance

- Frequency combs have **revolutionised precision measurement** in physics.
- They bridge the gap between **radio waves and visible light**.
- They are essential tools in **modern science, astronomy, and timekeeping**.



Bioremediation in India : Nature-Based Pollution Cleanup



Why in News?

- India is intensifying its focus on bioremediation as a sustainable solution to combat escalating pollution in its soil, water, and air.
- With conventional chemical and mechanical cleanup methods proving too expensive and energy-intensive, bioremediation is emerging as a critical, science-backed alternative to restore degraded ecosystems like the Ganga and Yamuna rivers.

I. What is Bioremediation?

Definition: The use of living organisms—**bacteria, fungi, algae, or plants**—to degrade, break down, or neutralize hazardous pollutants into harmless substances like water and carbon dioxide.

Types of Bioremediation

Type	Process	Example
In situ	Treatment occurs directly at the contaminated site without excavation.	Spraying oil-eating bacteria on an ocean oil spill.
Ex situ	Contaminated material is removed (excavated/pumped) and treated in a controlled facility.	Treating excavated toxic soil in a specialized bioreactor.

Key Specialized Techniques

- Phytoremediation:** Using **plants** to absorb or stabilize contaminants (e.g., using sunflowers to remove lead).

- Mycoremediation:** Using **fungi/mushrooms** to break down complex chemicals like pesticides or petroleum.
- Biomining:** Using microorganisms to extract metals of economic value from rock ores or legacy mine waste.

II. Why India Needs Bioremediation?

- Severe River Pollution:** According to the **CPCB (2024)**, approximately **72%** of monitored river stretches remain polluted, primarily due to untreated sewage.
- Industrial Legacy Waste:** India has over **1,700 identified contaminated sites** (tanneries, pesticide dumps, and e-waste hubs).
- Heavy Metal Crisis:** Groundwater in regions like Kanpur contains **chromium levels** 100–250 times higher than WHO limits.
- Cost Advantage:** Bioremediation can reduce cleanup costs by **60-70%** compared to traditional methods.
- Biodiversity Advantage:** India's native microbes are naturally adapted to local **high temperatures and salinity**, making them more effective than imported strains.

III. Advancements & Status in India

Technological Innovations

- GM Microbes:** Genetically modified bacteria are being designed to "eat" stubborn plastics and oil residues.
- Biosensors:** Using synthetic biology to create organisms that **change color** when they detect specific toxins.
- Nanocomposites:** IIT researchers have developed cotton-based nanocomposites to efficiently mop up oil spills.

Current Progress

- DBT Support:** The Department of Biotechnology (DBT) funds research through its **Clean Technology Programme**.
- Startup Ecosystem:** Firms like **Econirmal Biotech** and **BCIL** are now supplying microbial formulations for soil and wastewater.
- Pilot Stage:** Most projects are currently in pilot phases; the **Indore Model** of biomining legacy waste is being replicated across 100+ cities.

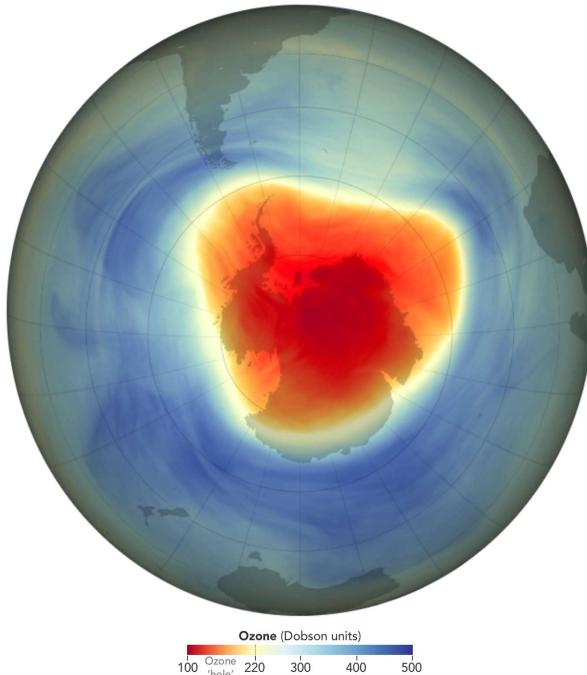
IV. Opportunities and Risks

Opportunities	Risks
Restoration of Namami Gange and Swachh Bharat missions.	Potential ecological disruption if GM organisms spread uncontrollably.
Reclaiming valuable urban land from legacy landfills .	Inadequate monitoring might lead to secondary pollution.
Job creation in biotech and environmental consulting.	Lack of unified national standards and certification.

V. The Way Forward

- National Standards:** Establish unified protocols under the **MoEFCC** for microbial approval and safety.
- Regional Hubs:** Connect IITs, CSIR labs, and local municipalities to create site-specific solutions.
- Native Microbe Registry:** Catalogue India's indigenous species to create a "bank" of cleanup agents suited for different climates.
- Public Engagement:** Build trust in microbial solutions through transparent communication and community-led monitoring.

Antarctic Ozone Hole Recovery & Long-Term Atmospheric Healing



Why in News?

- The **Antarctic ozone hole** closed on **December 1, 2025**, marking its earliest closure since 2019 and one of the earliest in the last 40 years.

- This early "healing" follows two consecutive years (2024 and 2025) of smaller-than-average ozone holes, providing strong evidence that the ozone layer is on a steady path to recovery thanks to global action under the **Montreal Protocol**.

I. Understanding the Antarctic Ozone Hole

- Definition:** Not a physical hole, but a region where the concentration of ozone (O_3) in the stratosphere drops below **220 Dobson Units (DU)**.
- Seasonal Nature:** Thinning typically occurs during the **austral spring** (September–November).
- Discovery:** First identified in **1985** by scientists from the British Antarctic Survey.

Factors Driving the Hole's Formation

- Polar Vortex:** A strong, circular wind pattern that traps cold air over Antarctica during winter, isolating the stratosphere.
- Polar Stratospheric Clouds (PSCs):** Extreme cold (below -78°C) allows these clouds to form. They provide a surface for chemical reactions that "activate" chlorine and bromine.
- Spring Sunlight:** When the sun returns in September, UV rays trigger these active chemicals to rapidly destroy ozone molecules.

II. Significance of the Early 2025 Closure

- Record Ranking:** The 2025 hole reached a maximum area of **21.08 million km²**—significantly smaller than the 2006 record of **29 million km²**.
- Atypical Trajectory:** While 2020–2023 saw large, long-lasting holes (partly due to volcanic eruptions like Tonga), 2025 benefited from a **weaker-than-normal polar vortex** and higher stratospheric temperatures.
- Recovery Milestones:**
 - Global Recovery:** Expected to return to 1980 levels by **2040**.
 - Arctic Recovery:** Expected by **2045**.
 - Antarctic Recovery:** Full healing expected around **2066–2070**.

III. Ozone: The Good vs. The Bad

Ozone is a reactive gas composed of three oxygen atoms. Its impact depends on where it is located in the atmosphere:

Type	Location	Role	Impact
Stratospheric	15–30 km above (Upper)	"Good Ozone"	Absorbs 97-99% of harmful UV-B radiation; acts as Earth's sunscreen.
Tropospheric	Ground level (Lower)	"Bad Ozone"	A major component of smog; causes respiratory issues and damages crops.

IV. Global Action & The Montreal Protocol

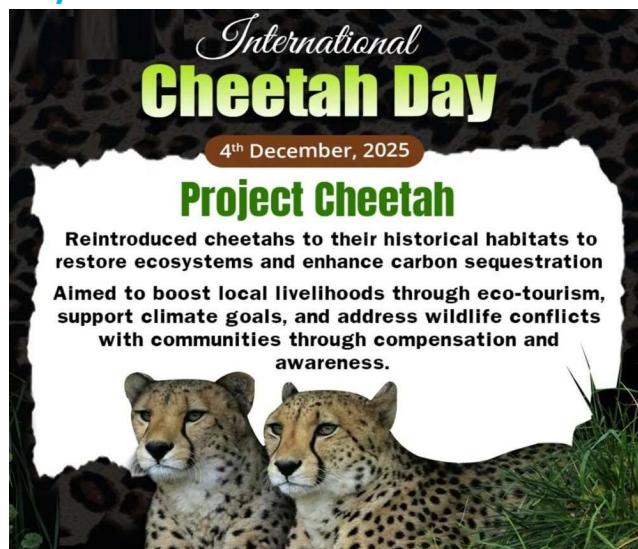
- The Treaty (1987):** The most successful environmental agreement in history; the first to achieve **universal ratification** (197 Parties).
- The Goal:** Phasing out **Ozone-Depleting Substances (ODS)** like Chlorofluorocarbons (CFCs), halons, and carbon tetrachloride.
- The Kigali Amendment (2016):** Mandates the phase-down of **Hydrofluorocarbons (HFCs)**. Although HFCs don't deplete ozone, they are potent greenhouse gases.
- Climate Co-benefit:** By phasing out ODS, the protocol has also prevented an estimated **0.5°C to 1°C** of global warming.

V. Why Recovery Matters

- Health:** Prevents millions of cases of **skin cancer**, cataracts, and immune system suppression.
- Ecosystems:** Protects **phytoplankton** (the base of the marine food web) and prevents crop yield losses.
- Climate Stability:** Ozone recovery helps stabilize the **Southern Hemisphere jet stream**, which influences rainfall patterns in Australia and South America.

Conclusion: The early closure of the 2025 ozone hole is a "climate win" that proves international cooperation can reverse human-induced environmental damage. However, vigilance is required as "legacy chemicals" still persist in landfills and old insulation.

Project Cheetah & International Cheetah Day 2025



Why in News?

- On **International Cheetah Day (December 4, 2025)**, Prime Minister Narendra Modi lauded the success of **Project Cheetah**, noting that India has officially entered the "second generation" phase of the reintroduction program.
- The day, established to commemorate a cheetah named **Khayam**, serves as a global call to protect the world's fastest land animal from extinction.

I. International Cheetah Day

- Origin:** Created by **Dr. Laurie Marker**, founder of the **Cheetah Conservation Fund (CCF)**.
- Date:** December 4 was chosen in honor of **Khayam**, a cheetah Dr. Marker raised in Namibia and brought to Oregon to test if captive-born cheetahs could be taught to hunt.
- Goal:** To raise awareness about the cheetah's status as a **vulnerable species** (with only ~7,000 remaining in the wild) and to promote habitat restoration.

II. Project Cheetah: India's "Aatmanirbhar" Wildlife Mission

Project Cheetah is the world's first intercontinental translocation of a large wild carnivore.

- Launch:** September 17, 2022, at **Kuno National Park**, Madhya Pradesh.
- The Goal:** To re-establish the ecological role of the cheetah in its historical range (extinct

in India since 1952) and restore grassland/savanna ecosystems.

- **Key Implementing Agencies:** National Tiger Conservation Authority (NTCA), Wildlife Institute of India (WII), and the Madhya Pradesh Forest Department.

III. Progress & Milestones (As of December 2025)

The project has moved from mere "survival" to "natural breeding," signaling long-term sustainability.

Current Population Status

- **Total Population:** 32 Cheetahs (including adults, sub-adults, and cubs).
- **Composition:** 21 India-born cubs, demonstrating that the African cheetahs have successfully adapted to the Indian monsoon and prey base.
- **Second Generation:** A historic milestone was achieved in November 2025 when Mukhi (a female born in India in 2023) gave birth to 5 healthy cubs, marking the first "Made in India" second-generation litter.

Habitat Expansion

To prevent overcrowding and ensure genetic diversity, the project is expanding beyond Kuno:

1. **Kuno National Park (Primary):** The flagship site hosting the majority of the population.
2. **Gandhi Sagar Wildlife Sanctuary:** Now the second functional home; the first female, "Dheera," was released here in late 2025.
3. **Banni Grasslands (Gujarat):** Under active development for future batches from Kenya.
4. **Nauradehi Sanctuary:** Identified as the next potential site in Madhya Pradesh.

IV. Global Cooperation & Incoming Batches

India continues to diversify the genetic pool through international partnerships:

- **Batches so far:** 8 from Namibia (2022) and 12 from South Africa (2023).
- **The Botswana Batch:** India signed a new pact with Botswana in late 2025. 8 new cheetahs are currently in quarantine and are expected to arrive in Kuno by early 2026.
- **Training:** Over 450 "Cheetah Mitras" (local community volunteers) have been trained to reduce human-wildlife conflict and promote eco-tourism.

V. Cheetah vs. Leopard: The Identification Key

As cheetahs begin to roam more widely, public awareness on identification is critical:

Feature	Cheetah	Leopard
Facial Marks	Distinct black "tear marks" from eyes to mouth.	No tear marks.
Spots	Solid black round spots.	Spots in "rosettes" (hollow flower-like shapes).
Body Build	Slender, long legs, built for speed.	Stocky, powerful limbs, built for climbing.
Claws	Semi-retractable (like dog claws) for grip.	Fully retractable (typical cat claws).

Conclusion: Project Cheetah has transitioned from a high-stakes experiment to a global model for carnivore rewilding. The birth of the second generation in 2025 confirms that India's savannas are once again a viable home for the fastest hunter on Earth.

Nahargarh Biological Park & Aravalli Ecology



Why in News?

- On December 7, 2025, a major safety scare occurred at Nahargarh Biological Park when a safari bus carrying 15 tourists caught fire inside the lion habitat.
- The incident, suspected to be caused by a short circuit, has ignited a debate over the use of aging diesel fleets in fragile eco-sensitive zones and the urgent need for Electric Vehicles (EVs) in wildlife safaris.
- **Timely Rescue:** All passengers were evacuated safely by forest department teams before the vehicle was completely gutted.
- **Recurring Lapse:** This marks the second major incident at the park in six weeks, following an October mishap where a bus got stuck in a muddy pit just 20 feet from a tiger.
- **Safety Review:** The Rajasthan Forest Department has launched a technical probe and suspended the use of several older vehicles in the safari fleet.

I. Nahargarh Biological Park

Located 12 km from Jaipur on the Delhi-Jaipur highway, this park serves as a hub for wildlife research, education, and ecotourism.

- **Ecological Context:** It is situated within the **Nahargarh Wildlife Sanctuary (WLS)** and is nestled in the foothills of the **Aravalli Range**.
- **Birding Paradise:** Hosts over **285 species of birds**. The star attraction is the **White-naped Tit**, a rare bird found exclusively in this pocket of the Aravallis.
- **Ram Sagar Lake:** A critical wetland within the park used for groundwater recharge and as a primary spot for migratory bird sightings.
- **Lion Safari:** The park is famous for its **7.2 sq. km** lion safari area, designed to provide a naturalistic habitat for Asiatic lions.

II. Nahargarh Wildlife Sanctuary (WLS)

- **Naming:** Named after the iconic **Nahargarh Fort** (built by Maharaja Sawai Jai Singh II in 1734), which overlooks the sanctuary.
- **Geology:** Spread over **50 sq. km**, the sanctuary features rugged terrain with rocky plateaus and seasonal streams.
- **Flora:** Primarily **dry deciduous forests** and **thorny scrub**. Dominant tree species include **Dhok** (*Anogeissus pendula*), **Khejri**, and **Babool**.
- **Fauna:** Beyond lions and tigers, it is a habitat for leopards, hyenas, sloth bears, Himalayan black bears, and Indian rock pythons.

III. The Aravalli Range: A Strategic Barrier

The sanctuary is a vital part of the Aravalli ecosystem, which is facing severe pressure from mining and urbanization.

- **Antiquity:** One of the **world's oldest fold mountain systems**, dating back to the Proterozoic era.
- **The "Green Wall":** Acts as a natural barrier preventing the **Thar Desert** from expanding into the fertile plains of North India.
- **Hydrological Role:** Serves as a major catchment area; it gives rise to the **Luni, Banas, and Sahibi** rivers.
- **Highest Point:** **Guru Shikhar** (1,722 m) at Mount Abu.

IV. Ecotourism vs. Conservation: The Road Ahead

The 2025 bus fire incident has brought focus to the **carrying capacity** of Jaipur's eco-sensitive zones:

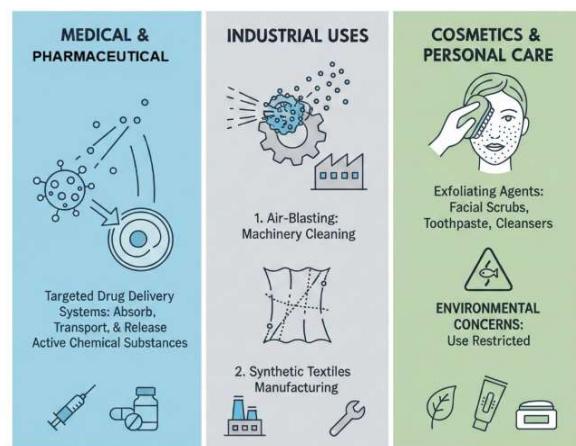
1. **Transition to EVs:** Calls to replace the current diesel fleet with silent, zero-emission electric buses to minimize noise pollution and fire hazards.

2. **Infrastructure Audit:** Mandatory fitness certificates for all safari vehicles before entering predator zones.
3. **Pollution Control:** Reducing the ecological footprint of over **2,300 daily visitors** to maintain the integrity of the Aravalli "lungs."

Conclusion: The narrow escape at Nahargarh is a wake-up call for the Rajasthan Forest Department to modernize safari infrastructure. Balancing tourism revenue with the safety of visitors and the protection of the Aravalli's unique biodiversity is essential for a sustainable **Viksit Rajasthan**.

Inhalable Microplastics in Urban Air – The New Frontier of Pollution

MICROPLASTICS: Diverse Applications



Why in News?

- In **December 2025**, a groundbreaking study published in ***Environment International*** by researchers from **IISER Kolkata, IMSc Chennai, and AIIMS Kalyani** revealed that inhalable microplastics have become a "hidden toxin" in the air of major Indian cities.
- While traditional monitoring focuses on dust and smoke, this first-of-its-kind Indian study at breathing height (1.5 meters) confirms that microplastics now account for up to **5% of total PM10 and PM2.5** in metropolitan markets.

I. What are Inhalable Microplastics (iMPs)?

Inhalable microplastics are airborne plastic particles smaller than **10 micrometres (µm)**.

- **The Size Factor:** Unlike larger microplastics that settle on the ground due to gravity, iMPs are light enough to remain suspended in the air for prolonged periods.

- Respirability:** Because they are $<10 \mu\text{m}$, they can bypass the body's natural filters (like nose hairs) and penetrate deep into the **alveoli** (the air sacs in lungs).
- Composition:** The study identified 11 different types of polymers, including **polyester, nylon, and polyethylene**.

II. Key Findings of the 2025 Study

Researchers monitored high-footfall markets across four metros: **Delhi, Mumbai, Kolkata, and Chennai**.

1. City-wise Variation

City	iMP Concentration ($\mu\text{g}/\text{m}^3$)	Reason for Variation
Kolkata	14.23	Highest load due to density and waste burning.
Delhi	14.18	High traffic and stagnant winter air.
Chennai	4.00	Coastal winds aid in pollutant dispersion.
Mumbai	2.65	Better atmospheric flushing due to sea breeze.

2. Seasonal and Daily Exposure

- Daily Dose:** An average urban resident inhales approximately **132 micrograms** of microplastics daily.
- Winter Spike:** Concentrations rise by **74%** during winter evenings due to **temperature inversion** (where a layer of warm air traps pollutants near the ground).
- Lifetime Impact:** A city resident may inhale nearly **2.9 grams** of microplastics over a lifetime—roughly the weight of a **small plastic bottle**.

III. The "Trojan Horse" Effect: Health Risks

The danger of iMPs is not just their physical presence, but their ability to act as carriers for other toxins.

- Heavy Metals:** iMPs were found carrying **Lead (Pb)** and **Cadmium (Cd)**, which can lead to neurological damage and kidney issues.
- Endocrine Disruptors:** The presence of **phthalates** on the particles is linked to hormonal imbalances and reproductive disorders.
- The Pathogen Hitchhike:** Microplastics carry harmful fungi like **Aspergillus fumigatus** and microbes with **antibiotic-resistance genes (ARGs)**, potentially causing drug-resistant respiratory infections.
- Chronic Inflammation:** Once lodged in the lungs, these non-biodegradable particles trigger long-term inflammation, oxidative stress, and increase the risk of **lung cancer**.

IV. Major Sources in Indian Cities

- Synthetic Textiles:** Polyester and nylon clothing shedding fibers (especially in crowded markets like Sarojini Nagar or Sealdah).
- Tyre & Brake Wear:** Friction from vehicles releasing micro-rubber and metallic dust.
- Waste Mismanagement:** Open burning of plastic waste and degradation of single-use packaging.
- Urban Dust:** Breakdown of paints, cosmetics, and footwear.

V. The Policy Blind Spot

Currently, India's **Air Quality Index (AQI)** and **National Ambient Air Quality Standards (NAAQS)** do not explicitly monitor or regulate microplastics.

- Detection Issue:** Routine monitors measure the **mass** of particles but not their **material composition**, allowing microplastics to hide within PM2.5 and PM10 readings.

VI. Proposed Solutions

- Regulatory Shift:** The study urges policymakers to include microplastics in the **NAAQS** framework.
- Textile Reform:** Promoting natural fibers like **Khadi** and mandating **microfiber filters** in industrial and domestic washing machines.
- Urban Planning:** Creating vehicle-free market zones and green buffer zones around congested areas.
- Improved Waste Management:** Strict enforcement of the **Plastic Waste Management Rules, 2024**, particularly targeting open burning.

Bharat Stage (BS) Norms & Delhi's 2025 Pollution Crackdown



Why in News?

In December 2025, the Delhi government operationalized the strictest ever vehicular controls under **Stage-IV** of the **Graded Response Action Plan (GRAP)**. As air quality plunged into the "Severe+" category (AQI >450), authorities enforced a historic "double-lock" strategy to curb toxic emissions:

- **Permanent "No PUC, No Fuel" Rule:** As of **December 18, 2025**, fuel stations in Delhi are barred from dispensing petrol or diesel to any vehicle without a valid **Pollution Under Control Certificate (PUCC)**. This is enforced via **AI-enabled ANPR (Automatic Number Plate Recognition)** cameras at petrol pumps.
- **The "BS-VI Entry Shield":** All private and commercial vehicles registered outside Delhi that do not meet **BS-VI standards** are strictly prohibited from entering the capital (exceptions granted only for EVs, CNG, and essential services).
- **GRAP-4 Permanency:** Environment Minister Manjinder Singh Sirsa announced that these two specific restrictions will now remain **permanent** to prevent seasonal AQI spikes, calling vehicular pollution a "crime against the city's air."

I. Understanding Bharat Stage (BS) Emission Norms

Bharat Stage (BS) norms are the regulatory standards for air pollutants from internal combustion engines, including motor vehicles.

- **Authority:** Framed by the **Ministry of Environment, Forest and Climate Change (MoEFCC)** and implemented by the **Central Pollution Control Board (CPCB)**.
- **The Leap to BS-VI (2020):** In 2020, India made a bold strategic move by **skipping BS-V** entirely and leapfrogging from BS-IV to BS-VI to address the air quality crisis in North India.
- **BS-VI Phase II (2023):** Introduced **Real Driving Emissions (RDE)**, requiring vehicles to meet pollution limits under actual road conditions, not just in controlled laboratories.
- **The Road to BS-VII (2026–27):** India is currently preparing for **BS-VII**, which will move beyond "tailpipe emissions" to regulate **brake dust (particulate matter)** and **tyre microplastics** for the first time.

II. BS-IV vs. BS-VI: The Toxic Difference

The shift from BS-IV to BS-VI was not just a minor tweak but a massive technological overhaul.

Pollutant / Feature	BS-IV (2017)	BS-VI (2020)	Change / Impact
Sulphur in Fuel	50 mg/kg (ppm)	10 mg/kg (ppm)	80% reduction; enables advanced filters.
NOx (Diesel)	250 mg/km	80 mg/km	68% reduction in smog-causing gases.
PM (Diesel)	25 mg/km	4.5 mg/km	82% reduction in fine soot particles.
Monitoring	Lab-based testing	RDE & OBM	Real-time tracking of emissions on road.

III. Why Older (Non-BS VI) Vehicles are Barred

The 2025 ban on older vehicles is rooted in the "High-Emitter" reality of aging engines:

1. **Missing After-treatment:** Older vehicles lack **Selective Catalytic Reduction (SCR)** and **Diesel Particulate Filters (DPF)**, which are mandatory in BS-VI to catch microscopic soot.
2. **The "Trojan Horse" of Sulfur:** BS-IV fuels had 5 times more sulfur. Using this older fuel in modern BS-VI engines can poison the expensive catalytic converters, making them useless.
3. **Engine Aging:** Over time, engine components wear out, leading to incomplete combustion and a **10–15% increase** in tailpipe toxins every 5 years of a vehicle's life.

IV. Enforcement: The "Prakhar" Strategy (2025)

To ensure the **December 2025** ban is effective, the Delhi government deployed:

- **37 "Prakhar" Enforcement Vans:** Mobile units equipped with remote sensing to detect high-emitting vehicles in moving traffic.
- **126 Border Checkpoints:** Manned by 580+ personnel using the **Vahan Database** to instantly check a vehicle's BS-compliance via its number plate.
- **Hologram Stickers:** All BS-VI vehicles now require **color-coded fuel stickers** (Light Blue for Petrol/CNG, Orange for Diesel) with a green strip on top for easy visual identification by traffic police.

Conclusion: The 2025 crackdown signals that "clean air" is no longer an advisory but a mandate. By making the BS-VI entry requirement and the PUCC-linked fueling permanent, Delhi is betting on technology and strict fuel standards to break the annual cycle of "Severe" air quality.

India's Energy Security Strategy (Year-End Review 2025)



Why in News?

In December 2025, the Ministry of Petroleum & Natural Gas (MoPNG) released its Year-End Review, detailing a multi-pronged strategy that has successfully balanced **affordability, sustainability, and strategic autonomy**. Amid global volatility, India achieved a landmark milestone in June 2025 by meeting **50% of its cumulative electric power capacity** from non-fossil fuel sources—five years ahead of its 2030 Paris Agreement target.

I. Key Achievements of 2025

The government's 2025 strategy focused on "de-carbonizing" the energy mix while expanding traditional infrastructure.

1. Clean Cooking & PMUY 2.0

- Saturation Goal:** Pradhan Mantri Ujjwala Yojana reached **10.35 crore** active connections.
- Consumption Surge:** The targeted subsidy of **300 per cylinder** (continued for FY 2025-26) boosted average refills to a record **4.85 per annum**.
- Safety First:** Conducted over **12.12 crore free safety inspections** at consumer premises via a nationwide campaign.

2. Gas-Based Economy: "One Nation, One Gas Grid"

- Network Expansion:** The operational gas pipeline network grew to **25,429 km** (with 10,459 km more under execution).
- Unified Tariff:** Implementation of the **Unified Pipeline Tariff** regime now covers 90% of the grid, eliminating the "distance-based" cost disadvantage for distant states.
- City Gas:** Domestic PNG connections reached **1.57 crore**, and CNG stations crossed the **8,400** mark.

3. Biofuels & Green Aviation

- Ethanol Blending:** Reached **19.24%** (on track for 20% by 2026).
- CBG Mandate:** Compulsory **Compressed Bio-Gas (CBG)** blending in CNG/PNG started in **FY 2025-26**.
- Sustainable Aviation Fuel (SAF):** Established a roadmap for **1-5% SAF blending** in ATF beginning in 2027.

II. Strategic Petroleum Reserves (SPR): Phase II

India's energy "insurance policy" relies on underground salt caverns and rock storage.

- Current Capacity:** **5.33 MMT** (sustaining ~9.5 days of requirement).
- SPR Phase II:** Advancement of new commercial-cum-strategic facilities:
 - Chandikhol (Odisha):** 4 MMT capacity.
 - Padur (Karnataka) Expansion:** 2.5 MMT capacity.
- The Gap:** Total storage (including OMCs) currently sustains **77 days**, still 13 days short of the **IEA-mandated 90-day supply**.

III. Challenges to India's Energy Security

Despite the shift toward renewables, structural vulnerabilities persist:

- The Import Challenge:** Crude oil import dependence climbed to **89%** in FY2025 as domestic production dipped to **28.7 MT**.
- Geopolitical "Sanction Friction":** India's reliance on **Russian oil (~36% share)** triggered punitive measures from the U.S. and EU in 2025, forcing a "re-evaluation" of strategic trust.
- Critical Mineral Bottleneck:** India remains **100% dependent on imports** for 10 key minerals (Lithium, Cobalt, Nickel) essential for the EV and battery storage transition.
- Concentration Risk:** Over **60%** of India's solar and wind projects are located in just three states (**Gujarat, Rajasthan, Tamil Nadu**), increasing vulnerability to regional weather shocks or hybrid threats.

IV. Transitioning the Power Sector (2025 Stats)

Source	Capacity (Nov 2025)	% of Total
Total Non-Fossil Fuel	262.74 GW	51.5%
Solar Power	132.85 GW	Dominant Driver
Wind Power	53.99 GW	Steady Growth
Thermal (Coal/Gas)	246.90 GW	Still Base Load

V. The Way Forward: 2026 Roadmap

1. **Mission Anveshan:** Deepening exploration in frontier basins like the **Andaman Islands** and **Krishna-Godavari**.
2. **Battery Mandate:** Integrating a **4-hour battery storage requirement** in all new renewable tenders to ensure grid stability.
3. **Global Alliances:** Championing the **One Sun One World One Grid (OSOWOG)** to enable cross-border clean energy trade.
4. **Nuclear Integration:** Fast-tracking **Small Modular Reactors (SMRs)** with international partners (USA, France) to replace aging thermal plants.

Conclusion: India's 2025 energy performance marks a transition from **fossil-dependency** to **strategic diversification**. While "Green Growth" is the destination, the short-term focus remains on securing affordable crude and expanding the gas grid to shield the common citizen from global price volatility.

Discovery of *Rhinophis siruvaniensis* – A New Shieldtail Snake



Why in News?

In December 2025, scientists formally described a new species of shieldtail snake, ***Rhinophis siruvaniensis***, discovered in the Siruvani Hills of the Western Ghats. The discovery is notable for being a **citizen science success story**, as the first specimen was spotted by a local tourist guide and farmer, Basil P. Das, a decade ago on his coffee plantation in Kerala.

I. About *Rhinophis siruvaniensis*

This newly identified serpent is a specialized burrowing snake adapted to life underground.

- **Physical Appearance:**

Coloration: A lustrous, brownish-black dorsal (top) coat with bold, creamy-white blotches on its sides and belly.

- **Size:** Adults reach about **30 cm (1 foot)** in length, while juveniles are around **12-14 cm**.

- **Distinctive Feature:** It possesses a **dome-shaped tail shield**, which is heavily keratinized (strengthened) to assist in burrowing through soil and for defense against predators.
- **Genetic Profile:** Mitochondrial DNA analysis shows a **2-4% divergence** from its closest relative, *Rhinophis melanoleucus* (found in Wayanad), confirming it as a distinct species.
- **Habitat:** Found at elevations between **800-1100 meters** in wet evergreen forests, as well as in monoculture coffee and cardamom plantations.

II. Key Facts about Shieldtail Snakes (Uropeltids)

Shieldtails are among the least-studied snake groups due to their secretive, subterranean lifestyle.

