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**FOR UPSC EXAM**

**COMPREHENSIVE | ANALYTICAL  
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# **VIDHVATH VIMARSHA**



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# POLITY & CONSTITUTION

## 1. SHANTI Bill 2025: Reforming India's Nuclear Energy Landscape

**Context:** Parliament recently passed the Sustainable Harnessing and Advancement of Nuclear Energy in India (SHANTI) Bill, 2025. This landmark legislation marks the most significant overhaul of India's nuclear sector since the 1960s, ending the long-standing state monopoly and modernizing regulatory and liability frameworks to meet the ambitious goal of 100 GW nuclear capacity by 2047.

- **End of State Monopoly:** The Bill repeals the Atomic Energy Act, 1962, allowing private Indian companies and joint ventures to own, build, and operate nuclear power plants for the first time, ending the exclusive control of Nuclear Power Corporation of India Limited (NPCIL).
- **Private and Foreign Participation:** It permits up to 49% private/foreign equity in nuclear projects while maintaining 51% government control over strategic "fuel-cycle" activities such as enrichment, reprocessing, and radioactive waste management.
- **Empowered Regulator:** The Atomic Energy Regulatory Board (AERB) has been granted statutory status and is now directly answerable to Parliament. This enhances its independence and expands its mandate to oversee safety and licensing across both public and private installations.
- **Tiered Liability Framework:** Replacing the Civil Liability for Nuclear Damage Act, 2010, the Bill introduces capacity-linked liability caps: ₹3,000 crore for large plants (>3600 MW), ₹1,500 crore for medium plants, and ₹100 crore for Small Modular Reactors (SMRs), with the Union government covering damages exceeding these limits.
- **Support for SMRs and Clean Energy:** A dedicated fund of ₹20,000 crore has been allocated to accelerate the deployment of Small Modular Reactors (SMRs), which are factory-built, safer, and ideal for industrial decarbonization and providing stable baseload power.
- **Controversial Transparency Clauses:** Section 39 of the Bill overrides the RTI Act, 2005, by allowing the government to classify vast categories of nuclear information—including plant designs and safety data—as "restricted," a move heavily criticized by transparency advocates.



### Key Definitions

- **Baseload Power:** The minimum amount of electric power a utility must make available to its customers, which nuclear energy provides reliably 24x7, unlike intermittent solar or wind.
- **Small Modular Reactor (SMR):** Advanced nuclear reactors with a power capacity of up to 300 MW per unit, designed to be built in factories and transported to sites for quicker installation.
- **Right of Recourse:** The legal right of an operator to seek compensation from a supplier in the event of an accident caused by defective equipment; the SHANTI Bill narrows this to cases of explicit contract or intentional harm.
- **Nuclear Liability Fund:** A state-managed fund established under the Bill to meet compensation requirements in cases of severe nuclear incidents where damages exceed the operator's liability cap.



## Constitutional and Legal Provisions

- **Seventh Schedule (Union List):** Entry 6 gives the Union Parliament exclusive power over "Atomic Energy and mineral resources necessary for its production," providing the constitutional basis for the SHANTI Bill.
- **Article 21:** The Right to Life and a Clean Environment. Critics argue that capping liability and removing supplier accountability may dilute the protections guaranteed under this Article.
- **Section 39 (SHANTI Bill):** Provides an "overriding effect" over the RTI Act, 2005, for information deemed sensitive to national security or commercial secrecy in the nuclear sector.
- **Factories Act, 1948:** While Section 42 of the Bill modifies its application, the AERB remains responsible for enforcing industrial safety standards within nuclear facilities.

## Conclusion

The SHANTI Bill 2025 transitions India from a "state-monopoly" to a "regulated-participation" model. While it addresses the critical need for private capital and advanced technology (like SMRs) to meet net-zero targets by 2070, the dilution of supplier liability and the shielding of information from public scrutiny remain significant points of contention. The success of this reset will depend on the AERB's ability to maintain rigorous, independent safety oversight in an increasingly profit-driven landscape.

## 2. Digital Policing: The Rise of Social Media Monitoring Cells in India

**Context:** According to the latest "Data on Police Organisations" (DoPO) report by the Bureau of Police Research and Development (BPR&D), Indian states have significantly scaled up their digital surveillance infrastructure. Dedicated social media monitoring cells have increased by approximately 39% between 2020 and 2024 to tackle evolving cybercrime and maintain law and order.

- **Rapid Institutional Expansion:** The number of dedicated social media monitoring cells rose from 262 in 2020 to 365 in 2024. These units, which previously functioned under cybercrime stations, are now increasingly operated as distinct specialized entities.
- **Geographical Concentration:** Bihar (52), Maharashtra (50), and Punjab (48) lead the country in the number of monitoring cells. Notably, West Bengal and Assam saw explosive growth, with Assam moving from a single cell in 2022 to 37 by 2024.
- **Conflict-Zone Monitoring:** In Manipur, monitoring units increased from 3 to 16 between 2020 and 2024. This growth occurred despite prolonged internet shutdowns, highlighting the state's focus on tracking digital narratives that fuel ethnic violence.
- **Diversified Surveillance Infrastructure:** Beyond social media, police forces are adopting advanced hardware. The number of drones available to state police forces reached 1,147 in 2024, signaling a shift toward hybrid (physical and digital) surveillance.





- **Human Resource Deficit:** Despite the technical expansion, the Indian police force faces a chronic vacancy crisis. Against a sanctioned strength of 27.55 lakh personnel, nearly 5.93 lakh posts (approx. 21.5%) remain vacant, impacting the efficiency of ground policing.
- **Representational Statistics:** Out of the 27.55 lakh sanctioned posts, the actual working strength includes 3,30,621 SC (12%), 2,31,928 ST (8.4%), and 6,37,774 OBC (23.1%) personnel, reflecting the current socio-demographic composition of the forces.

### Key Definitions

- **Social Media Monitoring Cells:** Specialized police units tasked with scanning public platforms (X, Facebook, WhatsApp, etc.) to identify inflammatory content, fake news, and criminal coordination.
- **Cybercrime Police Stations:** Dedicated police facilities equipped with digital forensic tools to investigate crimes committed via the internet or computer networks.
- **Sanctioned vs. Actual Strength:** "Sanctioned strength" refers to the total number of personnel permitted by law, while "actual strength" is the number of personnel currently in service.

### Constitutional and Legal Provisions

- **Police (State List):** Under the Seventh Schedule (List II, Entry 2), "Police" and "Public Order" are state subjects, giving states the primary authority to set up monitoring cells.
- **Information Technology (IT) Act, 2000:** Section 69A empowers the government to issue directions for blocking public access to information, while Section 79 governs the liability of intermediaries (social media companies).
- **Right to Privacy (Article 21):** The Supreme Court's *Puttaswamy* judgment establishes privacy as a fundamental right. Monitoring must meet the three-fold test of legality, necessity, and proportionality.
- **Rule of Law and Free Speech:** Article 19(1)(a) protects freedom of expression, which can only be restricted on specific grounds like public order, security of the state, or incitement to an offense (Article 19(2)).

### Conclusion

The proliferation of social media monitoring cells underscores a structural shift in Indian policing from reactive to proactive digital surveillance. While these cells are vital for curbing fake news and communal incitement, the concurrent rise in police vacancies suggests that technology is being used to bridge the gap left by a shortage of personnel. For a robust security apparatus, India must balance the expansion of digital monitoring with systemic police reforms and a transparent legal framework that protects citizens' fundamental right to privacy.

## 3. The Right to Disconnect: A New Frontier for Indian Labour Rights

The rapid digitization of the workplace has effectively turned smartphones into 24/7 "taskmasters," blurring the lines between professional duties and personal time. To address the resulting burnout and mental health crisis, Shashi Tharoor (MP) has proposed the **Occupational Safety, Health and Working Conditions Code (Amendment) Bill, 2025**. This legislative push seeks to formalize the "Right to Disconnect," ensuring that employees are not forced to remain "always on" at the cost of their health and dignity.

- **Addressing Chronic Overwork:** India ranks as one of the most overworked nations globally. According to the International Labour Organization (ILO), 51% of the Indian workforce works more than 49 hours per week, far exceeding the global average.



- **The "Right to Disconnect" Defined:** The Bill proposes that employees should have the legal right to ignore work-related communication (emails, calls, messages) outside of designated working hours without fear of disciplinary action, demotion, or discrimination.
- **Bridging Legal Gaps:** Current laws, like the OSH Code 2020, primarily protect traditional "workers." The new Bill seeks to expand these protections to all "employees," including contractual, freelance, and gig workers who are most vulnerable to digital exploitation.
- **Economic & Health Imperative:** Research indicates that 78% of Indian employees experience burnout. By enshrining the right to recharge, the Bill aims to reduce lifestyle diseases (hypertension, diabetes) and mental health issues, which currently account for 10%-12% of India's healthcare burden.
- **Global Precedents:** India follows a growing international trend where countries like France (2017), Portugal, Italy, and Australia (2024) have already legislated the right to disconnect to preserve long-term economic productivity.
- **Proposed Institutional Mechanism:** The legislation suggests establishing an **Internal Workplace Wellbeing Body (IWWB)** and a national **Employees' Welfare Authority** to monitor compliance, conduct biannual sensitivity workshops, and resolve grievances.



### Key Definitions

- **Right to Disconnect:** The entitlement of an employee to disengage from work-related digital communication during non-working hours without facing professional repercussions.
- **Gig Worker:** A person who performs work or participates in a work arrangement and earns from such activities outside of a traditional employer-employee relationship.
- **Halo Orbit:** While related to the Aditya-L1 context, in a broader sense, it represents the "stable" equilibrium—much like the balance this Bill seeks to find between work and rest.

### Constitutional & Legal Provisions

- **Article 21:** The "Right to Life" encompasses the **Right to Health** and the **Right to Dignity**. Excessive work pressure that leads to physical or mental collapse is viewed as a violation of these fundamental rights.
- **Article 24 (UDHR):** India is a signatory to the Universal Declaration of Human Rights, which states that "Everyone has the right to rest and leisure, including reasonable limitation of working hours."
- **Article 42 (DPSP):** Directs the State to make provision for securing **just and humane conditions of work** and for maternity relief.
- **OSH Code, 2020:** The existing framework which the current Bill seeks to amend to include digital "disconnection" as a core component of occupational safety

### Conclusion

The Right to Disconnect is not an "anti-work" measure but a "pro-productivity" investment. For India to harness its demographic dividend, its workforce must be sustainable, not exhausted. While the law provides a necessary shield, the ultimate success of this reform will depend on a cultural shift within corporate India—moving away from "presenteeism" toward a value system that respects downtime as a prerequisite for innovation.



## 4. Judicial Governance in Environment: Mandamus, Management, and Stability

Over the last decade, the Supreme Court of India has shifted from reviewing the legality of administrative decisions to issuing "forward-looking" directives, often assuming a managerial role in environmental regulation. While prompted by regulatory failure, this "judicial governance" has created a cycle of sweeping rules followed by frequent modifications, raising concerns about policy stability and the separation of powers.

### Key Highlights of Judicial Environmental Management

- **Managerial Shift:** The Court has increasingly moved beyond mere judicial review to acting as a "super-regulator," issuing specific technical instructions (e.g., fuel standards, buffer zone limits) when executive bodies fail to act.
- **Continuing Mandamus:** Through the doctrine of **Continuing Mandamus**, the Court keeps cases open for years, issuing a series of interim orders and monitoring compliance through court-appointed committees.
- **The Stability Paradox:** Large-scale "blanket rules"—such as the **1km Eco-Sensitive Zone (ESZ)** mandate of 2022—often face implementation hurdles, leading the Court to issue "U-turns" or modifications (as seen in the April 2023 ESZ reversal).
- **Expertise vs. Discretion:** The Court relies heavily on expert committees (e.g., in the **Aravalli mining matter**) but often finds its own definitions contested, leading to further delays and legal uncertainty for regulated industries.
- **Smothering Statutory Process:** Early judicial intervention in project approvals can sometimes bypass established statutory authorities (like the MoEFCC), creating a sense of "finality" that discourages lower-level judicial review and public contestation.
- **Consequentialism in Rulings:** In the **Vanashakti vs Union of India (2025)** case, the Court initially struck down *ex post facto* (retrospective) environmental clearances but later recalled the position in November 2025 to prevent economic disruption, highlighting a shift from strict legal principles to "consequence-based" balancing.

### Constitutional and Legal Provisions

- **Article 32 & 226:** Grant the Supreme Court and High Courts power to issue writs, including **Mandamus**, to enforce fundamental rights.
- **Article 142:** Grants the Supreme Court the power to pass any decree or order necessary for doing "complete justice," often used as the basis for wide-reaching environmental directives.
- **Article 21:** The "Right to Life" has been judicially expanded to include the **Right to a Clean Environment** (*M.C. Mehta cases*).
- **Article 48A & 51A(g):** Directive Principles and Fundamental Duties that mandate the State and citizens to protect and improve the natural environment.
- **Environment (Protection) Act, 1986:** The primary statutory framework which the Court often steps in to enforce (or substitute) when the executive remains inactive.

### Key Definitions

- **Continuing Mandamus:** A procedural innovation where the Court does not deliver a final judgment but issues periodic directions and monitors implementation over a long period.



- **Eco-Sensitive Zones (ESZ):** Buffer areas around Protected Areas (National Parks/Sanctuaries) intended to act as "shock absorbers" to minimize human-wildlife conflict and environmental degradation.
- **Ex Post Facto Clearance:** An environmental clearance granted to a project after it has already commenced operations or construction, effectively regularizing a prior illegality.
- **Judicial Overreach:** When the judiciary encroaches upon the domain of the legislature or executive, often by making policy decisions or administrative rules.

### Conclusion

The Supreme Court's proactive stance has undoubtedly saved critical ecosystems from administrative apathy. However, the transition from "Reviewer" to "Approver" has introduced systemic instability. To restore balance, the Court must transition from *managing* the environment to *disciplining* the State's own regulatory machinery. Stability in environmental law requires strict, predictable rules rather than negotiable, court-managed exemptions.

## 5. Karnataka Land Revenue Amendment: Reforming Coorg's Jamma Bane System

The Karnataka government recently enacted the **Karnataka Land Revenue (Second Amendment) Act, 2025**, aimed at modernizing the archaic land tenure system in the Kodagu (Coorg) district. This reform addresses the complexities of the **Jamma Bane** system, ensuring that land records reflect contemporary ownership rather than just the names of original grantees from centuries ago.

### Key Highlights of the Jamma Bane Land Reform

- **Historical Context:** Jamma lands were hereditary grants made between 1600 and 1800 by the Rajas of Coorg and later the British to local communities, primarily the **Kodavas**, in exchange for military and security services.
- **Unique Tenure System:** Unlike standard land holdings, Jamma Bane includes both **wetlands (paddy fields)** and **highlands (Bane)**. Historically, the highlands were used for cattle grazing and forest produce to support cultivation in the wetlands, though many have now evolved into coffee estates.
- **The "Pattedar" Dilemma:** Records traditionally carried only the name of the **original grantee (Pattedar)**. Over generations, while families grew and land was divided, the official "Record of Rights" failed to reflect current individual owners, leading to hurdles in obtaining bank loans or executing land sales.
- **Legislative Correction:** The 2025 Amendment empowers **Tahsildars** to correct inconsistencies in the Record of Rights (RTC). It allows for the deletion of obsolete entries and the inclusion of current family members' names to align Kodagu's records with the rest of the state under the **Bhoomi Project** (digitization).
- **Statutory Basis:** The amendment specifically modifies **Section 127** of the Karnataka Land Revenue Act, 1964. It provides a legal mechanism to move beyond the 1899 colonial regulations that had persisted in the region despite newer state laws.
- **Administrative Process:** To ensure transparency and resolve local disputes, the government will conduct **"Revenue Adalats"** where Tahsildars will hear objections before finalising the modernized land records.



## Key Definitions

- **Jamma:** Derived from 'Janma', meaning hereditary or birthright; refers to lands held under a privileged tenure.
- **Bane:** Forested lands or highlands attached to a 'Jamma' holding, traditionally used for grazing and firewood, now largely used for coffee cultivation.
- **Pattedar:** The original head of the family or the individual in whose name the land grant was initially registered.
- **Mutation:** The process of changing the title ownership of a property in the local municipal or revenue records when the property is transferred.

## Constitutional & Legal Framework

Provision/Case	Significance
<b>Karnataka Land Revenue Act, 1964</b>	The principal legislation governing land administration in the state; the 2025 amendment brings Kodagu under its full procedural ambit.
<b>Chekkera Poovaiah vs State (1993)</b>	A landmark Karnataka High Court ruling that recognized the distinct ownership rights of the people of Kodagu over Jamma Bane lands.
<b>Art. 31A &amp; 31B (9th Schedule)</b>	Constitutional protections often related to land reform; however, this amendment focuses on <b>administrative accuracy</b> and <b>Record of Rights</b> rather than redistribution.
<b>Article 300A</b>	The constitutional right to property; the amendment facilitates this right by providing clear, marketable titles to current occupants.

## Conclusion

The transition from a colonial-era customary record system to a digitized, statutory framework marks a significant milestone for the Kodava community. By resolving the "Pattedar" legacy, the Karnataka government has cleared a major bottleneck for the local agrarian economy, allowing coffee planters and farmers to leverage their land assets for formal credit and legal security while preserving the historical essence of Jamma tenure.