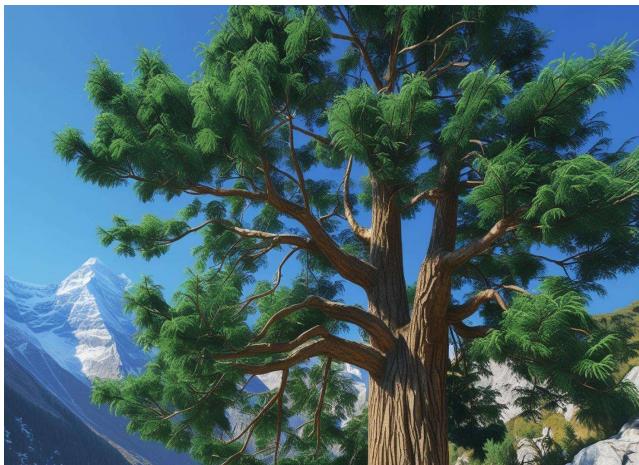
- **Family:** They belong to the **Uropeltidae** family.
- **Nature:** Small-sized, **non-venomous**, and completely harmless to humans.
- **Fossorial Lifestyle:** They spend most of their lives in loose soil and leaf litter, surfacing primarily during the **monsoon season**.
- **Distribution:** They are **endemic to India and Sri Lanka**.
 - In India, they are predominantly found in the **Western Ghats** and select hills of Peninsular India.
 - The genus *Rhinophis* is unique as the only uropeltid genus present in both India and Sri Lanka.
- **Ecological Role:** By burrowing, they help in **soil aeration** and regulate populations of small soil-dwelling insects.

III. Threats and Vulnerabilities

The discovery of *R. siruvaniensis* highlights the fragile nature of "cryptic" (hidden) biodiversity:

- **Habitat Sensitivity:** Burrowing snakes have a very low tolerance for environmental changes; deforestation and soil compaction due to heavy farming can decimate populations.
- **Roadkill & Farming:** Being slow-movers, they are frequently victims of roadkill or are accidentally killed during agricultural digging operations.
- **Climate Change:** Changes in monsoon patterns significantly disrupt their activity and breeding cycles.

Deodar Trees and Historical Climate Archives



Why in News?

In December 2025, a scientific study conducted by the **Birbal Sahni Institute of Palaeosciences (BSIP)** utilized the tree rings of ancient **Deodar (Himalayan Cedar)** trees in Himachal Pradesh's **Sangla Valley** to reconstruct nearly four centuries of environmental history. By examining the growth patterns in Batseri village, researchers were able to map precise climatic transitions and their direct impact on the region's geological stability.

I. About the Deodar Tree (*Cedrus deodara*)

The Deodar is the most revered and iconic conifer of the Western Himalayas, serving as a biological witness to centuries of environmental change.

- **Etymology:** The name is derived from the Sanskrit word "**Devadāru**", meaning "**Wood of the Gods**", reflecting its spiritual status in Himalayan culture.
- **State Symbol:** It is the **State Tree of Himachal Pradesh**.
- **Distribution:** Primarily native to the **Western Himalayan region**, spanning India, Pakistan, Afghanistan, and Nepal.

II. Botanical and Ecological Characteristics

- **Height and Shape:** A majestic evergreen conifer that reaches heights of up to **50 meters**. It is known for its tall, **pyramidal shape** and characteristic drooping branches.
- **Leaves:** Needle-like, bluish-green leaves that help the tree withstand the heavy snowfall and low temperatures of the alpine zones.
- **Bark:** Dark gray bark that becomes deeply fissured as the tree ages, providing a protective layer against extreme cold.
- **Reproduction:**
 - It is a **monoecious** species (male and female cones reside on the same tree).

- **Cones:** Solitary, erect, and ovoid in shape. They are initially green and turn dark brown upon maturity.

- **Altitude:** Found in high-altitude forests between **1800-3000 meters**, thriving in moist temperate climates and well-drained soils.

III. Cultural, Medicinal, and Economic Applications

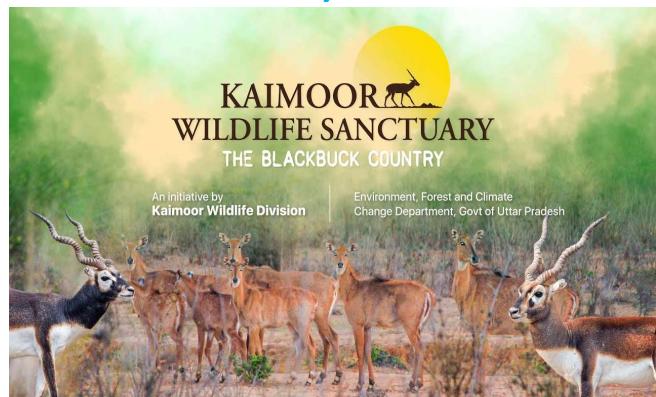
Domain	Use Case
Construction	Highly valued for its durable and rot-resistant timber; traditionally used in temple architecture and houseboats.
Ayurveda	The inner wood and essential oils are used for their antiseptic and anti-inflammatory properties.
Religious	The wood is used in sacred ceremonies and as incense due to its unique aromatic fragrance.
Ecology	Acts as a natural stabilizer for steep mountain slopes and provides a nesting habitat for endangered Himalayan fauna.

IV. Scientific Value: Dendroclimatology

Because Deodar trees are long-lived (some exceeding 1,000 years), they act as "**Natural Archives**" of the past:

- **Tree Rings:** Each ring represents a year of growth. Wide rings typically indicate wetter, favorable years, while narrow rings signify drought or extreme cold.
- **Climate Reconstruction:** By analyzing these rings, scientists can determine historical temperature and rainfall patterns long before modern weather stations existed.
- **Threats:** Despite their resilience, Deodar forests face modern threats from **habitat loss, illegal logging, and rapid climate fluctuations** that disrupt their centuries-old growth cycles.

Kaimur Wildlife Sanctuary – Poaching Raid and Biodiversity Profile



Why in News?

In **December 2025**, a forest department team conducted a successful undercover raid in the **Kaimur Wildlife Sanctuary**, leading to the arrest of a poacher and the seizure of a large cache of wildlife items.

- **The Operation:** Acting on intelligence about the illegal sale of wild animal meat, forest officials posed as customers for two days. They arrested one suspect at Dumuruka village near the Uttar Pradesh border while he was attempting to sell **Nilgai (Blue Bull)** meat.
- **The Seizure:** Subsequent raids on the suspect's residence led to the recovery of multiple **deer heads (Chital and Sambar)**, several sets of **horns**, and fresh animal flesh.
- **Legal Action:** A case has been registered under the **Wildlife Protection Act, 1972** and the **Indian Forest Act**, with five other accomplices identified and currently being pursued by the authorities.

I. About Kaimur Wildlife Sanctuary

Located in the Kaimur district of Bihar, it is the state's largest protected area and a site of immense historical and ecological value.

- **Size & Geography:** Spans approximately **1,342 sq. km** within the Kaimur Hills (Vindhyan Range).
- **Boundaries:** It is geographically defined by the **Son River** to the north and the **Karmanasa River** to the south.
- **Landscape:** The sanctuary features a rugged plateau intersected by seasonal streams that form deep gorges, cliffs, and famous waterfalls like **Karkat** and **Telhar**.

II. Connectivity and The "Tiger Landscape"

The sanctuary serves as a critical link in the Central Indian wildlife corridor.

- **Meta-population Link:** It is connected to the Bandhavgarh Sanjay Guru Ghasidas-Palamau tiger landscape through fragmented forest patches along the Son basin.
- **Tiger Status:** While tigers were considered "locally extinct" by the late 20th century, sightings in **2017 and 2020** have sparked efforts by the Bihar government to declare Kaimur as the **state's second Tiger Reserve** (after Valmiki TR).

III. Flora and Fauna Profile

- **Flora:** Primarily **Mixed Dry Deciduous Forests**. Dominant tree species include **Baakli, Mahua, Dhaak, and Bamboo**.
- **Fauna:** * **Mammals:** Black Bucks, Chinkaras, **Four-Horned Antelope (Chousingha)**, Sambar, Cheetal (Spotted Deer), and Leopards.
 - **Reptiles:** Pythons, Gharials, and Crocodiles (in the rivers).
 - **Avians:** Home to over **127 bird species**, including migratory visitors to **Anupam Lake**.

IV. Historical and Cultural Significance

The Kaimur Hills are a "living museum" of human history.

- **Prehistoric Heritage:** The region contains **prehistoric rock paintings (murals)** in areas like "Lakhania" and rare **Pre-Cambrian fossils** in "Salakhan."
- **Ancient Monuments:** Home to the **Mundeshwari Temple** (625 CE), considered one of the oldest functional Hindu temples in India, and the **Rohtasgarh and Shergarh Forts**.
- **Tribal Origin:** The **Oraon tribe** (also known as Kurukh) believes their ancestors originated from the Rohtas/Kaimur plateau before migrating to the Chotanagpur region.

Bar-Headed Goose – Breakthrough in Trans-Himalayan Tracking



Why in News?

In **December 2025**, a landmark tracking study in eastern India reached a major milestone when a **Bar-headed Goose** named 'Gagan' returned to the **Nagi Bird Sanctuary** in Bihar. This was the first time a bird of this species from eastern India was successfully tracked using a **solar-powered GSM-GPS transmitter**.

- **The Study:** Conducted by the **Bird Ringing and Monitoring Station (BRMS)**—a joint venture of the Bihar Forest Department and the **Bombay Natural History Society (BNHS)**.
- **The Journey:** Tagged in **February 2025**, 'Gagan' completed a full migration cycle of roughly **1,560 km**. The bird flew from Jamui (Bihar) to **Namucuo Lake in Northern Tibet**, crossing the Himalayas at a recorded altitude of **5,220 meters**.
- **Conservation Milestone:** The return of the tagged bird provides unprecedented data on the **Central Asian Flyway**, reinforcing the international ecological importance of Bihar's recently designated Ramsar sites, **Nagi and Nakti Bird Sanctuaries**.

I. About the Bar-Headed Goose (*Anser indicus*)

The Bar-headed Goose is a biological marvel, widely recognized as one of the **highest-flying birds** in the world.

- **Flight Physiology:** Capable of flying at altitudes of **25,000 feet (over 7,000 meters)**. At these heights, oxygen levels are roughly half of those at sea level, and temperatures are low enough to freeze exposed flesh.
- **Evolutionary Adaptation:** They possess a unique type of **hemoglobin** with a high affinity for oxygen, allowing them to extract more oxygen from each breath than other birds.
- **Distribution:**
 - **Breeding Grounds:** Native to **Central Asia** (Mongolia, Tibet, and Kazakhstan).
 - **Wintering Grounds:** They migrate south to **India**, Pakistan, Nepal, and Myanmar. In India, they are found from the **Indo-Gangetic plains** to the southern tip of the peninsula.

II. Physical and Behavioral Characteristics

- **Distinctive Markings:** Predominantly gray and white plumage with **two horseshoe-shaped, brownish-black bars** on the back of its white head. They have characteristic **orange or yellow bills and legs**.

- **Sexual Dimorphism:** Males and females appear nearly identical, though males are generally slightly larger.
- **Social Nature:** Highly social birds that migrate in large flocks (V-formations). They are **monogamous** and show high **site fidelity**, often returning to the same wintering spot year after year.
- **Diet:** Herbivorous; they graze on short grasses, aquatic vegetation, and cultivated crops like barley and wheat.

III. Habitat and Conservation Status

- **Habitat:**
 - **Breeding:** High-altitude mountain lakes in Central Asia.
 - **Wintering:** Freshwater lakes, rivers, marshes, and agricultural fields in South Asia.
- **Conservation Status:**
 - **IUCN Red List:** Least Concern.
 - **Wildlife Protection Act (India):** Schedule II.
- **Threats in 2025–26:** Despite being "Least Concern," they face increasing threats from **habitat degradation**, uncontrolled sewage in wetlands, and **collision with windmills** along their migration paths. A 2025 study in Karnataka reported a **34% decline** in arrivals due to erratic rainfall and climate-induced shifts in stopover sites.

IV. Institutional Support: The Bird Ringing Station

The **Bird Ringing and Monitoring Station (BRMS)** at Bhagalpur is India's fourth such facility (after Tamil Nadu, Rajasthan, and Odisha).

- **Objective:** To monitor bird health, population trends, and the impact of climate change on migration.
- **Technology:** Uses **GSM-GPS tags** that transmit real-time data via cellular networks.
- **Recent Success:** In **December 2025**, the station also tagged a female **Greylag Goose** named '**Sonbarsa**' to further expand the tracking database of the Central Asian Flyway.



Crux of The Hindu & Indian Express

Ecology & Environment

Farmers cannot be made Scapegoats for Delhi's Pollution" : Supreme Court



DC Edit | NCR Bad Air: Don't Blame Farmers

1. Why in News?

- The Supreme Court said that **farmers should not be blamed alone** for the air pollution crisis in Delhi–NCR.
- The Court asked why the sky was clear during the COVID lockdown even though **stubble burning still happened**, but **vehicles and industries were mostly shut**.
- The Court warned authorities not to turn this into a political blame game.

2. Key Observations of the Supreme Court

A. Farmers not the only source

- Stubble burning dropped from **88,000 cases to 5,500**, yet pollution levels stayed high.
- The Court said this clearly shows other sources are major contributors.

B. During COVID, air improved

- Stubble burning continued.
- But vehicles, industries, and construction were off → sky turned blue.
- So, pollution is **multi-source**, not just from farms.

C. Farmers need support, not blame

The Court said:

- Farmers must be **sensitised**, not punished.
- Crop stubble should be turned into an **asset** (for fuel, energy, fodder), not treated as waste.

3. What did the CAQM and Government say?

- CAQM told the Court that the goal for 2025 was "**zero stubble burning**".
- But the ground reality did not match the target.
- The Bench questioned whether action plans were actually being implemented.

Justice Bagchi said:

- Pollution also comes from **vehicles, road dust, and construction debris**.
- Paper plans are not enough — what matters is **execution**.

4. Supreme Court's Question to CAQM

The Court asked:

- If pollution control is not working,
- Should CAQM revisit and revise its action plan?**

The Court reminded that pollution affects **everyone in NCR** and even beyond.

5. Previous Directions

- Earlier, a Bench led by Justice Gavai had allowed CAQM to take **any proactive measure** to reduce pollution — even before the formal GRAP (Graded Response Action Plan) stages required it.

Examples of CAQM proposals:

- Advancing GRAP-IV restrictions to GRAP-III (like work-from-home, 50% office attendance).
- Restricting old vehicles (BS-III diesel, BS-IV petrol).
- Adding staggered office timings earlier in the GRAP stages.
- Increasing metro and bus services.
- Raising environmental charges on luxury diesel SUVs.

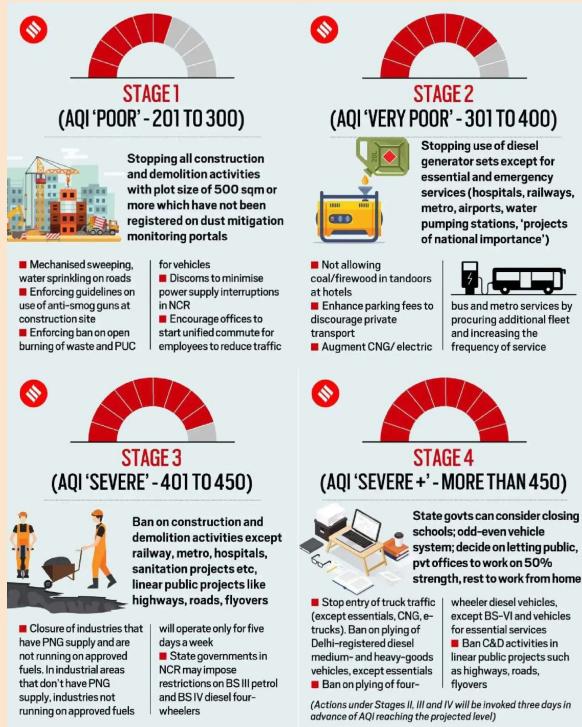
1. What is GRAP?

GRAP is an emergency action plan used in Delhi-NCR to control air pollution during winter. It gives step-by-step rules based on how bad the **Air Quality Index (AQI)** becomes.

GRAP has 4 stages:

Stage	AQI Range	Category
Stage I	201-300	Poor
Stage II	301-400	Very Poor
Stage III	401-450	Severe
Stage IV	Above 450	Severe +

As the AQI rises, rules become stricter.



2. What Changed Recently?

Some strict measures that were earlier applied **only in Stage IV (AQI >450)** have now been shifted to **Stage III (AQI 401-450)**.

This means strong actions will begin earlier, at lower pollution levels.

3. Key Advanced Measures Moved to Stage III

A. Work From Home (WFH) Rules

- Govt offices, private companies, and municipal bodies may be told to:
 - Call only **50% staff** to office.
 - Allow the remaining **50% to work from home**.

B. Vehicle Restrictions

- Ban on:
 - BS-III petrol cars**
 - BS-IV diesel cars**
- These rules apply strictly in Delhi and NCR districts.

C. Construction Ban (Expanded)

Earlier, construction bans did **not** include major public projects. Now even **linear public projects** are stopped under Stage III:

- Highways
- Roads
- Flyovers
- Power transmission lines
- Pipelines

This is a big shift because these projects were earlier allowed to continue.

D. Truck Entry Restrictions

- Entry of **non-essential trucks** and **medium/heavy goods vehicles** into Delhi-NCR is blocked.
- Only the following are allowed:
 - CNG trucks**
 - Electric trucks**
 - BS-VI diesel vehicles**

6. The Bigger Picture: Why Delhi Still Struggles with Pollution

The article explains why India finds it difficult to clean its air, even after years of action.

A. Pattern of Quick Fixes

Every winter, authorities repeat short-term measures:

- Smog towers
- Water sprinkling
- Odd-even
- Crackdowns during festivals
- Anti-smog guns :
- But these steps **do not reduce pollution permanently**.

They are “visible” actions, not long-term solutions.

B. Fragmented Governance

India's air pollution system has **too many agencies**:

- Environment Ministry
- CPCB
- State Pollution Boards
- CAQM
- Delhi municipal bodies
- Transport, industry, energy departments
- Highway authority, PWD, power companies, etc.

Each controls **only one slice** of the problem. No single agency has **full authority** or clear accountability.

This leads to:

- Slow enforcement
- Poor coordination
- Conflicting orders
- Weak long-term planning

C. Why quick fixes dominate

Governments prefer short-term steps because:

- They show immediate action.
- They avoid upsetting powerful sectors (construction, transport, agriculture).
- They fit inside yearly budgets.
- They avoid political risk.

But these actions **help politics, not public health.**

D. Two Major “Traps” in India’s Pollution Policy

1. *The Intellectual Trap*

- Solutions come from elite experts or think tanks.
- They are good on paper but hard to implement in cities with:
 - low staff,
 - weak records,
 - informal economy,
 - budget limits.

Ideas don’t match ground realities → so policies fail to scale.

2. *The Western Trap*

- Importing foreign “best practices” without adapting them to Indian conditions.
- Western models assume:
 - strong enforcement,
 - reliable public transport,
 - low informal activity,
 - high administrative capacity.
- These assumptions do not hold in Indian cities.

So imported ideas often fail or fade out.

E. India’s Real Constraints

- Uneven municipal capacity
- Informal labour markets
- Budget gaps
- Political pressures
- Different priorities across states

Policies must match **Indian realities**, not global models.

7. What India Actually Needs

A. *Clear leadership*

A modern clean-air law that clearly says:

- Who is responsible?
- Who enforces?
- How do different levels of government coordinate?

B. *Strong implementing institutions*

- Stable funding
- Skilled staff
- Reliable monitoring
- Transparent data
- Long-term programmes

C. *“Science managers”*

People who can:

- understand science,

- understand administration,
- convert ideas into workable ground-level action.

D. *Policies designed for India*

Solutions must match:

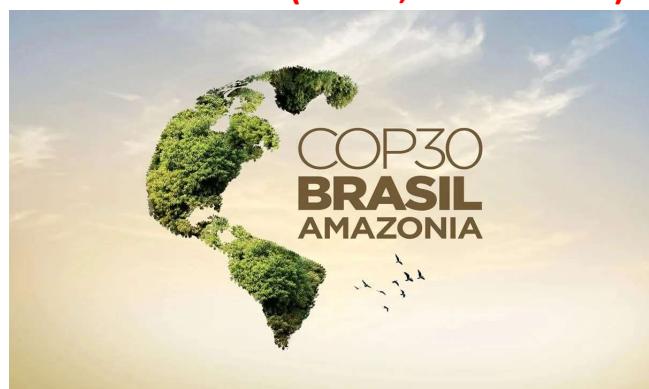
- local budgets
- local capacity
- local behaviour
- local political realities

Only then will clean-air efforts survive beyond one season.

Conclusion

The Supreme Court’s message is clear: **Farmers cannot be blamed alone for Delhi’s pollution.** Air pollution comes from many sources — vehicles, dust, construction, industries, and governance failures. India needs **long-term, India-specific, and well-coordinated** solutions, not seasonal quick fixes. True progress will come only when ideas, institutions, and ground realities finally align.

UNFCCC COP 30 – (Belém, Brazil – 2025)



- COP30, held in Belém, Brazil, from November 10–22, 2025.
- It was the 30th United Nations Climate Change Conference and a major milestone because it marked 10 years of the Paris Agreement and took place in the heart of the Amazon rainforest.
- It brings issues like forests, biodiversity and Indigenous rights to the centre of global discussions.
- COP stands for “Conference of the Parties,” referring to nearly 200 countries that signed the UNFCCC in 1992, and it serves as the top decision-making body for global climate action.
- COP30 was especially important because countries were expected to submit updated

Nationally Determined Contributions (NDCs) with stronger climate targets for 2035, but many arrived without revised plans, highlighting the growing gap between global climate goals and actual national commitments.

- This COP was called the “**Implementation COP**”, meaning the focus was not on new promises but on **how to actually do what countries already promised under the Paris Agreement**.

Why COP 30 Was Important

- Many climate commitments made earlier (Paris Agreement, Glasgow Pact, Dubai outcomes, Baku COP 29 finance deal) are **still not fulfilled**.
- Developing countries want **finance, technology, and justice**.
- Rich countries want **higher ambition and more mitigation**.
- The gap between what the world is doing vs what the planet needs is **very large**.

COP 30 tried to push **delivery, cooperation, and tracking of progress**, but deep political divisions limited strong outcomes

KEY OUTCOME 1: The Belém Package (Main Output of COP 30)

The Belém Package is a set of **29 negotiated decisions** focusing on:

1. Climate finance
2. Just transition
3. Adaptation tracking
4. Gender and community inclusion
5. Implementation tools and monitoring
6. Strengthening cooperation between countries

It signals a shift from “What should we do?” → “How will we do it?”

KEY OUTCOME 2: Global Mutirão Agreement

The **Global Mutirão** is the main high-level political deal of COP 30.

What it focuses on:

- Cooperation rather than strict new targets
- Delivery over ambition
- Bridging the gap between **promises vs. action**
- Supporting developing countries
- Balancing the interests of developed and developing nations

Brazil launched:

Global Mutirão Platform – a digital tool for:

- Tracking progress
- Pooling ideas
- Linking finance, energy and trade

Important:

This agreement is a **compromise** because countries could not agree on stronger language on fossil fuels or finance.

KEY OUTCOME 3: Just Transition Mechanism (JTM)

Also called **Belém Action Mechanism (BAM)**.

Purpose:

- Help workers and countries shift from fossil fuels to clean energy
- Provide knowledge-sharing, training, cooperation
- Support “people-centred transition”

Weakness:

- **No new dedicated finance** was committed. Without money, transition plans will be difficult.

KEY OUTCOME 4: GLOBAL IMPLEMENTATION TRACKER + Belém Mission to 1.5°C

Two new tools launched:

1. **Global Implementation Tracker**
2. **Belém Mission to 1.5°C**

What they do:

- Check if countries are meeting their NDCs
- Assess whether national actions align with 1.5°C pathways
- Bring accountability into the system
- Push for faster action

This marks a shift from negotiation → **monitoring and transparency**.

KEY OUTCOME 5: NAP (National Adaptation Plan) Implementation Alliance

Purpose:

- Help countries prepare and implement their adaptation plans faster
- Push technical support, finance, and climate tools

Countries also agreed:

- To triple adaptation finance by 2030 (baseline: 2025 levels)

Problem:

No clarity about **who will give the money**.

KEY OUTCOME 6: Global Goal on Adaptation (GGA)

Progress

Countries finalised:

1. **Baku Adaptation Roadmap**
2. **59 voluntary indicators** to track adaptation progress

What they track:

- Climate finance
- Technology transfer
- Capacity building
- Gender-responsive adaptation
- Community participation
- Local vulnerability

But → Many indicators were changed last minute, causing:

- Confusion
- Weak technical value
- Lack of clear next steps

KEY OUTCOME 7: Belém Health Action Plan

Launched on COP30 Health Day.

Focus:

- Link between climate change and health
- Build strong climate-resilient health systems
- Promote equity and justice
- Community involvement
- Protect vulnerable populations

KEY OUTCOME 8: Tropical Forests Forever Facility (TFFF)

Launched by **Brazil**.

Purpose:

- Pay countries for preserving tropical forests
- Use satellite monitoring
- Result-based model
- Mobilise **USD 125 billion**

Brazil contributed

- First **USD 1 billion**

This is major for countries with forests (Amazon, Congo Basin, Indonesia).

KEY OUTCOME 9: Belém 4x Pledge

Aim:

- Quadruple sustainable fuel usage by **2035** (compared to 2024 levels)

These fuels include:

- Hydrogen
- Biofuels
- Biogas
- E-fuels (electrofuels)

IEA will track progress annually.

KEY OUTCOME 10: Belém Declaration on Hunger, Poverty & People-Centred Climate Action

Signed by **43 countries + EU**.

Focus:

- Protect vulnerable groups
- Social protection (cash transfers, food security)
- Crop insurance
- Community resilience
- Climate action that puts people first

This is a strong shift towards **climate justice**.

KEY OUTCOME 11: Belém Gender Action Plan

This will strengthen gender-responsive climate action.

Key features:

- Use gender-disaggregated data
- Include women in climate decision-making
- Support women from vulnerable communities
- Integrate gender into:
 - NDCs
 - NAPs
 - climate laws
 - climate reporting

Recognises:

- Intersectionality (race, age, disability + gender)

INDIA'S ROLE AND POSITION AT COP 30

India played a very active role and focused on **equity, finance, and justice**.

India's Position 1: Climate Finance = Legal Duty

India argued:

- Finance is not charity
- Finance is a **legal obligation** under Article 9.1
- Rich nations must provide **predictable, grant-based** finance
- There must be a **universal definition** of climate finance
- Push rich nations to deliver:
 - **USD 1.3 trillion per year** (goal from Baku–Belém Roadmap)

India also reminded:

- Developing nations need **USD 310–365 billion per year** for adaptation alone
- Current flows ≈ **USD 26 billion**

- Glasgow target (double adaptation finance by 2025) → unmet

India's Position 2: Equity and Climate Justice

India strongly stressed:

- **CBDR-RC** (Common but Differentiated Responsibilities)
- Historical responsibility of rich nations
- Developing countries need a fair carbon space
- Implementation of UNFCCC + Paris + Kyoto must be respected

India also opposed:

- **EU Carbon Border Adjustment Mechanism (CBAM)**: Calling it a discriminatory climate tariff.

India's Position 3: Support for Vulnerable Countries

India said:

- Adaptation must get equal priority as mitigation
- Most vulnerable countries need predictable money and support

India also spoke for:

- Small island states
- Least developed countries (LDCs)

MAJOR SHORTCOMINGS OF COP 30

1. **No fossil fuel phase-out roadmap**: Even though 80+ countries demanded it.
2. **Weak climate finance progress**: Still no clarity on obligations and numbers.
3. **Ambition gap remains large**: Many countries delayed new NDCs.
4. **Implementation gap not solved**: Many promises, less action.
5. **Just Transition Mechanism has no funding**: Without money, transition is difficult.
6. **Adaptation indicators weakened last minute**: Reduced technical quality.

ABOUT COP / UNFCCC

- COP = decision-making body of UNFCCC.
- Meets every year to review progress and negotiate climate agreements.
- Supported by:
 - SBI (Implementation)
 - SBSTA (Scientific & Technical Advice)
- Also acts as:
 - CMP (for Kyoto Protocol)
 - CMA (for Paris Agreement)

Host sequence:

- **COP 31 (2026): Türkiye**
- **COP 32 (2027): Ethiopia**
- **COP 33 (2028): India?** (India has shown interest)

Why COP Matters for India

India uses COP to:

- Push equity and justice
- Showcase domestic achievements (renewables, green hydrogen, LiFE etc.)
- Demand finance for adaptation & loss and damage
- Lead groups like LMDC, BASIC
- Promote ISA (International Solar Alliance), CDRI, MAC, etc.

Conclusion :

COP 30 brought many new initiatives — but failed to deliver on the most critical issues: **Fossil fuel phase-out**, **Massive scale-up of climate finance**. The global north-south divide was evident. India strongly defended fairness and climate justice. Now, **COP 31 in Türkiye** becomes crucial for turning these commitments into **real, on-ground action**.

Groundwater Report Sounds Alarm Over Nitrate Contamination



1. Why in News

- The Central Groundwater Board (CGWB) submitted a report before the National Green Tribunal (NGT).
- The report highlights serious nitrate contamination in groundwater across India.
- Delhi has emerged as a major concern, with over 20% groundwater samples exceeding safe nitrate limits.

2. Key findings for Delhi

2.1 Nitrate Levels

- More than 20% of groundwater samples collected in 2023 exceeded the permissible limit of 45 mg/l.
- In some locations, nitrate levels reached 994 mg/l, which is over 22 times the safe limit.

2.2 Affected Districts

- High nitrate contamination was found in 7 out of 11 districts of Delhi:
 - New Delhi
 - North Delhi
 - Northwest Delhi
 - South Delhi
 - Southeast Delhi
 - Southwest Delhi
 - West Delhi

2.3 National Ranking of Delhi

- Delhi ranked 5th worst among States and Union Territories in terms of peak nitrate concentration.
- Delhi ranked 8th in terms of percentage of contaminated samples.
- 20.39% samples, or one in every five, exceeded the safe limit.

3. National Comparison

3.1 Worst-Affected States

- Andhra Pradesh recorded the highest nitrate concentration in the country.
- Levels reached 2,296.36 mg/l, far above safe limits.

3.2 Scale of Pervasiveness

- Rajasthan was the worst in terms of spread of contamination.
- 49.52% of groundwater samples (out of 630) exceeded permissible nitrate levels.

4. Health and Environmental Concerns

4.1 Health Risks

- High nitrate levels can cause methemoglobinemia, commonly known as Blue Baby Syndrome, in infants.
- Adults can tolerate slightly higher levels, but exceeding limits makes water unfit for consumption.
- Long-term exposure increases the risk of:
 - Cancer
 - Thyroid disorders
 - Acute oxygen deficiency

4.2 Environmental Impact

- Nitrate contamination is common in agricultural regions.
- Excessive use of nitrogen-based fertilisers and animal waste is a major cause.

5. NGT Case and CGWB Submission

5.1 Legal Context

- The case is currently ongoing before the NGT.
- The NGT took suo motu cognisance in January after media reports highlighted nitrate contamination.

5.2 CGWB Report Details

- CGWB submitted its Annual Groundwater Quality Report, 2024.
- The findings are based on samples collected in 2023
- A detailed national groundwater quality assessment is expected in September 2026.