## 6. Kuki-Zo Demand for Union Territory: Ethnic Crisis in Manipur

The Kuki-Zo Council (KZC) has formally reiterated its demand for a separate Union Territory (UT) with a legislature for the Kuki-Zo tribes under the Indian Constitution. This demand stems from the prolonged ethnic conflict in Manipur, where the council alleges a total breakdown of trust with the state administration, citing its inability or unwillingness to protect tribal interests during the violence that began in May 2023.

- **Separation of Administration:** The KZC argues that peaceful co-existence with the Meitei community is no longer viable, asserting that state machinery was "complicit" in atrocities, necessitating a distinct political identity and administrative setup directly under the Union government.
- **Casualties and Displacement:** According to the KZC memorandum, the conflict has resulted in over 250 Kuki-Zo deaths, the destruction of 7,000 houses, the desecration of 360 places of worship, and the displacement of approximately 40,000 people from the Imphal Valley.
- **The Buffer Zone Conflict:** A critical point of contention is the "buffer zones"—the narrow strips of land separating the Meitei-dominated valley from the Kuki-dominated hills. The KZC has warned against the resettlement of Meitei Internally Displaced Persons (IDPs) in these areas to prevent further escalation.



- **Allegations of State Failure:** The council highlights a "constitutional breakdown," claiming the state has failed to perform its basic duty of protecting life and property, thereby justifying the demand for a Union Territory under the "Separate Administration" slogan.
- **Geopolitical Sensitivity:** Manipur shares a porous border with Myanmar; the KZC emphasizes that resolving internal ethnic strife is essential for national security and the stability of India's "Act East" policy.

### Key Definitions

- **Buffer Zone:** In the context of the Manipur conflict, these are sensitive areas between the valley and the hills patrolled by Central Armed Police Forces (CAPF) to prevent armed groups from either side from crossing over.
- **Separate Administration:** A political demand by Kuki-Zo groups for a governance structure independent of the Manipur State government, ranging from an Autonomous District Council with enhanced powers to a full Union Territory.

### Constitutional and Legal Provisions

- **Article 3 of the Constitution:** Grants Parliament the power to form a new State or Union Territory, or increase/diminish the area of any State. This is the primary legal route for the KZC's demand.
- **Article 239A:** Provides for the creation of local Legislatures or Council of Ministers for certain Union Territories (like Puducherry), which the KZC is specifically seeking to ensure democratic representation.
- **Sixth Schedule:** Though currently not fully applicable to the hill areas of Manipur in the same way as in Meghalaya or Mizoram, it provides for Autonomous District Councils (ADCs) to protect tribal culture and land.
- **Article 371C:** A special provision for Manipur that mandates a "Hill Areas Committee" consisting of members elected from the hill areas to monitor the administration of those regions.

### Additional Keypoints

- **Asymmetric Federalism:** The demand highlights the challenges of Indian federalism in managing diverse ethnic aspirations within a single state boundary.
- **Internal Security:** The presence of various insurgent groups and the influx of refugees from Myanmar (due to the military coup there) adds a layer of complexity to the ethnic demographic debate in Manipur.
- **The Role of Central Forces:** Over 60,000 central personnel remain deployed in the state to maintain a fragile peace along the ethnic fault lines.

### Conclusion

The reiteration of the Union Territory demand by the Kuki-Zo Council signifies a hardening of ethnic identities and a deepening of the administrative chasm in Manipur. While the Union government seeks a mediated peace, the KZC insists that only a formal political separation can ensure the long-term security and developmental interests of the tribal population. This situation presents a significant challenge to India's internal security framework and its ability to balance competing sub-nationalist identities.



## 7. Passive Euthanasia and the Right to Die with Dignity: Supreme Court Deliberations

The Supreme Court of India is set to deliver a final order on a plea for passive euthanasia concerning a 31-year-old man, Harish Rana, who has been in a Permanent Vegetative State (PVS) for over 13 years. This case brings to the forefront the harrowing intersection of medical futility, the emotional burden on caregivers, and the legal framework governing the withdrawal of life support. Following the landmark Common Cause judgment (2018), the judiciary now balances the sanctity of life with the individual's right to be free from prolonged, meaningless suffering when medical recovery is deemed impossible by expert boards.

- **The Permanent Vegetative State (PVS):** Harish Rana has suffered 100% quadriplegic disability since 2013. Medical boards have confirmed that while he can be kept alive via tubes for years, there is "no sign or hope" of recovery or a normal life, rendering further medical intervention futile.
- **Parental Consent and Moral Responsibility:** The parents, citing their aging status and the son's lack of agency, have appealed for the withdrawal of life support. They argue that as his proxies, it is their moral duty to prevent his further suffering since he cannot speak for himself.
- **Expert Medical Consensus:** Both primary and secondary boards of doctors have recommended the discontinuation of treatment, suggesting that "nature should be allowed to take its own course," a key principle in legalizing passive euthanasia.
- **Judicial Direct Interaction:** In a notable procedural move, the Bench personally interacted with the family to assess the "pain in their hearts" and the sincerity of their appeal, ensuring that the decision is not made under duress or external pressure.
- **The Concept of Medical Futility:** The case highlights the legal shift where "prolonging life" is distinguished from "prolonging the process of dying," especially when treatment offers no qualitative improvement to the patient.
- **Procedural Safeguards:** The involvement of the Additional Solicitor-General and multiple medical boards underscores the rigorous "double-check" mechanism mandated by the Supreme Court to prevent potential misuse of euthanasia laws.



### Key Definitions

- **Passive Euthanasia:** The act of withdrawing or withholding life-sustaining medical treatment (like ventilators or feeding tubes) to allow a terminally ill patient to die naturally.
- **Active Euthanasia:** The intentional act of causing the death of a patient by administering lethal substances (Illegal in India).
- **Permanent Vegetative State (PVS):** A condition where a patient is awake but shows no signs of awareness of themselves or their environment, often requiring artificial nutrition and hydration to survive.
- **Living Will (Advance Medical Directive):** A legal document in which a person specifies what actions should be taken for their health if they are no longer able to make decisions for themselves due to illness or incapacity.



## Constitutional and Legal Provisions

- **Article 21: The Right to Life.** In the **Common Cause vs. Union of India (2018)** case, the Supreme Court ruled that the "Right to Life" includes the "Right to Die with Dignity," providing the legal bedrock for passive euthanasia.
- **Aruna Shanbaug Case (2011):** The starting point where the SC first allowed passive euthanasia under "exceptional circumstances" and laid down strict guidelines for the High Courts to follow.
- **2023 Amendment to Guidelines:** The SC simplified the 2018 guidelines, removing the necessity of a Judicial Magistrate's presence and allowing a "Primary Medical Board" and a "Secondary Medical Board" (constituted by the hospital) to certify the condition.
- **Doctrine of Parens Patriae:** The legal doctrine where the court acts as the "ultimate guardian" of those who cannot care for themselves, used by the judiciary to decide in the "best interest" of the patient.

## Additional Keypoints

- **Caregiver Burden:** The aging parents' concern about "who will care for him after us" highlights the socio-economic reality of long-term disability care in India and its impact on the decision for euthanasia.
- **Nature taking its course:** The transition from "treatment" to "palliative care" or "nature's course" is a crucial distinction that differentiates legal passive euthanasia from criminal homicide.
- **The Role of the State:** The Centre's support for the medical boards' findings indicates an evolving administrative stance toward end-of-life care and the reduction of judicial delays in such sensitive matters.

## Conclusion

The Harish Rana case serves as a poignant reminder that the law must remain compassionate and evolving. While the sanctity of life is paramount, the judiciary recognizes that forcing a person to exist in a state of 100% disability without consciousness, solely through artificial means, may infringe upon the dignity of the individual. By following the established protocols of medical board consensus and family consent, the Supreme Court aims to provide a "dignified exit" while maintaining safeguards against the devaluation of human life.

## 8. Supreme Court Split Verdict: Section 17A of the PC Act

The Supreme Court recently delivered a split verdict on the constitutional validity of **Section 17A of the Prevention of Corruption (PC) Act, 1988** (inserted via the 2018 Amendment). Because the two-judge bench disagreed, the matter has been referred to the Chief Justice of India (CJI) to be heard by a larger bench.

### 1. Understanding Section 17A

- **The Mandate:** No police officer can conduct an "enquiry, inquiry, or investigation" into a public servant's official decisions without prior approval from the competent government authority.
- **The Timeline:** Authorities must decide on sanction requests within **three months** (extendable by one month).
- **The Intent:** To protect honest officials from frivolous or malicious prosecution for bona fide policy decisions.



## 2. The Judicial Divide: Justice Nagarathna vs. Justice Viswanathan

Feature	Justice B.V. Nagarathna (Dissent)	Justice K.V. Viswanathan (Defense)
Verdict	Unconstitutional	Constitutional / Valid
Core Argument	It acts as a "shroud" for corrupt officials and violates <b>Article 14</b> .	It acts as a "shield" for honest officials against "policy paralysis."
Precedent	Viewed it as a resurrection of <b>Section 6A (DSPE Act)</b> , which was struck down in 2014.	Warned against "throwing the baby out with the bathwater."
Philosophy	Honest officers do not need statutory insulation; the law should not create barriers to justice.	Disrepute in the age of social media is "worse than death" for an official's career.
Recommendation	Total strike-down of the provision.	Shift sanctioning power to independent bodies (Lokpal/Lokayukta) to avoid executive bias.

### 3. Key Legal & Constitutional Context

- **Article 14 (Equality before Law):** The central debate is whether Section 17A creates an "arbitrary classification" by giving public servants a protection not available to ordinary citizens.
- **Section 6A of the DSPE Act:** A predecessor to Section 17A that required prior sanction for officers of Joint Secretary rank and above. It was struck down in the *Subramanian Swamy case (2014)* for being discriminatory.
- **Vineet Narain Judgment (1997):** A landmark ruling that sought to insulate investigative agencies (like the CBI) from executive interference.

### 4. Critical Concepts

- **Policy Paralysis:** A state where administrators stop making decisions or taking risks due to the fear of being investigated years later for a "bad outcome," even if the intent was honest.
- **Mala Fide Prosecution:** Legal action initiated with "bad faith" or malicious intent to harass an official.
- **Puisne Judge:** A term referring to any judge of the court other than the Chief Justice.



### 5. Conclusion & Way Forward

The split verdict highlights the "shield vs. shroud" dilemma. While the protection prevents the weaponization of law, it also risks delaying justice in genuine corruption cases. The larger bench will now determine if the executive should hold the "keys" to an investigation or if that power should reside with an independent ombudsman like the Lokpal.



# ECONOMY

## 1. Indian Economy: GST Collections Hit ₹1.75 Trillion in December 2025

India's gross Goods and Services Tax (GST) collections reached ₹1.75 trillion in December 2025, recording a 6.1% year-on-year growth. This performance is particularly significant as it follows a major rate rationalization exercise in late 2024. The data highlights a robust surge in import-linked revenues and a steady, albeit maturing, domestic consumption base, providing a stable fiscal foundation for the final quarter of the financial year.

### Key Highlights of December 2025 GST Collections

- **Revenue Growth:** Gross GST collections rose to ₹1.75 trillion from ₹1.64 trillion in December 2024. After accounting for ₹28,980 crore in refunds (a 31% increase), net GST revenue stood at ₹1.46 trillion, reflecting a 2.2% annual growth.
- **Import-Driven Momentum:** Integrated GST (IGST) on imports grew by nearly 20% to ₹51,977 crore. This suggests resilient supply chains and significant manufacturing activity, as a substantial portion of these imports typically feeds into export-oriented production.
- **Impact of Rate Rationalization:** Despite the sweeping GST rate cuts implemented on September 22, 2025 (affecting nearly 375 items), the 6.1% growth indicates that increased transaction volumes and improved compliance are effectively counterbalancing lower tax rates.
- **Cess Phase-Out:** Compensation cess collections fell sharply to ₹4,238 crore (down from ₹12,003 crore last year). The levy is currently restricted to tobacco and related products as the transition period for state revenue compensation concludes.
- **Cumulative Performance:** For the April-December FY26 period, gross collections reached ₹16.5 trillion, registering an 8.6% annual growth, which keeps the government's fiscal targets within reach.
- **Regional Disparities:** Large industrial states like Maharashtra (15%), Gujarat (12%), and Haryana (16%) continued to drive growth, while some regions in the North saw contractions, highlighting the uneven nature of the post-reform recovery.



### Essential Concepts and Definitions

- **Integrated GST (IGST):** A tax levied on all inter-state supplies of goods and services and on imports into India. It ensures that imports are taxed at the same level as domestic products.
- **Compensation Cess:** An additional levy on demerit and luxury goods intended to compensate states for revenue losses during the first five years of GST implementation (extended until March 2026 to repay pandemic-era loans).
- **Net GST Revenue:** The actual amount available to the government after subtracting tax refunds from the gross collections.
- **Basic Customs Duty (BCD):** A tariff levied on imports over and above IGST, providing a protectionist barrier for local domestic products.



## Constitutional and Legal Provisions

- **Article 279A:** Empowered the President to constitute the GST Council, which is the apex decision-making body for GST rates, exemptions, and administrative rules.
- **GST Compensation Act, 2017:** Provides the legal framework for the levy of cess to compensate states. The recent decision to restrict this to "sin goods" follows the discharge of most back-to-back loan obligations.
- **Central Excise (Amendment) Act, 2025:** Recently passed to adjust excise duties on tobacco to ensure tax incidence remains stable as the compensation cess is phased out by February 2026.
- **101st Constitutional Amendment Act:** The foundational law that introduced the GST regime in India, subsuming various central and state indirect taxes.

## Conclusion

The December 2025 GST figures underscore the "Laffer Curve" effect, where lower tax rates have spurred higher consumption and better reporting, preventing a revenue collapse. While the reliance on import-related IGST remains high, the steady performance of domestic collections post-rationalization signals that the Indian indirect tax system is reaching a state of maturity. This fiscal resilience provides the government with the necessary space for social spending and infrastructure development in the upcoming Union Budget.

## 2. Unified Payments Interface (UPI): Evolution and Strategic Growth in 2025-26

The Unified Payments Interface (UPI) has set unprecedented benchmarks in 2025, solidifying its position as the primary architecture of India's digital economy. As the platform transitions into 2026, the focus is shifting from simple transaction volume to sophisticated user-centric features, improved transparency against manipulative digital practices, and deeper penetration into rural markets.

### Key Highlights of UPI's Performance and Innovations

- **Record-Breaking Metrics:** In 2025, UPI processed an astounding 228 billion transactions worth ₹300 trillion, representing a 33% year-on-year increase in volume and a 21% rise in value.
- **Peak Monthly Activity:** December 2025 marked a historic high with 21.6 billion transactions valued at ₹30 trillion, averaging nearly 698 million transactions daily.
- **Combatting "Dark Patterns":** To protect consumer autonomy, NPCI launched a central mandate-management portal to help users identify and cancel deceptive recurring payment traps often hidden by e-commerce platforms.
- **Strengthening AutoPay:** The new 2025 guidelines require all UPI members to implement a dedicated portal by December 31, enhancing transparency for subscriptions, utilities, and SIPs.
- **Technological Frontiers:** 2026 is projected to be the year of "Intelligent Payments," integrating AI-driven intent recognition, biometric authentication, and vernacular conversational interfaces to reach the "last mile" in Tier-III towns.
- **Cross-Border Expansion:** Beyond domestic growth, UPI is evolving into a tool for intelligent cross-border flows, moving from reactive transactions to intent-based international remittances.





## Essential Concepts and Definitions

- **Unified Payments Interface (UPI):** A real-time payment system developed by NPCI that facilitates inter-bank peer-to-peer (P2P) and person-to-merchant (P2M) transactions via mobile devices.
- **Dark Patterns:** Deceptive user interface (UI) designs used by digital platforms to trick users into taking actions they did not intend, such as signing up for recurring subscriptions without clear consent.
- **Mandate Management:** A system that allows a user to authorize a merchant to debit a specified amount from their bank account at regular intervals (e.g., monthly OTT fees or insurance premiums).
- **Agentic Payments:** An emerging concept where AI agents or bots perform financial transactions on behalf of a user based on pre-defined preferences and intent.

## Constitutional and Legal Provisions

- **Payment and Settlement Systems Act, 2007:** The primary legal framework that empowers the Reserve Bank of India (RBI) to regulate and supervise all payment systems in the country, including those operated by NPCI.
- **Consumer Protection (E-Commerce) Rules, 2020:** These rules, along with recent CCPA advisories, provide the legal basis for penalizing platforms that employ "dark patterns" to mislead consumers.
- **Digital Personal Data Protection (DPDP) Act, 2023:** Regulates how payment apps process user data, ensuring that consent for transactions and mandates is "free, specific, informed, and unambiguous."
- **Article 21 (Right to Privacy):** The Supreme Court's interpretation of privacy as a fundamental right underpins the regulatory move toward giving users more control over their digital mandates and financial data.