6. Impact of Monsoon on Nitrate Levels

6.1 Monsoon Effect

- Monsoon rains usually help improve groundwater quantity.
- However, they can increase nitrate contamination due to agricultural runoff.

6.2 Data Comparison

- Pre-monsoon:
 - 30.77% samples exceeded safe nitrate limits.
- Post-monsoon:
 - 32.66% samples exceeded safe limits.

6.3 Reason

- Heavy rainfall causes fertilisers and pollutants to wash off from fields.
- These contaminants seep into aquifers, raising nitrate levels.

7. Central Groundwater Board (CGWB)

7.1 About CGWB

- CGWB functions under the Ministry of Jal Shakti.
- It is the apex body for groundwater management in India.
- It was established in 1970.

7.2 Evolution

- Originally formed from the Exploratory Tube Wells Organisation.

- Later merged with the **Ground Water Wing of the Geological Survey of India** in 1972.

7.3 Related Authority

- The **Central Ground Water Authority (CGWA)** was established under the **Environment Protection Act, 1986**.
- CGWA regulates groundwater extraction to ensure **sustainable use**.

7.4 Key Functions

- Groundwater exploration and monitoring.
- Water quality assessment and aquifer mapping.
- Artificial recharge and rainwater harvesting projects.
- Publication of **hydrogeological reports, groundwater yearbooks, and atlases**.

8. Sources of Groundwater Contamination

8.1 Agricultural Practices

- Excessive use of **fertilisers and pesticides** causes nitrate seepage.
- Improper irrigation and **over-extraction** worsen contamination.

8.2 Industrial and Urban Sources

- Leakage from **chemical and oil storage tanks**.
- Hazardous waste sites** and abandoned industrial areas.
- Landfills**, especially where protective linings are damaged.

8.3 Domestic Sources

- Poorly maintained **septic tanks and sewage systems**.

8.4 Environmental Factors

- Atmospheric pollutants entering groundwater through rainfall.
- Deforestation**, which reduces natural filtration of soil.

9. Implications of Groundwater Contamination

9.1 Health Impacts

- Leads to **waterborne diseases**.
- Causes **Blue Baby Syndrome** in infants.
- Fluoride and heavy metals damage **bones, teeth, and internal organs**.

9.2 Impact on Food Security

- Contaminated groundwater used for irrigation leads to **toxic accumulation in crops**.
- This threatens **food safety and human health**.

9.3 Environmental Impact

- Nitrate pollution damages **aquatic ecosystems**.

- Causes **soil salinization and land degradation**.

9.4 Economic and Social Costs

- Requires **expensive water treatment**.
- Reduces availability of freshwater.
- Can lead to **water stress and socio-economic crises**.

10. Measures Taken by the Government

10.1 Major Government Initiatives

- Jal Shakti Abhiyan (JSA)**
- National Aquifer Mapping and Management Programme (NAQUIM)**
- Atal Bhujal Yojana (ABHY)**

10.2 Pollution Control Measures

- Enforcement by **Central Pollution Control Board (CPCB)** and State Pollution Control Boards.
- Implementation of the **Water (Prevention and Control of Pollution) Act, 1974**.
- Setting up **Sewage Treatment Plants (STPs)** and **Effluent Treatment Plants (ETPs)**.

10.3 Awareness and Capacity Building

- Training through **Rajiv Gandhi National Ground Water Training & Research Institute**.
- Public campaigns like **Catch the Rain** and **Swachh Bharat Mission**.

11. Way Forward

11.1 Sustainable Agriculture

- Regulate excessive use of **nitrogen-based fertilisers**.
- Promote **organic and sustainable farming practices**.

11.2 Strengthening Groundwater Recharge

- Expand **rainwater harvesting**.
- Encourage **natural replenishment of aquifers**.

11.3 Better Waste Management

- Improve **urban sewage and solid waste management**.
- Promote **decentralised waste treatment systems**.

11.4 Policy and Monitoring

- Strengthen groundwater quality monitoring systems.
- Enforce **stricter regulations** on chemical discharge.
- Use scientific data for **long-term water planning**.





Geography

Role of Coal in India's Energy Security & The Transition Strategy



Why in News?

The government has authorized **private entities**, accredited by the **Quality Council of India (QCI)**, to act as **Accredited Prospecting Agencies (APAs)**. They are now permitted to conduct prospecting work under the **Mines and Minerals (Development and Regulation) Act, 1957**, aimed at boosting coal availability and energy security through a transparent exploration framework.

I. Role of Coal in India's Energy Security

- Energy Backbone:** Contributes 55% to the energy mix and fuels over 74% of electricity generation.
- Grid Stability:** Provides stable, "base-load" power, unlike intermittent renewable sources.
- Economic Driver:** Generates over **Rs 70,000 crore** annually in revenue; constitutes 49% of Indian Railways' freight earnings.
- Industrial Input:** Essential for steel (coking coal is 42% of production cost) and cement industries.
- Employment:** Coal India Ltd employs **2.39 lakh** people directly, with millions more in indirect roles.
- Sustainability Foundation:** Government is investing **Rs 8,500 crore** in **coal gasification** (syngas/methanol) to reduce carbon footprints.

II. Key Facts: Coal Sector in India

Coal Grades (Based on Carbon Content)

Type	Carbon %	Key Features	Primary Locations
Anthracite	86-97%	Highest heating value; premium quality.	Jammu & Kashmir
Bituminous	45-86%	Most common; used for power & industry.	Jharkhand, Odisha, Chhattisgarh
Subbituminous	35-45%	Lower heating value than Bituminous.	Various
Lignite	25-35%	High moisture (30-55%); high volatile matter.	Tamil Nadu, Gujarat, Rajasthan

Reserves & Production

- Global Rank:** India holds the **5th-largest** reserves and is the **2nd-largest** consumer.
- Top States:** Odisha, Jharkhand, and Chhattisgarh (account for **69%** of reserves).
- Production (FY 2024-25):** Reached **1,047 MT**, growing by **4.99%**.
- Imports:** Fell by **8.4%** (to 183 MT) in late 2024, saving **USD 5.43 billion** in foreign exchange.

III. Major Challenges

- Environmental Impact:** Thermal plants contribute **60% of PM** and **80% of mercury** emissions in the industrial sector.
- Water Stress:** Coal plants use water equivalent to the needs of **251 million** people.
- Health Costs:** Linked to **1.72 million deaths** in India (2022) due to air pollution (The Lancet Countdown 2025).
- Import Reliance:** India still imports **85%** of its high-grade **coking coal**.
- Economic Risk:** Solar/wind are now cheaper than **2/3** of India's coal power, risking "stranded assets."

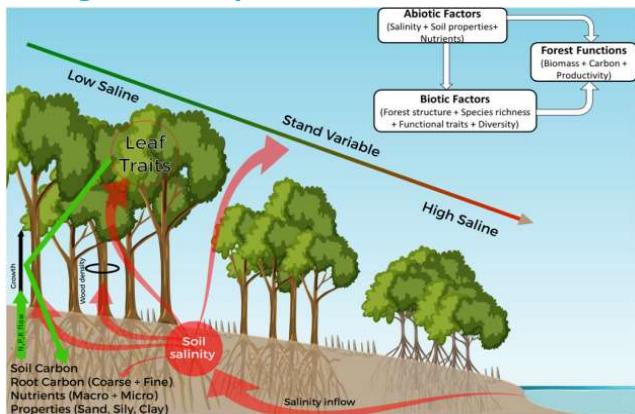
IV. The Path to a "Just Transition"

- Phased Reduction:** Retire old, inefficient plants while installing **SCR** and **ESPs** for emission control.
- Pollution Tech:** Mandatory **Flue Gas Desulfurization (FGD)** to scrub SO₂.
- Renewable Scaling:** Target of **500 GW** non-fossil capacity by 2030 (Current: **190 GW+**).

- **Energy Storage:** Implementing Viability Gap Funding (VGF) for **4,000 MWh** of Battery Storage (BESS) by 2030-31.
- **Strategic Repurposing:** Use coal as a "peaking power" source to support the grid when renewable output is low (night/monsoon).

Conclusion: While coal remains a vital transitional fuel for India's 24/7 power needs, the long-term focus is shifting toward a self-reliant, renewable-heavy energy architecture to mitigate environmental and economic costs.

Mangrove Adaptations for Salt Tolerance



Why in News?

- In December 2025, a landmark study published in the journal ***Current Biology*** identified the cellular secrets that allow mangroves to thrive in toxic saltwater environments.
- While most land plants would dehydrate and die in saline water, mangroves have evolved unique mechanical and physiological "shields" that could provide a roadmap for engineering **salt-tolerant crops** like rice and wheat, addressing food security challenges posed by rising sea levels.

I. How Mangroves Survive Saltwater

The study, led by Adam Roddy and a team of international biologists, compared 34 mangrove species with their inland relatives. They found that mangroves don't just "tolerate" salt; they structurally re-engineer their cells to manage it.

1. Cellular-Level Adaptations

- **Smaller Epidermal Cells:** Mangroves possess unusually small leaf epidermal "pavement" cells. Smaller cells are structurally more rigid and can withstand higher pressure without bursting.

- **Thickened Cell Walls:** The cell walls in mangroves are significantly thicker than those of inland plants. This provides the **mechanical strength** needed to prevent cellular collapse under **low osmotic potential** (extreme salt stress).
- **Decoupling from Stomata:** Unlike desert plants that shrink their stomata (breathing pores) to save water, mangroves do not show significant changes in stomatal size or density. Their survival depends more on **biomechanical strength** than on managing gas exchange.

2. Broad Salt Management Mechanisms

- **Salt Exclusion (Ultrafiltration):** Species like *Rhizophora* use a waxy root barrier that filters out up to **90% of salt** before the water even enters the plant system.
- **Salt Secretion:** Species like *Avicennia* absorb saltwater but actively "pump" excess salt out through specialized **salt glands** on their leaves, often leaving visible salt crystals on the surface.
- **Viviparity:** To ensure the next generation survives, mangrove seeds germinate while still attached to the parent tree, dropping as "propagules" ready to take root in the mud.

II. Implications for Climate-Resilient Agriculture

The findings align with the **National Mission on Sustainable Agriculture (NMSA)** and **SDG 13 (Climate Action)**.

- **Bio-Engineering Crops:** Scientists believe that by manipulating genes responsible for **cell size** and **cell wall thickness**, they can develop rice, wheat, and pulses that can grow in saline-prone coastal soils.
- **Soil Salinity Mitigation:** With climate change causing increased soil salinity globally, these "nature-based solutions" offer a way to maintain crop yields without massive desalination infrastructure.

III. Mangroves in India: Key Statistics (ISFR 2023)

As per the **India State of Forest Report (ISFR) 2023**, India's mangrove ecosystem is a critical national asset.

- **Total Cover: 4,991.68 sq. km** (approx. 0.15% of India's total area).

- **Top 3 States:**
 1. **West Bengal (Sunderbans):** 42.45%
 2. **Gujarat:** 23.32%
 3. **Andaman & Nicobar Islands:** 12.19%
- **Regulatory Protection:** Categorized as **Ecologically Sensitive Areas (ESAs)** under the **Environment (Protection) Act, 1986**. Any destruction requires a **3:1 compensatory replantation**.

IV. Significance of Mangrove Ecosystems

- **Blue Carbon Sinks:** They store **7.5–10 times more carbon** per acre than tropical rainforests, making them vital for carbon sequestration.
- **Coastal Protection:** Mangroves act as "Bio-Shields," reducing wave energy by **5–35%** and protecting coastlines from tsunamis and storm surges.
- **Nursery Grounds:** They are the primary breeding grounds for nearly **80% of global fish catches**, supporting millions of livelihoods.

Environmental Clearance for Dulhasti Stage-II Hydropower Project



Why in News?

- In December 2025, the **Expert Appraisal Committee (EAC)** of the Ministry of Environment, Forest and Climate Change (MoEF&CC) recommended **environmental clearance** for the **260 MW Dulhasti Stage-II hydropower project**.
- The clearance comes as a strategic move following India's decision to place the **Indus Waters Treaty (IWT)** in **abeyance (suspension)** effective from **April 23, 2025**, in response to the Pahalgam terror attack.
- This enables India to accelerate hydropower development in the Chenab basin, asserting

its rights over western river resources while the treaty remains on hold.

I. Dulhasti Stage-II: Project Profile

The project is designed as an integrated extension of the existing Stage-I facility to maximize power generation efficiency.

- **Location:** Kishtwar District, Jammu & Kashmir.
- **River:** Chenab River.
- **Capacity:** **260 MW** (2 units of 130 MW each).
- **Agency:** National Hydroelectric Power Corporation (NHPC) Limited.
- **Estimated Cost:** Approximately **3,277 crore**.
- **Type:** Run-of-the-River (ROR).

Technical Synergy

- **Infrastructure:** It will utilize the **existing dam, reservoir, and power intake** of Dulhasti Stage-I (390 MW).
- **Water Management:** The project will draw surplus water diverted from the **Marusudar River** (Chenab's largest tributary) via the **Pakal Dul** project.
- **New Components:** A new **3,685-meter-long headrace tunnel** and an **underground powerhouse** will be constructed to house the two new turbines.

II. Expert Appraisal Committee (EAC)

The EAC serves as the primary technical gatekeeper for major infrastructure projects in India.

- **About:** A multi-disciplinary **recommendatory body** constituted under the **EIA Notification, 2006**.
- **Function:** Screens and appraises industrial and infrastructure projects to ensure environmental safeguards.
- **2025 Directive:** For Dulhasti-II, the EAC has mandated a **River Conservation Strategy** to manage hydrological alterations in a 25 km stretch of the Marusudar river.
- **Compliance:** NHPC is required to conduct an independent impact study **5 years after commissioning** to assess long-term environmental health.

III. Strategic Context: The Indus Waters Treaty (IWT)

- **Background:** Signed in 1960 between India and Pakistan (brokered by the World Bank).

- **Allocation:** * **Eastern Rivers (Ravi, Beas, Sutlej):** India has full control.
 - **Western Rivers (Indus, Jhelum, Chenab):** Allocated primarily to Pakistan, with India allowed "non-consumptive" uses like ROR hydropower.
- **Suspension Impact:** With the treaty in abeyance since April 2025, India has fast-tracked a "cascade" of Chenab projects, including **Sawalkote (1,856 MW)**, **Ratle (850 MW)**, and **Pakal Dul (1,000 MW)**.

IV. The Chenab River

- **Origin:** Formed by the confluence of the **Chandra** and **Bhaga** rivers at Tandi (Himachal Pradesh).
- **Course:** Flows through the rugged Kishtwar and Doda districts of J&K, carving deep gorges ideal for "high-head" power generation.
- **Tributaries:** Key ones include the **Marusudar**, **Tawi**, and **Neeru** rivers.

Conclusion: The recommendation for environmental clearance of **Dulhasti Stage-II** in late 2025 is a critical step in India's "water-energy" strategic nexus. By leveraging existing infrastructure to add 260 MW of peaking power, India is optimizing its Himalayan resources to bolster both **national energy security** and **regional strategic deterrence**.

Heat Stress and Black Band Disease – Decimation of *Goniopora* Corals



Why in News?

- In **December 2025**, a devastating study by marine biologists from the **University of Sydney** (published in *Proceedings of the Royal Society B*) revealed that **75% of *Goniopora* coral colonies** have been wiped out at **One Tree Reef** in the southern Great Barrier Reef.
- The mortality was caused by a "lethal double whammy": extreme **marine heatwaves** during the 2024 El Niño followed by an unprecedented outbreak of **Black Band Disease (BBD)**.
- This event is significant because *Goniopora* is typically a **thermally tolerant** and long-lived species, signaling that even the most resilient corals are now succumbing to climate-driven stressors.

I. About *Goniopora* Coral

Known as the "**Flowerpot**" or "**Daisy**" coral, *Goniopora* is a vital structure-forming hard coral in the Indo-Pacific.

- **Family:** Poritidae.
- **Appearance:** Features long, fleshy polyps that remain extended during the day, ending in a fringe of 24 tentacles that resemble flower petals.
- **Habitat:** Typically found in **lagoons and turbid (cloudy) reefs**. They are considered a "tough" genus because they can handle higher sediment levels and temperatures than many other corals.
- **Feeding & Nutrition:**
 - **Photosynthetic:** Hosts symbiotic algae called **zooxanthellae** that provide nutrients via sunlight.
 - **Predatory:** Actively captures small plankton using its stinging tentacles.
- **Ecological Role:** Provides critical 3D architecture for fish and crustaceans, supporting reef biodiversity.

II. Black Band Disease (BBD): The "Necrotic Waster"

BBB is one of the most aggressive and easily recognizable coral diseases, though it was historically **rare in Australian waters** until this 2024–25 outbreak.

- **Definition:** A bacterial necrotic infection characterized by a **dark, tar-like microbial band** that migrates across the coral colony.

- **The "Kill Zone":**

1. The band consists of a **consortium of microbes** (Cyanobacteria, Sulfate-reducing bacteria, and Sulfide-oxidizing bacteria).
2. As the band moves (at a rate of up to **1 cm/day**), it creates an **anoxic (oxygen-free)** and **toxic (sulfide-rich)** environment.
3. This literally melts the coral tissue, leaving behind a **bare white skeleton**.

III. The 2025 Crisis: The Synergy of Stress

The University of Sydney study highlighted how record heat changed the reef's disease dynamics:

Factor	Impact on Goniopora
Extreme Heat	74 consecutive days above 28°C triggered mass bleaching, weakening the coral's immune system.
Infection Link	The disease occurred only on corals that had already bleached, proving that heat stress acts as a "gateway" for BBD.
Epizootic Event	By April 2024, the disease spread like an animal epidemic , infecting 61% of the bleached colonies.
Failure to Recover	Unlike typical bleaching where corals recover when water cools, the BBD infection ensured that three-quarters of the tagged colonies were dead by October 2024 .

IV. Global Implications

- **First Recorded Epizootic:** This is the first recorded event of a "disease epidemic" of this scale on the Great Barrier Reef.
- **Resilience Collapse:** The death of massive, old-growth corals (some decades old) indicates that the "**natural recovery window**" between heatwaves is vanishing.
- **Impact on Humans:** The loss of these corals threatens **coastal protection** (wave breaking) and **food security** for the billion people globally who rely on healthy reefs.

Conclusion: The **2025 Goniopora collapse** is a "red flag" for marine biology. It demonstrates that as ocean temperatures hit record highs, the primary threat to reefs is no longer just bleaching, but the **increased virulence of rare diseases** that strike when corals are at their weakest.

Charaichung Festival and the Royal Bird Sanctuary (2025–26)



Why in News?

- In **December 2025**, the second edition of the '**Charaichung Festival**' was hosted on Assam's **Majuli Island**.
- The four-day festival, held from December 7 to 10, aimed to revive and rejuvenate the 392-year-old **Charaichung Royal Bird Sanctuary**, which is recognized as Asia's first protected bird habitat.
- Organized by **Majuli Sahitya** and local residents, the festival seeks to restore the nearly defunct sanctuary and urge the government to designate it as a formal global tourism destination.
- By 2025, the sanctuary has seen a revival in interest, drawing birdwatchers from countries like Germany, the USA, and Australia.

I. Charaichung Royal Bird Sanctuary

This sanctuary holds immense historical and ecological value as a pioneer in wildlife protection.

- **Historical Legacy:** Established in **1633 AD** by the Ahom king **Swargadeu Pratap Singha** (also known as *Burha Roja*). This makes it the **first protected bird sanctuary in Asia**.
- **Location:** Situated in the heart of **Majuli**, the world's largest river island.
- **Ecological Richness:** It serves as a vital habitat for nearly **150 varieties** of birds.
 - **Indigenous Birds:** Resident species like eagles, kingfishers, and herons.

- **Migratory Birds:** Winter visitors from Siberia and China, including **Siberian Cranes**, Greylag Geese, and Bar-headed Geese.
- **Conservation Need:** Despite its "Royal" status, the sanctuary faced years of deterioration and was on the verge of extinction before recent community-led revival efforts.

II. Majuli Island: The Ecological Context

The sanctuary's survival is deeply linked to the geography of Majuli.

- **Formation:** The island is formed by the **Brahmaputra River** and its tributaries, the **Kherkutia Xuti** and **Subansiri**.
- **Cultural Capital:** Recognized as the "Soul of Assam," it is the center of **neo-Vaishnavite culture**, initiated by the saint **Srimanta Sankardeva** in the 15th century through institutions called **Satras**.
- **Tribal Heritage:** Home to three primary indigenous tribes: **Mishing, Deori, and Sonowal Kachari**.
- **Agriculture:**
 - **Unique Rice Varieties:** Residents grow **Komal Saul** (instant rice) and **Bao Dhan** (deep-water red rice).
 - **Livelihood:** Agriculture and traditional pottery remain the primary economic drivers.

III. Charaichung Festival 2025: Key Highlights

- **The Exhibition:** A special forest conservation exhibition was held to showcase local biodiversity and the 392-year legacy of Ahom-era conservation.
- **Community Driven:** Unlike typical government festivals, this is a grassroots initiative led by the **Majuli Sahitya Sabha** and local villagers.
- **Tourism Push:** The festival committee has appealed for **Global Recognition** and UNESCO heritage status (Majuli has been on the tentative list since 2004).
- **Cultural Tribute:** The 2025 edition also paid tribute to Assamese music icon **Zubeen Garg**, blending environmental awareness with cultural celebration.

Caribbean Hard Coral Decline – GCRMN 2025 Report



Why in News?

In December 2025, the **Global Coral Reef Monitoring Network (GCRMN)** released a landmark assessment titled *"Status and Trends of Caribbean Coral Reefs: 1970–2024."* The report, compiled by over 300 scientists across 44 countries, revealed a catastrophic **48% decline** in hard coral cover across the Caribbean since 1980.

- **The Tipping Point:** Hard coral cover has plummeted from an average of **28% in 1980** to just **14.6% in 2024**.
- **Economic Stakes:** Caribbean reefs generate approximately **\$6.2 billion annually** in fisheries and tourism; their collapse threatens the livelihoods of over **47 million people** living within 20 km of these reefs.

I. Understanding Hard Corals: The "Reef Architects"

Hard corals (Scleractinians) are the primary engineers of the marine world, creating the 3D structures that support 25% of all marine life.

- **Composition:** Formed by thousands of tiny, soft-bodied animals called **polyps** that sit inside a cup-shaped skeleton.
- **Skeleton Building:** These polyps extract calcium from seawater to secrete **calcium carbonate** (limestone). This process builds the rigid foundation of the reef.
- **Symbiosis:** They host microscopic algae called **zooxanthellae** within their tissues.
 - **The Deal:** The coral provides the algae with a protected environment and compounds for photosynthesis.
 - **The Reward:** The algae provide the coral with up to **90% of its energy** (food) and give corals their vibrant colors.

II. Primary Drivers of the Caribbean Collapse

The 2025 report identifies three "deadly" factors that have converged to decimate Caribbean hard corals:

1. Thermal Stress and Mass Bleaching

- **Record Warming:** Sea surface temperatures in the Caribbean have risen by **1.07°C** since 1985.
- **Bleaching Events:** Massive declines occurred during peak heat years: **1998 (-9%), 2005 (-17.1%),** and the unprecedented **2023–24 episode (-16.9%).**
- **Result:** When water is too warm, corals expel their zooxanthellae. If the heat persists, the coral starves and dies, leaving a ghostly white "bleached" skeleton.

2. Stony Coral Tissue Loss Disease (SCTLD)

- **The "Coral Pandemic":** First detected in Miami in 2014, SCTLD has now spread to **30 Caribbean countries.**
- **Lethality:** It affects over **30 species** (including primary reef-builders like Brain and Star corals) with a mortality rate of nearly **100%** in infected colonies. It is considered the most destructive coral disease ever recorded.

3. The Loss of "Keystone" Herbivores

- **The Diadema Crash:** The long-spined sea urchin (*Diadema antillarum*) is the reef's primary "gardener." A massive die-off in 1983 and a second "marine pandemic" in **2022** wiped out populations.
- **Macroalgae Surge:** Without urchins and parrotfish to graze, macroalgae cover has surged by **85%.** These "weeds" smother coral recruits and prevent baby corals from settling on the reef.

III. Shifting Reef Composition (1980–2024)

The Caribbean is undergoing a "Phase Shift" where complex reefs are being replaced by simplified, flatter ecosystems.

Coral Type	Trend	Significance
Acropora (Elkhorn/Staghorn)	90% Decline	These branching corals provided the highest structural complexity and storm protection.
Orbicella (Star Corals)	Stable at 5%	Massive species that are slow-growing but currently struggling to recover.
Porites (Finger Corals)	164% Increase	Small, stress-tolerant "weedy" species that occupy space but don't build large reef structures.

IV. Institutional Framework for Recovery

Despite the alarming data, the GCRMN report highlights that **well-managed Marine Protected Areas (MPAs)** show significantly higher resilience.

- **Cartagena Convention:** A regional legal agreement for the protection and development of the marine environment in the Wider Caribbean.
- **GCRMN Role:** An operational network of the **International Coral Reef Initiative (ICRI)** that provides the scientific evidence needed for policy-making.

The Return of "Lake Manly" in Death Valley National Park



Why in News?

In **late 2025**, record-breaking rainfall triggered by atmospheric rivers caused the rare reappearance of an ancient lake in **Death Valley National Park**, California. Known as **Lake Manly**, this ephemeral body of water returned to the **Badwater Basin**, transforming the hottest and driest place in North America into a vast, shallow turquoise mirror.

- **Atmospheric Resilience:** Typically, Death Valley receives only **2 inches** of rain annually. However, the 2024-25 winter storms dumped nearly a year's worth of rain in just 48 hours, allowing the lake to reach depths sufficient for kayaking for a brief period.
- **The "Mirror" Effect:** The return of the lake has drawn thousands of tourists to witness the rare sight of the **Sierra Nevada** and **Panamint Range** reflecting off the desert floor.

I. About Death Valley National Park

Death Valley is a land of extremes, defined by its unique geology and climate that defy the typical rules of North American geography.

- **Status:** The **largest national park** in the continental United States (outside Alaska).
- **Location:** Situated in the northern **Mojave Desert**, east of the Sierra Nevada Mountains in California.
- **Climate Records:** * Holds the record for the **highest temperature** ever recorded in the US (134°F on July 10, 1913).
 - Summer temperatures regularly peak above **120°F**.
- **Topographic Extremes:** * **Lowest Point:** **Badwater Basin** (282 feet below sea level), the lowest area in North America.
 - **Highest Point:** **Telescope Peak** (11,049 feet), creating a vertical relief of over 11,000 feet.

II. Geological Formation: A Rift Valley

Death Valley is not just a hole in the ground; it is a structural phenomenon known as a **graben**.

- **Tectonic Action:** It is a **rift valley** formed by the "pulling apart" of the Earth's crust.
- **The Mechanism:** Huge expanses of rock (the **graben**) sank between two parallel, block-faulted mountain ranges (the **horsts**) to the east and west.
- **Salt Flats:** As water evaporates in this "closed basin," it leaves behind thick crusts of sodium chloride and other minerals, creating the iconic white crystalline floor of Badwater Basin.

III. The Ancient Legacy of Lake Manly

- **Pleistocene Origin:** During the last Ice Age (roughly 10,000 to 100,000 years ago), Death Valley was a lush region home to the permanent **Lake Manly**, which was over **600 feet deep**.
- **Ephemeral Nature:** Today, the "lake" only appears after extreme weather events. The **2025 appearance** is one of the most significant in recent decades due to the high volume of rainfall.
- **Ecological Significance:** The water triggers the hatching of dormant brine shrimp and provides a rare hydration window for the park's **endemic species**, such as the **Death Valley Pupfish**.

IV. Flora and Fauna: Survival in Extremes

Despite the harsh conditions, the park is a "living desert" with high biodiversity.

- **Endemism:** Home to several species found nowhere else on Earth, adapted to high salinity and heat.
- **Wildflower Blooms:** Significant rainfall (like that of 2025) often leads to a "**Superbloom**," where millions of desert gold sunflowers, lupines, and desert fivespots blanket the valley floor.
- **Mountain Diversity:** Higher elevations feature snow-covered peaks and ancient **Bristlecone Pines**, some of the oldest living organisms on Earth.

Conclusion: The **2025 return of Lake Manly** serves as a powerful reminder of the desert's hidden potential. While Death Valley is defined by its dryness, its ability to transform into a lakeside landscape demonstrates the profound impact of shifting global weather patterns on even the most extreme environments on the planet.

Moei River – The Strategic Border Linked to Cyber-Fraud Compounds



Why in News?

In late **2025**, the Moei River became a focal point of international concern as the **Central Bureau of Investigation (CBI)** and the **National Investigation Agency (NIA)** intensified crackdowns on human trafficking networks. Investigations revealed that young men, particularly from **Gujarat and Rajasthan**, were being lured with promises of lucrative "data-entry" or IT jobs in Thailand, only to be trafficked across the **Moei River** into notorious "cyber-slavery" compounds in **Myawaddy, Myanmar**.

- **The Rescue Mission (Nov 2025):** The Indian government executed a complex mission, repatriating **270 Indian nationals** from Myawaddy via Indian Air Force (IAF) aircraft.
- **Operation Chakra-V:** The CBI filed chargesheets against 13 individuals, highlighting how these "slave compounds"

like **KK Park** use trafficked labor to execute global "digital arrest" and cryptocurrency frauds.

I. About the Moei River

The Moei River is a critical geographic and political boundary in Southeast Asia, known for its unique flow and strategic location.

- **Nomenclature:** Known in Thailand as **Mae Nam Moei** and in Myanmar as the **Thaungyin River**.
- **Length & Flow:** Stretches approximately **327 km**. Unlike most major rivers in Thailand that flow south, the Moei flows **north and northwest**.
- **Source:** Originates in the **Tenasserim Hills** (Thanon Thongchai Range) in Thailand's Tak Province.
- **Tributary Status:** It is a major tributary of the **Salween River** (Thanlwin), which it joins in the Sop Moei District.
- **Natural Border:** Serves as the natural international boundary between **Thailand** and **Myanmar**.

II. Key Towns and Crossings

The riverbanks host two significant "twin towns" that facilitate both legal trade and illegal transit:

1. **Mae Sot (Thailand):** A major trade hub and the primary entry point for humanitarian aid and refugees.
2. **Myawaddy (Myanmar):** A key border trading town in Kayin (Karen) State, currently notorious for hosting several unregulated "Special Economic Zones" or cyber-scam compounds.

III. Modern Strategic and Security Challenges

The Moei River has transitioned from a historical waterway of commerce into a high-risk zone for transnational crime.

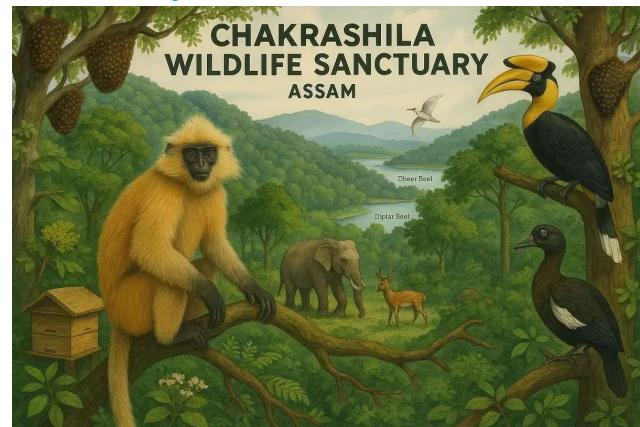
Challenge	Impact on Regional Security
Cyber-Fraud Hubs	Proliferation of compounds like KK Park and Shwe Kokko along the riverbanks, where thousands are held in "cyber-slavery."
Human Trafficking	Use of unauthorized "natural crossings" (shallow parts of the river) by traffickers to move victims from Thailand into Myanmar.
Conflict Zone	Frequent clashes between the Myanmar Military (Tatmadaw) and ethnic armed groups like the Karen National Union (KNU) along the river.
Refugee Crisis	The river serves as the primary escape route for thousands of refugees fleeing conflict in Myanmar's interior.

IV. Geographical Summary

- **Topography:** The river flows through a dissected granitic and limestone landscape with peaks reaching **4,000–6,000 feet**.
- **Vegetation:** Surrounded by dense tropical forests, making border surveillance difficult.
- **Hydrology:** Subject to flash floods during the monsoon, which often halt both trade and illegal crossings.

Conclusion: The **2025 rescue operations** have underscored that the Moei River is no longer just a geographical boundary but a frontline in the fight against **transnational digital crime**. As criminal syndicates exploit the jurisdictional "gray zones" along its banks, regional cooperation between India, Thailand, and Myanmar has become essential to safeguard vulnerable youth from the "data-entry" traps of the digital age.

Chakrashila Wildlife Sanctuary – Community-Led Bee Conservation



Why in News?

In **December 2025**, a community-led initiative at **Chakrashila Wildlife Sanctuary** in Assam was recognized for its breakthrough success in restoring **wild honey bee colonies**. The project, showcased at the **2025 Community Conference on Commons**, highlighted how indigenous stewardship has not only revived bee populations but also triggered a "cascade effect" that revitalized the entire forest ecosystem.

- **Key Achievement:** By reducing unregulated and harmful honey-hunting practices, local villagers successfully increased pollination rates, leading to healthier forest regeneration and improved food availability for the sanctuary's diverse fauna.
- **Leadership:** The effort was spearheaded by **Gala Basumatary**, a local spiritual leader from Bandarpara village, and supported by

the group **BERE (Bwiswmuthy Eco-Reverence Ensemble)**.

I. About Chakrashila Wildlife Sanctuary

Established as a sanctuary in **1994**, it is a vital biodiversity hotspot in the **Indo-Burma region**.

- **Location:** Spans across the **Kokrajhar and Dhubri districts** of Western Assam.
- **Area:** Approximately **45.5 sq. km** of hilly terrain and dense canopy.
- **The "Langur Stronghold":** It is famously the **second protected habitat** in India for the **Endangered Golden Langur (*Trachypithecus geei*)**, hosting a healthy population of over **600 to 800 individuals**.
- **Integral Wetlands:** The sanctuary is flanked by two major lakes: **Dheer Beel** and **Diplai Beel**, which are essential for maintaining the local microclimate and supporting aquatic biodiversity.

II. Flora: The Sal Domain

The sanctuary's vegetation acts as the "green lungs" of Western Assam.

- **Forest Types:** Predominantly **Tropical Moist Deciduous** and **Mixed Deciduous forests**, with pockets of semi-evergreen vegetation.
- **Dominant Species:** The **Sal tree (*Shorea robusta*)** is the primary canopy-forming species.
- **Sacred Groves:** The sanctuary contains culturally significant **Sacred Forests** (like the *Pedpakra sacred forest*), which are protected by local tribal taboos, acting as "mini-sanctuaries" within the protected area.

III. Fauna: A Trophic Powerhouse

- **Mammals:** Home to high-profile species including **Elephants, Tigers, Leopards, and Clouded Leopards**. It also supports Gaur, Sambar, and Barking Deer.
- **Primates:** Besides the Golden Langur, it hosts Rhesus Macaques and the secretive **Slow Loris**.
- **Avians:** Recognized as an Important Bird Area (IBA) with over **119 species**, including:
 - Bengal Florican (Critically Endangered)
 - Great Hornbill
 - White-winged Wood Duck (Endangered)

- **Invertebrates:** The sanctuary is a haven for over **40 species of butterflies**, whose populations have significantly benefited from the recent honey bee restoration efforts.

IV. The "Honey Bee" Success Story

The 2025 conservation model shifted the focus to **Keystone Pollinators**:

1. **Challenge:** Unregulated honey hunting was destroying nesting sites and causing forest fires.
2. **Community Solution:** Indigenous leaders introduced sustainable harvesting methods and designated "no-touch" zones for wild hives.
3. **Result:** The restoration of bees has led to a documented increase in **fruit and seed production** among forest trees, directly supporting the diet of the Golden Langur and various bird species.

Hainan Island – China's New Independent Customs Territory



Why in News?

On **December 18, 2025**, China officially launched **island-wide independent customs operations** on Hainan Island. This milestone marks the formal "split" of the island from the mainland's customs processing system, effectively creating a "special customs supervision area" within China's borders.

- **Strategic Goal:** The move is a flagship project aimed at transforming Hainan into a **globally influential Free Trade Port (FTP)** by 2050. It serves as a strategic hedge against external trade barriers and a bid to align with high-standard international trade rules, such as those of the **CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership)**.

- **The "Hawaii of China":** By offering Hong Kong-style commercial incentives, China intends to position Hainan as a new growth engine and a maritime gateway between the **Indian and Pacific Oceans**.

III. About Hainan Island

Hainan is not just a tourist destination but a geologically and strategically distinct province.

- **Geography:** An oval-shaped island (~260 km by 210 km) located at China's southernmost tip. It is the **largest island** administered solely by the People's Republic of China.
- **History:** Geologically separated from the mainland between **23 to 2.6 million years ago** when a rift formed the Hainan (Qiongzhou) Strait.
- **Capital:** Haikou (the "Coconut City"), while Sanya serves as the primary international tourism and duty-free shopping epicenter.
- **The "Hawaii" Label:** Known for its tropical climate, sandy beaches, and luxury resorts, it hosts the **Boao Forum for Asia**, often called "Asia's Davos."

Conclusion: The December 2025 customs "seal-off" marks the beginning of Hainan's life as a separate economic entity. While it is unlikely to rival Singapore or Hong Kong in the immediate term, its role as a "**testing ground**" for institutional opening-up makes it the most significant experiment in Chinese market liberalization since the creation of the Shenzhen Special Economic Zone.

Bura Chapor Wildlife Sanctuary – Encroachment & Afforestation Challenge



Why in News?

In December 2025, a high-level team of government officials, led by Sonitpur District Commissioner Ananda Kumar Das, visited the **Bura Chapor Wildlife**

Sanctuary to inspect land earmarked for **compensatory afforestation**.

I. About Bura Chapor Wildlife Sanctuary

Established as a sanctuary in **1995**, Bura Chapor is a vital riverine ecosystem that acts as a bridge for wildlife movement in the Brahmaputra valley.

- **Location:** Situated on the **southern bank** of the river Brahmaputra in the **Sonitpur district**, Assam.
- **Transboundary Landscape:** It forms a singular ecological entity with the **Laokhowa Wildlife Sanctuary** to its south, creating the **Laokhowa-Burachapor complex** (spanning ~114 sq. km).
- **Buffer Zone:** In **2007**, it was officially notified as a buffer zone of the **Kaziranga Tiger Reserve**, providing an essential safety net for the core tiger population.
- **Vulnerability:** Due to its low-lying topography, over **60%** of the sanctuary consists of flood-prone grasslands, making it highly sensitive to summer flooding.

II. Ecological Profile: Flora & Fauna

- **Flora:** The sanctuary is a mosaic of **wet alluvial grasslands**, riparian forests, and semi-evergreen patches.
 - **Medicinal Value:** Many indigenous plant species found here are utilized in traditional Assamese medicine.
- **Fauna:** * **Mammals:** A habitat for the **Great Indian One-horned Rhinoceros**, Bengal Tiger, Asian Elephant, and Asiatic Water Buffalo.
 - **Flagship Bird:** It is considered one of the most ideal habitats for the **Critically Endangered Bengal Florican**.
 - **Avian Diversity:** Recognized as an **Important Bird Area (IBA)**, it hosts the Black-necked Stork, Mallard, and White-eyed Pochard.

III. Key Conservation Challenges (2025–26)

The sanctuary faces a "Triple Threat" that complicates its management:

Threat	Impact on Ecosystem
Illegal Encroachment	Nearly 1,892 hectares (historical and current) have been targeted by illegal settlers, leading to habitat fragmentation.
Land Conversion	Conversion of grasslands into agricultural patches for rice and vegetables disrupts the nesting grounds of ground-dwelling birds like the Bengal Florican.
Compensatory Issues	Delays in Compensatory Afforestation due to land disputes weaken the state's ability to offset forest loss occurring elsewhere (e.g., from oil drilling or infrastructure).

IV. The Rhino Corridor Project

Bura Chapori is the "missing link" in the **Indian Rhino Vision 2.0**:

1. **Corridor Connectivity:** It links Orang National Park (west) to Kaziranga National Park (east).
2. **Natural Migration:** As of **early 2025**, five rhinos have successfully migrated into the Laokhwa-Burachapori complex naturally via this corridor for the first time in 40 years.
3. **Gene Flow:** Maintaining this corridor is essential for the genetic health of the rhino and tiger populations across Central Assam.



EDITORIALS

Crux of The Hindu & Indian Express

Geography

Indian Farmers & Experts Ask Govt to Reject Expansion of Global Plant Treaty



1. Background

- There is an international agreement called the **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**.
- A big meeting of this treaty will happen in **Lima, Peru**, in the last week of November 2025.
- Before this meeting, many groups in India — farmers' organisations, civil society groups, and scientists — have raised strong concerns.
- They wrote letters to the Prime Minister and important ministers.

- Their message is simple: **protect India's rights over its own seeds and plant genetic resources**.

2. What is the main issue?

There is a proposal to **expand** the treaty's **Multilateral System (MLS)**.

Right now:

- MLS covers only **64 crops**. (Example: rice, wheat, maize etc.)

New proposal:

- Expand MLS to **almost all plant genetic resources (PGRFA)**.
- Only a very small number of crops can be kept out through a "negative list".

Why is this a problem for India?

Farmer groups say:

- This expansion will **open almost all of India's seed diversity** to foreign seed companies.
- India will **lose control** over who uses its seeds.
- It goes against Indian laws:
 - **Biological Diversity Act, 2002**
 - **Plant Varieties and Farmers' Rights Act, 2001**

These laws protect:

- India's **sovereign rights** over genetic resources.
- Farmers' role as **custodians of seeds**.

3. Disagreement over India's obligations

At a consultation meeting, a senior official, **Sunil Archak**, made some claims:

1. India can choose which seeds to share.
2. India is not giving seeds to MLS, only receiving.
3. India needs expansion to get access to crops like soybean, tomato, groundnut, oil palm.

Farmers and scientists say this is wrong.

They say:

- The treaty is **legally binding**. Countries **cannot keep reservations** once they sign.
- Articles 11 and 12 say countries **must** share all plant resources that fall under the expanded list.
- India has **already shared more than 4 lakh seed samples** with MLS. These include **farmers' own varieties**.
- India already has rich diversity in soybean, tomato, etc.

- India can get any extra material through **bilateral agreements**, without giving up sovereignty.

Their point:

A small benefit is not worth losing control over India's entire seed heritage.

4. Transparency and digital biopiracy issues

Another major concern is **lack of transparency** in MLS.

Problems raised:

- No proper system to track **who is taking seeds**, how they use them, or what products they make.
- New rules introduce **confidentiality clauses** — even less transparency.
- Digital Sequence Information (DSI)** is not regulated.
(DSI = genetic data taken from seeds.)

Why is this dangerous?

- Seed companies can take India's seeds, create digital data, and use it freely.
- This allows **digital biopiracy** — using India's genetic wealth without permission or benefit-sharing.
- Data can go to private databases not accountable to India.

5. What farmers and experts want the government to do

They listed clear demands for India's stand at the Lima meeting (GB-11):

Demands:

- Reject expansion of MLS** to include all PGRFA.
- Demand **full transparency** — list of who accessed India's seeds must be public.
- Oppose confidentiality clauses** in the seed-sharing agreement (SMTA).
- Regulate **DSI** — allow sharing only on transparent and accountable systems.
- Appoint a **skilled negotiator**, preferably from the Ministry of External Affairs.
- Restrict Sunil Archak** from representing India because of conflict of interest.
- Work with **Global South countries** to push for better governance and tracking before any expansion.

They will also hold a **press briefing on 18 November 2025** to share all these concerns with the public.

6. Key questions they want the government to answer

- Will an expanded treaty give **international access** to all of India's publicly held seed resources?
- Will India **lose oversight** over who uses its plant genetic material?
- What will happen to **farmers' seed sovereignty**?

NCPOR : The Anchor of India's Polar and Ocean Research – Goa Governor



Date: 1 December 2025

1. Why in News?

- At an event celebrating **Antarctica Day**, the Governor of Goa said that the **National Centre for Polar and Ocean Research (NCPOR)** has become the “**anchor**” of India’s work in polar (Arctic & Antarctic) and ocean exploration.
- A **special commemorative postage stamp** was also released to mark **NCPOR’s Silver Jubilee (25 years)**.

2. What is Antarctica Day?

- Celebrated globally on **1 December** every year.
- Marks the signing of the **Antarctic Treaty (1959)**.
- The treaty says Antarctica must be used **only for peace and scientific research**.

3. What Happened at the Event?

A. Governor's Remarks

Governor P. Ashok Gajapathi Raju said:

- NCPOR has spent **25 years expanding India's scientific presence** in the world's most extreme regions.

- It now plays a **lead role in the Deep Ocean Mission**.
- Polar regions may look far away, but they affect **everyone** through climate and sea levels.

He explained:

- Antarctica holds **70% of the world's fresh water**.
- If it melts fully, global sea levels would rise sharply and disturb climate stability.
- India, aiming to become a developed country by 2047, must understand these changes.

He also said Goa is proud to host this important national institute and assured continued state support.

B. Release of the Special Postage Stamp

- The **Department of Posts** released a special stamp to mark **25 years of NCPOR (2000–2025)**.
- Officials said the stamp shows their commitment to supporting India's polar science journey.

C. Announcements by NCPOR Director

NCPOR Director Dr. Thamban Meloth shared two major updates:

1. **New Antarctic Research Station – Maitri-II**
 - The Government of India has given in-principle approval.
 - This will be a **modern, state-of-the-art** research base.
2. **India's First Indigenous Ice-Class Research Vessel**
 - Also approved in principle.
 - This ship will allow India to conduct advanced polar research without depending on foreign vessels.

He said that the Government of India has always supported NCPOR's missions.

4. What Does NCPOR Do? (Simple Overview)

NCPOR leads India's scientific work in:

- **Antarctica**
- **Arctic**
- **Southern Ocean**
- **Himalayan cryosphere (snow/ice regions)**

Indian Polar Research Stations Operated by NCPOR

In Antarctica:

1. **Dakshin Gangotri** (first station)
2. **Maitri**
3. **Bharati**

In the Arctic:

- **Himadri**

In the Himalayas:

- **Himansh**

NCPOR manages:

- India's annual Antarctic expeditions
- Arctic research programmes
- Studies on climate change, glaciers, oceans, and polar ecosystems

5. Why is NCPOR Important for India?

- Helps India understand climate change and sea-level rise.
- Builds scientific capacity and global leadership in polar research.
- Supports national goals like **Deep Ocean Mission**.
- Strengthens India's position in international scientific cooperation.
- Gives India strategic presence in polar regions.

Conclusion

NCPOR has completed **25 years** as the central force behind India's polar and ocean exploration. From managing research stations to planning new missions and vessels, it plays a vital role in India's scientific and strategic future. The Silver Jubilee stamp and government support highlight the national importance of this institution.

Operation Sagar Bandhu : India Sends NDRF Teams & Aid to Sri Lanka After Cyclone Ditwah



1. Why in News?

- Sri Lanka is facing a **major humanitarian crisis** after **Cyclone Ditwah** caused massive floods, landslides, and widespread destruction.

- To help its neighbour, India launched **Operation Sagar Bandhu**, sending relief material, rescue teams, and emergency supplies.

2. India's Assistance Under Operation Sagar Bandhu

A. NDRF Rescue Teams Sent to Sri Lanka

- India deployed **two specialised NDRF teams**.
- Total: **80 trained rescuers + 4 search dogs**.
- Left at **4:06 a.m.** from **Hindon Airbase** in an **IAF IL-76 aircraft**.
- Led by Commandant P. K. Tiwary (8th Battalion).

Equipment carried

- Inflatable rescue boats
- Hydraulic cutting tools
- Breaching tools
- Advanced communication sets
- First-aid medical kits
- Other humanitarian supplies

These teams will support **search, rescue, evacuation**, and on-ground disaster response in Sri Lanka.

B. Indian Air Force Aircraft Deliver Aid

- An **IAF C-130 aircraft** landed in **Colombo around 1:30 a.m.**
- Carried:
 - Tents
 - Tarpaulins
 - Blankets
 - Hygiene kits
 - Ready-to-eat food
 - Other emergency items

Officials from the **Indian High Commission** and the **Sri Lanka Air Force** received the consignment.

C. Indian Navy Sends Relief Supplies

A day earlier:

- INS Vikrant** and **INS Udaygiri** delivered:
 - 4.5 tonnes** of dry rations
 - 2 tonnes** of fresh rations
 - Other essential relief kits

This was the **first tranche** of relief under Operation Sagar Bandhu.

D. India's Leadership Statements

Prime Minister Narendra Modi

- Offered condolences to victims.
- Said India stands firmly with Sri Lanka.
- Linked the response to:
 - Neighbourhood First policy**
 - Vision MAHASAGAR**

- Assured that **more aid will be sent if needed**.

3. NDRF Preparedness Inside India

As Cyclone Ditwah also threatens coastal Tamil Nadu and Puducherry:

- 14 NDRF teams** deployed across:
 - Villupuram
 - Chengalpattu
 - Tiruvallur
 - Nagapattinam
 - Tiruvarur
 - Thanjavur
 - Pudukkottai
 - Mayiladuthurai
- Additional teams placed in Puducherry.
- 10 more teams** travelling from **Pune and Vadodara** to Chennai.

NDRF continues **24x7 coordination** with:

- IMD
- NDMA
- State governments
- MEA

4. Cyclone Ditwah: Situation in Sri Lanka

A. Human Loss

Sri Lanka's Disaster Management Centre (DMC) reported:

- 69 confirmed deaths** (as of 6 a.m. Saturday)
- 34 missing**
- Over **2 lakh people** affected
- 61,000+ families** displaced

Local officials say the actual toll is higher

- Kandy district:** 50+ reported dead
- Badulla district:** 35+ dead, many missing due to landslides

B. Infrastructure Damage

- Major reservoirs and rivers have **overflowed**.
- People have been told to **evacuate** immediately.
- Over **35% of the island** has no electricity.
- Around **7 million customers** of Ceylon Electricity Board affected.

Relentless rain is slowing down repair work and rescue efforts.

C. Weather Update

- Cyclone expected to exit Sri Lanka by **late Saturday**,

- But **200 mm+ rainfall** is still forecast.
- Chennai and nearby districts have already seen moderate to heavy showers.

5. Importance of Operation Sagar Bandhu

- Shows India's role as a **First Responder** in the Indian Ocean Region.
- Strengthens **neighbourhood ties** and goodwill.
- Demonstrates India's capacity for quick humanitarian action.
- Fits into India's broader vision:
 - **Neighbourhood First**
 - **SAGAR** (Security and Growth for All in the Region)
 - **MAHASAGAR Doctrine**

Timeline of India's 12 Major Rescue Operations (2014–2025)

No.	Operation Name (Event, Date)	Key Details and Impact
1	Operation Maitri (Nepal Earthquake, April 2015)	Launched within hours. Evacuated 43,000+ Indians . Used IAF aircraft, NDRF teams, and road convoys.
2	Operation Raahat (Yemen Civil War, April 2015)	Rescued 5,600 people , including 960 foreigners. Evacuation from war-hit Sana'a and Aden using Navy and Air Force.
3	Operation Sankat Mochan (South Sudan, July 2016)	After clashes in Juba, two IAF C-17 flights rescued 600+ Indians . Included safe evacuation of some foreign nationals.
4	Operation Samudra Setu (COVID Evacuations by Sea, 2020)	Navy evacuated 3,900+ citizens from Maldives, Sri Lanka, Iran. Ships used: INS Jalashwa, INS Airavat.
5	Vande Bharat Mission (Global COVID Airlift, 2020–2021)	One of the largest evacuation missions globally. Brought home over 10 lakh (1 million+) Indians from 100+ countries.
6	Operation Devi Shakti (Afghanistan Crisis, Aug 2021)	Evacuated 800+ people after Kabul fell to Taliban. Included Indian nationals and Afghan minorities under high-risk conditions.
7	Operation Ganga (Ukraine War, Feb–Apr 2022)	Evacuated 18,000+ Indians , mostly students. Rescue flights operated from Poland, Hungary, Romania, and Slovakia.
8	Operation Dost (Turkey–Syria Earthquake, Feb 2023)	Humanitarian relief mission. India sent medical teams, field hospitals, and rescue units. (Strong disaster support, no major evacuation of Indians.)
9	Operation Kaveri (Sudan Civil War, Apr–May 2023)	Rescued 3,900+ Indians from conflict in Khartoum. Evacuations by Navy ships and IAF C-17s.
10	Operation Ajay (Israel–Hamas War, Oct 2023)	Brought Indian students and workers back from conflict zones in Israel. Multiple charter flights were used.
11	Operation Indravati (Haiti Gang Violence, Mar 2024)	Bold evacuation during violent gang clashes. India rescued 12 Indians , transporting them safely to the Dominican Republic.
12	Operation Sindhu (Iran–Israel Conflict, June 2025)	Over 285 Indians evacuated from Iran via Armenia and Turkmenistan. Mission expanded to evacuate Indians from conflict-hit areas in Israel as well.

Why These Operations Matter

- **A. Shows India's Global Commitment:** India protects its citizens anywhere in the world (natural disaster, war zone, political instability, or pandemic).
- **B. Demonstrates Strong Diplomacy:** Requires quick talks with foreign governments, permission to land/fly, and strong embassy support. India manages this repeatedly.
- **C. Shows Military Capability:** IAF heavy-lift aircraft, Navy warships, commandos, doctors, and rescue teams work together within hours.
- **D. Builds India's Image as a Responsible Global Power:** India is seen as a country that responds fast, saves lives, supports friends and neighbours, and helps other nationals too (Yemen, Nepal examples).

World Soil Day 2025



1. What is World Soil Day?

World Soil Day is observed every year on **5 December**.

The day reminds us that:

- Soil is essential for life
- It supports food, water, biodiversity and climate balance
- Once soil is damaged, it is **very hard to restore**

World Soil Day 2025 comes at a time when:

- Climate change is increasing
- Cities are expanding fast
- Natural land is shrinking

2. Why Soil Is So Important

Soil is not just “mud” or “dirt”.

Healthy soil:

- Grows food

- Stores water
- Supports forests, grasslands and wildlife
- Absorbs carbon and helps fight climate change

A shocking fact highlighted by the UN:

- It can take **nearly 1,000 years** to form just a few centimetres of fertile soil
- But human activity is destroying it within **decades**

This makes soil a **precious and limited natural resource**.

3. Theme of World Soil Day 2025

“Healthy Soils for Healthy Cities”

- This theme is very important.
- Usually, we think:
- Soil protection = farms and villages

But the 2025 theme says: **Cities also depend on soil**

This shifts focus to:

- Urban soil
- Soil under roads, buildings, parks and playgrounds

4. Why Urban Soil Matters

Soil beneath cities performs many hidden functions:

- Absorbs rainwater
- Reduces flooding and waterlogging
- Stores heat and regulates temperature
- Filters harmful pollutants
- Supports trees, parks and green spaces

But today:

- Concrete covers the ground
- Green areas are shrinking
- Soil becomes sealed and lifeless

This leads to:

- Urban flooding
- Heat waves
- Poor air quality
- Loss of biodiversity

World Soil Day 2025 highlights these **urban soil problems**, which are often ignored.

5. History of World Soil Day

The idea of World Soil Day began in **2002**.

- Proposed by: **International Union of Soil Sciences**
- Supported by:
 - **Food and Agriculture Organisation (FAO)**
 - **Kingdom of Thailand**

In **2013**:

- United Nations General Assembly officially declared **5 December as World Soil Day**
- First global celebration: **2014**

Since then, it has become a **global awareness movement**.

6. Global and Local Efforts on Soil Conservation

World Soil Day promotes:

- Sustainable land use
- Eco-friendly farming
- Soil restoration techniques
- Climate-resilient planning

Governments, scientists, farmers, city planners and students all take part.

7. India and Soil Health

In India:

- Soil degradation is a growing concern
- Overuse of chemicals
- Loss of organic matter
- Urbanisation pressure

India has started:

- Soil health awareness campaigns
- Education programs
- Land restoration efforts

The message is clear: Soil protection is not only a farmer's issue, It affects **cities, towns and villages alike**

8. World Soil Day 2025 – Main Message

World Soil Day 2025 gives a strong message:

- Soil is **not infinite**
- Once destroyed, it cannot be easily replaced
- Soil loss affects:
 - Food security
 - Water availability
 - Climate stability
 - Human health

As cities grow, protecting soil becomes a **shared responsibility**.

Africa Heading for a Continental Breakup: New Ocean Basin Possible in 5–10 Million Years



Africa heading for a continental breakup, researchers predict a future ocean basin in next 5 to 10 million years



1. Why is this issue in the news?

- Researchers have stated that **Africa is slowly breaking apart** due to ongoing **tectonic activity** beneath the continent.
- Scientific studies suggest that Africa may split into **two separate landmasses** within the next **5 to 10 million years**.
- This process could eventually lead to the formation of a **new ocean basin**.
- The findings are based on **new analysis of magnetic data** and long-term geological observations.

2. What exactly is happening to the African continent?

- Africa is undergoing a **gradual but continuous geological separation**.
- The crust beneath Africa is **stretching, thinning, and tearing apart**.
- Scientists compare this movement to “**the zip on a jacket**”, opening slowly from **northeast to south**.
- The process is accompanied by **volcanic activity, earthquakes, and seismic movements**.

3. When is the complete breakup expected?

- According to geological timelines, the continental split is expected to be completed in the next **5 to 10 million years**.
- Scientists emphasise that this is an **extremely slow process**, not perceptible in human lifetimes.

4. What will Africa look like after the split?

- After the breakup, Africa will likely exist as **two distinct landmasses**.

Western African landmass

This larger portion is expected to include:

- Egypt**
- Algeria**
- Nigeria**
- Ghana**
- Namibia**

Eastern African landmass

This smaller block will likely include:

- Somalia**
- Kenya**
- Tanzania**
- Mozambique**
- Large parts of **Ethiopia**

5. Scientific basis: Theory of Plate Tectonics

- The explanation for this phenomenon lies in the **Theory of Plate Tectonics**.
- This theory states that:
 - Earth's continents sit on **tectonic plates**.
 - These plates are **constantly moving**, though very slowly.
- Over **millions of years**, continents break apart and move, leading to:
 - Formation of **new oceans**, and
 - Creation of **new crust** through **seafloor spreading**.

Continents have **never been fixed** in Earth's history.

6. The East African Rift: The key geological zone

- The most important region for this breakup is the **East African Rift System**.
- It is a massive **tectonic fissure** about **4,000 miles long**.
- It stretches from **Jordan**, passing through **East Africa**, and reaches **Mozambique**.
- The rift is approximately **30–40 miles wide on average**.

7. What changes are occurring in the East African Rift?

- The Earth's crust in this region is **weakening and pulling apart**.
- Over geological time, the rift is expected to:
 - Grow deeper, and
 - Eventually be filled by ocean water.
- The rift is also expected to pass through major lakes such as:
 - Lake Malawi
 - Lake Turkana

8. Importance of the Afar Region

- Scientists have focused on the **Afar region**, which lies at the junction of:
 - The **Red Sea**, and
 - The **Gulf of Aden**.

Why Afar is special

- It hosts a **triple junction**, where three rift systems meet:
 - **Main Ethiopian Rift**
 - **Red Sea Rift**
 - **Gulf of Aden Rift**
- A triple junction is considered a **classic indicator of continental breakup**.
- Scientists believe Afar shows the **earliest visible stage of a new ocean formation**.

9. Role of magnetic data in this research

- Researchers re-analysed **magnetic data collected in 1968 and 1969** using modern techniques.
- The data was gathered using **airborne magnetic surveys**.

Why magnetic data matters

- When magma cools, it records the **Earth's magnetic field direction**.
- These magnetic patterns behave like:
 - **Barcodes**, or
 - **Tree rings**, preserving geological history.

10. What did the magnetic data reveal?

- The data showed evidence of **ancient magnetic reversals**, proving that:
 - **Seafloor spreading** had already occurred between **Africa and Arabia** millions of years ago.
- This confirms that the region has been undergoing **slow but steady rifting** for tens of millions of years.

11. Evidence of steady rifting

- The Earth's crust in the rift zone is **stretching like soft material**.
- Over time, this stretching leads to:
 - Thinning of crust
 - Eventual rupture
 - Formation of a **new ocean basin**

12. Speed of the continental breakup

- According to **Dr Emma Watts**, a geochemist at **Swansea University**:
 - The plates are currently separating at a rate of about **5 to 16 millimetres per year** in the northern section.
- This confirms that while the process is active, it remains **extremely slow**.

13. Key expert observations

- **Professor Peter Styles** from **Keele University** described the findings as proof that Earth is **constantly changing beneath our feet**.
- Dr Emma Watts explained that:
 - The breakup will take **several million years** to complete.

14. Research publication details

- The findings were published in the **Journal of African Earth Sciences**.
- Researchers noted that the **1968 Afar magnetic survey data** had been underused earlier.
- Modern analysis has now **revived its scientific importance**.

15. Why does this research matter?

- It helps scientists understand:
 - The **earliest stages of continental breakup**.
 - How new **oceans are formed**.
- It strengthens understanding of:
 - Plate tectonics
 - Rift systems
 - Earth's long-term geological evolution

16. Conclusion

Africa is not splitting today or tomorrow, but **geology works on million-year timescales**. The forces reshaping Africa are **slow, powerful, and unstoppable**. In the distant future, a **new ocean** will stand as proof that Earth's surface is **never static**.

National Digital Livestock Mission (NDLM)

National Livestock Mission

Breed Development of Livestock and Poultry

Feed and Fodder Development

Innovation and Extension



1. Introduction

- The Department of Animal Husbandry and Dairying (DAHD), Government of India, has launched the National Digital Livestock Mission (NDLM).
- The mission aims to create a nationwide digital database of livestock and related services.
- NDLM seeks to address challenges arising from the scattered ownership of livestock, which is largely held by small and marginal farmers across villages.
- The mission supports data-driven planning, targeted service delivery, and sectoral reforms in livestock management

2. Implementation Status

- NDLM has been successfully implemented in all States and Union Territories.
- In Uttar Pradesh, implementation covers districts such as Etah, Kasganj, Etawah, Auraiya, Mainpuri, Kannauj, and Aonla (Bareilly).
- All livestock owners and their animals in these areas are already registered under the NDLM system.
- As of date, 35.96 crore Pashu Aadhaar numbers have been issued and registered.

3. Bharat Pashudhan Digital Ecosystem

- NDLM is implemented through a technology-enabled digital ecosystem called "Bharat Pashudhan".