## Conclusion

The 2025 data confirms that UPI is no longer just a "fast" payment tool but has become a structural pillar of the Indian household economy. The government's focus on eliminating "dark patterns" and enhancing user control over AutoPay mandates indicates a shift toward a more ethical digital ecosystem. As the platform embraces AI and biometric security in 2026, it is poised to bridge the remaining digital divide, ensuring that financial inclusion reaches the "Bharat" beyond metropolitan hubs.

## 3. Stability in Land Acquisition Policy and the PRAGATI Framework

In a significant policy clarification, Cabinet Secretary T.V. Somanathan announced that the Union Government has no intention to alter the existing land acquisition framework, despite it being a primary bottleneck in infrastructure development. Speaking after the 50th PRAGATI meeting, the government highlighted that while land-related hurdles account for over a third of project delays, the focus will remain on administrative resolution and inter-ministerial coordination rather than legislative overhauls.

### Key Summary Points

- **Policy Continuity:** The Centre has officially ruled out amendments to the current land acquisition laws, opting instead to strengthen implementation through existing institutional mechanisms.





- **PRAGATI's Milestone:** The Pro-Active Governance and Timely Implementation (PRAGATI) platform has completed 50 sessions, reviewing 3,300 projects with a cumulative valuation of ₹85 lakh crore.
- **Bottleneck Analysis:** Data reveals that 35% of project implementation issues are tied to land acquisition, followed by 20% related to forest and environmental clearances, and 18% concerning Right of Way (RoW) permissions.
- **Cooperative Federalism:** The framework has successfully resolved over 7,100 issues by fostering direct communication between the Prime Minister, Union Secretaries, and State Chief Secretaries.
- **Legacy Project Resolution:** The monitoring system has been instrumental in completing long-stalled projects, some dating back to the 1990s, by escalating "bottleneck" issues to the highest executive level.
- **Multi-Level Coordination:** The escalation matrix ensures that simple issues are handled at the Ministry level, while complex, inter-state, or inter-departmental conflicts are resolved at the PRAGATI table.

### Definitions of Key Terms

- **PRAGATI:** Launched in 2015, it is a multi-purpose and multi-modal platform aimed at addressing common man's grievances and monitoring important programs and projects.
- **Right of Way (RoW):** The legal right, established by usage or grant, to pass along a specific route through grounds or property belonging to another (critical for pipelines, railways, and highways).
- **Land Acquisition:** The process by which the government forcibly acquires private land for public purposes, such as infrastructure or industrialization, subject to compensation.
- **Escalation Framework:** A structured process for bypassing lower-level management to involve senior leadership when a problem cannot be resolved at the initial stage.

### Constitutional and Legal Provisions

- **Article 300A:** Inserted by the 44th Amendment (1978), it states that "no person shall be deprived of his property save by authority of law." While no longer a Fundamental Right, property remains a high-tier Constitutional Right.
- **RFCTLARR Act, 2013:** The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act is the current primary law. It mandates Social Impact Assessment (SIA) and consent clauses (70% for PPP, 80% for private projects).
- **Seventh Schedule:** "Land" is a State Subject (Entry 18, List II), but "Acquisition and Requisitioning of Property" is in the Concurrent List (Entry 42, List III), allowing both Centre and States to legislate.
- **Doctrine of Eminent Domain:** The inherent power of the State to seize private property for public use, provided just compensation is paid.

### Important Keypoints for Analysis

- **Efficiency over Amendment:** The decision not to change the policy suggests a strategic choice to avoid the political sensitivity of the 2013 Act, focusing instead on "procedural efficiency."



- **Impact on PM Gati Shakti:** The resolution of land issues is vital for the success of the PM Gati Shakti National Master Plan, which aims for integrated multi-modal connectivity.
- **Financial Savings:** Timely resolution of 7,156 issues has prevented massive cost overruns in projects worth ₹85 lakh crore, protecting the fiscal health of the exchequer.
- **Responsive Bureaucracy:** The Cabinet Secretary noted that Chief Secretaries across states, regardless of political affiliation, have been responsive, showcasing a rare alignment in development politics.

### Conclusion

The government's stance reflects a shift from seeking legislative ease to achieving administrative mastery. By utilizing the PRAGATI platform as a "problem-solving" engine, the Centre is managing the friction between rapid infrastructure needs and complex land rights. While land acquisition remains the "Achilles' heel" of Indian infrastructure, the high resolution rate of issues indicates that high-level political monitoring can compensate for a stringent legal regime.

## 4. Export Promotion Mission: Financing the Future of MSME Exports

The Government of India has operationalized two landmark credit-linked components under the newly formed **Export Promotion Mission (EPM)**, aimed at mitigating the dual challenges of high interest rates and collateral requirements for MSME exporters. With a combined outlay of ₹5,181 crore, these schemes under the **Niryat Protsahan** category seek to reduce the cost of trade finance and provide credit guarantees. By integrating MSMEs into global value chains through a unified digital framework, the government aims to buffer Indian exports against global headwinds and shifting tariff regimes, ensuring that "Made in India" remains competitive in international markets.

### Key Summary Points

- **Institutional Shift to EPM:** The Export Promotion Mission (EPM) replaces fragmented initiatives with a single, outcome-based framework. Three of the 11 planned components are now live, following the recent rollout of the Market Access Scheme.
- **Interest Subvention Framework:** The "Interest Subvention for Pre- and Post-Shipment Export Credit" provides a base subsidy of 2.75% for MSMEs. This is benchmarked against the Repo rate and comparable global economies to ensure flexible, market-linked support.
- **Collateral Guarantee Support:** Implemented via the CGTMSE, this scheme provides up to 85% guarantee cover for Micro and Small exporters and 65% for Medium exporters, enabling collateral-free working capital of up to ₹10 crore per firm.
- **Targeted "Positive List":** Incentives are restricted to a data-driven list of 75% of India's tariff lines, prioritizing labour-intensive and capital-intensive sectors while including strategic exports like Defence and SCOMET products.
- **Fiscal Prudence & Transparency:** Total budgetary support for these two components is ₹7,295 crore (including ₹2,114 crore for collateral support) over six years (2025-2031), with an annual benefit cap of ₹50 lakh per exporter to ensure wide distribution.
- **Digital-First Implementation:** The DGFT and RBI will implement these via a digital platform, where exporters generate a Unique Identification Number (UIN) to link with banks, ensuring a faceless and transparent disbursement process.



### Key Definitions for UPSC

- **Pre-shipment Credit:** Also known as 'Packing Credit,' it is the finance provided to an exporter for purchasing, processing, or packing goods prior to their shipment.
- **Post-shipment Credit:** Finance provided to an exporter from the date of extending credit after shipment of goods to the date of realization of export proceeds.
- **Interest Subvention:** A form of government subsidy where the state pays a portion of the interest on a loan, thereby reducing the effective interest rate for the borrower.
- **SCOMET:** An acronym for Special Chemicals, Organisms, Materials, Equipment and Technologies; these are dual-use items (civilian and military) whose export is regulated by the DGFT.

### Constitutional and Legal Provisions

- **Article 246 (Seventh Schedule):** Trade and commerce with foreign countries and import/export across customs frontiers fall under the **Union List (Entry 41)**.
- **Foreign Trade (Development and Regulation) Act, 1992:** The parent legislation that empowers the Central Government to formulate and implement the Foreign Trade Policy (FTP).
- **FTP 2023 Guidelines:** The new schemes are notified under Paragraph 1.07A of the FTP 2023, which allows for pilot implementation and stakeholder consultation to refine trade frameworks.
- **Directive Principles (Article 39):** The mission aligns with the state's duty to ensure that the ownership and control of material resources are distributed to best subserve the common good, particularly by supporting small-scale industries.

### Important Keypoints for Analysis

- **Repo-Linked Floating Rates:** Unlike previous fixed-rate schemes (which gave a flat 3% subsidy), the new 2026 subvention is floating. If the RBI Repo rate drops, the subsidy also adjusts, ensuring fiscal sustainability for the exchequer.
- **MSME Liquidity Crisis:** Currently, MSMEs borrow at 9.5%-12.5%. The 2.75% subvention combined with 85% credit guarantee significantly lowers the "risk premium" charged by banks, freeing up liquidity for growth.
- **Strategic Sector Inclusion:** The inclusion of SCOMET and Defence items indicates a pivot toward high-value, strategic exports, moving beyond traditional labour-intensive sectors like textiles and leather.
- **Global Headwinds:** The mission is a proactive response to rising protectionism (e.g., US tariffs) and global supply chain disruptions, aimed at diversifying India's export destinations through "additional incentives" for emerging markets.

### Conclusion

The operationalization of the Export Promotion Mission's credit-linked plans marks a transition from "subsidy-based" to "infrastructure-based" export support. By reducing the "cost of doing business" through cheaper finance and reduced collateral barriers, India is empowering its MSME sector—the backbone of its industrial economy—to compete on quality and price. For the mission to achieve its goal of "Viksit Bharat," the successful integration of these financial tools with digital ease-of-doing-business will be the ultimate litmus test.



## 5. Gig Economy and Labour Rights: Challenges to Unionization

**Context:** Recent strikes by gig workers on New Year's Eve have reignited the debate over the legal status of platform-based labor in India. While aggregators highlight the flexibility and value of gig work, workers' unions demand formal recognition and better social security, exposing a significant gap between traditional labor laws and the modern platform economy.

- **Legal Status of Gig Unions:** Under the Trade Unions Act, 1926, registration requires a formal employer-employee relationship; however, the fluid nature of gig work—where workers often operate across multiple platforms like Zomato, Swiggy, and Uber—complicates this traditional classification.
- **Transition from Informal to Gig Sector:** Historical precedents, such as the Mathadi (headloaders) boards in the 1970s and the Building and Other Construction Workers Act (1996), show that India has previously successfully unionized informal workers without permanent contracts.
- **The Code on Social Security (2020):** This code provides the first federal definition of a gig worker, mandating minimum work thresholds (90 days with one aggregator or 120 days across multiple) to qualify for social security benefits, though it stops short of granting full "employee" status.
- **State-Level Legislative Pioneers:** States like Rajasthan and Telangana have introduced dedicated legislation to establish welfare boards and funds for gig workers, providing a template for recognizing representative bodies and ensuring financial safety nets.
- **Protection and Privileges:** Registered trade unions enjoy immunity from certain civil and criminal suits during collective bargaining; gig workers' groups, often being unregistered or merely affiliated, lack these statutory protections, making their strikes legally vulnerable.
- **Bargaining Power vs. Platform Algorithms:** As the gig workforce grows, the perceived marginalization by platform algorithms has strengthened the resolve of these unions, shifting the discourse from mere "flexibility" to a demand for dignity and institutionalized grievance redressal.



### Key Definitions

- **Gig Worker:** A person who performs work or participates in a work arrangement and earns from such activities outside of a traditional employer-employee relationship.
- **Aggregator:** A digital intermediary or marketplace for a buyer or user of a service to connect with the seller or the service provider.
- **Collective Bargaining:** The process of negotiation between employers and a group of employees aimed at agreements to regulate working salaries, working conditions, and other aspects of workers' compensation.

### Constitutional and Legal Provisions

- **Article 19(1)(c):** Guarantees the fundamental right to all citizens to form associations or unions.
- **Article 43A (DPSP):** Directs the State to take steps to secure the participation of workers in the management of undertakings.



- **Trade Unions Act, 1926:** Provides the mechanism for registration and protection of unions, but currently centers on the "workman" definition which gig workers struggle to satisfy.
- **Code on Social Security, 2020:** Clauses 1(35) and 2(35) define "gig work" and "platform work," creating a legal basis for welfare schemes and the "Social Security Fund."

### UPSC Relevance

- **GS Paper II:** Statutory, regulatory, and various quasi-judicial bodies; Welfare schemes for vulnerable sections of the population.
- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development, and employment; Changes in industrial policy and their effects on industrial growth.
- **Key Themes:** Labour Law Reforms, Gig Economy vs. Traditional Employment, Social Security for the Informal Sector, and Digital Economy Governance.

### Conclusion

The rise of gig worker unions represents a critical evolution in India's industrial relations. While the current legal framework is rooted in the 20th-century industrial model, the move toward specialized state laws and the federal Social Security Code suggests a transition toward recognizing the unique needs of platform labor. Ensuring that "flexibility" does not translate into "exploitation" will be the primary challenge for future labor policy and judicial interpretation.

## 6. Decline in India's ATM Network: Trends and Structural Shifts

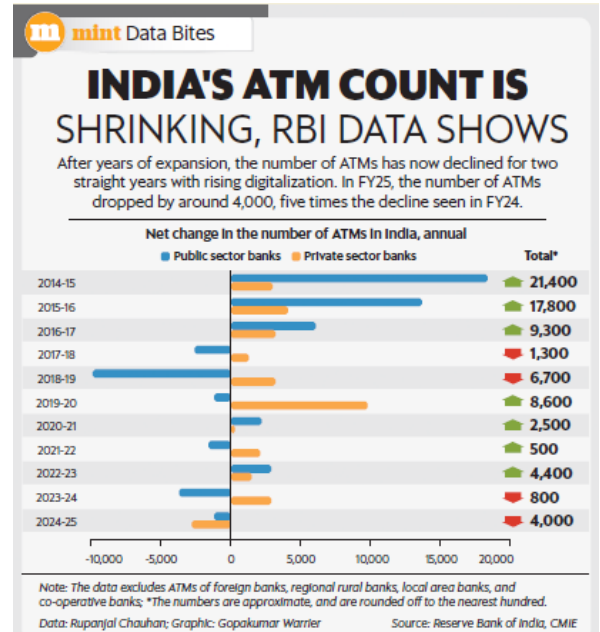
**Context:** Recent data from the Reserve Bank of India (RBI) for FY25 reveals a significant contraction in India's ATM network. After years of expansion, the number of ATMs has declined for two consecutive years, with approximately 4,000 machines removed in the last fiscal year alone. This shift highlights the deep penetration of digital payments and a strategic pivot in the banking sector's operational model.

- **Digital Transformation Over Physical Infrastructure:** The rapid adoption of the Unified Payments Interface (UPI) and mobile banking has fundamentally reduced the frequency of cash withdrawals, rendering many off-site ATMs underutilized and economically unviable.
- **Consolidation of Banking Networks:** Public Sector Bank (PSB) mergers and the rationalization of private sector branch networks have led to the removal of overlapping ATM units, with banks now preferring a "hub and spoke" model focused on branch-integrated machines.
- **High Operational and Compliance Costs:** Increased regulatory requirements for ATM security (e.g., cassette swap mandates) and stagnant "interchange fees"—the fee one bank pays another for its customer's transaction—have squeezed the profit margins for ATM operators.
- **Urban-Rural Divergence:** While private and foreign banks are aggressively cutting urban off-site ATMs where digital literacy is highest, public sector banks and "White Label ATM" (WLA) operators are filling the gap in rural and semi-urban areas to support financial inclusion.
- **Resilience of Cash in the Informal Economy:** Despite the shrinking ATM count, Currency in Circulation (CiC) continues to rise, indicating that cash remains a critical store of value and a medium for high-value or informal transactions, even as routine payments turn digital.
- **Rise of White Label ATMs (WLAs):** Unlike traditional bank-owned ATMs, WLAs (operated by non-banking entities) are seeing growth, particularly in "ATM deserts," suggesting a shift from bank-led to third-party-led cash infrastructure.



## Key Definitions

- **Off-site ATM:** An ATM located at a place other than the bank's physical branch premises, such as shopping malls, airports, or railway stations.
- **White Label ATM (WLA):** ATMs set up, owned, and operated by non-bank entities authorized under the Payment and Settlement Systems Act, 2007.
- **Interchange Fee:** A transaction fee paid by the card-issuing bank to the bank (or operator) whose ATM was used by the customer.
- **Currency in Circulation (CiC):** The total value of physical currency (notes and coins) that has been issued by the RBI and is held by the public and in bank vaults.



## Constitutional and Legal Provisions

- **Payment and Settlement Systems Act, 2007:** The primary legal framework under which the RBI regulates payment systems, including the authorization of WLA operators.
- **RBI Act, 1934:** Grants the RBI the sole right to issue banknotes and manage the currency system (Section 22), providing the basis for ATM cash management.
- **Banking Regulation Act, 1949:** Empowers the RBI to oversee the branch and ATM expansion strategies of scheduled commercial banks.
- **National Strategy for Financial Inclusion (2019-2024):** A policy roadmap that balances the growth of digital payments with the need for physical touchpoints in underserved areas.

## UPSC Relevance

- **GS Paper III:** Indian Economy and issues relating to mobilization of resources, growth, development, and employment; Effects of liberalization on the economy; Changes in industrial policy.
- **Key Themes:** Financial Inclusion (Jan Dhan Yojana), the Digital India mission, the transition to a "less-cash" economy, and the evolution of the Payment and Settlement Systems.
- **Economic Geography:** The rural-urban divide in financial infrastructure and its impact on equitable growth.

## Conclusion

The shrinking ATM count is not a sign of financial regression but rather a symptom of a structural shift in India's payment landscape. As UPI becomes the primary tool for retail transactions, the role of the ATM is evolving from a daily necessity to a specialized service point for cash-heavy sectors and rural populations. For policymakers, the challenge lies in ensuring that this "digital-first" approach does not leave behind the digitally illiterate or those in remote regions where cash remains the primary lifeline.