- Bharat Pashudhan provides a **farmer-centric digital platform** for livestock data management and service delivery.
- The system supports **planning, monitoring, and implementation of livestock sector schemes** at national and State levels.

4. Digital Tools and Technology Used

- An **Android-based mobile application** and **web interface** named *Bharat Pashudhan* has been developed.
- The application is available on the **Google Play Store** and is used by field-level workers.
- Each livestock animal is issued a **12-digit bar-coded ear tag**, known as **Pashu Aadhaar**.
- The Tag ID acts as a **unique digital identity** for every animal.

5. Data Captured Under NDLM

- Using the Pashu Aadhaar number, field workers digitally record:
 - Animal registration details
 - Artificial insemination and breeding activities
 - Ownership changes
 - Vaccination records
 - Disease reporting
 - E-prescriptions and ration balancing
 - Milk recording and productivity data
- This enables **real-time tracking and monitoring** of livestock health and productivity.

6. Statistical Highlights (As on Date)

- Total livestock owners registered: **9.5 crore**
- Total Pashu Aadhaar numbers registered: **35.96 crore**
- Field worker user IDs issued: **4 lakh**
- Vaccination records entered: **146.6 crore**
- Total transactional records available: **250 crore**

7. Major Objectives of NDLM

7.1 Productivity and Breed Improvement

- NDLM integrates breeding-related data to support **scientific breed improvement**.
- The system helps develop **quality germplasm** suitable for different agro-climatic regions of India.

7.2 Disease Monitoring and Control

- NDLM includes an **integrated disease surveillance system**.

- It enables early detection, prediction, prevention, and treatment of major livestock diseases.
- This strengthens national preparedness against animal disease outbreaks.

7.3 Livestock Product Traceability

- The mission links **Tag IDs, geographic location, and processing facilities**.
- It creates a **foolproof traceability system** for livestock products.
- This supports product branding, food safety, and access to domestic and global markets.

7.4 Farmer-Centric Digital Ecosystem

- NDLM empowers livestock owners by providing **access to information on animals, services, and government schemes**.
- The system ensures better utilisation of public facilities and welfare programmes.

7.5 Open Source and API-Based Architecture

- NDLM is built on **open-source architecture**.
- The system is **API-enabled**, allowing integration with:
 - Financial institutions
 - Insurance companies
 - Private veterinarians
 - Other livestock sector stakeholders
- This enables seamless data sharing across the ecosystem.

8. Livestock Owner Interface: 1962 App

- To empower farmers directly, the **1962 Livestock Owner Application** has been developed.
- The app is connected to the **NDLM database** and the **DAHD website**.
- It provides livestock owners with:
 - Information about their registered animals
 - Details of ongoing schemes and service
- The earlier **e-Gopala app** has been replaced by the **1962 Livestock Owner app**.

9. Integration with Other Government Schemes

- Major livestock sector programmes such as:
 - **Rashtriya Gokul Mission (RGM)**
 - **National Animal Disease Control Programme (NADCP)**
- These schemes are fully integrated into the NDLM platform.

- This ensures **convergence, efficiency, and unified monitoring**.

10. Parliamentary Information

- The details regarding NDLM were provided by the **Union Minister of Fisheries, Animal Husbandry and Dairying**.
- The information was shared in response to a **question raised in the Lok Sabha**.

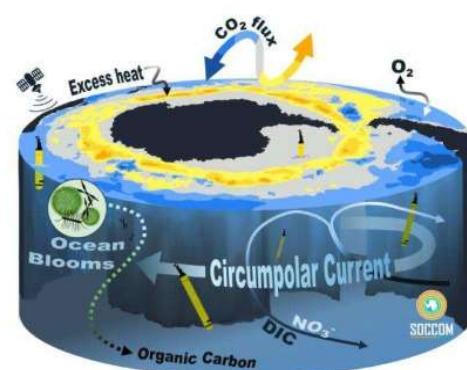
11. Significance of NDLM

- NDLM strengthens **digital governance in the livestock sector**.
- It improves **productivity, disease control, market access, and farmer empowerment**.
- The mission supports evidence-based policymaking and long-term sectoral sustainability.

Conclusion

The National Digital Livestock Mission represents a **transformational reform** in India's livestock management system. By combining technology, farmer-centric design, and inter-sectoral integration, NDLM enhances the efficiency and resilience of the livestock economy. The mission is expected to play a key role in **doubling farmers' income and ensuring animal health security**.

Southern Ocean Carbon 'Anomaly': What Climate Models Missed



1. Why in News?

- Scientists have discovered that the **Southern Ocean has absorbed more carbon dioxide than expected**, contradicting long-standing climate model predictions.
- This unexpected behaviour is referred to as the **Southern Ocean carbon anomaly**.
- The findings were published in **Nature Climate Change** in October 2025 by researchers from Germany.

2. Importance of the Southern Ocean

- The Southern Ocean surrounds Antarctica and is one of the **least explored oceans** on Earth.
- It plays a **critical role in regulating global climate**.
- The Southern Ocean covers about **25–30 percent of the global ocean area**.
- It absorbs nearly **40 percent of the carbon dioxide taken up by the world's oceans**.
- Its ability to absorb heat and carbon makes it a major **buffer against global warming**.

3. Why the Southern Ocean Is a Strong Carbon Sink

- The surface of the Southern Ocean is **cold and relatively fresh**, making it lighter than deeper waters.
- Below the surface lie **warmer, saltier, and carbon-rich deep waters**.
- This layered structure, known as **stratification**, traps carbon dioxide below the surface.
- As long as this layering remains stable, the ocean continues to absorb more carbon than it releases.

4. Climate Model Predictions

- For nearly two decades, climate models predicted that the Southern Ocean would become a **weaker carbon sink**.
- Rising greenhouse gases and ozone depletion were expected to strengthen **westerly winds** in the Southern Hemisphere.
- Stronger winds were expected to increase **upwelling**, bringing carbon-rich deep waters to the surface.
- This process was expected to release carbon dioxide into the atmosphere and accelerate climate change.

5. What Scientists Actually Observed

- Observations since the early 2000s show that the Southern Ocean has been **absorbing more carbon**, not less.
- Long-term ocean chemistry data revealed that **deep waters are indeed rising**, as models predicted.
- Circumpolar deep waters have moved upward by about **40 metres since the 1990s**.

- Carbon dioxide pressure in subsurface waters has increased by around **10 microatmospheres**.
- Despite this, carbon dioxide has **not escaped into the atmosphere**.

6. What the Climate Models Missed

- Scientists found that a **thin but persistent layer of freshwater at the surface** prevented carbon release.
- The Southern Ocean has become **less salty** due to:
 - Increased rainfall
 - Melting Antarctic glaciers
 - Transport of sea ice
- Fresher water is lighter and strengthens **surface stratification**.
- This stratification traps carbon-rich waters **100–200 metres below the surface**, preventing gas exchange with the atmosphere.

7. Competing Physical Processes at Work

- Two opposing mechanisms are operating simultaneously:
 - **Upwelling**, which pushes deep carbon-rich water upward
 - **Stratification**, which blocks vertical mixing
- Climate models captured the upwelling correctly but **underestimated surface stratification**.
- Stratification is difficult to model because it depends on complex processes like:
 - Ocean eddies
 - Ice-shelf cavities
 - Small-scale turbulence
- Limited observational data in the Southern Ocean worsened this modelling gap.

8. Why This Carbon Sink May Be Temporary

- Scientists warn that the current situation may not last long.
- Since the early 2010s, the stratified freshwater layer has started to **thin in some regions**.
- Surface salinity has begun increasing again in parts of the Southern Ocean.

- Strong winds could soon penetrate the weakened stratified layer.
- This could allow carbon-rich deep waters to mix with surface waters and release carbon dioxide into the atmosphere.

9. Future Climate Risk

- The deep carbon reservoir is now **closer to the surface than before**.
- If stratification weakens further, carbon dioxide could be released **suddenly and in large amounts**.
- This could cause a **rapid weakening of the Southern Ocean carbon sink**, as models had originally predicted.

10. What This Means for Climate Models

- The findings do not invalidate climate models.
- Instead, they show that models:
 - Correctly identify long-term vulnerabilities
 - May miss short-term or regional exceptions
- Observations complement models by revealing **unexpected real-world behaviour**.
- Together, models and observations improve understanding of Earth's climate system.

11. Need for Better Observations

- Scientists stress the need for **continuous, year-round monitoring** of the Southern Ocean.
- The region is one of the **harshest environments on Earth**, making data collection difficult.
- Improved observations are essential to predict whether the ocean will absorb or release carbon in the future.

12. Conclusion

- The Southern Ocean carbon anomaly highlights the **complex and dynamic nature of Earth's climate system**.
- Temporary processes like surface freshening can delay long-term climate impacts.
- However, these buffers may weaken, leading to sudden changes.
- Understanding this balance is crucial for accurate climate prediction and global climate policy.

Aravalli Range : Supreme Court Ruling, Mining Regulation, and Sustainable Development

ARAVALLIS EXPLAINED

	Old Definition	New Definition (SC & Govt, 2025)
Aravalli Hills	Landform ≥ 100 m above surrounding terrain applicable only to Rajasthan since 2006	Now standardised across relevant states like Haryana, Delhi NCR, Gujarat
Aravalli Ranges	Not formally defined	Two or more hills within 500 m and the land between them, including slopes and smaller hillocks, are protected everywhere



SUPREME COURT VERDICT
Accepted government committee's new definition

Directed uniform criteria for mining regulation

GOVERNMENT STANCE

- ▶ Over 90% of the Aravalli region remains protected
- ▶ Ongoing afforestation, eco-sensitive zones, strict monitoring of mining and urban activity

PUBLIC OUTCRY

Activists claim lower hills and connecting landforms may be exposed

Protests and campaigns ongoing in Delhi-NCR, Jaipur, Udaipur, Gurgaon, Faridabad

Citizens demand strict enforcement and a comprehensive management plan



1. Why in News?

- In November–December 2025, the Supreme Court of India adopted a **uniform and scientific definition of the Aravalli Hills and Ranges** to regulate mining activities.
- Following the ruling, the Union Government announced a **district-wise demarcation plan** for mining regulation in the Aravalli Range.
- The decision triggered **public protests, political reactions, and the #SaveAravalli campaign**, with concerns that the new definition might weaken ecological protection.

2. Ecological Importance of the Aravalli Range:



- The Aravalli Range is **nearly 2 billion years old**, making it **India's oldest mountain system**.
- It stretches from **Delhi through Haryana and Rajasthan to Gujarat**, spanning **about 800 km and 37 districts**.
- The Aravallis act as a **natural barrier against desertification**, preventing the eastward spread of the Thar Desert.
- **Guru Shikhar** in Mount Abu is the highest peak at **1,722 metres**.
- It acts as a **natural barrier against the eastward spread of the Thar Desert**.
- It is a major **watershed**, dividing drainage between the Arabian Sea and Bay of Bengal systems.
- The region supports **dry deciduous forests, grasslands, wetlands**, and rich wildlife, including **tigers, leopards, and the Great Indian Bustard**.
- It hosts **UNESCO World Heritage Sites** such as Chittorgarh and Kumbhalgarh forts.
- They play a critical role in **groundwater recharge, climate regulation, and biodiversity conservation**.
- The Supreme Court has repeatedly warned that **uncontrolled mining in the Aravallis poses a serious threat to the nation's ecology**.

3. Why a Uniform Definition Was Needed

- For decades, **only Rajasthan** had a formally notified definition for regulating mining in the Aravallis.
- Rajasthan followed a **2002 State Committee Report** based on **Richard Murphy landform classification**, defining hills as landforms rising **100 metres above local relief**.
- Other States lacked a common definition, resulting in **regulatory ambiguity, weak enforcement, and illegal mining**.
- To address this, the Supreme Court directed adoption of a **uniform, objective, and science-based definition** applicable across all States.

4. Committee Constituted for the Definition

- A committee led by the **Ministry of Environment, Forest and Climate Change (MoEF&CC)** was constituted under Supreme Court directions.
- The committee included:
 - Forest Secretaries from Delhi, Haryana, Rajasthan, and Gujarat
 - Representatives of the **Forest Survey of India**,
 - Central Empowered Committee (CEC), and
 - Geological Survey of India (GSI).
- After extensive consultation, all States agreed to adopt the **100-metre above local relief criterion**, with additional safeguards.

5. Supreme Court's Final Decision (November 2025)

- The Supreme Court accepted the committee's recommendations in full.
- It adopted a **uniform operational definition** of the Aravalli Hills and Ranges.
- It imposed a **temporary freeze on new mining leases**.
- It directed preparation of a **Management Plan for Sustainable Mining (MPSM)** before any future mining expansion.

6. Uniform Definition Approved by the Supreme Court

A. Aravalli Hills

- Any landform in the Aravalli districts rising **100 metres or more above local relief** is defined as an Aravalli Hill.

- Local relief is measured using the **lowest contour line encircling the landform**.
- Protection covers the **entire hill system**, including:
 - The hill peak
 - Supporting slopes
 - Associated landforms, irrespective of gradient

B. Aravalli Ranges

- **Two or more Aravalli Hills within 500 metres of each other** constitute an Aravalli Range.
- The **entire area between such hills**, including slopes, valleys, and smaller hillocks, is included.
- **All landforms within this 500-metre zone are excluded from mining**, regardless of height.

→ These definitions are **ecological safeguards**, not merely technical criteria

7. Why This Definition Strengthens Protection

- It ensures **comprehensive protection of entire landforms**, preventing piecemeal mining of slopes and foothills.
- It adopts a **cluster-based approach**, protecting ecological connectivity and wildlife corridors.
- It mandates **mapping on Survey of India toposheets**, making boundaries objective and enforceable.
- It closes loopholes that earlier allowed mining below 100 metres in ecologically sensitive zones.

8. Supreme Court Directions on Mining

- **No new mining leases** can be granted until a landscape-wide plan is finalised.
- Existing legal mines may continue **only under strict compliance** with environmental norms.
- Mining is **absolutely prohibited** in core and inviolate areas, except for narrowly defined strategic minerals.
- The Court rejected blanket bans, noting that they often **encourage illegal mining**, and instead adopted a **calibrated regulatory approach**.

9. Management Plan for Sustainable Mining (MPSM)

- The Court directed MoEF&CC to prepare an MPSM through the **Indian Council of Forestry Research and Education (ICFRE)**.

- The MPSM must:
 - Treat the Aravallis as a **continuous geological ridge from Gujarat to Delhi**.
 - Identify **no-mining zones and regulated mining zones**.
 - Map **ecologically sensitive areas and wildlife corridors**.
 - Assess **cumulative environmental impacts and ecological carrying capacity**.
 - Include **post-mining restoration and rehabilitation measures**.
- Until the MPSM is finalised, the **moratorium on new mining leases remains in force**.

10. Protection of Core / Inviolate Areas

Mining is **strictly prohibited** in:

- Protected Areas, Tiger Reserves, and Wildlife Corridors
- Eco-Sensitive Zones and Eco-Sensitive Areas
- Wetlands and Ramsar sites (with 500 m buffer)
- CAMPA plantations and conservation investment areas
- **Within 1 km of Protected Area boundaries**

Limited exceptions apply only for:

- Atomic minerals
- Critical and strategic minerals
- Minerals listed in the Seventh Schedule of the MMDR Act, 1957

11. Government's Stand

- The Union Government clarified that the framework **does not dilute protection of the Aravallis**.
- It emphasised that **illegal mining**, not legal mining, is the main threat.
- Enforcement will be strengthened using **drones, satellite imagery, CCTV, weighbridges, and district task forces**.
- Only **237 sq km out of 147,000 sq km** of the Aravalli landscape is eligible for mining.

12. Criticisms and Concerns

- Critics argue that the **100-metre threshold excludes large portions** of the Aravalli landscape.
- The definition is seen as **peak-centric**, potentially overlooking ecological roles of lower hills and valleys.

- There are fears of **groundwater depletion, desertification, and urban expansion**, especially around Delhi-NCR.
- Effective protection depends on **accurate mapping, strict enforcement, and timely preparation of the MPSM**.

13. Restoration and Long-Term Conservation

- The Aravalli Green Wall Initiative aims at **landscape-level ecological restoration**.
- It proposes a **1,400 km long and 5 km wide green belt** across Gujarat, Rajasthan, Haryana, and Delhi.
- The goal is to restore **over 1.1 million hectares of degraded land by 2027**.
- Traditional water systems such as **johads and taankas** are being promoted for watershed revival.

14. Conclusion

- The Supreme Court's intervention has created a **scientific, transparent, and enforceable framework** for Aravalli protection.
- Contrary to alarmist claims, the ruling **strengthens ecological safeguards**, freezes new mining, and prioritises restoration
- The real test lies in **implementation, enforcement, and landscape-level planning**.
- The future of **north-west India's water security, climate resilience, and biodiversity** depends on how effectively this framework is executed.

In Indian Ocean Region, 100 Villages to be Tsunami-Ready



1. Why in News :

- India will soon have **more than 100 tsunami-ready villages** in the Indian Ocean region.
- India will become the **first country in the region** to achieve this milestone.

- These villages will be officially recognised under the **UNESCO-IOC Tsunami Ready programme**.

What is a Tsunami-Ready Village?

2. Meaning

- A **tsunami-ready village** is a coastal village that is well prepared to face tsunami hazards.
- Such villages have **high awareness, proper planning, and quick response systems**.

3. Key Features of Tsunami-Ready Villages

- High public awareness about tsunamis.
- Hazard preparedness and **risk mapping**.
- **Public display of evacuation maps**.
- **24-hour tsunami warning systems**.
- Regular **mock drills** and community participation.
- Coordination with local and national disaster agencies.

4. Certification Authority

- The certification is awarded by the **Intergovernmental Oceanographic Commission of UNESCO**.

Tsunami Ready Programme

5. Nature of the Programme

- It is a **voluntary and community-based programme**.
- It focuses on **active participation of local communities**.
- Community leaders, disaster agencies, and governments work together.

6. Aim and Objectives

- To build **resilient coastal communities**.
- To reduce **loss of life, livelihoods, and property** due to tsunamis.
- To improve **preparedness, awareness, and response capacity**.

Status of Tsunami-Ready Villages in India

7. Existing Coverage

- India already has **24 certified coastal villages**.
- These villages are spread across **six coastal districts**.

8. Odisha's Major Contribution

- Odisha is set to add **72 more villages** under this programme.
- This will make Odisha a key contributor to tsunami preparedness.

9. Other States and UTs

- Gujarat, Kerala, Andhra Pradesh, and Andaman & Nicobar Islands** have identified villages.
- Kerala has proposed **nine coastal villages**.
- These villages are expected to be certified by **March–April 2026**.

Role of INCOIS

10. Key Institution

- Indian National Centre for Ocean Information Services (INCOIS)**, Hyderabad plays a central role.

11. Indian Tsunami Early Warning Centre

- INCOIS operates the **Indian Tsunami Early Warning Centre**.
- It tracks **earthquakes across the world**.
- It issues **tsunami warnings for the Indian Ocean region**.

12. Coordinating Role

- INCOIS is the **coordinating agency** for implementing the UNESCO-IOC Tsunami Ready initiative in India.
- It has started **pilot-scale activities** in all coastal States and UTs.

13. Expert Statement

- Balakrishnan Nair**, Director of INCOIS, said this is a **community-driven initiative**.
- He stressed that States and UTs must **proactively identify vulnerable areas**.
- He also said the programme helps not only in **tsunamis**, but also in **cyclones and similar hazards**.

About Tsunami Ready Recognition Programme

14. Programme Details

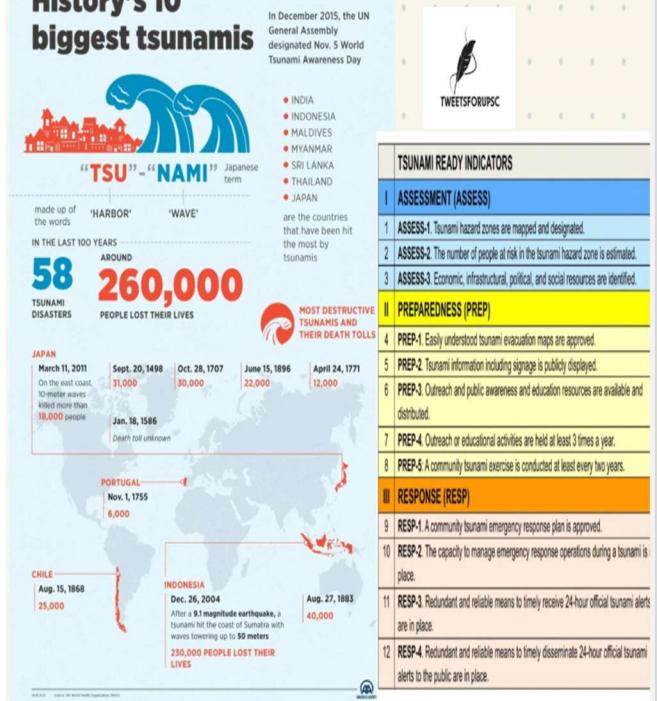
- It is an **international recognition programme**.

- Developed by the **IOC of UNESCO**.

15. Methodology

- Communities must meet **all 12 indicators**.
- Indicators cover **Assessment, Preparedness, and Response**.
- Only after fulfilling these indicators, a village is recognised as **Tsunami Ready**.

History's 10 biggest tsunamis



16. Validity

- The recognition is **renewable every four years**.
- Villages must maintain preparedness standards to continue certification.

Significance

- Strengthens **disaster preparedness** at the grassroots level.
- Reduces **casualties and damage** during tsunamis.
- Enhances community confidence and **early response capacity**.
- Supports India's leadership role in **disaster risk reduction** in the Indian Ocean region.





Internal Security

Delivery of INS Taragiri & Progress of Project 17A Frigates



Why in News?

- The Indian Navy has officially received **Taragiri (Yard 12653)**, the fourth **Nilgiri-class (Project 17A)** stealth frigate.
- Built by **Mazagon Dock Shipbuilders Ltd (MDL)**, its delivery in November 2025 marks a major milestone in India's naval indigenization journey, with the ship being delivered ahead of its original schedule.

I. INS Taragiri: A New Legacy

- Reincarnation:** Named after the former *INS Taragiri* (Leander-class frigate), which served the Navy for **33 years (1980–2013)**.
- Design & Build:** Designed by the **Warship Design Bureau (WDB)** and constructed using the **Integrated Construction** methodology.
- Efficiency:** Due to improved processes, the build period for Taragiri was compressed to **81 months**, compared to 93 months for the lead ship, *INS Nilgiri*.

II. Project 17A (Nilgiri-Class) Overview

- Project 17A** is the successor to the **Shivalik-class (Project 17)**. It involves the construction of seven advanced stealth frigates equipped with state-of-the-art weapons and sensors.

The Seven Sisters of P17A

Ship Name	Builder	Status (as of late 2025)
INS Nilgiri	MDL	Commissioned (Jan 2025)
INS Himgiri	GRSE	Commissioned (Aug 2025)
INS Udaygiri	MDL	Commissioned (Aug 2025)
INS Taragiri	MDL	Delivered (Nov 2025)
INS Dunagiri	GRSE	Under Construction / Trials
INS Vindhyaigiri	GRSE	Under Construction
INS Mahendragiri	MDL	Under Construction

III. Key Technical Features

- Stealth:** Features improved "low-observable" signatures (radar, infrared, and acoustic) compared to the Shivalik class.
- Indigenous Content:** Approximately **75%** of the systems are sourced from over 200 Indian MSMEs.
- Propulsion:** Uses a **Combined Diesel or Gas (CODOG)** system.
 - Engines:** Two MAN Diesel engines + Two General Electric LM2500 Gas Turbines.
 - Maneuverability:** Drives a **Controllable Pitch Propeller (CPP)** on each shaft.
- Automation:** Managed by an **Integrated Platform Management System (IPMS)** for centralized control.

IV. Weaponry & Sensors (The "Fight" Suite)

These frigates are designed for **Blue-Water missions**, excelling in anti-surface, anti-air, and anti-submarine warfare.

Weapons

- Surface-to-Surface:** 8-cell VLS for **BrahMos** Supersonic Cruise Missiles.
- Surface-to-Air:** 32-cell VLS for **Barak-8 (LRSAM) / MRSAM** complex.
- Main Gun:** 76mm Super Rapid Gun Mount (SRGM) by BHEL.
- Anti-Submarine:** Indigenous Rocket Launchers (IRL) and lightweight Torpedoes.
- CIWS:** 30mm AK-630 and 12.7mm stabilized remote-controlled guns for close-in defense.

Sensors & Electronics

- Radar:** IAI EL/M-2248 **MF-STAR** (Multi-Function Surveillance, Track And Guidance Radar).
- Sonar:** **HUMSA-NG** (Hull Mounted Sonar Array - Next Generation).
- Electronic Warfare:** **Shakti EW Suite** (developed by DRDO).

V. Shipbuilding Innovation: Integrated Construction

Unlike traditional "telescopic" methods where the hull is built first and then fitted, **Integrated Construction** involves:

- Building the ship in **blocks (modules)**.
- Pre-outfitting:** Installing pipes, cables, and machinery into these blocks *before* they are joined.

3. **Outcome:** Significantly reduces the time the ship spends in the dry dock and speeds up overall delivery.

Conclusion: The delivery of *Taragiri* reinforces India's transition from a "Buyer's Navy" to a "Builder's Navy," showcasing the ability of Indian shipyards to deliver complex frontline combatants with high indigenous participation.

The Durand Line Dispute & Pakistan-Afghanistan Border Conflict



Why in News?

- Conflict has resurfaced along the **Pakistan-Afghanistan border**, with the Taliban administration accusing Pakistan of conducting air strikes near the **Durand Line**.
- These tensions highlight the long-standing dispute over the 2,600 km border, which Afghanistan has historically refused to recognize as an international boundary.

I. Historical Origin: The Great Game

- The Agreement:** Drawn in 1893 between Sir Henry Mortimer Durand (British India's Foreign Secretary) and Emir Abdur Rahman Khan of Afghanistan.
- Geographical Span:** Runs 2,600 km from the Iran border in the west to the China border in the east.

- Terrain:** Cuts across diverse landscapes, including the **Karakoram range** and the **Registan desert**.
- Strategic Buffer:** Established the **Wakhan Corridor** to act as a buffer zone between the Russian Empire and British India.

II. The Anglo-Afghan Wars & Treaties

The Durand Line was a product of the "Great Game"—the 19th-century geopolitical rivalry between Britain and Russia.

- First Anglo-Afghan War (1839):** British attempt to influence Afghanistan; ended in a British retreat.
- Second Anglo-Afghan War (1878):** Resulted in the **Treaty of Gandamak (1879)**, giving Britain control over Afghanistan's foreign policy.
- The 1893 Agreement:** The Durand Line was formally established, splitting **Pashtun tribal areas** and placing **Balochistan** under British Indian control.
- Third Anglo-Afghan War (1919):** Ended with the **Treaty of Rawalpindi**, which reaffirmed the Durand Line while restoring Afghanistan's independence in foreign affairs.

III. Post-1947 Inheritance & Modern Conflict

- Legal Inheritance:** Upon independence in 1947, Pakistan inherited the Durand Line as its western border under international law (*Uti possidetis juris*).
- Afghan Rejection:** Afghanistan (the only country to vote against Pakistan's entry into the UN) rejected the line, labeling it an "artificial colonial creation" imposed under duress.
- The Pashtunistan Issue:** The line bisects the Pashtun ethnic homeland. Groups on both sides have historically demanded an independent **Pashtunistan**, creating a permanent friction point.

IV. Current Status and Taliban Position

- Consistency in Defiance:** Despite Pakistan's historical support for the Taliban, the current Taliban government—like all Afghan predecessors—rejects the legitimacy of the Durand Line.
- Fencing Dispute:** Pakistan has fenced nearly the entire border to check militancy (notably the TTP) and smuggling; the Taliban has

frequently uprooted these fences, claiming they restrict the movement of Pashtun tribes.

- **Recent Escalation:** Border skirmishes and air strikes have increased as Pakistan accuses the Taliban of providing a safe haven for the **Tehrik-i-Taliban Pakistan (TTP)**.

V. Key Implications

- **Security:** The disputed nature of the border makes it a "porous" zone for insurgents and cross-border terrorism.
- **Ethnic Tensions:** The division of the Pashtun community remains a sensitive political tool for leaders in Kabul.
- **Regional Stability:** Relations between Kabul and Islamabad remain volatile, affecting transit trade and regional connectivity projects.

Conclusion: The Durand Line remains one of the most contentious colonial legacies in South Asia. While Pakistan views it as a settled international border, Afghanistan's persistent refusal to recognize it ensures that the frontier remains a flashpoint for conflict.

Exercise EKUVERIN & India-Maldives Defence Cooperation



Why in News?

- The **14th edition** of the Joint Military Exercise **EKUVERIN** between the Indian Army and the **Maldives National Defence Force (MNDF)** commenced in Thiruvananthapuram, Kerala, on **December 2, 2025**.
- This two-week bilateral engagement, running until December 15, highlights the expanding military partnership and shared security interests in the Indian Ocean Region (IOR).

I. Understanding Exercise EKUVERIN

- **Etymology:** "EKUVERIN" translates to "Friends" in **Dhivehi**, the national language of the Maldives.
- **Frequency & Format:** Held annually and alternately in India and the Maldives since its inception in **2009**.
- **Objective:** Enhancing **interoperability** and operational synergy specifically for **Counter-Insurgency (CI)** and **Counter-Terrorism (CT)** operations.
- **Training Terrain:** Focuses on tactical drills in diverse environments, including:
 - Jungle warfare
 - Semi-urban combat
 - Coastal and littoral operations

II. India-Maldives Defence Relations

India remains the Maldives' pre-eminent defense partner, often acting as the "**First Responder**" in times of crisis.

Key Bilateral & Trilateral Exercises

Exercise Name	Format	Participant Nations
EKUVERIN	Bilateral (Army)	India & Maldives
EKATHA	Bilateral (Navy/Coast Guard)	India & Maldives
DOSTI	Trilateral (Coast Guard)	India, Maldives & Sri Lanka

Strategic Pillars of Cooperation

- **First Responder Legacy:** * **Operation Cactus (1988):** Indian forces thwarted a coup attempt against the Maldivian government.
 - **2004 Tsunami:** Rapid humanitarian assistance and disaster relief (HADR).
 - **2014 Water Crisis:** India airlifted drinking water to Malé during a desalination plant failure.
- **Security Frameworks:** Guided by India's **Neighbourhood First** policy and the **SAGAR (Security and Growth for All in the Region)** vision.
- **Annual Defence Cooperation Dialogue (DCD):** Initiated in **2016** at the Defence Secretary level, it serves as the highest institutional mechanism to review the entire gamut of bilateral defense ties.
- **Capacity Building:** India provides over **70%** of the training requirements for the MNDF and

has gifted assets like fast patrol vessels and aircraft for surveillance.

III. Significance of Current Engagement

- **Regional Stability:** Strengthening the security of the **Indian Ocean Region**, which is critical for global trade and energy shipping lanes.
- **Niche Technology:** The 2025 edition places a special emphasis on the integration of **niche technologies** to enhance combat effectiveness.
- **Inter-agency Synergy:** Beyond military drills, the exercise fosters cultural exchange and mutual trust between the two armies, reinforcing the spirit of "camaraderie."

Conclusion: Exercise EKUVERIN 14 is a vital component of India's maritime security strategy. Despite shifting political dynamics, the consistent conduct of such exercises underscores the foundational strength of the India-Maldives defense partnership in maintaining a stable and secure Indo-Pacific.