## 7. RBI Monetary Policy Framework: Retaining the 4% Inflation Target

**Context:** As of January 2026, the Government of India is poised to retain the existing 4% inflation target for the Reserve Bank of India (RBI) for the upcoming five-year cycle (2026–2031). This decision, expected to be formalized in March 2026, reinforces the effectiveness of the Flexible Inflation Targeting (FIT) framework in anchoring price expectations and maintaining macroeconomic stability despite global supply-side shocks.

- **Stability and Continuity:** The retention of the 4% target (with a +/-2% tolerance band) reflects the government's confidence in the 2016 framework. By maintaining the mid-point at 4%, the RBI ensures policy credibility and avoids "creeping inflation" that could arise from raising the target.
- **Effective Price Anchoring:** Since the adoption of FIT, average inflation has moderated significantly compared to the pre-2016 era. Even during the volatile 2024–2025 period, the framework helped the Monetary Policy Committee (MPC) navigate through geopolitical uncertainties and food price fluctuations.
- **The Growth-Inflation Balance:** An inflation rate of 4% is considered the "inflection point" for India; levels significantly higher tend to hurt long-term growth by eroding purchasing power, while levels below 2% risk deflationary pressures and reduced producer incentives.
- **Headline vs. Core Inflation:** Despite debates about focusing solely on "Core Inflation" (excluding food and fuel), the RBI continues to target "Headline CPI" because food constitutes nearly 46% of the Indian consumer basket and persistent food inflation eventually spills over into wages and services.
- **MPC Autonomy and Accountability:** The framework provides operational independence to the MPC to set the repo rate. However, a failure to stay within the 2–6% band for three consecutive quarters mandates the RBI to issue an "open letter" to the government explaining the failure and remedial steps.
- **Global Signaling:** In an era of global economic shifts, sticking to the 4% target signals to international investors that India remains committed to a rule-based, transparent monetary policy, supporting the stability of the Rupee and domestic bond yields.



### Key Definitions

- **Flexible Inflation Targeting (FIT):** A monetary policy strategy where the central bank has a specific target for inflation but also considers the objective of economic growth.
- **Headline CPI:** The total inflation measure based on the Consumer Price Index, including volatile components like food and fuel.
- **Monetary Policy Committee (MPC):** A six-member statutory committee (3 from RBI, 3 nominated by the Government) responsible for fixing the benchmark interest rate (repo rate).
- **Tolerance Band:** The permissible deviation from the target. In India, it is 4% +/-2%, meaning a range of 2% to 6%.

### Constitutional and Legal Provisions

- **Reserve Bank of India Act, 1934:** Specifically amended via the **Finance Act, 2016**, to provide a statutory basis for the FIT framework (Sections 45ZA to 45ZN).



- **Section 45ZA:** Empowers the Central Government, in consultation with the RBI, to determine the inflation target once every five years.
- **Section 45ZN:** Outlines the "Failure to maintain inflation target" clause, requiring a report to the government if the target is breached for three consecutive quarters.
- **Fiscal Responsibility and Budget Management (FRBM) Act:** While primarily for fiscal policy, it works in tandem with monetary policy to ensure overall macroeconomic balance.

### Conclusion

The decision to retain the 4% inflation target in 2026 is a testament to the institutional maturation of India's monetary policy. While supply-side disruptions (especially in food and energy) remain a challenge, the fixed 4% anchor provides the necessary "nominal anchor" for the economy. For India to remain the world's fastest-growing major economy, price stability is not just a secondary goal but a prerequisite for sustainable investment and the protection of the poor against the regressive tax of high inflation.

## 8. Economic Resilience and Disaster Risk: Navigating India's GDP Vulnerability

Emerging Asian economies, particularly India, face a critical escalation in natural disaster frequency and intensity. With an average of 100 disasters impacting 80 million people annually in the region, the human and economic toll has moved **Disaster Risk Finance (DRF)** to the center of national policy discourse.

- **Significant GDP Erosion:** India loses approximately **0.4% of its GDP annually** to natural disasters, a figure that highlights the severe fiscal strain on developmental goals and long-term economic stability.
- **Dominance of Hydrological Risks:** While regional threats vary, India's primary vulnerability is hydrological, with non-storm-related **floods and landslides** accounting for nearly 63% of its annual economic disaster losses.
- **High World Risk Ranking:** India ranks **second in the World Risk Index** among analyzed Asian economies (surpassed only by the Philippines), reflecting high population exposure coupled with structural susceptibility.
- **Finance as a Mitigation Tool:** Disaster Risk Finance has transitioned from a reactive relief model to a data-driven foundation, focusing on "**pre-disaster**" **mitigation** and capacity building to reduce the "insurance gap" where 90% of losses remain currently uninsured.
- **Geographical Specificity:** Vulnerability is not uniform; while India deals with floods, neighboring China and Indonesia face higher seismic risks, and the Philippines contends with frequent tropical cyclones, necessitating **tailored regional response frameworks**.
- **The Exposure-Vulnerability Nexus:** Risk in India is calculated as a geometric mean of **Exposure** (population burden in hazard zones) and **Vulnerability** (the lack of coping capacity and structural resilience), making rapid unplanned urbanization a major risk multiplier.

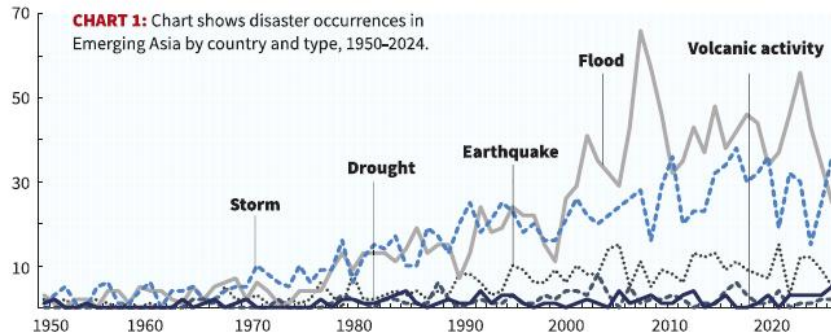
### Key Definitions

- **Disaster Risk Finance (DRF):** A suite of financial instruments (like the NDRF, insurance, and catastrophe bonds) designed to provide immediate liquidity and long-term funding for disaster response and reconstruction.
- **Exposure:** The presence of people, livelihoods, and assets in places that could be adversely affected by physical natural hazards.

- **Vulnerability:** Characteristics of a community or system that make it susceptible to the damaging effects of a hazard (e.g., poor building codes or lack of early warning).

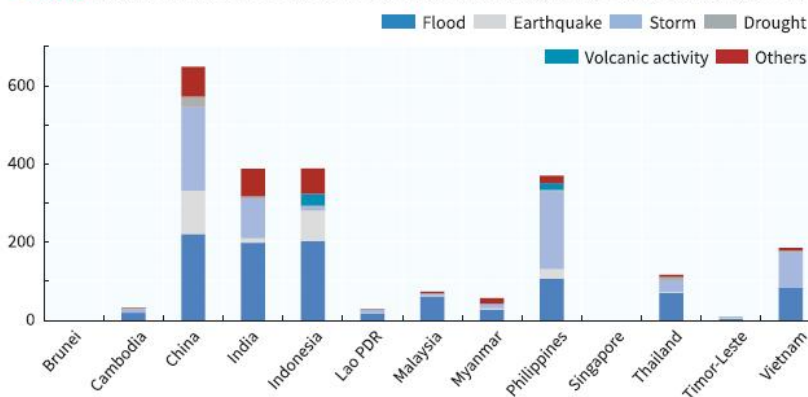
## Asia's climate bill is rising

The charts were sourced from the OECD development centre's "Economic Outlook for Southeast Asia, China and India 2025: Enhancing Disaster Risk Financing" report released in December 2025

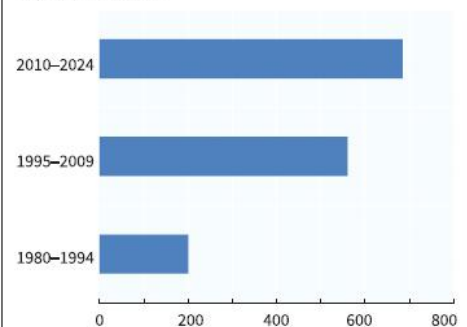


**Counting losses:** A convenience shop owner assesses the damage after floods in southern Thailand in November 2025. AP

**CHART 2:** Chart shows the total occurrences of disasters in Emerging Asia by country and type, 2000-24



**CHART 3:** Total disaster-related damage among Emerging Asian countries (1980-2024). The data are depicted in \$ billion



**CHART 4:** Average annual loss due to disasters, 1990-2024. The data are depicted as the percentage of a country's GDP

**CHART 5:** World Risk Index, by country, 2025. The higher the score, the higher the risk

- **Geometric Mean:** A mathematical calculation used in indices like the World Risk Index to ensure that high risk in one category (like exposure) cannot be completely offset by a low score in another.

### Constitutional and Legal Provisions

- **Disaster Management Act, 2005:** The bedrock of India's institutional framework, establishing the NDMA (National) and SDMAs (State) to shift from a "relief-centric" to a "proactive mitigation" approach.
- **Disaster Management (Amendment) Act, 2025:** Recently enacted to create **Urban Disaster Management Authorities** for state capitals and institutionalize a national disaster database for transparency.
- **Article 21:** Interpreted by the Judiciary to include the "**Right to a Safe Environment**" as part of the Right to Life, placing a positive obligation on the state to mitigate disaster risks.
- **15th Finance Commission Recommendations:** Formalized the **National Disaster Mitigation Fund (NDMF)** and introduced a performance-based allocation using the Disaster Risk Index (DRI).
- **Schedule VII (Entries 14, 17, 23):** While "Disaster Management" is not explicitly mentioned, related subjects (Agriculture, Water, Social Security) fall under State and Concurrent lists, necessitating **Cooperative Federalism**.



## Conclusion

The 0.4% annual GDP loss is a stark reminder that disaster management is no longer just a humanitarian issue but a fundamental economic challenge. As India moves toward the "**Viksit Bharat 2047**" vision, integrating disaster-resilient infrastructure (through initiatives like CDRI) and robust risk-financing models will be essential to protect economic gains. The transition from "managing disasters" to "managing risks" is the only sustainable path forward.

## 9. Wind Energy Milestone: India Scaled 54.51 GW Capacity in 2025

India's renewable energy sector achieved a significant breakthrough in the calendar year 2025, adding a record **6.34 GW** of wind energy capacity. Union Minister for New and Renewable Energy, Pralhad Joshi, announced that this surge has pushed India's total cumulative wind capacity to **54.51 GW**. The 2025 performance represents an **85.4% increase** over the 3.42 GW added in 2024, signaling an accelerated momentum in India's transition toward a non-fossil fuel-based economy.

### Key Highlights for UPSC

- **Record Annual Addition:** The 6.34 GW added in 2025 is the highest ever for the wind sector in a single year, nearly doubling the previous year's installation and showcasing improved execution of hybrid and standalone tenders.
- **Global Standing:** With 54.51 GW, India maintains its position as the **fourth-largest** wind power market in the world, trailing only China, the USA, and Germany.
- **Panchamrit Targets:** This growth is pivotal for achieving India's updated "Panchamrit" goal of **500 GW of non-fossil fuel capacity by 2030**, of which wind energy is expected to contribute approximately 100-140 GW.
- **Non-Fossil Milestone:** As of late 2025, India has already achieved over **51%** of its total electric capacity from non-fossil sources, meeting one of its COP26 commitments five years ahead of the 2030 schedule.
- **Regional Concentration:** The majority of the capacity addition remains concentrated in wind-rich states like **Gujarat, Tamil Nadu, and Karnataka**, which together account for nearly half of India's total wind infrastructure.
- **Technological Shift:** The year 2025 saw a pivot toward **Offshore Wind** and **Wind-Solar Hybrid** projects, supported by a ₹7,453 crore Viability Gap Funding (VGF) scheme for 1 GW of offshore projects in Tamil Nadu and Gujarat.

### Constitutional and Legal Provisions

- **Article 48A (DPSP):** The Constitution mandates the State to "endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country."
- **Article 51A(g):** It is a Fundamental Duty of every citizen to protect and improve the natural environment.
- **National Wind-Solar Hybrid Policy (2018):** Provides a framework to promote large grid-connected wind-solar PV systems for optimal utilization of transmission infrastructure and land.
- **Offshore Wind Energy Policy (2015):** Governs the development of wind energy in India's Exclusive Economic Zone (EEZ).



- **Renewable Purchase Obligation (RPO):** A legal mandate under the **Electricity Act, 2003**, requiring power distribution companies to purchase a certain percentage of electricity from renewable sources, including a specific sub-category for wind.

### Key Definitions

- **Gigawatt (GW):** A unit of power equal to one billion watts. In 2025, India's total installed electricity capacity (fossil + non-fossil) surpassed 500 GW.
- **Intermittency:** The non-continuous nature of power generation from sources like wind and solar, which vary based on weather conditions.
- **Repowering:** The process of replacing older, smaller wind turbines with modern, high-capacity ones to increase the efficiency of existing wind sites.
- **Viability Gap Funding (VGF):** A one-time or deferred grant provided to support infrastructure projects that are economically justified but fall short of financial viability.
- **Capacity Factor:** The ratio of actual energy produced by a wind turbine over a period to the theoretical maximum possible energy it could have produced if running at full capacity constantly.

### Conclusion

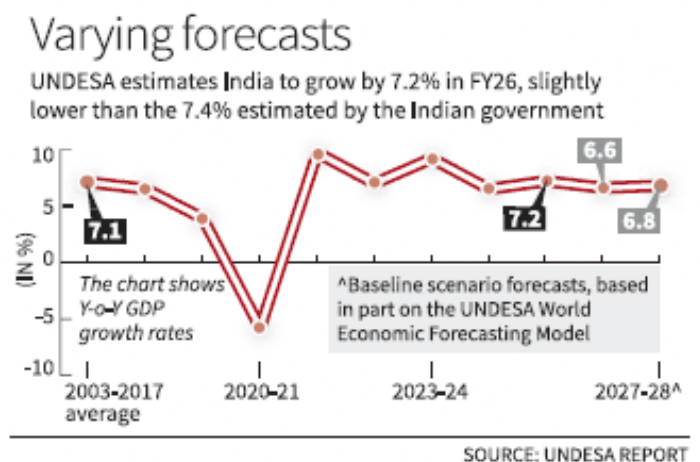
India's wind energy performance in 2025 marks a turning point from stagnation to high-growth momentum. While the 54.51 GW milestone is impressive, the sector must now address structural challenges such as **intermittency, grid stability, and land acquisition** to meet the 100 GW+ target for 2030. The integration of advanced **Battery Energy Storage Systems (BESS)** and the successful launch of offshore tenders will be the next critical steps in making wind energy a reliable "baseload" contributor to India's energy grid.

## 10. UN DESA Report 2026: India's Growth Outlook and Global Headwinds

The United Nations Department of Economic and Social Affairs (**UN DESA**) recently released its **World Economic Situation and Prospects (WESP) 2026** report. While the global economy faces a slowdown, India is projected to remain a "bright spot," maintaining its status as the world's fastest-growing major economy despite external trade shocks.

### Key Highlights of the Report

- **Growth Projections:** The UN pegs India's GDP growth at **7.2% for FY 2025-26** (slightly below the government's 7.4% estimate) and **6.6% for 2026-27**, citing a transition from post-pandemic recovery to a more stable growth phase.
- **Resilience to Tariffs:** Robust domestic **private consumption** and sustained **public investment** in physical and digital infrastructure are expected to "largely offset" the adverse impact of the 2025 U.S. tariff hikes.
- **Export Vulnerability:** With the U.S. accounting for **18% of India's total exports**, the report warns that prolonged high tariffs could weigh on export performance, although electronics and smartphones may remain largely exempt.





- **Diversification Buffer:** Strong demand from alternative markets like **Europe and West Asia** (Middle East) acts as a strategic buffer, mitigating India's dependence on the American market.
- **Monetary and Fiscal Support:** Recent **tax reforms** and a cycle of **monetary easing** (lower interest rates) by the RBI are cited as critical near-term drivers for maintaining economic momentum.
- **Manufacturing & Services:** Continued expansion in these two sectors remains the bedrock of India's supply-side growth, with India strengthening its position in global electronics supply chains.

### Constitutional and Legal Provisions

- **Article 246 (Seventh Schedule):** Governance of economic and social planning is a concurrent subject, allowing both Center and States to legislate on growth-related policies.
- **Fiscal Responsibility and Budget Management (FRBM) Act, 2003:** Sets the legal framework for the government to ensure fiscal discipline, which the UN report highlights as essential for sustaining public investment.
- **Collection of Statistics Act, 2008:** Provides the legal mandate for the National Statistical Office (NSO) to release the "Advance Estimates" of GDP mentioned in the report.
- **Foreign Trade (Development and Regulation) Act, 1992:** Empowers the Union government to formulate the Foreign Trade Policy (FTP) to address tariff challenges like those posed by the U.S.

### Key Definitions

- **UN DESA:** The United Nations Department of Economic and Social Affairs, responsible for tracking global economic trends and progress toward the **Sustainable Development Goals (SDGs)**.
- **First Advance Estimates:** The government's earliest projections of the year's GDP, based on the performance of the economy in the first 7-8 months, used for budget planning.
- **Monetary Easing:** A policy where central banks lower interest rates or increase money supply to stimulate economic activity.
- **Public Investment:** Government spending on infrastructure, defense, and essential services aimed at long-term economic capacity building.

### Conclusion

The UN DESA report underscores a "Goldilocks" scenario for India: high growth coupled with cooling inflation. While global trade fragmentation and aggressive U.S. protectionism present genuine risks, India's internal demand engine and strategic trade diversification provide a significant safety net. The transition toward becoming the world's third-largest economy remains on track, provided structural reforms in labor and manufacturing continue to gain pace.

## 11. Samagra Shiksha 3.0: Strategic Roadmap for School Education Reforms

### Summary of the Consultative Meeting

- **Inception of Samagra Shiksha 3.0:** Union Education Minister Dharmendra Pradhan chaired a high-level meeting to develop a strategic framework for the next phase of India's integrated school education scheme, aligning it with the goals of **National Education Policy (NEP) 2020**.
- **Community-Centric Governance:** A key proposal is to "entrust schools to society," advocating for increased public participation in **School Management Committees (SMCs)** to enhance accountability and holistic student development.



- **Technology and Skill Integration:** The 3.0 phase prioritizes the "meaningful integration of technology" and the embedding of vocational pathways and skilling from the middle school level to prepare students for a rapidly changing economy.
- **Viksit Bharat 2047 Vision:** The roadmap is designed to achieve **100% school enrolment** up to Class 12 by 2047, bridging existing learning gaps and reducing dropout rates through outcome-oriented interventions.
- **Cooperative Federalism:** The Centre and States engaged in a dialogue to balance government responsibility (teacher salaries and systems) with social responsibility (school operations) and requested additional support for teacher capacity building.
- **Outcome-Based Learning:** Moving beyond infrastructure, the new phase focuses on measurable learning indicators, nutrition outcomes, and moving the "Amrit Peedhi" (the current generation) away from colonial educational mindsets.

## Constitutional and Legal Provisions

### 1. Article 21A:

- Inserted by the **86th Constitutional Amendment Act, 2002**, it makes free and compulsory education a Fundamental Right for all children in the age group of 6 to 14 years. **2. Right to Education (RTE) Act, 2009:**
- Provides the legal framework to implement Article 21A. It mandates **School Management Committees (SMCs)** to include 75% parents/guardians to ensure community-led oversight of schools. **3. 73rd and 74th Amendment Acts:**
- Empower Panchayats and Urban Local Bodies to manage elementary and secondary education, supporting the Minister's vision of decentralizing school management to society. **4. Directive Principles of State Policy (Article 45):**
- Directs the State to provide early childhood care and education for all children until they complete the age of six years.

### Definitions of Key Terms

- **Samagra Shiksha:** An overarching, centrally sponsored scheme for the school education sector extending from pre-school to Class 12, subsuming Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA), and Teacher Education (TE).
- **Viksit Bharat 2047:** The Government of India's vision to transform the country into a developed nation by the 100th year of its independence, with education as a primary pillar.
- **Macaulay Mindset:** A reference to the colonial-era education system designed to produce clerks; current reforms aim to replace this with a system rooted in Indian values (**Bharatiyata**) and critical thinking.
- **Gross Enrolment Ratio (GER):** The total enrolment in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to that level.

### Key Features of the Transition to 3.0

- **Holistic Progress Cards (HPC):** Transitioning from traditional marks-based reports to a 360-degree overview of a child's cognitive, socio-emotional, and physical growth.



- **DIETs of Excellence:** Upgrading all 613 District Institutes of Education and Training into centers of excellence for reimagining teacher training.
- **NIPUN Bharat Linkage:** Deepening the focus on **Foundational Literacy and Numeracy (FLN)** to ensure every child masters basic reading and math by Grade 3.

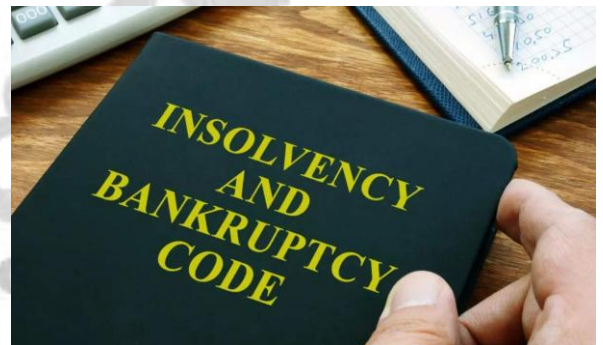
### Conclusion

Samagra Shiksha 3.0 represents a paradigm shift from "schooling for all" to "learning for all." By reimagining schools as social institutions rather than mere government administrative units, the scheme seeks to foster a decentralized, technology-driven, and value-based ecosystem. The success of this phase will hinge on the effective convergence of central funding, state execution, and active community participation.

## 12. Sweeping Reforms in India's Insolvency Regime: IBC (Amendment) Bill, 2025

The Union Government is set to introduce the Insolvency and Bankruptcy Code (Amendment) Bill, 2025, during the upcoming Budget Session. Based on the recommendations of a Lok Sabha Select Committee, the Bill aims to overhaul the current framework by prioritizing efficiency, reducing litigation, and institutionalizing the "Clean Slate" principle to attract better resolution applicants.

- **Clean Slate Principle:** The Bill formalizes the doctrine that a successful bidder (Resolution Applicant) takes over the distressed company with a fresh start, ensuring all past undisclosed or government liabilities are extinguished upon the approval of the resolution plan.
- **Prospective Application:** Contrary to committee suggestions for retrospective effect from 2016, the government proposes a prospective application to avoid disrupting hundreds of ongoing cases currently under judicial scrutiny, thereby ensuring legal certainty.
- **Speeding Up Resolutions:** To address systemic delays, the Bill introduces mandatory timelines for the National Company Law Appellate Tribunal (NCLAT) to dispose of appeals within three months and seeks to expedite the admission of cases.
- **Decriminalization and Governance:** The reforms include the decriminalization of technical or good-faith lapses—replacing them with civil penalties—and empowering the Insolvency and Bankruptcy Board of India (IBBI) to specify a strict Code of Conduct for the Committee of Creditors (CoC).
- **Cross-Border and Group Insolvency:** For the first time, a robust legislative framework for cross-border insolvency (involving foreign assets/debtors) and "group insolvency" (simultaneous resolution of related companies) is being integrated into the Code.
- **Liquidation Reforms:** To eliminate conflicts of interest, the Bill proposes that a Resolution Professional (RP) who conducted the initial insolvency process shall be ineligible to act as the Liquidator for the same firm.



### Key Definitions

- **Clean Slate Doctrine:** A legal theory ensuring that a new owner of an insolvent company is not "haunted" by previous debts, penalties, or legal claims not explicitly included in the approved resolution plan.



- **Committee of Creditors (CoC):** The decision-making body in the insolvency process, primarily composed of financial creditors who vote on the viability of resolution plans.
- **Moratorium:** A legal period under Section 14 of the IBC during which all judicial proceedings, recovery of security interest, or sale of assets against the corporate debtor are suspended.
- **Haircut:** The percentage reduction in the total claim value that creditors agree to accept during a debt resolution process.

### Constitutional & Legal Provisions

- **Article 19(1)(g):** The right to practice any profession or carry on any occupation, trade, or business; IBC balances this with the need for efficient market exit.
- **Article 300A:** Right to property; the IBC provides a legal procedure to deprive a person of property (shares/assets) for the purpose of debt recovery and economic revival.
- **Section 31 (IBC, 2016):** The core provision governing the approval of resolution plans; the 2025 amendment seeks to clarify the binding nature of these plans on Central/State governments and local authorities.
- **Doctrine of Finality:** A judicial principle reinforced by the Supreme Court (e.g., *Ghanashyam Mishra case*) stating that once a resolution plan is approved, it cannot be reopened for undecided past claims.

### Additional Key Points

- **Role of Technology:** The Bill envisions an integrated "e-platform" for the insolvency ecosystem to minimize physical touchpoints and enhance transparency in asset bidding.
- **Pre-Packaged Insolvency (PPIRP):** The voting threshold for initiating pre-packs (currently for MSMEs) is proposed to be reduced from 66% to 51% to encourage out-of-court settlements.

### Conclusion

The 2025 amendments signify a shift from a "process-oriented" to a "result-oriented" insolvency regime. By providing a statutory "clean slate" and addressing the "perverse incentives" in liquidation, the government aims to restore investor confidence. However, the refusal to apply the clean slate retrospectively remains a point of contention that might leave some legacy cases vulnerable to "hydra-headed" litigation from state and tax authorities.

## 13. Revolutionizing Indian Agriculture: Digital Agriculture Mission (DAM) Expansion

The Union Government is set to significantly augment the Digital Agriculture Mission (DAM), with proposed budgetary outlays projected to reach ₹7,500 crore for the FY27–FY30 period. This 166% increase highlights a strategic shift from traditional, siloed e-governance to a unified, AI-driven Digital Public Infrastructure (DPI) aimed at boosting productivity for nearly half of India's workforce.

- **Digital Public Infrastructure (DPI):** The mission centers on creating a "Federated Architecture" through **Agri-Stack**, which provides every farmer with a unique "Farmer ID" (Kisan ki Pehchaan) linked to land records, crop data, and livestock.





- **AI-Powered Precision Farming:** Moving beyond static SMS advisories, the expanded mission leverages Artificial Intelligence for real-time decision-making in pest management, soil health monitoring, and local monsoon onset forecasting.
- **Economic Impact and Loss Mitigation:** With annual crop losses due to pests estimated at ₹2 trillion, the **National Pest Surveillance System (NPSS)** uses machine learning to allow farmers to diagnose 432 pests across 66 crops via simple smartphone images.
- **Unified Decision Support:** The **Krishi Decision Support System (Krishi-DSS)** integrates geospatial data from RISAT-1A and VEDAS, unifying satellite imagery, weather patterns, and soil maps into a single platform for evidence-based policy and insurance claims.
- **Data-Driven Financial Inclusion:** By creating a "Crop Sown Registry" through Digital Crop Surveys, the mission enables paperless MSP-based procurement and seamless, credit-linked Kisan Credit Card (KCC) loans via the JanSamarth platform.
- **Strategic Integration:** The mission aligns with the **IndiaAI Mission** (outlay of ₹10,372 crore), treating agriculture as a priority sector to build indigenous AI models that cater to India's unique agro-climatic zones and regional languages.

### Key Definitions

- **Agri-Stack:** A collection of digital databases and entry points that allows various stakeholders to provide services to farmers, functioning as a digital foundation similar to the "Aadhaar" ecosystem.
- **Precision Agriculture:** A farming management concept based on observing, measuring, and responding to inter and intra-field variability in crops using technology like GPS and AI.
- **Geogenic vs. Anthropogenic:** While not directly in the farm text, in the context of soil health maps, it refers to whether soil characteristics are naturally occurring (geogenic) or man-made (anthropogenic, like fertilizer runoff).
- **Ground-Truthing:** The process of sending technicians or farmers to the field to verify that the information gathered from satellite imagery or AI models matches the reality on the ground.

### Constitutional & Legal Provisions

- **Article 246 (Seventh Schedule):** Agriculture is primarily a **State List** subject (Entry 14), necessitating the "Federated" collaborative model between the Centre and States for Agri-Stack.
- **Article 350A:** Relates to the provision of facilities for instruction in mother tongue; reflected in the mission's push for AI chatbots (Kisan e-Mitra) supporting 11+ regional languages.
- **Article 38:** Directive Principle mandating the State to minimize inequalities in income and status; digital missions aim to bridge the "digital divide" between smallholders and large farmers.
- **National Geospatial Policy, 2022:** Provides the regulatory framework for the Krishi-DSS to use high-resolution satellite data for public and private agricultural innovation.
- **Digital Personal Data Protection (DPDP) Act, 2023:** Governs how the Farmer Registry data is collected, stored, and shared with third-party agritech service providers.



### Additional Key Points

- **Targeting Smallholders:** The mission aims to create digital identities for 11 crore farmers by FY 2026-27, specifically focusing on ease of access for small and marginal farmers who currently face high barriers to formal credit.
- **Youth Employment:** The mission is expected to generate "Agri-entrepreneurship" opportunities for 2.5 lakh local youth and "Krishi Sakhis" to act as digital intermediaries.

### Conclusion

The expansion of the Digital Agriculture Mission marks India's transition from "subsistence-based" to "data-driven" farming. By treating data as a sovereign public good, the government is building an ecosystem where AI acts as a "Force Multiplier" for the individual farmer. Success, however, will hinge on overcoming the last-mile digital literacy gap and ensuring that the "Clean Slate" of digital records accurately reflects the ground reality of fragmented land ownership.

## 14. India's First State-Funded BSL-4 Laboratory in Gujarat

Union Home Minister Amit Shah recently laid the foundation stone for India's first state-funded **Bio-Safety Level 4 (BSL-4)** containment facility in Gandhinagar, Gujarat. Developed at a cost of **₹362 crore** over 11,000 square meters, this facility marks a significant leap in India's biological research infrastructure and health security.

### Key Highlights and Strategic Importance

- **Pioneering Infrastructure:** It is the **first BSL-4 lab in India to be fully funded and controlled by a state government** (under the Gujarat State Biotechnology Mission). Nationally, it is the second civilian BSL-4 facility after the National Institute of Virology (NIV), Pune.
- **Comprehensive Modules:** The facility includes BSL-2, BSL-3, and BSL-4 modules, alongside **Animal Bio-Safety Level (ABSL) 3 and 4** labs, enabling research on both human and zoonotic pathogens.
- **Strategic Health Shield:** Designed to study high-risk, infectious pathogens that lack effective treatments, such as **Ebola, Marburg, Nipah, and Crimean-Congo Hemorrhagic Fever (CCHF)**.
- **National Integration:** The Department of Biotechnology (DBT) has signed an MoU designating it as a "**National Facility**," ensuring expert guidance and collaborative research across Indian institutions.
- **Zoonotic Research Focus:** The inclusion of an ABSL-4 lab allows for vaccine production from animal antibodies, reducing dependence on the ICAR-NIHSAD facility in Bhopal for testing animal samples.
- **Global Compliance:** The lab follows stringent international standards set by the **US CDC, US NIH, DBT India, and ICMR**, placing India on the global map of high-containment research (joining a group of roughly 70 such labs worldwide).





## Definitions of Key Terms

- **Biosafety Level 4 (BSL-4):** The highest level of biocontainment used for dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening diseases.
- **ABSL (Animal Bio-Safety Level):** Specific containment standards for laboratories where research is conducted on animals infected with pathogens.
- **Zoonotic Diseases:** Infectious diseases that are transmitted from animals to humans (e.g., Nipah, Rabies).
- **Biotechnology Regulatory Authority of India (BRAI):** A proposed regulatory body to provide a single-window mechanism for biosafety clearances (currently regulated via multiple bodies).

## Constitutional and Legal Provisions

Aspect	Provision / Authority
<b>Legal Framework</b>	<b>Environment (Protection) Act, 1986:</b> The primary law governing the manufacture, use, import, export, and storage of hazardous microorganisms.
<b>Specific Rules</b>	<b>Rules, 1989:</b> Formulated under the EPA 1986 to regulate Genetically Modified Organisms (GMOs) and hazardous microbes.
<b>Security Law</b>	<b>WMD Act, 2005:</b> The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act criminalizes the misuse of biological agents as weapons.
<b>Regulatory Bodies</b>	<b>RCGM &amp; GEAC:</b> The Review Committee on Genetic Manipulation (under DBT) and Genetic Engineering Appraisal Committee (under MoEFCC) oversee biosafety compliance.
<b>International Treaty</b>	<b>Biological Weapons Convention (BWC):</b> India is a signatory to this treaty, which prohibits the development and stockpiling of biological weapons.

## Conclusion

The establishment of the BSL-4 facility in Gujarat is a transformative step towards **Atmanirbhar Bharat** in the biotechnology sector. By bridging the gap in high-containment infrastructure, India enhances its capacity for real-time outbreak response and indigenous vaccine development. This "health shield" not only protects against natural pandemics but also serves as a critical component of national biosecurity against emerging biological threats.

## 15. Impact of the VB-G RAM G Act on Rural Female Labour Participation

The transition from the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to the Viksit Bharat Guarantee for Rozgar and Ajeevika Mission (Gramin) Act (VB-G RAM G) marks a significant shift in India's rural employment policy. While the new legislation promises an increase in guaranteed work from 100 to 125 days, critics argue that the structural changes and conditional job availability may undermine the hard-won economic autonomy of over 26 crore rural workers, particularly women.

### Core Analysis and Concerns for Rural Women

- **Dilution of the Demand-Driven Nature:** Unlike MGNREGA, which functioned as a legal "right to work" triggered by worker demand, the VB-G RAM G is perceived as shifting toward a more conditional and supply-led model, potentially eliminating the absolute guarantee of work on demand.