Indian Maritime Doctrine 2025 & India's Naval Heritage



Why in News?

- On **Indian Navy Day (December 4, 2025)**, the Chief of the Naval Staff released the **Indian Maritime Doctrine 2025**.
- This apex document outlines the Navy's strategic principles and operational framework to meet contemporary challenges in the Indo-Pacific.

Note on Navy Day: Celebrated to honor **Operation Trident (1971)**.

- **Operation Trident:** A surprise night attack on **Karachi Harbour** using Soviet-era Osa-I missile boats (**INS Nipat, Nirghat, and Veer**).

- **Outcome:** Sank three Pakistani ships and destroyed oil storage tanks without a single Indian casualty.

I. Indian Maritime Doctrine 2025: Key Highlights

- **"No-War, No-Peace" Category:** For the first time, the doctrine formally recognizes the **Grey Zone**—the space between peace and open conflict where coercion and hybrid threats occur.
- **Theaterisation & Jointness:** Prioritizes **interoperability** among the Army, Navy, and Air Force to support the creation of unified Theatre Commands.
- **Multi-Domain Operations:** Expands the Navy's focus beyond the sea into **Space, Cyber, and Cognitive warfare**.
- **Emerging Tech:** Emphasizes the integration of **uncrewed systems (drones)**, AI-driven analytics, and autonomous underwater platforms.
- **Viksit Bharat 2047:** Positions maritime power as a core pillar of India's development goal, aligning with the **Blue Economy** and national infrastructure missions like **PM Gati Shakti**.

II. Evolution of the Indian Navy

1. Ancient Maritime Roots

- **Antiquity:** Maritime trade existed **4,000+ years ago** (Indus Valley). **Lothal** (2300 BCE) housed one of the world's first tidal docks.
- **Cultural Influence:** The word "Navigation" is derived from the Sanskrit word **Navagati**.
- **Global Reach:** Ancient Indians used seasonal monsoon winds to trade with Rome, Egypt, and Southeast Asia.

2. Medieval and Colonial Era

- **Chola Dynasty:** Established a "Thalassocracy" (maritime empire) in Southeast Asia (10th-11th Century CE).
- **Maratha Navy:** Under **Kanhoji Angre**, the Marathas effectively used guerrilla naval tactics to challenge Portuguese and British dominance on the west coast.
- **European Hegemony:** From **Vasco da Gama (1498)** to the British Raj, European "blue-water" navies dominated Indian waters for centuries.

3. Rise of the Modern Navy

- **Royal Indian Navy (RIN):** Established by the British; played significant roles in **WWII** (30,000+ personnel).
- **1946 Mutiny:** The RIN Revolt was a major catalyst for Indian independence.
- **1950:** Following Republic status, the "Royal" prefix was dropped, and it became the **Indian Navy**.

III. Leadership and Capabilities

- **Supreme Commander:** The **President of India**.
- **Motto:** "*Sam No Varunah*" (May the Lord of the Oceans be auspicious unto us).
- **Special Forces:** **MARCOS** (Marine Commandos)—modeled after the US Navy SEALs; specialized in maritime counter-terrorism and unconventional warfare.
- **Indigenization:** Over **50+ ships** currently under construction are being built in Indian shipyards, moving toward the **Aatmanirbhar** (Self-Reliant) vision by 2047.

IV. Major National Initiatives Integrated

- **Sagarmala:** Port-led development and coastal infrastructure.
- **MAHASAGAR (2025):** "Mutual and Holistic Advancement for Security and Growth Across Regions"—extending India's role as a net security provider to Africa and the Global South.
- **Blue Economy:** Sustainable use of ocean resources for economic growth.

50 Years of BWC & The Threat of Bioterrorism



Why in News?

- In December 2025, India hosted an international conference in New Delhi titled

"**50 Years of BWC: Strengthening Biosecurity for the Global South**" to commemorate the 50th anniversary of the **Biological Weapons Convention (BWC)**.

- India's External Affairs Minister, Dr. S. Jaishankar, emphasized that the rapid convergence of **AI and Synthetic Biology** has lowered the barriers for non-state actors to create bioweapons, making the world more vulnerable to **bioterrorism** than ever before.

I. Biological Weapons Convention (BWC)

Formal Name: *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*.

- **Status:** The first multilateral disarmament treaty to ban an **entire category** of Weapons of Mass Destruction (WMD).
- **Timeline:** Opened for signature in **1972**; entered into force in **1975**.
- **Membership:** Currently has **189 States Parties** (India ratified it in **1974**).
- **General Purpose Criterion (Article I):** It does not list specific "banned" agents; instead, it prohibits any use of biological agents that lacks a **legitimate peaceful purpose**.

II. Key Gaps in the BWC Architecture

Despite its age, the BWC is often called a "toothless" treaty due to major structural weaknesses:

- **Lack of Verification:** Unlike the Chemical Weapons Convention (which has the OPCW), the BWC has **no formal inspection or verification mechanism** to check if countries are secretly developing bioweapons.
- **Under-Resourced:** The **Implementation Support Unit (ISU)** consists of only three staff members and has an annual budget smaller than a typical McDonald's franchise (~USD 1.5 million).
- **The Dual-Use Dilemma:** It is difficult to distinguish between "legitimate" vaccine research and "offensive" bioweapon research, especially with new **gene-editing (CRISPR)** tools.

III. Understanding Bioterrorism

Definition: The deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants.

Types of Biological Agents

The CDC categorizes agents based on their risk level:

- **Category A (High Priority):** Easily spread, high death rates (e.g., Anthrax, Smallpox, Ebola, Plague).
- **Category B (Moderate):** Moderately easy to spread, lower death rates (e.g., Ricin, Food safety threats).
- **Category C (Emerging):** Pathogens that could be engineered for mass spread in the future.

IV. Why Bioterrorism is a Rising Concern?

- **Low Cost:** Known as the "**Poor Man's Atomic Bomb**" because biological agents are significantly cheaper and easier to produce than nuclear weapons.
- **Detection Challenge:** A biological attack is often "**covert**"; it may go unnoticed for days until people start falling ill, making it look like a natural outbreak.
- **Impact of AI:** AI can now be used to design **novel pathogens** that are more resistant to current vaccines or more lethal than anything found in nature.

V. India's Proposed "Bio-Secure Bharat" Framework

India is positioning itself as a leader for the **Global South** in modernizing biosecurity. Key pillars include:

1. **National Implementation Framework:** A unified law to manage high-risk agents and oversee dual-use research across different ministries.
2. **One Health Mission:** Integrating human, animal, and environmental health surveillance to detect outbreaks early (natural or deliberate).
3. **SCOMET List:** Strengthening export controls on "Special Chemicals, Organisms, Materials, Equipment and Technologies."
4. **Article VII Database:** India co-sponsored a proposal for a **Global Assistance Database** to provide rapid medical and technical help to any country hit by a biological attack.

Conclusion: The COVID-19 pandemic served as a "dry run" showing how a single pathogen can paralyze the global economy. As we mark 50 years of the BWC, the focus must shift from mere "disarmament" to active "biosecurity"—ensuring that the same science used to save lives isn't repurposed to end them.

Exercise Harimau Shakti 2025 & India-Malaysia Defence Ties



Why in News?

- The 5th edition of the India-Malaysia bilateral military exercise, **Exercise Harimau Shakti 2025**, was conducted at the **Mahajan Field Firing Range** in Rajasthan from **December 5 to 18, 2025**.
- This edition marked a significant shift from previous jungle-warfare-centric drills to **semi-desert and arid terrain** operations, reflecting the evolving nature of global security challenges and India's growing defense diplomacy in the Indo-Pacific.

I. Understanding Exercise Harimau Shakti

- **Etymology:** "Harimau" means **Tiger** in Malay, symbolizing the power and agility of both the Indian and Malaysian armies.
- **Frequency:** An **annual** bilateral exercise initiated in **2012**, hosted alternately by India and Malaysia.
- **Participants (2025):**
 - **India:** Troops from the **Dogra Regiment**.
 - **Malaysia:** Personnel from the **25th Battalion of the Royal Malaysian Army**.
- **Objective:** To enhance interoperability in **Sub-Conventional Operations** specifically under the **UN Chapter VII** mandate.

II. Key Highlights of 2025 Edition

The exercise was divided into two phases—a cross-training phase and a validation phase—incorporating modern battlefield elements.

- **Tactical Drills:** Focused on Counter-Insurgency (CI) and Counter-Terrorism (CT) maneuvers including:
 - **Cordon and Search** operations.
 - **Search and Destroy** missions.
 - **Heliborne Operations:** Using MI-17 helicopters for slithering and insertion in restrictive terrain.
- **Modern Warfare Integration:** Employment of Drones (UAVs) and Counter-UAS (Unmanned Aircraft Systems) measures to stay ahead of asymmetric threats.
- **Physical & Mental Resilience:** The curriculum integrated the Army Martial Arts Routine (AMAR), combat reflex shooting, and Yoga to build holistic combat readiness.

III. The UN Chapter VII Mandate

- **Context:** Most joint exercises operate under UN Chapter VI (Peacekeeping). However, **Harimau Shakti** often practices under **Chapter VII (Peace Enforcement)**.
- **Scope:** Chapter VII allows the UN Security Council to authorize the use of **military force** to maintain or restore international peace and security.
- **Training Value:** This requires a higher level of tactical synergy and "combat reflex," moving beyond mere observation to active stabilization and neutralization of threats.

IV. Strategic Importance for India

- **Act East Policy:** Strengthens India's role as a **net security provider** in the ASEAN region.
- **Indo-Pacific Stability:** Malaysia is a key maritime neighbor; military cooperation ensures stable sea lines of communication (SLOCs).
- **Diversified Terrain Training:** Previous editions in Malaysia (e.g., **Hulu Langat**) focused on tropical rainforests. The Rajasthan phase in 2025 allowed Malaysian troops to adapt to **high-heat, low-visibility desert environments**.

V. Other Major India-Malaysia Exercises

Exercise Name	Domain	Participants
Harimau Shakti	Army	Dogra/Garhwal/Grenadiers vs. Royal Malay/Ranger Regiments.
Udara Shakti	Air Force	IAF (Su-30MKI) vs. RMAF (Su-30MKM).
Samudra Laksamana	Navy	Indian Navy vs. Royal Malaysian Navy.

Defense Modernization – Induction of Advanced Infantry and Naval Weapons



Why in News?

- On **December 30, 2025**, the Ministry of Defence (MoD) signed two major capital acquisition contracts worth a combined **₹4,666 crore** to bolster the combat capabilities of the Indian Army and Navy.
- The deals, finalized in the presence of Defence Secretary Rajesh Kumar Singh, focus on indigenizing the infantry's small arms and filling a decade-long gap in the submarine fleet's offensive weaponry.
- **Infantry Modernization:** India has finally moved to replace the aging **9mm Sterling carbines** (1940s design) with state-of-the-art indigenous Close Quarter Battle (CQB) carbines.
- **Undersea Deterrence:** The induction of modern torpedoes for the **Kalvari-class** submarines restores their intended "lethality" in the increasingly contested Indian Ocean Region.

I. The CQB Carbine Induction (₹2,770 Crore)

The deal for over **4.25 lakh carbines** marks one of India's largest-ever private-sector small arms orders, significantly boosting the **Aatmanirbhar Bharat** initiative.

- **Manufacturers:** The order is split in a **60:40** ratio between:
 - **Bharat Forge Ltd:** Supplying the indigenously designed **5.56x45 mm carbine** (developed jointly by DRDO-ARDE and Bharat Forge).
 - **PLR Systems (Adani Defence):** Supplying the **IWI ACE 21N** (Israeli-origin Galil ACE), manufactured in India.

- **Combat Role:** Designed for urban warfare and counter-insurgency, these carbines are compact and offer a high rate of fire, making them ideal for "room clearing" and confined-space operations.
- **Delivery Timeline:** Deliveries are expected to begin in **September 2026** and conclude by 2031.

II. Advanced Underwater Warfare (₹1,896 Crore)

The second contract secures **48 Heavyweight Torpedoes** from Italy's **WASS Submarine Systems** (a Fincantieri/Leonardo subsidiary) for the Navy's Project-75 (Kalvari-class) fleet.

- **The Weapon:** Identified as the **Black Shark Advanced (BSA)** torpedo, it is a high-speed (50+ knots), wire-guided weapon with a range of over 50 km.
- **Strategic Gap:** Since their induction starting in 2017, the Kalvari submarines had been operating without their primary heavyweight armament due to prior procurement delays and bans.
- **Delivery Window:** Scheduled between **April 2028 and early 2030**, serving as a bridge until the indigenous heavyweight torpedo (Varunastra variant) is fully ready.

III. Modernization Snapshot: FY 2025–26

The MoD has maintained an aggressive procurement pace in the current fiscal year to address evolving two-front threats.

Metric	Details (as of Dec 30, 2025)
Total Capital Contracts	₹1.82 lakh crore
Indigenous Share	Over 70% of total value (estimated)
Key Focus Areas	Small arms, Submarine lethality, Loitering munitions, and Radar systems.

IV. Institutional Significance

1. **Private Sector Empowerment:** The selection of Bharat Forge and Adani-PLR highlights the government's shift toward the private sector for high-volume manufacturing.
2. **Project-75 Completion:** Equipping the six Scorpène-class submarines (**INS Kalvari, Khanderi, Karanj, Vela, Vagir, Vagsheer**) with modern torpedoes transforms them from "stealth observers" to "lethal predators."
3. **MSME Integration:** The carbine project alone is expected to engage over **200 Indian MSMEs** for components and raw materials, fostering a robust domestic supply chain.

HAL Dhruv-NG – Maiden Flight and Civil Aviation Push



Why in News?

- On **December 30, 2025**, the **Dhruv-New Generation (NG)**, indigenously developed by **Hindustan Aeronautics Limited (HAL)**, successfully conducted its **maiden flight** in Bengaluru.
- The event was flagged off by Union Civil Aviation Minister **K. Ram Mohan Naidu**, signaling India's formal entry into the global civil and export helicopter markets.
- **Historic Certification:** During the event, HAL received **DGCA type certification** for the indigenous manufacture of the **Shakti civil engine**. This is the **first time** an aero-engine has been certified for indigenous production in India.
- **Commercial Interest:** State-run **Pawan Hans** has already placed an order for **8 Dhruv-NG helicopters** to support **ONGC's offshore operations** at Bombay High.

I. Dhruv-NG: Design and Technical Specifications

The Dhruv-NG is a **5.5-tonne class**, light twin-engine, multi-role helicopter designed to master the diverse and demanding terrains of the Indian subcontinent.

Feature	Specification
Max Take-off Weight	5,500 kg
Power Plant	Twin Shakti 1H1C engines (with higher power ratings).
Max Speed	285 km/h
Range	630 km (with 20-minute reserve).
Endurance	3 hours 40 minutes.
Service Ceiling	6,000 meters (High-altitude capable).
Seating Capacity	Up to 14 passengers (Commuter layout).

II. Key Features for Civil Operations

Unlike military variants, the NG (New Generation) is specifically tailored for commercial and humanitarian roles:

- **Glass Cockpit:** Features an AS4-compliant modern avionics suite for superior situational awareness.
- **Safety & Redundancy:** Includes **crashworthy seats, self-sealing fuel tanks, and a high-redundancy twin-engine configuration.**
- **Ride Comfort:** Advanced **vibration-control systems** ensure a smooth ride, crucial for VIP transport and **HEMS (Air Ambulance) missions.**
- **Cabin Flexibility:** A **7.33 cubic meter cabin volume** that can be reconfigured for VIP transport (4-6 seats), law enforcement, or search-and-rescue (SAR).

III. Certification and Strategic Significance

- **The DGCA-EASA Connection:** While it holds **DGCA certification** for its engines, HAL is progressing toward **full civil certification** for the airframe within the next **3-4 months**. It previously received **restricted certification from EASA** (European Union Aviation Safety Agency) in 2023.
- **Aatmanirbhar Bharat:** Currently featuring **65% indigenization**, HAL aims to reach **80%** in the next few years, reducing heavy reliance on imported twin-engine helicopters like those from Airbus or Leonardo.
- **Support Models:** To ensure 24/7 fleet availability, HAL is offering "One-Stop Solutions" through **Power-By-Hour (PBH)** and **Performance-Based Logistics (PBL).**

IV. Evolution: From Military to Civil

The Dhruv platform is a proven workhorse with over **3.75 lakh flying hours**. The NG variant transitions this rugged military DNA into a sophisticated civilian machine.

- **Dhruv Mk-I/II/III:** Primarily utility and high-altitude military variants.
- **Dhruv Mk-IV (Rudra):** Armed military variant.
- **Dhruv-NG (Civil):** Specifically upgraded to meet rigorous **global civil aviation standards.**

Conclusion: The Dhruv-NG's 2025 maiden flight is a "defining moment" that balances HAL's portfolio between defense and civil aviation. With a projected demand for **1,000+ helicopters** in India over the next decade, the Dhruv-NG is positioned to anchor the domestic civil helicopter ecosystem and serve as a cost-effective alternative for the global market.

Crux of The Hindu & Indian Express

Internal Security

India-Indonesia Joint Special Forces Exercise



GARUDA SHAKTI

1. What is the News?

India and Indonesia have started the **10th edition** of their **Joint Special Forces Exercise "GARUDA SHAKTI"**.

- Location: **Special Forces Training School, Bakloh, Himachal Pradesh**
- Dates: **03 to 12 December 2025**

This exercise is conducted regularly to improve defence cooperation between the two countries.

2. Participating Forces

Indian Contingent

- From **The Parachute Regiment (Special Forces)**
- This is one of India's elite special operations units

Indonesian Contingent

- From the **Indonesian Special Forces**
- Highly trained in counter-terrorism and special missions

Both teams are trained to operate in tough and hostile conditions.

3. Purpose of Exercise GARUDA SHAKTI

The main aim of GARUDA SHAKTI is to:

- Improve **mutual understanding**
- Increase **cooperation**
- Enhance **interoperability**

Interoperability means: Ability of forces from different countries to **work together smoothly** during real operations.

4. Nature of the Training

The exercise focuses on **counter-terrorism operations**.

Training is conducted at **troop level**, meaning:

- Small units
- Close coordination
- Realistic combat situations

The training area includes **semi-mountainous terrain**, similar to many operational areas.

5. Key Training Areas Covered

During GARUDA SHAKTI, soldiers train in:

- **Unarmed combat techniques**
- **Combat shooting drills**
- **Sniping operations**
- **Heliborne operations**
(Operations using helicopters for insertion and extraction)
- **Drone operations**
- **Counter-UAS (anti-drone) techniques**
- **Planning for loitering munition strikes**

This reflects modern battlefield requirements, where technology and mobility are very important.

6. Exchange of Operational Knowledge

Apart from physical training, the exercise also includes:

- Sharing experiences
- Learning about each other's:
 - Weapons
 - Equipment
 - Tactics
 - Operational procedures

This exchange helps both sides upgrade their skills and adapt to new threats.

7. Focus on Physical and Mental Readiness

The exercise places strong emphasis on:

- High physical fitness
- Tough tactical drills
- High-intensity combat training

This helps:

- Improve endurance
- Build teamwork
- Increase confidence among troops

8. Final Validation Exercise

At the end of the training:

- A **validation exercise** is conducted

This:

- Simulates real combat scenarios
- Tests:
 - Coordination
 - Combat readiness
 - Decision-making under pressure

It acts as a practical assessment of everything learned during the exercise.

Conclusion

The **GARUDA SHAKTI** joint exercise shows the commitment of India and Indonesia to:

- Counter-terrorism cooperation
- Defence preparedness
- Strong bilateral relations

Such exercises prepare forces to handle real-world security challenges together.

INDIAN NAVY TO COMMISSION FIRST INDIGENOUS DIVING SUPPORT CRAFT



Why in News?

- The Indian Navy will commission **DSC A20**, its **first indigenously designed and constructed Diving Support Craft**, on **16 December 2025** at Kochi.
- The vessel will be inducted under the **Southern Naval Command**.

What is a Diving Support Craft?

- A Diving Support Craft is a **specialised naval vessel** used to support **underwater diving and inspection operations**.
- It is **not a combat ship**.
- Its main role is to assist naval divers during underwater missions.
- In simple words, it is a **support ship for underwater work**.

About DSC A20

- **Name:** DSC A20
- **Type:** Diving Support Craft
- **Status:** First indigenous DSC of the Indian Navy
- **Commissioning date:** 16 December 2025
- **Place of commissioning:** Kochi
- **Operational base:** Kochi
- **Command:** Southern Naval Command

DSC A20 is the **lead ship** in a series of **five Diving Support Craft** planned for the Indian Navy.

Construction and Indigenous Development

- Builder: Titagarh Rail Systems Limited (TRSL), Kolkata
- Designed and built in India
- Constructed under Indian naval standards

The project reflects strong cooperation between:

- Indian Navy
- Indian shipbuilding industry
- Indian defence research organisations

Design and Technical Features:

Catamaran Hull Design

- The ship has **two parallel hulls instead of one**.
- This design provides:
 - Better stability at sea
 - Larger deck space for equipment
 - Safer conditions for diving operations

This is especially useful during underwater missions where stability is critical

Key Technical Details

- Displacement: Around **390 tonnes**
- Built as per **Indian Register of Shipping (IRS)** naval rules
- Hydrodynamic and model testing conducted at:
 - Naval Science and Technological Laboratory (NSTL), Visakhapatnam

These tests ensure safe movement, balance, and reliability of the vessel at sea.

Operational Roles of DSC A20

DSC A20 will strengthen the Navy's capability in:

1. Supporting deep and shallow water diving operations
2. Underwater inspection of ships, ports, and harbour structures
3. Salvage operations for damaged or sunken vessels

4. Coastal underwater missions
5. Training and deployment of naval divers
6. Assistance during emergencies and rescue situations

Strategic and National Importance

Strengthening Naval Capabilities

- Enhances underwater operational support
- Improves safety and efficiency of diving missions
- Important for coastal security and port infrastructure

Boost to Aatmanirbhar Bharat

- First fully indigenous Diving Support Craft
- Reduces dependence on foreign specialised vessels

Success of Make in India

- Demonstrates India's ability to build complex naval support platforms
- Highlights growth of indigenous defence manufacturing

MEIL AND RATLE HYDROELECTRIC PROJECT ISSUE



Why in News?

Megha Engineering and Infrastructures Ltd. (MEIL) has stated that it may withdraw from the 850 MW Ratle Hydroelectric Project in Kishtwar district of Jammu and Kashmir if threats, political interference, and pressure on workers are not stopped.

About Ratle Hydroelectric Project

- Capacity: **850 MW**
- Type: **Run-of-the-river hydroelectric project**
- River: **Chenab**
- Location: **Kishtwar district, Jammu and Kashmir**
- Approved: **2021**

- Estimated cost: **Rs. 5,281.94 crore**
- Scheduled commissioning: **May 2026**

Implementing Agency and Ownership

- Implemented by **Ratle Hydroelectric Power Corporation Limited (RHPCL)**
- RHPCL is a **joint venture** between:
 - NHPC** – 51 percent equity
 - Jammu and Kashmir State Power Development Corporation (JKSPDC)** – 49 percent equity
- Construction contractor: **Megha Engineering and Infrastructure Limited (MEIL)**

Technical Features of the Project

- Concrete gravity dam**
 - Height: **133 metres**
 - Length: **194.8 metres**
- Includes a **diversion dam**
- Underground powerhouse** located on the right bank of the Chenab
- Powerhouse dimensions: **168 m x 24.5 m x 49 m**
- Turbine configuration:
 - Four **205 MW Francis turbine units**
 - One **30 MW auxiliary turbine**
- Expected annual generation: **3,137 GWh of electricity**

Issues Raised by MEIL

- Workers facing **threats and intimidation**
- Political pressure** to hire additional local workers despite no vacancies
- Interference affecting **project execution**
- Concern that safety and construction quality may be compromised

Triggering Incident

- On **4 December 2025**, MEIL's **HR head was allegedly attacked**
- The incident created fear among workers at the project site

Employment Situation at the Project

- Total workforce: **1,434**
- From Kishtwar: **900**
- From nearby districts: **244**
- From outside the region: **215**, due to specialised technical requirements

MEIL stated it cannot meet **forced hiring demands** when no vacancies exist.

International Dimension

- Pakistan has repeatedly objected** to the Ratle project
- Allegations claim violation of the **Indus Waters Treaty, 1960**
- India maintains that Ratle is a **run-of-the-river project**, permissible under the Treaty

Why This Issue Matters

- Ratle is a **strategically important power project** for Jammu and Kashmir
- Delays or withdrawal could affect **regional energy security**
- Raises concerns about:
 - Law and order at infrastructure sites
 - Investment climate in sensitive regions
 - Balancing local employment and technical needs

Indian Army Receives Final Batch of Apache Helicopters



1. Introduction

- The Indian Army received the **final batch of three AH-64E Apache attack helicopters** on **December 16, 2025**.
- With this delivery, the Army has completed its planned fleet of **six Apache helicopters**.
- The helicopters are part of the **451 Army Aviation Squadron**, which is based in **Jodhpur, Rajasthan**.
- The helicopters first landed at **Hindon Air Force Station in Ghaziabad** before being inducted into Army service.

2. Contract and Procurement Details

- The Apache helicopters were contracted in **February 2020** under a deal worth **approximately 600 million US dollars**.
- The contract was signed with the **United States** as part of India's defence procurement programme.

- The first batch of **three helicopters** was delivered earlier in **2025**.
- The arrival of the final batch ensures the **full operationalisation of the Army's dedicated Apache squadron**.

3. Deployment and Operational Role

- All six Apache helicopters will be stationed at **Jodhpur, Rajasthan**.
- The deployment significantly enhances the Army's **strike, surveillance, and reconnaissance capabilities**.
- The helicopters are primarily meant to support operations along the **western sector facing Pakistan**.
- The **451 Army Aviation Squadron** was raised in **March 2024** to meet specific operational requirements on the western front.

4. Strategic Significance

- The induction of Apache helicopters strengthens the Indian Army's **offensive and deterrence posture**.
- These helicopters provide the Army with a **dedicated attack helicopter capability**, separate from the Indian Air Force.
- Their presence enhances India's ability to respond swiftly to threats along sensitive borders.

5. India–United States Defence Cooperation Context

- The deliveries took place against the backdrop of **India–US defence cooperation**.
- In **July 2025**, the Indian Defence Minister held a telephonic conversation with the **US Defence Secretary**.
- During the talks, both sides reviewed ongoing and upcoming defence cooperation initiatives.
- The United States assured India that the first batch of helicopters would be delivered within two weeks and the remaining batch by **November 2025**.

6. Delivery Delays and Logistics Issues

- The first batch of Apache helicopters was delivered after a delay of **nearly 15 months**.
- The original delivery schedule was **May 2024**.
- The delay occurred mainly due to **global supply chain disruptions**.

- In **November 2025**, an **Antonov AN-124 cargo aircraft** transported three Apache helicopters from **Arizona, USA**.
- The aircraft landed in **England** for refuelling but remained grounded for about a week.
- The delay occurred after **Turkey denied overflight clearance**, forcing the aircraft to return to the United States

7. Features of the AH-64E Apache Helicopter

- The **AH-64E Apache** is considered the **world's most advanced multi-role combat helicopter**.
- It is equipped with **advanced avionics, sensors, and weapon systems**.
- The helicopter is capable of operating in **all weather conditions and varied terrain**.
- It can perform **attack, reconnaissance, and close air support missions** with high precision.

8. Importance for Indian Army Modernisation

- The induction of Apache helicopters is part of the Indian Army's broader **modernisation and force restructuring efforts**.
- It enhances **joint operations capability** and battlefield dominance.
- The helicopters provide a strong technological edge in **high-intensity conflict scenarios**.

GhostPairing Attack : Why CERT-In Warned Indian WhatsApp Users



What is 'GhostPairing' and why is CERT-In warning Indian WhatsApp users about it?



1. Why in News?

- The Indian Computer Emergency Response Team (CERT-In) has issued a **high-severity**

- advisory warning Indian users about a new cyber-attack method called **GhostPairing**.
- The advisory was issued on **December 19, 2025**.
- The attack targets **WhatsApp users** and allows cybercriminals to **take over accounts without passwords or SIM swaps**.

2. What Is GhostPairing?

- GhostPairing** is a new technique used to hijack WhatsApp accounts.
- It exploits WhatsApp's **device-linking feature**, which allows users to access chats on browsers, laptops, or tablets.
- The attack tricks users into **linking an attacker's device as a trusted hidden device**.
- Once linked, attackers gain **full control of the WhatsApp account**.

3. Why GhostPairing Is Dangerous

- The attack does **not require stealing passwords**.
- The attack does **not require SIM swapping**.
- Victims unknowingly approve access by entering **pairing codes that appear legitimate**.
- This makes the attack **difficult to detect**.

4. Background: Device Linking in WhatsApp

- WhatsApp allows users to link multiple devices to a single account.
- Users can link devices by:
 - Scanning a **QR code**, or
 - Entering a **pairing code** displayed on the device.
- Currently, there is **no strict limit** on the number of devices linked to an account.
- GhostPairing exploits this feature.

5. Modus Operandi of the GhostPairing Attack

- The attack usually begins with a message from a **trusted contact** saying, "*Hi, check this photo.*"
- The message contains a **malicious link** with a Facebook-style preview.
- The link opens a **fake Facebook content viewer**.
- The fake page asks the victim to **verify** in order to view the content.
- Victims are then prompted to enter:
 - Their **phone number**, and
 - A **pairing or verification code**.

- By doing this, victims unknowingly link the attacker's device to their WhatsApp account.

6. What Happens After Account Takeover

- Once the attacker's device is linked, cybercriminals can:
 - Read all existing chats.
 - Receive new messages in real time.
 - Access photos, videos, and voice notes.
 - Impersonate the victim.
- Attackers can send messages to the victim's contacts and group chats.
- This can lead to **financial fraud, misinformation, and social engineering scams**.

7. Link with Government SIM-Binding Directive

- CERT-In's advisory comes after a **Department of Telecommunications (DoT)** directive.
- The DoT ordered messaging platforms like WhatsApp, Signal, and Telegram to implement **continuous SIM binding**.
- Under this rule:
 - Users cannot access accounts on devices without the registered SIM.
 - WhatsApp Web sessions will be logged out every **six hours**.
- Users will need to **re-link devices using QR codes**.
- The aim is to curb **account hijacking and digital fraud**.

8. Concerns Around SIM-Binding

- Digital rights advocates argue that continuous SIM binding may:
 - Affect **user privacy**.
 - Complicate multi-device usage, especially for professionals.
- Cybersecurity experts have pointed out **technical challenges** in implementation.

9. Related Cybercrime Trends in India

- In **October 2025**, the **Indian Cybercrime Coordination Centre (I4C)** identified a transnational scam trend.
- Scammers used **Facebook and Instagram ads** to trick users into linking WhatsApp accounts.
- GhostPairing fits into this broader pattern of **social-engineering-based account hijacking**.

10. CERT-In's Safety Recommendations for Individual Users

- Users should **avoid clicking suspicious links**, even if they are sent by known contacts.
- Users should **never enter phone numbers or verification codes** on external websites.
- Users should regularly check **Linked Devices** in WhatsApp settings.
- If an unknown device is found, users should **log out immediately**.

11. Safety Recommendations for Organisations

- Organisations using WhatsApp should provide **cybersecurity awareness training**.
- They should enforce **mobile device management (MDM)** policies where possible.
- They should monitor for signs of **phishing and social engineering attacks**.
- Clear protocols should be established for **rapid response and remediation**.

12. Significance for Cybersecurity Governance

- The GhostPairing attack highlights the **evolving sophistication of cyber threats**.
- It underscores the importance of **user awareness**, platform security, and regulatory oversight.
- The advisory reflects CERT-In's role in **early warning and national cyber resilience**.



History, Art & Culture

Ministry of Culture Year-End Review 2025 – Heritage & Civilizational Resurgence



Why in News?

The **Ministry of Culture** released its **Year-End Review for 2025**, marking a monumental year for India's cultural diplomacy and heritage preservation. The year 2025 was defined by the integration of technology with tradition, the return of long-lost sacred relics, and the expansion of India's global footprint with its 44th UNESCO World Heritage inscription.

I. Landmark Heritage & Global Recognition

- **Maratha Military Landscapes (44th UNESCO Site):** In **July 2025**, India secured UNESCO World Heritage status for a network of **12 forts** (11 in Maharashtra and 1 in Tamil Nadu). These sites, including Raigad, Shivneri, and Gingee, demonstrate the strategic military and architectural ingenuity of the Maratha Empire.
- **Repatriation of Piprahwa Relics:** In a major diplomatic victory, the sacred **Piprahwa Buddha relics** (discovered in 1898) were repatriated from Hong Kong in **July 2025** after 127 years. This was achieved through a unique Public-Private Partnership (PPP) with the Godrej Industries Group.
- **Project Mausam:** The ASI hosted a national workshop titled "*Islands at the Crossroads of Maritime Networks*" in November 2025. It aims to revitalize historical maritime ties across the **Indian Ocean Region** and explore transnational UNESCO nominations.

II. Major Cultural Festivals & Civilizational Connect

- **Kashi Tamil Sangamam 3.0:** Held in Varanasi in **February 2025**, the third edition focused on **Sage Agasthyar** and the Siddha system of medicine. For the first time, delegates also visited the newly inaugurated **Ram Mandir** in **Ayodhya** and the **Mahakumbh** in **Prayagraj**.
- **Kalagram at Mahakumbh 2025:** A massive 10.24-acre "cultural village" in **Prayagraj** hosted **15,000 artists and artisans** over 45 days, showcasing India's diverse crafts, music, and spiritual heritage to crores of pilgrims.
- **Revival of Kambh Ramayana:** The Ministry institutionalized the **Kamba Ramayana Festival** at the Srirangam Temple in Tamil

Nadu (March 2025) to preserve the 12th-century Tamil epic tradition.

- **Aadi Thiruvathirai Festival:** Celebrated at Gangaikonda Cholapuram in July 2025 to commemorate the **1,000-year anniversary** of Rajendra Chola I's maritime expeditions.

III. Knowledge & National Identity Initiatives

- **Gyan Bharatam:** Launched in **September 2025**, this mission aims to preserve and digitize over **1 crore manuscripts**. The **Delhi Declaration** adopted at the conference pledged to make India a global hub for manuscriptology.
- **Vande Mataram 150:** In **November 2025**, the Prime Minister launched the year-long commemoration of the 150th anniversary of India's National Song. Over **1.6 crore citizens** participated via a dedicated digital platform.
- **Samvidhan Hatya Diwas (June 25):** Observed to mark 50 years of the Emergency, focusing on the defense of **constitutional values** and democratic safeguards.
- **Special Campaign 5.0 (SCDPM):** Achieved 100% cleanliness and de-cluttering targets across **599 protected monuments** and cultural sites.

IV. Commemorating National Icons

Event	Milestone	Significance
Lokmata Ahilyabai Holkar	300th Birth Anniversary	Commemorative coin and stamp released; focus on her role in temple restoration.
Sardar Vallabhbhai Patel	150th Birth Anniversary	National-scale cultural events emphasizing <i>Rashtriya Ekta</i> (Unity).
Dr. Syama Prasad Mookerjee	125th Birth Anniversary	Launch of a two-year nationwide celebration of his legacy.
Vande Mataram	150 Years	Nationwide mass participation to honor the "Mother India" sentiment.

Conclusion: The Year-End Review 2025 reflects India's transition from being a mere spectator to becoming a **Global Custodian of Heritage**. By combining the "Vikas" (Development) of digital infrastructure with the "Virasat" (Heritage) of ancient manuscripts and forts, the Ministry of Culture has aligned the nation's identity with the vision of **Viksit Bharat 2047**.

Adichanallur – Protecting India's Iron Age Heritage



Why in News?

In December 2025, the **Madurai Bench of the Madras High Court** issued a strict directive prohibiting any sand mining in or around **Adichanallur** and within the village limits of Thoothukudi district. The ruling came while disposing of a 2016 petition that alleged illegal mining was threatening the integrity of this globally significant archaeological site.

- **The Ruling:** Justices G. Jayachandran and K.K. Ramakrishnan emphasized that any activity disturbing the site would cause **irreversible damage** to India's cultural heritage.
- **Administrative Stand:** The Thoothukudi District Collector confirmed to the court that **no mining licenses** have been issued for the area, and the Archaeological Survey of India (ASI) has fully fenced the active excavation zones.

I. Adichanallur: The "Cradle of Tamil Civilization"

Adichanallur is one of India's oldest and most extensive **Iron Age–Megalithic** burial sites (dated between 1000 BCE and 600 BCE).

- **Location:** Situated on the right bank of the **Thamirabarani River** (Porunai) in the Thoothukudi district, Tamil Nadu.
- **Historical Discovery:** First reported in **1876** by German explorer **Dr. Jagor**. Extensive excavations were later led by **Alexander Rea** (1899–1905), who called it the most important site in South India.
- **"Iconic Site" Status:** In the 2020 Union Budget, Adichanallur was selected as one of the **five iconic archaeological sites** in India to be developed with an on-site museum.

II. Material Culture and Major Discoveries

Excavations have yielded a staggering variety of artifacts, showcasing advanced metallurgy and trade.

- **Urn Burials (Tali):** The site features thousands of large earthenware pots (urns) containing human skeletal remains in fetal positions, buried along with grave goods.
- **Metallurgy:** * **Gold:** Rare gold diadems (headbands) and beads, among the earliest gold finds in the region.
 - **Bronze:** Elaborate bronze vessels, sieves, and lids decorated with animal motifs (deer, birds).
 - **Iron:** A massive collection of weapons including **swords, daggers, spears**, and agricultural tools like chisels and axes.
- **Pottery:** Predominantly **Black-and-Red Ware (BRW)**, often featuring Tamil-Brahmi scripts or decorative motifs (crocodiles, cranes).
- **Mixed Origins:** Scientific analysis of skeletal remains suggests a **multiracial composition**, indicating that Adichanallur was a cosmopolitan hub with maritime links to ancient Rome and other civilizations via the nearby port of **Korkai**.

III. Cultural Significance & Sangam Literature

Adichanallur provides archaeological "proof" for many customs mentioned in ancient **Sangam Literature**:

- **Funerary Customs:** The practice of **urn burial** described in poems like *Purananuru* matches the archaeological findings at the site.
- **Timeline:** Carbon dating (2019/2025) has pushed the dates as far back as **3345 BCE**, placing the Thamirabarani valley among the world's earliest hubs of iron technology.

IV. Modern Preservation: The In-Situ Museum (2025)

Under the Central Government's "Iconic Sites" initiative, India's first **in-situ museum** at Adichanallur is nearing completion in 2025.

- **The Concept:** Unlike traditional museums, this allows visitors to see artifacts exactly where they were unearthed, protected by glass flooring and state-of-the-art climate control.
- **Objective:** To boost heritage tourism and provide an educational center for

understanding the evolution of the Tamil civilization.

V. Threats and Challenges

- **Illegal Sand Mining:** Mining on the Thamirabarani riverbed destabilizes the soil and can destroy unexcavated burial layers.
- **Urban Encroachment:** Expanding village settlements and agricultural activities occasionally encroach upon the 114-acre protected zone.
- **Environmental Degradation:** Pollution in the Thamirabarani river affects the overall preservation of the riparian landscape.

Conclusion: The Madras High Court's 2025 intervention is a vital victory for "Virasat" (Heritage). By barring sand mining, the judiciary has ensured that the "silent" history of Adichanallur remains intact for future generations to study. As the on-site museum opens, Adichanallur is set to redefine our understanding of the Iron Age in the Indian subcontinent.

Bengal as the Crucible of Indian Nationalism



Why in News?

In December 2025, West Bengal Chief Minister **Mamata Banerjee** sharply criticized the Central Government during a public meeting in Cooch Behar. She alleged that the contributions of Bengal's national icons—**Rabindranath Tagore, Netaji Subhas Chandra Bose, and Bankim Chandra Chattopadhyay**—were being undermined for political gains.

- **The "Bankim da" Controversy:** The CM demanded an apology from the Prime Minister for referring to the legendary author Bankim Chandra Chattopadhyay as "Bankim da" in Parliament, calling it a mark of "utter contempt" and disrespect toward a national icon.

- **150 Years of Vande Mataram:** The debate coincided with national celebrations of the 150th year of the song **Vande Mataram**, with political friction arising over the song's stanzas and historical interpretations of partition.

I. Role of Bengal in the Indian National Movement

Bengal served as the **vanguard of anti-colonial resistance**, shaping the ideological, organizational, and cultural foundation of the freedom struggle.

1. Intellectual & Cultural Awakening (Bengal Renaissance)

- **Raja Rammohan Roy:** The "Father of Modern India" established the **Brahmo Samaj (1828)**, initiating a wave of rationalism and social reform that later fueled political consciousness.
- **Swami Vivekananda:** Transformed spiritual pride into national duty, inspiring the youth with his call for **self-reliance** and **fearlessness**.
- **Bankim Chandra Chattopadhyay:** His 1882 novel **Anandamath** provided the "war cry" of the freedom struggle—**Vande Mataram**.
 - It was first sung by **Rabindranath Tagore** at the 1896 Congress session.

2. Early Political Foundations

- **Calcutta as the Epicenter:** Early associations like the **British Indian Association (1851)** and **Indian Association (1876)** by Surendranath Banerjee laid the groundwork for the Indian National Congress.
- **Political Giants:** Leaders like **W.C. Bonnerjee** (1st Congress President) and **Ananda Mohan Bose** were instrumental in early moderate politics.

II. The "Agni Yug" (Era of Fire): Revolutionary Nationalism

The **Partition of Bengal (1905)** by Lord Curzon transformed Bengal into a hotbed of extremist and revolutionary activity.

- **Swadeshi Movement:** Introduced the tools of **Boycott** and **Indigenous Industry**, making the struggle a mass movement for the first time.
- **Secret Societies:** The **Anushilan Samiti (1902)** and **Jugantar (1906)** trained youth in revolutionary tactics.
- **Iconic Figures:**

- **Aurobindo Ghosh:** Transitioned from a fiery revolutionary to a spiritual philosopher of nationalism.
- **Master Da Surya Sen:** Led the daring **Chittagong Armoury Raid (1930)**.
- **Bose's Military Vision:** Netaji Subhas Chandra Bose eventually formed the **Indian National Army (Azad Hind Fauj)**, giving the slogan "**Jai Hind**" to the nation.

III. Iconic Personalities: Contributions & Legacies

Icon	Key Contribution	Impact
Bankim Chandra	Authored <i>Anandamath</i> and <i>Vande Mataram</i> .	Created a cultural and religious archetype for the Motherland.
Rabindranath Tagore	Composed <i>Jana Gana Mana</i> and <i>Amar Sonar Bangla</i> .	First Nobel Laureate; his universalism balanced narrow nationalism.
Subhas Chandra Bose	Twice Congress President; founded Forward Bloc and INA.	Challenged the British Empire through armed global diplomacy and military force.
Kazi Nazrul Islam	The "Rebel Poet"; wrote <i>Bidrohi</i> .	Fused Hindu-Muslim imagery to inspire anti-colonial rebellion.

IV. The Contested Symbolism: Vande Mataram

In **2025**, the debate over Vande Mataram remains central to Bengal's identity politics:

- **Historical Choice:** In 1937, a committee including **Tagore** and **Nehru** decided to adopt only the **first two stanzas** as the National Song to ensure its secular and inclusive appeal, as the later stanzas contained specific religious imagery.
- **2025 Debate:** The PM recently stated that the removal of stanzas in 1937 "sowed seeds of partition," a claim that the Bengal CM and opposition leaders have labeled as an attempt to "distort history" and communalize a patriotic symbol.

V. Bengal's Enduring Legacy

Bengal's contribution was **multidimensional**:

1. **Literature:** From the press (*Amrita Bazar Patrika*) to plays (*Neel Darpan*), Bengal weaponized the pen.
2. **Women's Role:** Trailblazers like **Matangini Hazra** (Quit India) and **Bina Das** (who shot the Bengal Governor) proved that the revolution was not gender-bound.
3. **Industrial Resistance:** The rise of Swadeshi enterprises (Bengal Chemicals) proved economic self-reliance was possible.

Conclusion: Bengal was indeed the "Laboratory of Indian Nationalism." The 2025 political debates underscore that while the freedom struggle is over, the **politics of memory** remains vibrant. For the people of Bengal, these icons are not just historical figures but "sacred pillars" of their civilizational consciousness.

Ponduru Khadi & The GI Tag Recognition (2025)

HERITAGE WEAVE EARNS TAG

● The khadi is unique as the entire process, from cotton to fabric, is carried out manually

● Process of cleaning the cotton with the jawbone of Valuga fish is unique to Ponduru khadi and is not practised anywhere else in the world

● Cotton used is indigenous to Srikakulam district and is grown in and around Ponduru

● Produced from one of three types of cotton – hill cotton, punasa cotton, or red cotton

● Ponduru is the only place in India where spinners still use single-spindle charkhas with 24 spokes, also known as the 'Gandhi Charkha'

● The final textile has a very high yarn count, around 100-120 counts

● Spinning thin yarn to 100-120 counts is a difficult process requiring special skill, which very few spinners possess

Why in News?

In December 2025, Ponduru Khadi, the iconic handspun fabric from Andhra Pradesh, was officially granted the **Geographical Indication (GI)** tag by the Union Ministry of Commerce and Industry. This recognition comes nearly a century after **Mahatma Gandhi** first lauded the fabric's exceptional fineness during the freedom struggle.

- Significance:** The GI tag (registered under Classes 23, 24, and 25) prevents unauthorized imitations and ensures that only fabric produced using traditional methods in Ponduru can carry the name.
- The "Iconic" Status:** It joins the ranks of other heritage textiles like *Banarasi Silk* and *Pochampally Ikat*, providing a major economic boost to the weavers of **Srikakulam district**.

I. What is Ponduru Khadi?

Ponduru Khadi is a traditional handspun and handwoven cotton fabric, locally known as **Patnulu**. It is renowned for being the only khadi in India that is **100% processed by hand**, from cleaning the raw cotton to the final weave.

The Material Layer

- Indigenous Cotton:** Uses short-staple **Hill cotton**, **Punasa cotton**, and **Red cotton**, all of which are native to the Srikakulam region and grown organically.

- Fineness:** The fabric achieves an extremely high yarn count of **100–120**, making it translucent, soft, and breathable.

II. Unique Artisanal Processes

Ponduru Khadi is globally unique due to its preservation of ancient, non-mechanized techniques:

1. The Valuga Fish Jawbone (Ginning)

- The Technique:** To clean the cotton, artisans use the dried and split jawbone of the **Valuga fish** (Wallago attu), a freshwater catfish found in the Godavari and Thamirabarani rivers.
- Why Fish Bone?** The needle-like teeth of the jawbone help in straightening the fibers and removing minute impurities without damaging the delicate short-staple cotton. This process gives the fabric a **silky sheen** that is impossible to achieve with metal combs.

2. The Gandhi Charkha (Spinning)

- Equipment:** Ponduru is the last remaining place in India where weavers still use the **single-spindle charkha with 24 spokes**, also known as the **Gandhi Charkha**.
- Storage:** Once spun, the delicate slivers of yarn are stored inside **dried banana stems** to maintain moisture and prevent the fibers from breaking.

III. Historical and Cultural Significance

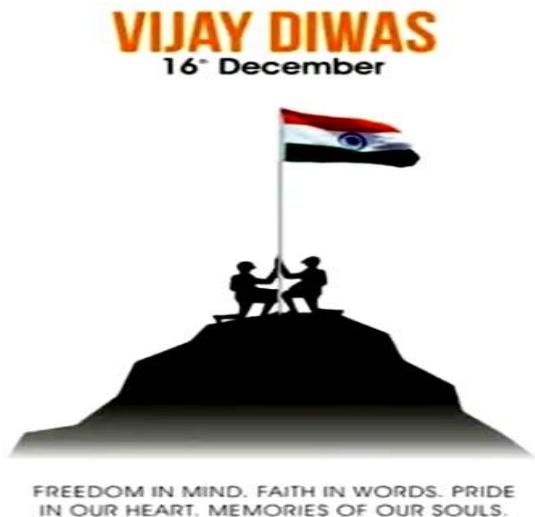
- Mahatma Gandhi's Endorsement:** In his journal *Young India*, Gandhi wrote about the "virtues of Ponduru Khadi," choosing it for his own use and promoting it as a symbol of **Swadeshi (Self-reliance)**.
- Eminent Patrons:** Historically worn by figures like **Indira Gandhi** and veteran politicians, it remains a "prestige fabric" for representatives and senior citizens due to its high quality and simplicity.
- Institutional Support:** The **Andhra Fine Khadi Karmikabhrudhi Sangham (AFKKS)**, founded in 1949 by **Acharya Vinoba Bhave**, continues to be the primary support body for the artisans.

IV. Economic Impact of the GI Tag

Feature	Benefit to Artisans
Legal Protection	Prevents powerloom fabrics from being sold as "Handmade Ponduru Khadi."
Market Value	Allows weavers to command a premium price for the authentic craft.
ODOP Scheme	Nominated under the One District One Product (ODOP) scheme, attracting global export queries.
Sustainable Income	Provides livelihood security to over 950 families of spinners and weavers in Srikakulam.

Conclusion: The granting of the GI tag in 2025 is a long-overdue validation of the "slow and honest" craftsmanship of Ponduru. By protecting the unique use of fish jawbones and manual spinning, India has ensured that this "masterpiece of simplicity" remains a living heritage rather than a relic of history.

54th Vijay Diwas – 1971 Indo-Pak War Victory



Why in News?

- On December 16, 2025, India celebrated the 54th Vijay Diwas to commemorate the historic victory over Pakistan in the 1971 War.
- President Droupadi Murmu and Prime Minister Narendra Modi paid floral tributes to the martyrs at the National War Memorial in New Delhi.
- A major highlight of the 2025 celebrations was the Military Tattoo organized by the Eastern Command in Kolkata, showcasing precision combat maneuvers and modern technology like swarm drones and robotic mules, linking historical valor with the future of warfare.

I. The Indo-Pakistan War of 1971

The 1971 conflict remains one of the fastest and most decisive military campaigns in history, lasting only 13 days (December 3–16).

Genesis of the Conflict

- Operation Searchlight:** On March 25, 1971, the West Pakistani military launched a brutal crackdown in East Pakistan (now Bangladesh) to suppress the Bengali nationalist movement.
- Humanitarian Crisis:** The genocide led to approximately 3 million deaths and forced 10 million refugees to flee into India, creating a massive economic and security burden.
- India's Intervention:** India initially provided diplomatic support but officially entered the war on December 3, 1971, after Pakistan launched pre-emptive air strikes (Operation Chengiz Khan) on Indian airfields.

II. Key Military Operations and Leadership

The war showcased unparalleled coordination between the Army, Navy, and Air Force.

- Strategic Leadership:** Led by Field Marshal Sam Manekshaw (then COAS), with Lt. Gen. Jagjit Singh Aurora (Eastern Command) overseeing the surrender in Dhaka.
- Operation Trident:** The Indian Navy's daring missile boat attack on Karachi Port (Dec 4–5) crippled Pakistan's fuel reserves and naval strength.
- Battle of Longewala:** A legendary defense where 120 Indian soldiers held back a massive Pakistani tank regiment in the deserts of Rajasthan.
- Tangail Airdrop:** The Indian Air Force executed a massive paratrooper drop to encircle Pakistani forces and cut off their retreat to Dhaka.

III. Decisive Victory & Regional Impact

The war concluded on December 16, 1971, with the signing of the Instrument of Surrender in Dhaka.

Key Outcome	Statistical / Historical Fact
Mass Surrender	93,000 Pakistani soldiers laid down arms (largest since WWII).
New Nation	Formation of the sovereign People's Republic of Bangladesh.
Shimla Agreement	Signed in July 1972 to resolve future disputes bilaterally.
Human Cost	3,900 Indian soldiers made the supreme sacrifice during the war.

IV. Modern Significance: 2025 Observations

- **Joint Commemorations:** India and Bangladesh jointly observed the day as **Vijay Diwas** and **Bijoy Dibos**, reaffirming the "Blood Ties" of 1971.
- **Operational Readiness:** In her 2025 address, the President noted that the 1971 strategy serves as a blueprint for modern **Theater Commands** and **self-reliance (Atmanirbharta)** in defense.
- **Veteran Outreach:** The **Southern Command** organized special "Veer Nari" felicitations and veteran meetings in Pune to honor the legacy of the 1971 heroes.

Conclusion: The 54th Vijay Diwas is not just a celebration of a military win but a reminder of India's commitment to humanitarian justice. The 1971 war reshaped the South Asian geopolitical map and established India as a responsible regional power capable of decisive intervention against genocide.

Balidaan Diwas (Kakori Train Action Martyrs)



Why in News?

On **December 19, 2025**, the Union Home Minister paid heartfelt tributes to **Pandit Ram Prasad Bismil**, **Ashfaqulla Khan**, and **Thakur Roshan Singh** on their **Balidaan Diwas** (Martyrdom Day). The day marks the anniversary of their executions in **1927** for their pivotal roles in the **Kakori Train Action** (1925), an event that galvanized the Indian revolutionary movement and challenged the financial foundations of British rule.

I. The Kakori Train Action (August 9, 1925)

The Kakori Train Action was a strategic revolutionary strike designed to fund the independence struggle and signal a departure from purely non-violent methods.

Historical Context

- **Disillusionment:** Following the abrupt withdrawal of the **Non-Cooperation Movement** in **1922** after the Chauri Chaura incident, many young nationalists turned toward armed revolution.
- **Objective:** The **Hindustan Republican Association (HRA)** needed funds to purchase arms and ammunition. They decided to reclaim the Indian wealth being transported by the British treasury.

The Event

- **Execution:** Revolutionaries halted the **8-Down Train** (Shahjahanpur to Lucknow) near Kakori.
- **Key Figures:** Led by **Ram Prasad Bismil**, the group included **Ashfaqulla Khan**, **Chandrashekhar Azad**, **Rajendra Lahiri**, and several others.
- **Outcome:** They successfully seized approximately **Rs 8,000** without looting a single passenger. However, an accidental shot led to the death of one passenger, turning it into a manslaughter case.

II. The Trial and Martyrdom (1927)

The British response was a massive crackdown known as the **Kakori Conspiracy Case**.

- **The Trial:** Lasted 18 months; prominent lawyers like **Govind Ballabh Pant** defended the revolutionaries.
- **The Executions (December 1927):**
 - **Rajendra Lahiri:** Hanged on **Dec 17** (two days early) in Gonda Jail.
 - **Ram Prasad Bismil:** Hanged on **Dec 19** in Gorakhpur Jail.
 - **Ashfaqulla Khan:** Hanged on **Dec 19** in Faizabad Jail.
 - **Thakur Roshan Singh:** Hanged on **Dec 19** in Naini (Allahabad) Jail.
- **Impact:** The martyrdom of Bismil and Khan became a legendary symbol of **Hindu-Muslim unity** in the fight for freedom.

III. Evolution of the Revolutionary Movement

The setback at Kakori did not end the movement; instead, it led to ideological maturity and reorganization.

Hindustan Republican Association (HRA)

- **Founded:** October 1924 in Kanpur by Bismil, Sachindra Nath Sanyal, and Jogesh Chandra Chatterjee.

- **Manifesto:** "The Revolutionary" (1925) advocated for a **Federal Republic of United States of India** based on universal suffrage and socialist principles.

Hindustan Socialist Republican Association (HSRA)

- **Formation (1928):** Reorganized at Feroz Shah Kotla, Delhi, under **Chandrashekhar Azad** and **Bhagat Singh**.
- **Ideology:** Shifted toward **Socialism** and Marxism, influenced by the Russian Revolution (1917).
- **Major Actions:**
 - * Assassination of **J.P. Saunders** (1928) to avenge Lala Lajpat Rai.
 - **Central Legislative Assembly Bombing** (1929) by Bhagat Singh and Batukeshwar Dutt to "make the deaf hear."

IV. Legacy and Significance

- **Strategic Shift:** Proved that the British "treasure" was not safe, inspiring common citizens to contribute to the cause.
- **Literary Contribution:** Ram Prasad Bismil's poems, such as those under the pen names *Bismil*, *Ram*, and *Agyat*, continue to inspire patriotic fervor.
- **Foundation for the Future:** Provided the organizational and ideological bridge that led to the high-water mark of revolutionary activity in the late 1920s and 30s.

Conclusion: The sacrifice of the Kakori martyrs on December 19 serves as a perennial reminder of the courage required to challenge an empire. As India observes **Balidaan Diwas** in 2025, the legacy of Bismil, Khan, and Singh remains a cornerstone of the national identity, emphasizing unity and selfless service to the motherland.

Goa Liberation Day & The Journey of Integration (1961)



Why in News?

On **December 19, 2025**, the Union Home Minister extended greetings on **Goa Liberation Day**, marking the **64th anniversary** of Goa's freedom from Portuguese rule. In his tribute, he honored the "noble souls" who endured immense pain for India's integration.

- **A Forgotten Restriction:** The Home Minister highlighted that before 1961, Indians required **special permission (visas/permits)** to visit Goa, despite it being part of the Indian subcontinent.
- **Key Figures Honored:** Tributes were paid to **Prabhakar Vaidya**, **Bala Raya Mapari**, **Nanaji Deshmukh**, and **Jagannath Rao Joshi**, who led mass satyagrahas and political resistance against the colonial administration.

I. The 451-Year Colonial Shadow (1510–1961)

Goa's colonial history was distinct from the British Raj, lasting significantly longer.

- **The Conquest:** In **1510**, Portuguese general **Afonso de Albuquerque** seized Goa from the Sultan of Bijapur, Yusuf Adil Shah.
- **The "Estado da Índia":** Goa became the headquarters of the Portuguese Empire in the East, which included Daman, Diu, Dadra, and Nagar Haveli.
- **Cultural Impact:** Over four centuries, the Portuguese introduced European architecture, the Latin script, and unique culinary fusions, while often suppressing local languages like Konkani.

II. The Liberation Movement: Two Paths to Freedom

The struggle for Goa was a blend of non-violent agitation and militant resistance.

1. The Satyagraha Path

- **Dr. Ram Manohar Lohia (1946):** On June 18, 1946, Lohia launched the first mass civil disobedience movement in Goa, demanding civil liberties. This is still celebrated as **Goa Revolution Day**.
- **National Support:** Leaders like **Jagannath Rao Joshi** and **Nanaji Deshmukh** (Bharatiya Jana Sangh) led thousands of satyagrahis across the border in 1955, where many were fired upon by Portuguese police (e.g., the massacre at **Patrao Devi**).

2. The Revolutionary Path

- **Azad Gomantak Dal (AGD):** Groups like the AGD, led by figures like **Prabhakar Vaidya**,

believed that only armed struggle would force the Portuguese out. They conducted guerrilla raids on police stations and telecommunication hubs.

III. Operation Vijay: The Final 36 Hours

After years of failed diplomacy and the unprovoked firing on the Indian ship *Sabarmati*, Prime Minister Jawaharlal Nehru authorized military action.

- **The Operation:** Launched on **December 17, 1961**, it was India's first major **Tri-Service operation** (Army, Navy, and Air Force working together).
- **Swift Victory:** Within **36 hours**, the Portuguese Governor-General, Manuel António Vassalo e Silva, signed the **Instrument of Surrender** on **December 19, 1961**.
- **Casualties:** The conflict was brief, resulting in the deaths of **22 Indian** and **30 Portuguese** personnel.

IV. Evolution of Goa's Statehood

Year	Legal/Political Milestone
1961	Goa, Daman, and Diu annexed as a Union Territory .
1967	Goa Opinion Poll: Residents voted against merging with Maharashtra, choosing to maintain a distinct identity.
1974	Portugal finally recognized Indian sovereignty via a formal treaty.
1987 (May 30)	Goa granted full statehood (25th state), while Daman and Diu remained a UT.

V. Key Patriots of the Movement

- **Tristão de Bragança Cunha:** Known as the **"Father of Goan Nationalism,"** he founded the Goa National Congress in 1928.
- **Bala Raya Mapari:** A young revolutionary who was tortured and killed by Portuguese authorities, becoming a symbol of local sacrifice.
- **Jagannath Rao Joshi:** A prominent national leader who spent years in Portuguese jails for leading the 1955 satyagraha.

Conclusion: Goa Liberation Day 2025 reminds the nation that India's independence was not complete in 1947. The integration of Goa was a hard-fought victory that combined the "moral force" of satyagrahis with the "decisive force" of the Indian military, ensuring that the last remnants of European colonialism were removed from Indian soil.

Jallikattu 2026 – SOP and Regulatory Framework



Why in News?

In **December 2025**, the Tamil Nadu government issued a comprehensive **Standard Operating Procedure (SOP)** for the conduct of **Jallikattu 2026**. This detailed directive aims to balance the preservation of a 2,000-year-old cultural tradition with the stringent requirements of animal welfare and human safety.

- **Key Timeline:** The events are scheduled to begin in **January 2026** during the Pongal festivities and continue through May.
- **Administrative Oversight:** District Collectors have been instructed to form specialized committees to monitor every event, ensuring they occur only in **government-notified locations**.

I. Standard Operating Procedure (SOP) 2026: Key Highlights

The 2026 guidelines introduce stricter monitoring and digital transparency to mitigate the "barbaric" image often associated with the sport by critics.

1. Safety and Infrastructure

- **Double Barricading:** Organizers must install double barricades with a minimum height of **8 feet** to prevent bulls from leaping into the spectator gallery.
- **Arena Requirements:** The *vaadivasal* (entry point) and the bull-run area must be free of sharp objects and properly cushioned with coir pith to prevent injuries.
- **CCTV & Documentation:** Every event must be **fully videographed**. Some associations have also requested large digital screens to display real-time scores and prize distributions to ensure transparency.

2. Animal Welfare Protocols

- **Veterinary Screening:** Every bull must undergo a medical check-up by the **Department of Animal Husbandry** before entry.
- **Drug & Alcohol Testing:** Bulls are specifically screened for **alcohol abuse** or performance-enhancing drugs.
- **Post-Run Care:** Veterinary teams must be stationed at the "collection yard" to provide immediate medical assistance to bulls after they exit the arena.

3. Tamer and Participant Norms

- **Age & Fitness:** Participants must be above **18 years** and undergo a fitness check for drug or alcohol intake.
- **Online Registration:** All tamers, bulls, and organizers must register through the exclusive state portal (www.jallikattu.tn.gov.in) to prevent malpractices.