- **Erosion of the Rural Safety Net:** The provision that may restrict guaranteed work during the 60 days of peak agricultural seasons could force women back into the informal agrarian market, where they lack wage parity, proximity to home, and bargaining power against landowning classes.
- **Impact on Financial Autonomy:** Women’s participation in MGNREGA rose from 48% in 2008-09 to nearly 58% in 2024-25. By providing equal wages and direct payments, the scheme reduced dependence on male family members; any reduction in accessible work threatens this social progress.
- **Reinforcement of Gender Hierarchies:** In scenarios of excess labor supply, patriarchal norms often relegate women to "secondary" status. Conditional job availability under the new law may prioritize male heads of households, further marginalizing women from the workforce.
- **Operational Challenges for Women:** Features of MGNREGA such as worksites within a 5 km radius and mandatory crèche facilities were pivotal for women balancing domestic duties. A revamped scheme that prioritizes "efficiency" over "proximity" could increase commute costs and time poverty for rural women.
- **Lack of Stakeholder Consultation:** The transition occurred without extensive consultation with the primary beneficiaries—the workers and civil society—raising concerns about the top-down implementation of a scheme that serves as a critical fallback during market failures.



### Constitutional & Legal Provisions

Provision/Act	Description and Relevance
Article 21	The Right to Life includes the Right to Livelihood; MGNREGA was a legislative tool to realize this constitutional goal.
Article 39(d)	Directive Principle of State Policy (DPSP) ensuring "Equal pay for equal work" for both men and women.
Article 41	Directs the State to secure the right to work, education, and public assistance in cases of unemployment within its economic capacity.
Schedule VII (Entry 24)	Welfare of labor including conditions of work, provident funds, and unemployment.
Section 3 (MGNREGA)	The statutory right to 100 days of unskilled manual work for every rural household.

### Key Definitions

- **Female Labour Force Participation Rate (FLFPR):** The percentage of women in the population who are either employed or actively seeking work.
- **Mode of Employment (Demand-driven vs. Supply-driven):** Demand-driven implies the government must provide work whenever a citizen asks for it; supply-driven means the government provides work based on available projects and budget.
- **Wage Parity:** Ensuring that workers are paid the same amount for the same volume of work, regardless of gender, a feature strictly enforced under the previous MGNREGA framework.



- **Time Poverty:** A situation where an individual (usually women) lacks enough time for rest or leisure due to the burden of both paid work and unpaid domestic labor.

### Conclusion

While the VB-G RAM G Act aims to align rural employment with the "Viksit Bharat" vision by increasing the total days of work, its success hinges on maintaining the "guarantee" element. If the scheme becomes conditional or restricted during peak seasons, it risks reversing the gains made in rural women's empowerment. True reform should address implementation bottlenecks—such as wage delays—without compromising the legal right to work that provides a vital floor for rural wages and dignity.

## 16. NITI Aayog Report: Strategic Convergence for MSME Sector Efficiency

NITI Aayog recently released a landmark report titled "**Achieving Efficiencies in MSME Sector through Convergence of Schemes.**" The report serves as a strategic roadmap to address the fragmentation in the support ecosystem for Micro, Small, and Medium Enterprises (MSMEs). By proposing a shift from isolated ministerial actions to a unified "whole-of-government" approach, the report aims to amplify the impact of existing interventions, reduce administrative redundancies, and simplify the journey for nearly 6.3 crore MSMEs in India.

### Key Highlights and Strategic Recommendations

- **The "Convergence First" Mandate:** The report identifies that the Ministry of MSME currently manages 18 distinct schemes with overlapping objectives. It advocates for "cautious convergence"—merging similar programs to eliminate duplication while safeguarding specialized initiatives like the National SC/ST Hub.
- **Dual Framework for Integration:** The strategy relies on two pillars: **Information Convergence** (integrating data across Central and State levels for better decision-making) and **Process Convergence** (aligning operational workflows and unifying similar scheme components).
- **AI-Powered Centralized Digital Portal:** A core recommendation is the creation of a "one-stop" digital platform. This portal would utilize AI chatbots and real-time dashboards to provide MSMEs with instant access to scheme information, compliance requirements, and market intelligence.
- **Unified Cluster Development:** The report proposes merging the **Scheme of Fund for Regeneration of Traditional Industries (SFURTI)** with the **Micro and Small Enterprises – Cluster Development Programme (MSE-CDP)**. This would create a single governance structure to scale up traditional crafts while modernizing infrastructure.
- **Three-Tier Skilling Structure:** To resolve fragmented training initiatives, the report suggests a streamlined hierarchy: Entrepreneurship & Business Skills, MSME Technical Skills, and specialized training for Rural and Women Artisans.
- **Specialized Marketing & Innovation Wings:** Integration of the **ASPIRE** scheme into the **MSME Innovative** framework is suggested to better support agro-rural startups. Additionally, a dedicated Marketing Assistance Wing is proposed to bridge the gap between domestic production and global market access.





## Constitutional & Legal Provisions

Provision/Act	Context & Relevance
<b>MSMED Act, 2006</b>	The primary legal framework governing the classification, development, and competitiveness of MSMEs in India.
<b>Article 39 (a) &amp; (b)</b>	Directive Principles (DPSP) ensuring citizens have the right to an adequate means of livelihood and that ownership of material resources subserves the common good.
<b>Article 43</b>	Directs the State to promote cottage industries on an individual or co-operative basis in rural areas.
<b>Schedule VII (Entry 24)</b>	'Industries' fall under the State List, but 'Development of Industries' under Entry 52 of the Union List allows Central intervention in the public interest.

## Key Definitions for Value Addition

- **MSME Convergence:** The process of aligning various government schemes to create a unified, more efficient delivery mechanism for beneficiaries.
- **Information Asymmetry:** A market failure where one party (often the government or large firms) has more information than the other (small enterprises), leading to poor uptake of beneficial schemes.
- **Common Facility Centers (CFCs):** Shared infrastructure (labs, testing centers, tool rooms) provided under cluster schemes to help small units reduce capital expenditure.
- **Regeneration of Traditional Industries:** Efforts specifically aimed at revitalizing endangered arts and crafts through modern technology and market linkages.

## Conclusion

The NITI Aayog report transitions the MSME policy narrative from "more schemes" to "better delivery." In an era where MSMEs contribute nearly **30% to India's GDP** and **45% to exports**, systemic efficiency is not just an administrative goal but an economic necessity. By leveraging Digital Public Infrastructure (DPI) and AI, the proposed convergence framework can turn fragmented support into a cohesive engine for "Viksit Bharat."

## 17. Building a National Mentoring Movement: Bridging India's Learning-to-Livelihood Gap

India is at a demographic crossroads with over 40 million youth in higher education and 10 million entering the job market annually. While policy interventions in skilling and internships are expanding, a "human gap" persists—characterized by lack of confidence, limited networks, and the challenges of first-generation learners. Mentoring is emerging as a critical structural intervention to bridge this divide, personalizing the transition from education to employment.

- **Humanizing the Transition:** Unlike traditional skilling, mentoring addresses the psychological and social barriers—such as fear and uncertainty—that often hinder youth from underserved backgrounds and first-generation learners.
- **Cultivating Human-Centric Skills:** As AI reshapes entry-level roles, employers increasingly value adaptability, leadership, and problem-solving. Mentoring provides a safe space to nurture these soft skills through personalized guidance.



- **Empowering Young Women:** While women enter higher education at par with men, their labor force participation remains below 40%. Mentoring helps expand their professional networks and challenges restrictive social norms.
- **Correcting Network Inequality:** Data shows a significant "network gap," with men's network strength being 8.3 percentile points higher than women's. Mentoring democratizes access to professional connections, making job seekers four times more likely to secure roles.
- **Scaling through Technology:** Platforms like the National Career Service (NCS) and "Mera Yuva Bharat" (MY Bharat) are now integrating digital mentoring hubs to connect industry professionals with students across tier 2 and tier 3 cities.
- **Institutionalizing Guidance:** The shift from mentoring as an "optional extra" to a structural component of the education system is being led by states like Karnataka and Telangana, aiming for a national architecture of quality and inclusion.

### Key Definitions

- **Human-Centric Skills:** Also known as "soft skills," these include interpersonal abilities like empathy, communication, and adaptability that are less susceptible to automation by AI.
- **Network Strength:** The measure of a person's professional connections and their ability to leverage these links for information, referrals, and career advancement.
- **First-Generation Learner:** Students who are the first in their families to pursue higher education, often lacking inherited professional networks or career guidance at home.

### Constitutional and Legal Provisions

- **Article 21 (Right to Livelihood):** The Supreme Court has interpreted the Right to Life to include the right to earn a livelihood; mentoring ensures this right is accessible to all, regardless of social background.
- **Article 15 (Special Provisions for Women/SC/ST):** Mentoring acts as a tool for "substantive equality" by providing targeted support to historically disadvantaged groups in the competitive labor market.
- **National Education Policy (NEP) 2020:** Emphasizes holistic development and the integration of vocational and academic streams, identifying mentorship as a key enabler for student success.
- **Corporate Social Responsibility (CSR):** Under Section 135 of the Companies Act, 2013, companies can leverage CSR funds to build mentoring infrastructure and mobilize employee volunteers for youth development.

### Additional Keypoints

- **Mera Yuva Bharat (MY Bharat):** Launched in 2023, this autonomous platform serves as a "phygital" (physical + digital) space for youth engagement, featuring a dedicated Mentorship Hub.
- **Role of Non-Profits:** Organizations like 'Mentor Together' provide the curriculum and safeguarding standards necessary to ensure mentoring is safe, effective, and evidence-based.
- **Strategic Volunteering:** Corporate initiatives, such as the LinkedIn Coaches Program, have supported over one million students, demonstrating how private-sector employees can act as "Mentors of Change."



## Conclusion

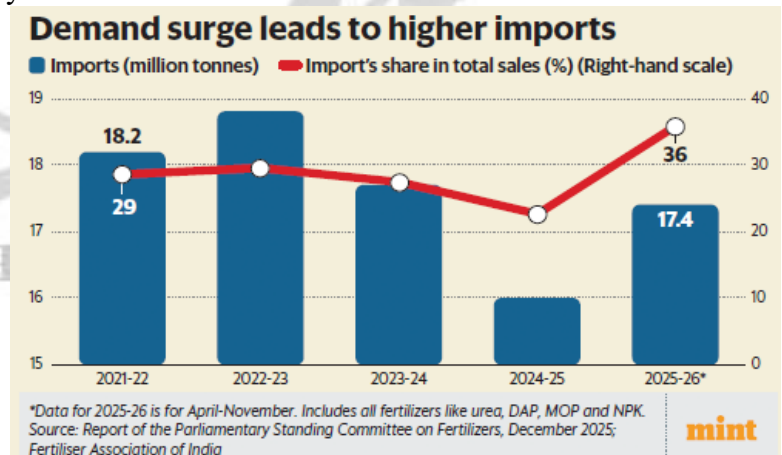
A national mentoring movement is no longer a luxury but a necessity for India's economic future. By moving beyond physical infrastructure to focus on human capability, India can unlock the true potential of its demographic dividend. When professionals commit to mentoring even one young person, they contribute to a massive collective action that transforms aspirations into tangible career pathways.

## 18. The Crisis of Fertilizer Self-Reliance in India: Supply, Soil, and Subsidies

India's agricultural sector is currently facing a critical rebalancing as the goal of *Atmanirbharta* (self-reliance) in fertilizers encounters structural roadblocks. Despite the commissioning of new urea plants and the introduction of nano-fertilizer technologies, import dependency has surged in FY26. Driven by a robust monsoon and expanded acreage, the mismatch between domestic supply and soaring demand has led to local shortages, rising subsidy burdens, and significant concerns regarding long-term soil health.

### Key Summary Points for Examination

- **Surging Import Dependency:** In FY26 (April–November), urea imports rose by 120% to 7.2 million tonnes, while DAP and complex NPK imports increased by 54% and nearly 100% respectively. This indicates that imports have shifted from being "supplementary" to a "structural" component of India's supply chain.
- **Supply-Demand Mismatch:** Higher rainfall led to increased sowing of water-intensive crops like rice and corn (Kharif) and wheat (Rabi). Domestic production fell by 3.7%, failing to keep pace with a demand trajectory projected to reach 40 mt for urea by 2025-26.
- **Subsidy Burden:** The fertilizer subsidy bill has ballooned from ₹81,124 crore in 2019-20 to an estimated ₹1.83 trillion in 2024-25. Urea alone accounts for nearly 70% of this, sold at over 90% subsidy, which creates a massive fiscal drain on the exchequer.
- **Soil Health Degradation:** Heavy subsidies on urea incentivize its overuse, leading to a skewed NPK application ratio (widely deviating from the ideal 4:2:1). This imbalance depletes organic carbon, acidifies soil, and lowers long-term crop yields.
- **Structural Feedstock Constraints:** India lacks significant domestic reserves of rock phosphate and potash, making it 100% dependent on imports for Muriate of Potash (MOP). Furthermore, even domestic urea production relies on imported natural gas for 70-80% of its feedstock.
- **Strategic Policy Shifts:** To counter these trends, the government is promoting "Green Infrastructure" through the PM-PRANAM scheme and Nano Urea, aiming to reduce chemical dependence and incentivize states to save on fertilizer subsidies.



### Important Definitions & Key Terms

- **Nutrient Based Subsidy (NBS):** A policy (implemented since 2010 for P&K fertilizers) where a fixed amount of subsidy is provided based on the nutrient content (N, P, K, S) rather than the product price. Urea remains outside NBS.



- **Nano Urea:** A nanotechnology-based fertilizer that provides nitrogen to plants in liquid form with higher nutrient use efficiency (up to 80%) compared to conventional urea (approx. 30-40%).
- **Atmanirbhar Bharat:** The vision of a "Self-Reliant India" focusing on domestic manufacturing and reducing vulnerability to global supply chain disruptions.

### Constitutional and Legal Provisions

- **Article 48 (DPSP):** Directs the State to organize agriculture and animal husbandry on modern and scientific lines.
- **Article 47 (DPSP):** Mandates the State to improve public health and nutrition; sustainable agriculture is foundational to food and nutritional security.
- **Article 51A(g):** Fundamental duty of citizens to protect and improve the natural environment, which includes maintaining the health of the soil and water ecosystems.
- **Essential Commodities Act, 1955:** Used to regulate the distribution, pricing, and prevent black-marketing or hoarding of fertilizers during shortages.
- **Fertilizer Control Order (FCO), 1985:** Regulates the quality, price, and distribution of fertilizers in India.

### Additional Key Points for Mains

- **The "One Nation One Fertilizer" (ONOF) Initiative:** Under the brand name 'Bharat', this seeks to standardize fertilizer quality and reduce cross-country freight costs by preventing brand-specific long-distance transport.
- **Natural Gas Dependency:** Since natural gas is the primary feedstock for urea, global price volatility in the energy sector directly impacts India's food security and fiscal deficit.
- **Integrated Nutrient Management (INM):** The need for a shift from purely chemical inputs to a blend of organic, bio-fertilizers, and chemical nutrients to restore soil microbial activity.

### Conclusion

India's struggle for fertilizer self-reliance highlights the conflict between short-term political necessity (cheap urea for farmers) and long-term ecological and fiscal sustainability. Achieving true *Atmanirbharta* will require more than just reviving old plants; it demands a radical overhaul of the subsidy regime to encourage balanced nutrient use, a massive scale-up of nano-technologies, and a transition toward natural and organic farming to protect India's "Mother Earth" from chemical exhaustion.

## 19. Revival of BOT Model: A Strategic Shift in Highway Infrastructure

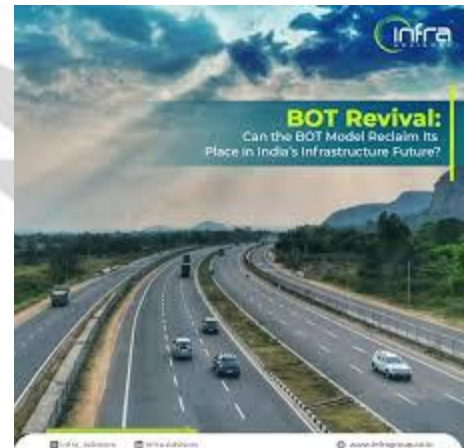
The Government of India has announced a major policy pivot to bid out highway projects worth **₹75,000 crore** under the **Build-Operate-Transfer (BOT) Toll** mode for FY27. This marks a significant return to private-sector-led development after a decade-long hiatus since 2014, during which the government predominantly relied on the EPC and HAM models. By shifting the financial and operational risks back to private developers, the Centre aims to unlock public funds for critical social sector schemes while leveraging the efficiency of the private sector in the road transport network.

### Key Summary Points for Examination

- **Strategic Re-adoption:** The government aims to award **50% of its highway targets** (approx. 5,000 km out of 10,000 km) via the BOT model in FY27, seeking to tap into private risk capital.