II. Historical and Cultural Significance

- **Ancient Origins:** Traces back to the **Ayar (pastoral)** community of the Sangam era. It is depicted in cave paintings near Madurai and on a seal from the **Indus Valley Civilization**.
- **The Breeds:** The sport is vital for the conservation of indigenous breeds like **Pulikulam** and **Kangayam**. Without Jallikattu, these high-strength breeds would likely face extinction as they are no longer needed for traditional plowing.
- **The Ritual:** Historically known as *Yeru Thazhuvuthal* (embracing the bull), it was a test of bravery for young men, sometimes used for selecting bridegrooms.

III. Legal Status: The 2023 Turning Point

The legal battle for Jallikattu has been a tussle between **Article 51A(g)** (duty to be compassionate to animals) and **Article 29(1)** (right to preserve culture).

- **2014 Ban:** The Supreme Court (SC) originally banned the sport in the *A. Nagaraj* case, citing cruelty.
- **2017 Amendment:** Following massive protests at Marina Beach, Tamil Nadu amended the **Prevention of Cruelty to Animals Act, 1960**.
- **2023 Validation:** A five-judge SC bench upheld these amendments, ruling that the legislature is the best judge of "cultural heritage" and that the new rules significantly minimized animal pain.

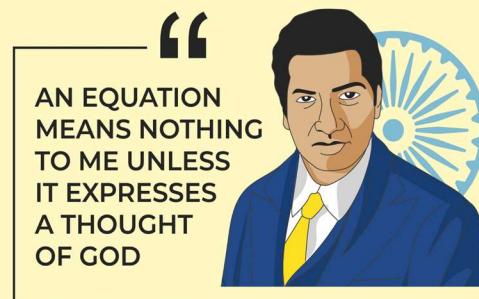
IV. Regional Clusters: The Jallikattu Belt

While practiced across the state, the 2026 SOP highlights major hubs that attract international tourism:

- **Alanganallur (Madurai):** The most famous venue, known for high-value prizes like cars and gold.
- **Palamedu & Avaniyapuram:** Part of the "Madurai Trinity" of Jallikattu.
- **Pudukkottai:** Known for having the maximum number of notified events in the central region.

Conclusion: The **Jallikattu 2026 SOP** marks a transition from a purely traditional festival to a highly regulated sporting event. By integrating **AI monitoring**, **mandatory insurance**, and **veterinary checkpoints**, the Tamil Nadu government aims to preserve the "Spirit of the Bull" while adhering to the constitutional mandates of the 21st century.

National Mathematics Day – Commemorating Srinivasa Ramanujan



- SHRI SRINIVASA RAMANUJAN -

NATIONAL MATHEMATICS DAY

22 DECEMBER

Why in News?

On December 22, 2025, India observed its 14th **National Mathematics Day** to celebrate the 138th birth anniversary of the legendary mathematician **Srinivasa Ramanujan**. Across the country, educational institutions and scientific bodies organized "Ganit Week" (Mathematics Week) and innovation fairs to promote numerical aptitude and honor the "Man Who Knew Infinity."

- Breakthrough in Physics:** In a 2025 study published in *Physical Review Letters*, researchers at the **Indian Institute of Science (IISc)** discovered that Ramanujan's 111-year-old infinite series for mirrors structures in **conformal field theories**, providing new tools for calculating black hole entropy and fluid turbulence.
- Prize Announcement:** The prestigious **2025 SASTRA Ramanujan Prize** was formally presented to **Dr. Alexander Smith** in Kumbakonam (Ramanujan's hometown) for his work on **congruent number problems**.

I. Srinivasa Ramanujan: The Intuitive Genius (1887–1920)

Ramanujan was a largely self-taught prodigy who reshaped 20th-century mathematics without formal training.

Key Life Milestones

- The Frayed Notebooks:** As a teenager, he recorded nearly **3,900 results** (mostly identities and equations) in notebooks, many of which were proven correct decades after his death.
- Cambridge Years:** Invited to England by **G.H. Hardy** in 1914, he transformed from a clerk in Madras to a world-renowned researcher.
- Global Recognition:** He became the **first Indian Fellow of Trinity College, Cambridge**, and one of the youngest Fellows of the **Royal Society (UK)** in 1918.

II. Major Mathematical Contributions

1. The Hardy-Ramanujan Number (1729)

- Definition:** The smallest number expressible as the sum of two cubes in two different ways.
- Formula:** $1^3 + 12^3 = 9^3 + 10^3 = 1729$.
- Significance:** It reflects Ramanujan's deep insight into "near misses" of **Fermat's Last Theorem**.

2. Infinite Series for PI

- Ramanujan developed series that are far more efficient than traditional methods. These form the core of **modern high-precision algorithms** used by computers to calculate pi to trillions of digits.

3. Mock Theta Functions

- These were introduced by Ramanujan on his deathbed. Decades later, they became crucial

in **String Theory** and **Quantum Physics**, specifically for counting the "quantum states" of black holes.

4. The Circle Method

- Co-developed with G.H. Hardy, this powerful tool in **analytic number theory** is used to solve the "Partition Problem"—calculating how many ways a number can be written as a sum of positive integers.

III. Legacy and Awards

Award	Details	2025 Winner
SASTRA Ramanujan Prize	Awarded to mathematicians aged 32 or younger (commemorating Ramanujan's age at death).	Dr. Alexander Smith (Northwestern University, USA).
ICTP Ramanujan Prize	For young mathematicians from developing countries (under age 45).	Claudio Muñoz (University of Chile).

IV. Modern Relevance in 2025

- Black Hole Physics:** Scientists are using "Ramanujan-style" techniques to simplify complex calculations in **logarithmic conformal field theories**, which describe systems that look the same regardless of scale (like water at its critical point).
- AI and Cryptography:** Ramanujan's work on continued fractions and prime numbers is being applied to develop **quantum-resistant encryption** algorithms.

Narsapuram Crochet Lace – Global Export Milestone



Why in News?

In December 2025, the traditional **crochet lace craft of Narsapuram** in Andhra Pradesh achieved a

significant economic milestone, with exports crossing **₹150 crore** in the current financial year. This surge marks a robust post-pandemic recovery for the craft, driven by a surge in international demand and strategic institutional support.

- **Key Driver:** The official grant of the **Geographical Indication (GI) Tag** in early 2024 has been a primary catalyst, providing global legal protection and brand value to the artisans.
- **Recognition:** The craft was also honored with the "**One District One Product" (ODOP) Award** in July 2025 by the Ministry of Commerce and Industry.

I. Narsapuram Crochet Lace: Historical Legacy

Narsapuram, located on the banks of the **Godavari River**, is often hailed as the "Lace Town of India."

- **Origins (1844):** The craft was introduced by **Irish missionaries** (specifically the Macrae couple) who trained local women from the farming and fishing communities.
- **Resilience:** The industry famously survived the **Indian Famine of 1899** and the **Great Depression of 1929**, serving as a vital secondary source of income for rural households.
- **Social Impact:** Today, the sector employs over **1.5 lakh women artisans** across 19 mandals in the West Godavari and Konaseema districts. For many, it remains a "leisure-time" craft practiced at home that provides financial independence.

II. Technique and Artistry

The craft is distinguished by its delicate "web-like" appearance and durability.

- **Tools:** The primary tool is a single **crochet hook** (available in various sizes) used to draw thread through loops.
- **Process:**
 1. Selection: Fine cotton threads (traditionally white or beige) are selected.
 2. Stitching: Artisans use interlocking stitches to create floral, geometric, and paisley motifs.
 3. Finishing: The lace is washed, starched, and ironed to provide the necessary stiffness and texture before being exported.
- **Products:** Ranging from domestic items like **doilies**, table runners, and cushion covers to high-fashion garments and accessories like stoles and purses.

III. Export and Institutional Support

Narsapuram lace has a global footprint, with nearly **80–85%** of its products reaching international markets.

Market Category	Major Destinations
Traditional Markets	UK, USA, France, Japan.
Emerging Markets	Middle East, Italy.
Fashion Influence	Used by global luxury brands like Dolce & Gabbana and Christian Dior.

Role of Key Organizations

- **International Lace Trade Centre (ILTC):** Established by the Ministry of Textiles in Narsapur, it serves as a hub for design development, quality testing, and direct interaction between artisans and foreign buyers.
- **Export Promotion Council for Handicrafts (EPCH):** A statutory body under the **Ministry of Textiles** that organizes international fairs and ensures artisans adhere to a "child-labour-free" code of conduct.

IV. Challenges and The Way Forward

Despite the ₹150 crore milestone, the industry faces stiff competition:

- **Machine vs. Hand:** Cheap, **machine-made lace from China** often floods the market, making the GI tag essential to distinguish authentic handmade Narsapur lace.
- **Modernization:** There is a growing need to move beyond traditional doilies into **contemporary fashion** and home decor to attract younger global consumers.
- **Skill Preservation:** Younger generations are moving toward other sectors, making skill-transfer workshops at the ILTC critical for the craft's survival.

Conclusion: The **2025 export milestone** proves that traditional Indian handicrafts can thrive in the global digital economy if backed by strong IP protection (GI Tag) and institutional infrastructure. Narsapuram's lace is not just a textile; it is a thread of resilience that connects the rural women of the Godavari delta to the high-fashion runways of Europe.

Karthigai Deepam Ritual at Thirupparankundram Uchipillaiyar Temple



Why in News?

In December 2025, the Tamil Nadu government officially informed the **Madurai Bench of the Madras High Court** that the sacred **Karthigai Deepam (lamp)** was lit at the **Uchipillaiyar temple mandapam** on Thirupparankundram hill, maintaining a tradition that has spanned over **150 years**.

- Judicial Intervention:** The statement was part of a long-standing legal battle regarding the location of the ritual. The court recently directed that the deepam must be lit at the **Deepathoon** (an ancient stone lamp pillar) in addition to the customary mandapam to assert and protect temple property rights.
- Cultural Restoration:** Justice **G.R. Swaminathan** noted that the ritual is woven into Tamil identity, referencing classical literature like *Akananuru* to emphasize that lighting lamps on hilltops is a tradition dating back to **200–300 BCE**.

I. Uchipillaiyar Temple: The Summit of Rockfort

While the recent news pertains to the Thirupparankundram hill in Madurai, the most famous "Uchi Pillaiyar" (Top Ganesha) temple is the **Rockfort Temple** in Trichy.

- Location & Altitude:** Perched atop a colossus rock rising **83 meters (272 ft)** above Trichy city.
- Deity:** Dedicated to **Lord Ganesha**. Legend says Ganesha ran to this peak to escape King Vibhishana after establishing the Ranganathaswamy deity at Srirangam.

- Architecture:** * The rock was first carved by the **Pallavas** (7th century CE) during the reign of **Mahendravarman I**.

1. The temple structures were later completed by the **Nayaks of Madurai** under the Vijayanagara Empire.

- The Three-Temple Complex:**

1. **Manikka Vinayakar Temple:** Located at the foot of the hill.
2. **Thayumanaswamy Temple:** Situated midway, dedicated to Lord Shiva (who, legend says, appeared as a mother—*Thayum-ana*—to help a devotee in labor).
3. **Uchipillaiyar Temple:** The small shrine at the very summit.

II. Geological Significance: "Older than the Himalayas"

The Trichy Rockfort is not just a religious site but a geological marvel.

- Age:** Estimated to be **3.8 billion years old** (Archaean Eon).
- Comparison:** It is one of the oldest exposed rock formations on Earth, as old as the rocks found in Greenland.
- The Himalayan Contrast:** In geological terms, the Himalayas are "infants," having formed only about **50 million years ago**.

Feature	Trichy Rockfort (Granite)	The Himalayas (Fold Mountains)
Estimated Age	~3.8 Billion Years	~50 Million Years
Formation	Ancient volcanic/plutonic activity	Tectonic collision (Indian & Eurasian plates)
Status	One of the oldest rocks in the world	The world's youngest mountain range

III. Karthigai Deepam: The Festival of Lights

The lighting of the deepam is the most significant ritual of the **Karthigai** month (Nov-Dec).

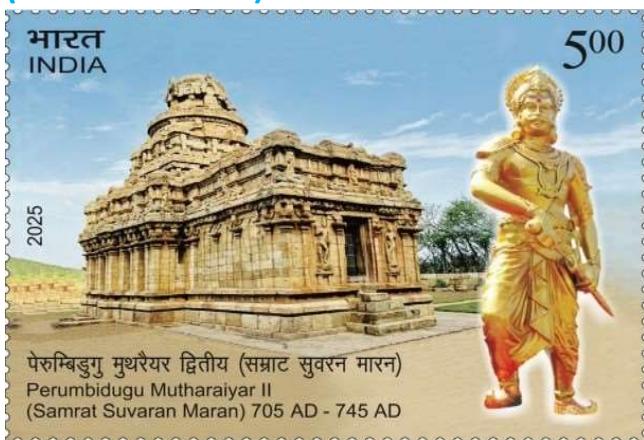
- Symbolism:** Represents the removal of darkness and the manifestation of Lord Shiva as an infinite pillar of fire (*Jyotirlinga*).
- The Deepathoon:** These are ancient stone lamp pillars found atop various Tamil hills. In 2025, the Madras High Court ruled that lighting the lamp at the **Deepathoon** is a "legal and moral duty" of temple

management to assert ownership over temple-owned hill lands.

- **View from the Top:** Lighting the deepam at Uchipillaiyar provides a panoramic view of Trichy, including the **Srirangam Temple**, and the rivers **Kaveri** and **Kollidam**.

Conclusion: The **2025 judicial ruling** on the Thirupparankundram deepam ritual highlights the intersection of ancient faith and modern property law. By mandating the lighting of the lamp at the Deepathoon, the court has ensured that a 2,000-year-old Tamil tradition continues to serve as a beacon of both spiritual light and legal heritage.

Emperor Perumbidugu Mutharaiyar-II (Suvaran Maran)



Why in News?

- On **December 14, 2025**, a commemorative postage stamp in honor of **Emperor Perumbidugu Mutharaiyar II** (also known as Suvaran Maran) was released by the **Vice President of India**, Shri C.P. Radhakrishnan, in New Delhi.
- Prime Minister Narendra Modi welcomed the initiative, describing the 8th-century ruler as a "formidable administrator" and a "great patron of Tamil culture."
- The release is part of the government's ongoing effort to recognize "unsung heroes" and regional kings who played pivotal roles in shaping India's cultural and political landscape but have remained largely under-celebrated in national history.

I. About Perumbidugu Mutharaiyar II (705–745 CE)

He was a powerful South Indian monarch belonging to the **Mutharaiyar dynasty**, which dominated the central regions of Tamil Nadu between the 7th and 9th centuries.

- **Nomenclature:** He is historically recorded as **Suvaran Maran**.
- **Titles:** He earned the title "Shatrubhayankar" (one who inspires fear in enemies) and "Kalavara Kalvan" (as seen in some inscriptions, possibly linking his lineage to the Kalabhras).
- **Military Prowess:** A trusted ally of the **Pallava King Nandivarman II**, he reportedly fought in at least **12 to 16 battles** against the Pandyas and Cheras to protect the Pallava frontier.
- **Governance:** He ruled from **Tiruchirappalli** for nearly four decades, a period marked by administrative stability, irrigation development, and the expansion of the agrarian economy in the Cauvery delta.

II. Who were the Mutharaiyars?

The Mutharaiyars were a prominent chieftain clan of early medieval Tamil Nadu who acted as a crucial political bridge between the **Pallava** and **Chola** eras.

- **Political Status:** They served as high-ranking **feudatories (lieutenants)** of the Pallavas. As Pallava power waned, they established themselves as independent regional rulers.
- **Territory:** They held sway over the fertile **Cauvery River basin**, including modern-day **Thanjavur, Pudukkottai, Trichy, and Perambalur**.
- **The Transition:** The Mutharaiyar rule ended in the late 9th century when **Vijayalaya Chola** (founder of the Medieval Chola Empire) captured Thanjavur by defeating them.

III. Architectural Legacy: Pioneers of Stone Temples

The Mutharaiyars were prolific temple builders and made seminal contributions to South Indian rock-cut architecture.

- **Cave Temples:** They were actively engaged in **cave temple enterprises** up to the early 9th century. Their style is considered a transitional link between Pallava art and early Chola art.
- **Key Monuments:**
 - **Kunnandarkoil Cave Temple (Pudukkottai):** Dedicated to Lord Shiva, it is one of the oldest stone temples in South India.
 - **Vijayalaya Choleeswaram (Narthamalai):** Though named after a Chola king, its foundation and the

- nearby **Aluruttimalai Jain Caves** are attributed to the Mutharaiyar period.
- **Thirukokarnam (Gokarnesvara Temple):** A live cave temple patronized by the clan.

IV. Religious Pluralism and Learning

Perumbidugu Mutharaiyar II's court was a hub for intellectual and religious dialogue.

- **Scholarly Patronage:** Although a patron of Shaivism, he hosted diverse scholars.
- **The Jain Debate:** Historical records mention that the famous **Jain Acharya Vimalachandra** (from Shravanabelagola) visited his court to engage in philosophical debates with Shaiva, Buddhist, and Pashupata scholars.
- **Epigraphical Evidence:** Inscriptions at **Sendalai** (near Thanjavur) and the **Vaikuntha Perumal Temple** (Kanchipuram) provide detailed accounts of his military victories and endowments to religious institutions.



EDITORIALS

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India Hosts UNESCO's 20th Intergovernmental Committee Session on Intangible Cultural Heritage (ICH)



1. Why in the news?

- India is hosting the 20th session of the UNESCO Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage (ICH).
- The session is being held from **8 to 13 December 2025** in New Delhi.

- This is the **first time India is hosting the ICH Committee session**, marking a significant cultural milestone.
- The event coincides with **20 years of India's ratification of the 2003 UNESCO Convention**, highlighting India's long-term commitment to safeguarding living heritage.

2. Why is the venue significant?

- The meeting is hosted at the **Red Fort Complex**, a **UNESCO World Heritage Site**.
- Hosting an **intangible heritage event at a tangible heritage site** symbolises the **interconnection between tangible and intangible heritage**.
- The Red Fort represents India's **historical continuity and cultural identity**.

3. Who is chairing the session?

- The session will be chaired by India's **Permanent Delegate to UNESCO**.
- The chairmanship reinforces **India's leadership role** in global heritage governance.

4. What is Intangible Cultural Heritage (ICH)?

According to UNESCO, Intangible Cultural Heritage includes:

- **Practices, expressions, knowledge and skills**
- Objects, artefacts and spaces associated with them
- Traditions that communities recognise as part of their **cultural identity**

Key characteristics of ICH:

- It is **living heritage**, not static.
- It is **transmitted across generations**.
- It evolves continuously and adapts to social changes.
- It strengthens **cultural diversity and social cohesion**.

5. Background: UNESCO's 2003 Convention

- UNESCO adopted the **Convention for the Safeguarding of Intangible Cultural Heritage** on **17 October 2003**.
- It was adopted during UNESCO's **32nd General Conference in Paris**.

Why the Convention was needed:

- Globalisation and social change were threatening **living traditions**.
- Oral traditions, rituals, crafts and performing arts lacked protection.

6. Core philosophy of the 2003 Convention

- The Convention places **communities, groups and practitioners** at the centre of safeguarding efforts.
- It recognises the role of **indigenous and local communities**.
- It highlights the **interdependence of tangible and intangible heritage**.
- It promotes **international cooperation and youth awareness**.

7. Objectives of the 2003 Convention

The Convention aims:

- To **safeguard intangible cultural heritage**.
- To ensure **respect for communities and practitioners**.
- To raise **awareness at local, national and international levels**.
- To promote **international cooperation and assistance**.

8. What is the Intergovernmental Committee for ICH?

- The **Intergovernmental Committee for Safeguarding of ICH** ensures the **effective implementation of the 2003 Convention**.
- It works under UNESCO and consists of **States Parties** elected by the General Assembly.

9. Functions of the Intergovernmental Committee

The Committee performs the following roles:

- Promotes and monitors implementation of the **2003 Convention**.
- Issues **guidelines and best practices** for safeguarding ICH.
- Manages the **Intangible Cultural Heritage Fund**.
- Mobilises **additional resources** for safeguarding efforts.
- Drafts and revises **operational guidelines**.
- Reviews **periodic reports** submitted by States Parties.
- Evaluates and decides on:
 - **Inscription of elements on UNESCO ICH Lists**
 - **Granting of international assistance**

10. India's role in the ICH Committee

- India has served on the **Intergovernmental Committee for three terms**.

- Hosting the 20th session reflects India's **consistent engagement and credibility**.
- India plays an active role in advocating **community-centric and inclusive safeguarding models**.

11. Nodal agencies for the 20th session

- **Ministry of Culture (MoC), Government of India**
- **Sangeet Natak Akademi (SNA)**, an autonomous cultural body

These institutions are responsible for **coordination, cultural programming, and logistics**.

12. Key agendas of the 20th ICH session

By hosting this session, India aims to:

- Share its **national safeguarding model**, which combines:
 - Institutional support
 - Community participation
 - Documentation and inventories
- Promote **international cooperation** through:
 - Joint nominations
 - Capacity building
 - Knowledge exchange
- Increase **global visibility of Indian ICH**, including lesser-known traditions.
- Strengthen **youth engagement** and intergenerational transmission.
- Use the platform for **cultural diplomacy and soft power projection**.
- Link **heritage conservation with sustainable development and livelihoods**.

13. India's ICH elements on UNESCO's Representative List

- India has **15 elements inscribed on UNESCO's Representative List of ICH of Humanity**.

These include:

- Performing arts like **Kutiyattam, Chhau**.
- Rituals like **Ramlila, Ramman**.
- Knowledge systems like **Vedic chanting**.
- Mega cultural events like **Kumbh Mela**
- Contemporary elements like **Yoga, Garba, Durga Puja**.

14. Did you know?

- In **2025**, India has nominated:
 - **Chhath Mahaparva**
 - **Diwali**for inclusion in UNESCO's ICH List.

Conclusion

India hosting the **20th UNESCO ICH Committee session** is both **symbolic and strategic**. It highlights India's **civilisational depth, cultural diversity and community-driven heritage model**. The session strengthens global cooperation and sets a strong example for **inclusive safeguarding of living heritage**. Hosting this event reflects India's enduring commitment to preserving cultural traditions for present and future generations.

Deepavali Added to UNESCO's Intangible Cultural Heritage List



What happened?

- Deepavali (Diwali) has been officially added to **UNESCO's Intangible Cultural Heritage List**.
- The announcement was made at the **20th UNESCO Intergovernmental Committee meeting** held at the **Red Fort, New Delhi** (8–13 December 2025).
- With this, Deepavali becomes **India's 16th element** on the UNESCO list.
- This decision was made in the presence of delegates from **194 countries**, experts, and representatives of the UNESCO ICH network.

List of 16 UNESCO Intangible Cultural Heritage Elements from India (as of December 2025)

The following list includes the 15 elements previously inscribed, plus the latest addition of Deepavali:

1. **Vedic Chanting** (2008)
2. **Ramlila**, the traditional performance of the Ramayana (2008)
3. **Koodiyattam**, Sanskrit theatre, Kerala (2008)
4. **Ramman**, religious festival and ritual theatre of the Garhwal Himalayas, Uttarakhand (2009)
5. **Mudiyettu**, ritual theatre and dance drama of Kerala (2010)

6. **Kalbelia folk songs and dances of Rajasthan** (2010)
7. **Chhau Dance** (2010)
8. **Buddhist chanting of Ladakh**: Recitation of sacred Buddhist texts in the Trans-Himalayan region of Jammu and Kashmir (2012)
9. **Sankirtana**, ritual singing, drumming and dancing of Manipur (2013)
10. **Traditional brass and copper craft of utensil making** among the Thatheras of Jandiala Guru, Punjab (2014)
11. **Navruz** (shared multinational inscription, 2016)
12. **Yoga** (2016)
13. **Kumbh Mela** (2017)
14. **Durga Puja in Kolkata** (2021)
15. **Garba of Gujarat** (2023)
16. **Deepavali** (2025)

Why is this important?

Deepavali is not just a festival. It is a **living tradition**, passed from one generation to another. It joins the UNESCO list because it supports:

- **Social unity**
- **Shared cultural values**
- **Community participation**
- **Continuity of traditions**

PM Narendra Modi appreciated the decision and said that Deepavali represents the **soul of Indian civilisation**.

How does an element get on the list?

- Countries must prepare and submit a **nomination dossier**.
- Each country can send **only one nomination every two years**.
- India nominated **Deepavali** for the **2024–25 cycle**.

Background: UNESCO and Intangible Cultural Heritage

- UNESCO adopted the **2003 Convention on Intangible Cultural Heritage** in Paris.
 - This convention protects living traditions that are at risk due to:
 - Globalisation

- Social and economic changes
- Declining traditional skills
- Lack of documentation

Deepavali's inclusion shows global recognition of India's cultural strength.

What leaders said

Union Culture & Tourism Minister **Gajendra Singh Shekhawat** said:

- The honour belongs to every home that lights a diya.
- Deepavali's message of hope and harmony is universal.
- Recognition also brings **responsibility** to preserve the festival for the future.

The Ministry of Culture said the decision will help increase world awareness of India's cultural traditions.

About Deepavali – The Festival of Lights

When is it celebrated?

- On **Kartik Amavasya** (October–November).

Main idea

Deepavali celebrates:

- **Light defeating darkness**
- **Good winning over evil**
- **Prosperity, new beginnings, unity**

Why people love Deepavali

- It brings families and communities together.
- It spreads positivity, hope, and joy.
- It strengthens cultural bonds across regions and religions.

Popular Legends Linked to Deepavali

- Deepavali has many stories because India is diverse. Some famous ones:

1. Return of Lord Rama (*Ramayana*)

- Rama, Sita, and Lakshmana returned to Ayodhya after 14 years. People lit lamps to welcome them.

2. Return of the Pandavas (*Mahabharata*)

- The Pandavas returned from exile.

3. Krishna and Narakasura

- Celebrated as **Naraka Chaturdashi**, marking the defeat of the demon Narakasura.

4. Goddess Lakshmi's arrival

- People believe Lakshmi visits clean, well-lit homes.

5. Mahavira's Nirvana (*Jain tradition*)

- Lord Mahavira attained Nirvana at Pavapuri. Jains celebrate Deepavali as **Nirvana Day**.

6. Tripurasura and Lord Shiva

- Shiva destroyed the demon Tripurasura with a single arrow. Celebrated in some regions as **Dev Deepavali**.

7. King Bali's return (*Maharashtra*)

- Symbol of justice and generosity.

8. Kali Puja (*Bengal, Assam, Odisha*)

- People worship Goddess Kali.

9. Govardhan/Annakut

- Marks Krishna lifting Govardhan Hill.

How Deepavali Is Celebrated (Five Days)

1. Dhanteras

- Buying metal items or essentials for good luck.

2. Naraka Chaturdashi

- Rituals for removing negativity and welcoming light.

3. Deepavali / Lakshmi-Ganesha Puja

- Main day. Homes glow with lamps, rangoli, sweets and prayers.

4. Govardhan Puja / Padwa

- Visits, gift exchanges, family gatherings.

5. Bhai Dooj

- Celebration of the bond between brothers and sisters.

Deepavali's Social and Economic Importance

1. Supports livelihoods

Huge boost for:

- Potters
- Lantern makers
- Florists
- Sweet makers
- Decorators
- Textile workers
- Small businesses

Deepavali creates large seasonal employment.

2. Community welfare

Many groups organise:

- Food donation
- Charity events
- Visits to old-age homes
- Support for people with disabilities

3. Environment & health initiatives

- Promotion of **green crackers** (CSIR-NEERI).
- Cleanliness drives: *Swachh Diwali – Shubh Diwali*.
- Home and market cleaning supports good hygiene habits.

4. Contribution to SDGs

Deepavali links to Sustainable Development Goals by supporting:

- **Poverty reduction**
- **Gender equality** (crafts, participation)
- **Well-being**
- **Cultural education**

The Nomination Process: How Communities Were Involved

For the UNESCO nomination:

- Sangeet Natak Akademi formed an **expert committee** of scholars, artists, practitioners.
- Consultations were held across India — cities, villages, mountains, coasts.

- Communities involved:
 - Artisans
 - Farmers
 - Religious groups
 - Indigenous groups
 - Transgender communities
 - Diaspora groups

People shared their personal stories, memories, rituals, and cultural meanings of Deepavali.

This proved that Deepavali is a **true community-driven living tradition**.

Conclusion

Deepavali's inclusion in UNESCO's Intangible Cultural Heritage List is a proud moment for India. It honours: Millions who celebrate it each year, Artisans who keep traditions alive, Communities who pass down stories and ritual. This recognition shows that India's culture is **alive, vibrant, and shared with the world**. Deepavali now shines not only in homes—but also on a global cultural stage.



PERSONS IN NEWS

Name	Who / Position	Key Details
Bibha Chowdhuri 	Pioneer Indian physicist	A new biography has highlighted her neglected role in Indian physics. She was the first woman researcher at TIFR (1949), co-discovered mesons with D.M. Bose, and earned a PhD under Nobel laureate P.M.S. Blackett, but never received major national awards.
Rajinder Singh 	Science historian	Co-authored the biography that revived Bibha Chowdhuri's scientific legacy and gender-based exclusion.
Suprakash C. Roy 	Science writer	Co-author of the biography focusing on forgotten Indian scientists, especially women.
Biswabandhu Sen 	Speaker, Tripura Legislative Assembly	Passed away at 72 after a cerebral stroke. A veteran politician with five decades in public life; Tripura observed three days of state mourning.
K Shekhar 	Veteran art director	Died at 72; known for path-breaking visual effects in <i>My Dear Kuttichathan</i> (India's first 3D film). His work combined engineering with cinema long before CGI era.

<p>Aishi Prisha Borah</p> 	<p>Student innovator</p>	<p>Awarded PM Rashtriya Bal Puraskar for science & technology. Known for waste-to-wealth innovations like making pencils from old newspapers.</p>
<p>Esther Lalduhawmi Hnamte</p>  <p>ESTHER LALDUHAWMI HNAMTE AWARDEE PRADHAN MANDI RASHTRIYA BAL PURASKAR 2025</p>	<p>Child singing prodigy</p>	<p>Received PM Rashtriya Bal Puraskar 2025 (Art & Culture). Rose to fame after viral <i>Vande Mataram</i> rendition; praised by PM Modi.</p>
<p>Ashwini Kumar Tewari</p> 	<p>Managing Director, SBI</p>	<p>Re-appointed as SBI MD till December 31, 2027. A career banker, earlier MD & CEO of SBI Cards; oversees corporate banking.</p>
<p>Nicholas Hum</p> 	<p>Australian Paralympian</p>	<p>Passed away at 32. Bronze medallist in T20 long jump at Tokyo 2020; held Australian national record.</p>

Kavita Chand 	Indian mountaineer	Scaled Mount Vinson in Antarctica, moving closer to Seven Summits goal. Former media professional turned endurance athlete.
Vinesh Phogat 	Indian wrestler	Reversed retirement to aim for Olympic gold at LA 2028 after Paris 2024 disqualification and personal break.
Supriya Sahu 	IAS officer, Tamil Nadu	Named UN Champions of the Earth 2025. Recognized for Cool Roof Project, plastic bans, mangrove expansion, and Dugong conservation.
Dinesh Khatak 	CRPF officer	Awarded Union Home Minister's Efficiency Medal. Known for counter-insurgency roles in J&K and training commandos at CIAT.
Anant Ambani 	Founder, Vantara	Honoured with Global Humanitarian Award for Animal Welfare. Youngest and first Asian recipient for wildlife conservation work.



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