- **Fiscal Prudence:** Moving to BOT reduces the immediate burden on the exchequer. Unlike the EPC model (where the government pays 100%) or HAM (where it pays 40%), BOT requires the private developer to bear the entire upfront construction cost.
- **Investor-Friendly Reforms:** A revised **Master Concession Agreement (MCA)** is being finalized to address historical bottlenecks, including easier entry/exit clauses and a robust compensation mechanism for revenue shortfalls.
- **Revenue Visibility:** The near-total penetration of **FASTag** (over 95%) has significantly enhanced toll transparency and traffic predictability, making road assets more attractive to institutional investors.
- **Risk Allocation:** In the BOT (Toll) variant, the private concessionaire assumes the "traffic risk." If traffic is lower than projected, the developer bears the loss, whereas the government benefits from revenue-sharing if traffic exceeds targets.
- **Comparison with Other Models:** While **EPC (Engineering, Procurement, and Construction)** is a pure contract where the government pays for the work, the **Hybrid Annuity Model (HAM)** was a middle ground that shared risks which has now reached its fiscal capacity limit for the government.



### Important Definitions & Key Terms

- **Build-Operate-Transfer (BOT):** A PPP model where a private entity finances, builds, and operates an infrastructure project for a fixed "concession period" before transferring it back to the government.
- **Master Concession Agreement (MCA):** The core legal contract between the government authority (like NHAI) and the private developer, outlining the rights, obligations, and risk-sharing frameworks.
- **Toll-Operate-Transfer (TOT):** A model used for monetizing *already built* and operational highways by leasing them to private players for long-term toll collection.

### Constitutional and Legal Provisions

- **Entry 23 of the Union List (Seventh Schedule):** Grants Parliament the exclusive power to legislate on National Highways.
- **National Highways Act, 1956:** The primary legislation providing for the declaration, development, and maintenance of national highways. **Section 8A** specifically empowers the Centre to enter into agreements for private participation.
- **National Highways Authority of India (NHAI) Act, 1988:** Established NHAI as an autonomous body to manage the national highway network.
- **Article 298 of the Constitution:** Extends the executive power of the Union to the carrying on of any trade or business and the making of contracts.

### Additional Key Points for Mains

- **The Kelkar Committee Recommendations:** The shift aligns with the Vijay Kelkar Committee's suggestions on PPPs, which emphasized the need for balanced risk allocation and independent dispute resolution.



- **Asset Monetization Pipeline:** The revival of BOT is complementary to the **National Monetization Pipeline (NMP)**, as it creates a fresh pipeline of brownfield assets that can be monetized in the future via TOT or InvITs.
- **Global Best Practices:** By attracting long-term patient capital (Pension Funds, Sovereign Wealth Funds), India is moving toward global standards in infrastructure financing, ensuring that infrastructure creates its own revenue streams.

### Conclusion

The revival of the BOT model is a calculated move to transition from a government-funded infrastructure cycle to a private-capital-driven one. While it offers a pathway to fiscal sustainability, its success will depend on the "bankability" of the new MCA and the government's ability to provide land clearances on time. If executed correctly, this could provide the "fiscal space" needed for India to achieve its \$5 trillion economy goal without compromising on social welfare spending.

## 20. Integration of Tribal Healers into the National Health Framework

The Union Ministry of Tribal Affairs has launched a landmark initiative to formally recognize one lakh tribal healers as "partners in health services." This move aims to bridge the healthcare gap in remote tribal regions by integrating Traditional Tribal Knowledge (TTK) with modern medical practices. During a capacity-building event in Hyderabad, the government emphasized the role of these healers in strengthening community health surveillance and creating sustainable livelihoods through market linkages with pharmaceutical and FMCG sectors.

### Key Highlights for UPSC Preparation

- **Formal Recognition:** The government seeks to institutionalize the role of one lakh tribal healers, elevating them from informal practitioners to recognized partners in the public health delivery system.
- **Capacity Building:** Technical knowledge and service delivery are being enhanced through collaborations with premier institutes like AIIMS, ICMR, AYUSH, and the World Health Organization (WHO).
- **Bharat Tribal Health Observatory:** A Memorandum of Understanding (MoU) has been signed with ICMR-RMRC Bhubaneswar to establish India's first national tribal health observatory for tribe-disaggregated data.
- **Disease Focus:** The initiative specifically targets the elimination of localized health burdens such as malaria, leprosy, and tuberculosis in tribal districts through research-driven interventions.
- **Economic Linkages:** State governments are encouraged to facilitate partnerships between healers and the industry to transform traditional medicine into a viable employment domain.
- **Evidence-Based Planning:** By addressing the gap in tribal-specific health analytics, the government aims to move toward more precise and culturally sensitive health planning.

### Constitutional and Legal Provisions

- **Article 342:** Deals with the identification and notification of Scheduled Tribes (STs) in India.
- **Article 47 (Directive Principles):** Mandates the State to regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties.



- **Article 21:** The Right to Health is an integral part of the Right to Life, necessitating accessible healthcare for marginalized tribal communities.
- **PESA Act, 1996:** Empowering Gram Sabhas in Scheduled Areas to manage and protect their traditional knowledge and community resources.
- **Biological Diversity Act, 2002:** Protects the traditional knowledge of local communities and ensures equitable sharing of benefits arising from the use of such knowledge.

### Definitions of Key Concepts

- **Tribal Healers:** Traditional practitioners within tribal communities who use herbs, minerals, and indigenous rituals to treat ailments, often serving as the first point of medical contact.
- **Tribe-Disaggregated Data:** Health data that is categorized by specific tribal groups rather than being generalized, allowing for the identification of group-specific genetic or environmental health risks.
- **FMCG (Fast-Moving Consumer Goods):** In this context, it refers to the commercialization of herbal and traditional health products for daily consumer use.
- **Health Observatory:** A centralized platform or institution that collects, analyzes, and disseminates health information to monitor trends and guide policy.

### Conclusion

The formal recognition of tribal healers marks a paradigm shift from viewing traditional medicine as an "informal" sector to an "essential" component of the healthcare ecosystem. By combining indigenous wisdom with the technical rigor of institutions like ICMR, India is creating a unique, pluralistic health model. The success of this initiative will depend on balancing the commercialization of traditional products with the intellectual property rights of tribal communities while ensuring that modern medical ethics are maintained.

## 21. Unified FEMA Regulations: Streamlining India's Foreign Trade

Reserve Bank of India (RBI) notified the **Foreign Exchange Management (Export and Import of Goods and Services) Regulations, 2026**. Replacing the decade-old 2015 framework, these regulations integrate the management of both goods and services under a single regulatory umbrella. Set to take effect in **October 2026**, the overhaul aims to reduce the compliance burden on Micro, Small, and Medium Enterprises (MSMEs), empower Authorised Dealer (AD) banks with greater discretion, and transition toward a more transparent, digital-first monitoring system.

### Key Features of the Unified Regulations

- **Consolidated Framework:** For the first time, export and import rules for both physical goods and intangible services (including software) are merged into a single regulation to eliminate procedural overlaps.
- **Empowerment of AD Banks:** Responsibility has shifted to Authorised Dealer banks to manage routine trade matters based on internal board-approved policies and risk assessments rather than seeking case-by-case RBI approvals.
- **Ease for MSMEs:** Transactions up to **₹10 lakh** can now be closed in the RBI's monitoring systems (EDPMS/IDPMS) through self-declaration, significantly reducing paperwork for small-scale exporters.



- **Service Export Reporting:** Service exporters now have a formal **30-day window** to file declarations from the date of invoice, bringing them on par with the transparency standards of goods exports.
- **Revised Realisation Timelines:** While the standard 15-month timeline for repatriation of proceeds remains, it has been extended to **18 months** for trades settled in **Indian Rupees (INR)**, supporting the internationalization of the Rupee.
- **Stricter Discipline for Defaulters:** Exporters with dues outstanding for more than a year beyond the allowed period will be restricted to shipments only against **100% advance payment** or irrevocable letters of credit.

RBI'S DRAFT FEMA  
REGULATIONS  
2025: A  
COMPREHENSIVE  
GUIDE FOR  
INDIAN  
EXPORTERS AND  
IMPORTERS.

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### Constitutional and Legal Provisions

- **FEMA, 1999:** The primary legislation governing foreign exchange in India. Unlike its predecessor FERA, FEMA treats violations as civil offenses.
- **Article 246 & Union List:** Parliament has the exclusive power to make laws regarding "Foreign Loans" and "Trade and Commerce with foreign countries" (Entries 37 and 41).
- **Section 5 of FEMA:** Deals with Current Account transactions, which include payments due in connection with foreign trade and other current business.
- **Section 47 of FEMA:** Grants the RBI the power to make regulations to carry out the provisions of the Act, under which this new 2026 notification has been issued.

### Definitions and Key Systems

- **EDPMS & IDPMS:** The Export/Import Data Processing and Monitoring System—digital platforms used by the RBI and banks to track the flow of goods and the corresponding inward/outward remittances.
- **Authorised Dealer (AD):** Any person/bank authorized by the RBI under Section 10(1) of FEMA to deal in foreign exchange or foreign securities.
- **Merchanting Trade:** Transactions where the shipment of goods takes place from one foreign country to another foreign country without the goods entering the domestic tariff area of India.
- **EDI Ports:** Electronic Data Interchange ports where customs documentation is processed digitally, allowing for the automatic embedding of Export Declaration Forms (EDF).

### Conclusion

The 2026 FEMA Regulations represent a strategic shift from "regulation by control" to "regulation by monitoring." By decentralizing authority to banks and simplifying the exit of small-value entries, the RBI is fostering a more "Ease of Doing Business" environment. However, the success of this unified regime depends on the robustness of the digital tracking systems and the capacity of AD banks to assess transaction bona fides without creating new bottlenecks.



# GEOGRAPHY & ENVIRONMENT

## 1. Decarbonizing Energy: ONGC's Landmark Carbon Capture Pilot in Gujarat

In a significant stride toward India's climate goals, the Oil and Natural Gas Corporation (ONGC) has initiated its first full-scale Carbon Capture and Storage (CCS) pilot at the Gandhar oilfield in Gujarat. This project marks a pivotal shift in India's upstream energy sector, transitioning from conventional extraction to integrated carbon management and enhanced resource recovery.

- **Strategic Decarbonization Step:** The pilot project involves injecting approximately 100 tonnes of captured carbon dioxide (CO<sub>2</sub>) per day into two abandoned onshore wells at the Gandhar field. This effectively "locks" the greenhouse gas in subsurface hydrocarbon reservoirs, preventing its release into the atmosphere.
- **Integrated Source-to-Sink Model:** CO<sub>2</sub> is captured from multiple industrial nodes, including ONGC's Hazira plant and other facilities in the Dahej industrial belt. This demonstrates a collaborative "cluster-based" approach essential for decarbonizing hard-to-abate sectors like petrochemicals and fertilizers.
- **Dual-Benefit Technology:** Beyond mere storage, the project utilizes CO<sub>2</sub> for **Enhanced Oil Recovery (EOR)**. By injecting gas to reduce oil viscosity and increase reservoir pressure, ONGC aims to transform a waste emission into a catalyst for increasing domestic crude oil production from mature fields.
- **Foundation for Blue Hydrogen:** This CCS infrastructure is a critical precursor to the production of **Blue Hydrogen** (hydrogen produced from natural gas with captured CO<sub>2</sub>). It aligns with the National Green Hydrogen Mission's broader goals by providing a low-carbon alternative during the energy transition.
- **Investment and Net-Zero Roadmap:** This initiative is part of ONGC's larger \$12 billion commitment to energy transition projects. The company aims to achieve Net-Zero operational emissions (Scope 1 and Scope 2) by 2038, significantly ahead of India's national 2070 target.
- **National Climate Alignment:** With India being the world's third-largest emitter, this pilot directly supports the nation's updated **Nationally Determined Contributions (NDCs)**, which include a commitment to reduce carbon emissions intensity by 45% by 2030 and a 50% reduction in total emissions by 2050.

### Key Definitions

- **Carbon Capture and Storage (CCS):** A technological process that captures CO<sub>2</sub> at the source (industrial plants), transports it, and stores it in deep geological formations to mitigate climate change.
- **Enhanced Oil Recovery (EOR):** A "tertiary" extraction technique where fluids (like CO<sub>2</sub>, steam, or chemicals) are injected into a reservoir to extract oil that cannot be recovered through primary or secondary methods.
- **Depleted Reservoirs:** Subsurface rock formations that have already yielded their original oil or gas content, making them ideal, leak-proof containers for long-term gas storage.
- **Hard-to-Abate Sectors:** Industries such as steel, cement, and chemicals where reducing emissions is technically difficult or expensive because fossil fuels are used as chemical feedstocks or for high-heat processes.



## Constitutional and Legal Provisions

- **Article 48A:** A Directive Principle of State Policy (DPSP) that mandates the State to protect and improve the environment and safeguard the forests and wildlife of the country.
- **Article 51A(g):** A Fundamental Duty of every citizen to protect and improve the natural environment, which underpins the social license for large-scale decarbonization projects.
- **Environment (Protection) Act, 1986:** Provides the overarching legal framework for the central government to coordinate environmental protection activities and set standards for industrial emissions.
- **The Energy Conservation (Amendment) Act, 2022:** Facilitates the creation of a **Carbon Credit Trading Scheme** in India, providing a market-based incentive for companies like ONGC to invest in carbon capture technologies.

## Conclusion

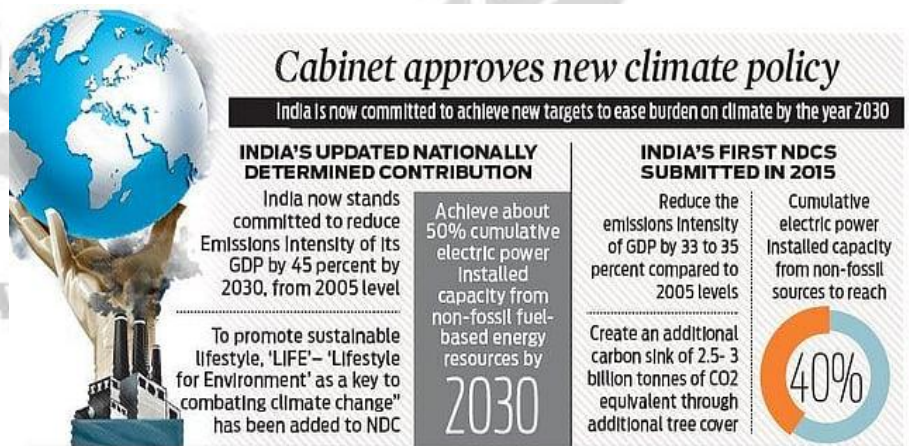
ONGC's Gandhar pilot is a landmark for Indian energy policy, proving that industrial growth and climate responsibility can be technologically integrated. By successfully converting abandoned wells into carbon sinks, India is building the technical expertise required to scale up **Carbon Capture, Utilization, and Storage (CCUS)**. This not only secures India's energy future through enhanced recovery but also provides a scalable blueprint for other developing nations to manage the "carbon cost" of industrialization.

## 2. India's Climate Commitments: Progress, Paradigms, and Pitfalls

India's climate trajectory is at a crossroads as it navigates the transition from the 2015 Paris Agreement pledges to the 2070 Net-Zero goal. While the country has achieved significant milestones in emissions intensity and non-fossil capacity, structural challenges in energy storage, coal dependency, and ecological quality persist. The following analysis evaluates India's performance against its Nationally Determined Contributions (NDCs) and the underlying complexities of its "green" transition.

### Key Highlights for UPSC

- **Emissions Intensity**  
**Success:** India reduced its GDP emissions intensity by 36% by 2020 (using a 2005 baseline), surpassing its initial target of 33-35% a decade ahead of the 2030 deadline. This reflects a "decoupling" where economy grows faster than emissions.



- **Non-Fossil Capacity Milestone:** By mid-2025, non-fossil fuel sources accounted for 51.4% of India's installed power capacity (~253 GW), meeting the updated Glasgow pledge (50% by 2030) well in advance.
- **The Generation-Capacity Gap:** Despite high renewable capacity, coal still provides over 70% of actual electricity generation. This is due to the "intermittency" of solar/wind and a massive shortfall in Battery Energy Storage Systems (BESS).



- **Carbon Sink Targets:** India is on track to achieve its 2.5-3 billion tonnes of CO<sub>2</sub> equivalent sequestration target by 2030. However, critics argue this is driven by "administrative designations" (plantations and orchards) rather than restored natural biodiversity.
- **Forest Definition Contention:** The Forest Survey of India (FSI) defines "forest cover" as any land over 1 hectare with a canopy density of >10%. This allows monocultures and roadside trees to be counted, potentially masking the degradation of pristine ecological zones.
- **Implementation Bottlenecks:** While the Compensatory Afforestation Fund (CAMPA) has accumulated ~₹95,000 crore, fund utilization remains low in several states, and land acquisition remains a primary hurdle for grid connectivity.

### Constitutional and Legal Framework

- **Article 48A:** A Directive Principle of State Policy (DPSP) that mandates the State to protect and improve the environment and safeguard forests and wildlife.
- **Article 51A(g):** A Fundamental Duty of every citizen to protect and improve the natural environment including forests, lakes, rivers, and wildlife.
- **Compensatory Afforestation Fund Act, 2016:** Provides the legal framework for managing funds collected from industries that divert forest land for non-forest purposes.
- **Environment Protection Act, 1986:** The umbrella legislation providing the central government the power to protect and improve environmental quality.
- **Aravalli Judgment (2024):** A landmark Supreme Court ruling emphasizing that the "Green Belt" cannot be sacrificed for mining, reinforcing the "Public Trust Doctrine."

### Important Definitions

- **Emissions Intensity:** The volume of greenhouse gas emissions emitted per unit of GDP. Reducing this means an economy is becoming more carbon-efficient even if it continues to grow.
- **Baseload Power:** The minimum amount of electric power that a grid must provide consistently to meet 24/7 demand; currently, coal remains India's primary baseload provider.
- **Net-Zero:** A state where the amount of greenhouse gases produced is balanced by the amount removed from the atmosphere. India's target year is 2070.
- **Capacity Factor:** The ratio of actual energy produced by a plant over a period to the maximum possible energy it could have produced. Solar and wind have lower capacity factors compared to thermal power.
- **Sequestration:** The process of capturing and storing atmospheric carbon dioxide, primarily through biological means like forests and soil.

### Conclusion

India has proven its ability to meet "quantified" targets through rapid technology deployment and policy pushes like the National Solar Mission. However, the "qualitative" transition—moving from installed capacity to actual green generation and from monoculture plantations to biodiverse forests—remains the true challenge. Achieving the 2070 Net-Zero goal will require not just headline metrics, but a systemic shift in grid management, storage infrastructure, and ecological transparency.



### 3. NGT Verdict on Varanasi Tent City: Balancing Tourism with Ecological Integrity

#### Summary of the Judicial Intervention

- **Environmental Violation Found:** The National Green Tribunal (NGT) ruled on January 8, 2026, that the luxury 'Tent City' established on the Ganga riverbed in 2023 operated in "flagrant violation" of green norms and the River Ganga Order, 2016.
- **Pollution and Waste Mismanagement:** A seven-member joint committee reported that the project directly discharged untreated sewage into the river and caused significant harm to the local flora and fauna.
- **Lack of Prior Approval:** The National Mission for Clean Ganga (NMCG) revealed that the project developers sought mandatory prior approval only after the facility had already been implemented and operationalized.
- **Financial Penalties:** The Uttar Pradesh Pollution Control Board (UPPCB) has been directed to expeditiously recover an environmental compensation of approximately 17 lakh from each of the two private operating companies.
- **Future Prohibition:** The NGT has issued a permanent directive to government authorities to ensure that no similar commercial tent cities are permitted on the banks of the Ganga or its tributaries in the future.
- **Wildlife Sanctuary Concerns:** Allegations regarding the illegal de-notification of the 'Kachhua (Turtle) Wildlife Sanctuary' to facilitate the project remain sub-judice before the Supreme Court.



#### Constitutional and Legal Provisions

##### 1. National Green Tribunal (NGT) Act, 2010:

- Established under **Article 21** (Right to a healthy environment), the NGT is a specialized body equipped with the expertise to handle environmental disputes involving multi-disciplinary issues.
- ##### 2. River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016:
- Issued under the **Environment (Protection) Act, 1986**, this order prohibits any construction or commercial activity on the active floodplains and riverbeds of the Ganga without prior environmental clearance from the NMCG.

##### 3. The Doctrine of Public Trust:

- A legal principle (affirmed in *MC Mehta v. Kamal Nath*) stating that certain resources like rivers, forests, and air are held by the State as a trustee for the free and unimpeded use of the general public and cannot be converted into private commercial use.
- ##### 4. Article 48A and 51A(g):
- **48A (DPSP):** The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.
  - **51A(g) (Fundamental Duty):** To protect and improve the natural environment including forests, lakes, rivers, and wildlife.



### Key Word Definitions

- **Active Floodplain:** The area of relatively smooth land adjacent to a river channel that is frequently flooded and is vital for maintaining the river's ecological health and groundwater recharge.
- **Environmental Compensation:** A "polluter pays" principle-based fine intended to rectify the damage caused to the environment and deter future violations.
- **De-notification:** The official process of removing the protected status of a designated wildlife area or sanctuary, often requiring approval from the National Board for Wildlife (NBWL).
- **Flora and Fauna:** The collective term for the plant (flora) and animal (fauna) life of a particular region or time.

### Additional Keypoints for Analysis

- **Tourism vs. Ecology:** The case highlights the "sustainable development" challenge where high-value tourism projects (promoted as the 'Orange Economy') clash with the primary mandate of 'Aviral' (continuous) and 'Nirmal' (clean) Ganga.
- **Procedural Lapses:** The fact that the project was inaugurated by the highest executive office before regulatory clearances were secured underscores a gap in administrative due diligence.
- **Ecological Flow (e-flow):** The NGT emphasized that permanent or semi-permanent structures on riverbeds obstruct the natural flow and self-purifying capacity of the river.

### Conclusion

The NGT's order on the Varanasi Tent City serves as a corrective measure against the commercialization of sensitive river ecosystems. While religious and heritage tourism are vital for the local economy, they cannot be pursued at the cost of the river's biological and chemical integrity. This judgment reaffirms the supremacy of environmental law over administrative enthusiasm and sets a precedent for the protection of floodplains across India.

## 4. Groundwater Contamination Crisis in Andhra Pradesh (CGWB Report 2025)

The Central Ground Water Board (CGWB) Annual Ground Water Quality Report (2025) has raised a red flag regarding the alarming levels of chemical and heavy metal pollutants in Andhra Pradesh's aquifers, identifying it as one of the most affected states in India.

- **Multi-Pollutant Prevalence:** Groundwater in AP exceeds Bureau of Indian Standards (BIS) limits for a spectrum of contaminants including **Nitrate, Iron, Fluoride**, and toxic heavy metals like **Arsenic, Lead, and Cadmium**.
- **Uranium and Arsenic Hotspots:** Elevated Uranium levels (>30 ppb) were detected sporadically, specifically in 16 villages of **Sri Sathya Sai** district and 3 in **Tirupati**; additionally, five villages were identified as Arsenic hotspots (>10 ppb).
- **Salinity and Seawater Intrusion:** High **Electrical Conductivity (EC)** indicates significant seawater intrusion in coastal aquifers, further compounded by a high incidence of **Residual Sodium Carbonate (RSC)** in 26.87% of analyzed samples.
- **Fluoride and Hard Rock Aquifers:** Fluoride contamination exceeding 1.5 mg/l remains a systemic issue, particularly within the state's hard rock geological formations, leading to long-term health risks like fluorosis.



- **Seasonal Dilution Effect:** The report notes a marginal improvement in water quality following the monsoon, suggesting that recharge cycles temporarily dilute concentrations of Fluoride and EC-related salts.
- **Industrial and Trace Metal Alerts:** Specific alerts were issued for the presence of **Chromium, Cobalt, Manganese, Nickel, and Zinc**, indicating a complex mix of geogenic (natural) and anthropogenic (man-made) pollution sources.

### Key Definitions

- **Electrical Conductivity (EC):** A measure of water's ability to conduct electricity, which serves as a proxy for the total dissolved solids (TDS) and salinity levels.
- **Residual Sodium Carbonate (RSC):** An index used to determine the bicarbonate hazard of irrigation water; high RSC levels can lead to soil alkalinity and reduced permeability.
- **Parts Per Billion (ppb):** A unit of concentration representing one microgram of a substance per liter of water ( $\mu\text{g/L}$ ).
- **Aquifer:** A body of permeable rock or sediment that contains or transmits groundwater.



### Constitutional and Legal Framework

- **Article 21:** The Right to Life includes the right to clean drinking water as interpreted by the Judiciary.
- **Article 48A:** The State shall endeavor to protect and improve the environment.
- **Article 51A(g):** It is the fundamental duty of citizens to protect and improve the natural environment including lakes and rivers.
- **The Environment (Protection) Act, 1986:** Provides the overarching legal framework for managing hazardous substances and groundwater quality.
- **Model Groundwater (Control and Regulation) Bill:** Circulated by the Center to states to ensure planned development and management of groundwater.

### Additional Key Points

- **Geogenic vs. Anthropogenic:** While Uranium and Fluoride are often geogenic (leaching from rocks), high Nitrate levels are typically linked to excessive fertilizer use and poor sanitation.
- **Health Implications:** Prolonged exposure to Uranium can cause nephrotoxicity (kidney damage), while Arsenic is a known carcinogen linked to skin lesions and cardiovascular diseases.

### Conclusion

The CGWB Report 2025 underscores a looming public health crisis in Andhra Pradesh driven by deteriorating groundwater chemistry. Addressing this requires a shift from mere "water extraction" to "aquifer management," integrating rainwater harvesting to dilute contaminants and deploying advanced filtration technologies (like Ion Exchange or Reverse Osmosis) in identified hotspots to ensure "Har Ghar Jal" is not just about quantity, but also quality.



## 5. Environmental Impact of Artificial Intelligence: The Hidden Carbon Footprint

While Artificial Intelligence (AI) is lauded for its transformative potential in healthcare and agriculture, its ecological cost is often overlooked. Reports from international bodies like the OECD and UNEP highlight that the rapid deployment of large-scale AI models consumes massive amounts of energy and water, contributing significantly to global greenhouse gas (GHG) emissions. As India strives for technological leadership, integrating environmental accountability into AI development has become a critical necessity for sustainable growth.

- **Rising Energy Demands:** Training a single Large Language Model (LLM) can generate nearly 3,00,000 kg of carbon emissions. A single ChatGPT query is estimated to consume 10 times more electricity than a standard Google search.
- **Water Scarcity Risks:** Data centers require vast amounts of water for cooling hardware. UNEP forecasts that AI servers could utilize up to 6.6 billion cubic meters of water by 2027, potentially exacerbating global water stress.
- **Inconsistent Data Reporting:** Information regarding AI's carbon footprint is often self-reported by tech giants and may be incomplete. Critics argue that low electricity consumption claims by corporations often ignore the full lifecycle impact of hardware manufacturing.
- **Global Regulatory Trends:** The U.S. and EU have initiated legislative measures, such as the *AI Environmental Impacts Act of 2024*, to mandate transparency in energy use. UNESCO's 2021 recommendations also provide a global ethical framework for "Green AI."
- **The Indian Context:** India currently mandates Environmental Impact Assessments (EIA) for physical infrastructure under the *EIA Notification, 2006*. Experts suggest expanding this scope to include the digital "compute" footprint of AI algorithms.
- **Sustainable Pathways:** Mitigation strategies include using pre-trained models to avoid redundant energy expenditure, transitioning data centers to renewable energy, and adopting ESG (Environmental, Social, and Governance) disclosure standards.



### Key Definitions

- **AI Compute:** The specialized hardware (like GPUs) and software "stacks" required to process complex AI workloads and train large models.
- **Large Language Models (LLMs):** AI systems trained on massive datasets to understand and generate human-like text; they are the most resource-intensive forms of modern AI.
- **Carbon Footprint:** The total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions—in this case, by the lifecycle of an AI model.
- **Bambi Bucket (Concept Analogy):** Just as aerial firefighting uses specialized tools for crisis, "Green AI" uses specialized metrics to "douse" the rising heat generated by data centers.

### Constitutional and Legal Provisions

- **Article 48A (DPSP):** Directs the State to protect and improve the environment. This can be interpreted to include regulating digital industries that significantly contribute to carbon emissions.



- **Article 51A(g):** Fundamental Duty of citizens to protect the natural environment, which extends to responsible technology consumption and development.
- **EIA Notification, 2006:** Issued under the *Environment (Protection) Act, 1986*, it provides the legal basis for assessing the impact of new projects. Integrating AI compute into this framework would strengthen digital governance.
- **Energy Conservation Act, 2001:** Could be utilized to set energy-efficiency standards for data centers hosting AI infrastructure in India.

### Conclusion

AI should be a part of the solution for global sustainability, not a contributor to its degradation. While the technology can optimize power grids and track deforestation, the "cost of compute" must be measured accurately. India needs to transition from purely "using AI for climate" to "developing climate-conscious AI." By establishing clear measuring standards and including AI impacts in ESG disclosures, India can ensure its digital revolution does not come at the cost of its environmental commitments.

## INTERNATIONAL RELATIONS

### 1. Indo-Bangladesh Joint Water Measurement: Ganges Water Sharing Treaty 2026

India and Bangladesh have initiated the joint water measurement process for the Padma and Ganga rivers, marking a critical diplomatic juncture as the historic 1996 Ganges Water Sharing Treaty enters its 30th and final year. This technical exercise is essential for ensuring transparency and data-driven cooperation in transboundary river management between the two neighbors.

#### Key Highlights of the Joint Measurement Exercise

- **Final Year of Treaty:** The measurement comes as the 30-year "Ganges Water Sharing Treaty," signed in 1996, is set to expire in December 2026, necessitating a review or renewal.
- **Geographical Locations:** Joint teams are conducting measurements at two strategic points: 3,500 feet upstream of the Hardinge Bridge on the Padma River (Bangladesh) and at the Farakka Manfe point (India).
- **Technical Collaboration:** The exercise involves experts from the Joint Rivers Commission (JRC) of both nations to verify the flow of water during the "lean season" (January to May).
- **Data Transparency:** Accurate flow measurement is vital to resolve long-standing disputes regarding water availability at Farakka and the actual discharge reaching downstream Bangladesh.
- **Strategic Rejuvenation:** This move signals a commitment to "Hydro-diplomacy" despite political transitions, ensuring that bilateral ecological and agricultural needs are prioritized.
- **Future Framework:** The data collected during this final year will form the scientific basis for negotiating a successor treaty or extending the existing 1996 agreement.



#### Essential Concepts and Definitions

- **Lean Season:** The period between January 1 and May 31 each year when the water flow in the Ganga is at its lowest, requiring a structured sharing formula.



- **Farakka Barrage:** A barrage across the Ganga river located in West Bengal, India, designed to divert water into the Hooghly River to flush out silt and keep the Kolkata Port operational.
- **Transboundary River:** A river that crosses at least one political border, either within a nation or an international boundary, requiring cooperative management frameworks.
- **Joint Rivers Commission (JRC):** A bilateral body established in 1972 to work for the common benefit of both countries in harnessing the waters of shared rivers.

### Constitutional and Legal Provisions

- **Ganges Water Sharing Treaty (1996):** A bilateral agreement that established a 30-year formula for sharing the Ganga waters at Farakka during the lean season. It includes a provision for review every five years.
- **Article 253:** Empowers the Indian Parliament to make laws for implementing any treaty, agreement, or convention with any other country or decisions made at international conferences.
- **Entry 14 (Union List):** Deals with "Entering into treaties and agreements with foreign countries and implementing of treaties, agreements and conventions with foreign countries."
- **Article 262:** Provides for the adjudication of disputes relating to waters of inter-State rivers or river valleys, though international water sharing falls under the Union's executive power in foreign affairs.

### Conclusion

The commencement of joint water measurement is a proactive step in stabilizing the "Upper Riparian vs. Lower Riparian" dynamic between India and Bangladesh. As the 1996 treaty reaches its sunset clause, the success of this measurement exercise will determine the trust levels required for a new water-sharing paradigm. Beyond the Ganga, this process sets a precedent for resolving similar issues on other shared rivers like the Teesta, emphasizing that scientific data remains the best antidote to political friction in transboundary water management.

## 2. India-U.S. Relations: Energy Diplomacy and Trade Friction

**Context:** U.S. President Donald Trump has asserted that India reduced its Russian oil imports to secure a bilateral trade deal and mitigate the impact of U.S.-imposed tariffs. Senator Lindsey Graham corroborated this, suggesting Indian diplomacy actively leveraged these energy shifts to seek relief from a 25% additional tariff.

- **Shift in Energy Procurement:** Recent trends indicate a strategic reduction in India's intake of Russian crude, which the U.S. administration interprets as a direct response to American diplomatic pressure and tariff threats.
- **Transactional Diplomacy:** The U.S. leadership views India's energy choices through a transactional lens, linking oil imports from Russia to the broader 25% reciprocal tariff framework and the pending India-U.S. trade agreement.
- **Tariff Escalation as Leverage:** President Trump emphasized that the threat of rapid tariff hikes remains a primary tool to influence Indian trade policy, labeling current shifts as an effort by Prime Minister Modi to maintain bilateral rapport.
- **Diplomatic Intercession:** Indian Ambassador Vinay Kwatra reportedly engaged in high-level lobbying with U.S. Senators to negotiate "tariff relief," highlighting the intersection of trade penalties and energy security in current bilateral talks.





- **Strategic Autonomy vs. Pressure:** While the U.S. claims credit for India's pivot, New Delhi's silence suggests a complex balancing act between maintaining its "Strategic Autonomy" and managing the economic fallout of U.S. protectionist policies.
- **Impact on Trade Deal:** The reduction in Russian oil dependency is being positioned by the U.S. as a prerequisite for finalizing a trade deal that would stabilize economic relations between the two largest democracies.

### Key Definitions

- **Reciprocal Tariffs:** A trade policy where a country imposes tariffs on imports from another country at the same rate that the other country imposes on its own exports.
- **Strategic Autonomy:** The ability of a state to pursue its national interests and adopt its preferred foreign policy without being constrained by other states.
- **Energy Security:** The association between national security and the availability of natural resources for energy consumption at an affordable price.

### Constitutional and Legal Provisions

- **Article 51 (Directive Principles):** The Constitution of India enjoins the State to promote international peace and security and maintain just and honorable relations between nations.
- **Entry 10 & 14, Union List (Schedule VII):** The Central Government has exclusive jurisdiction over "Foreign Affairs" and "Entering into treaties and agreements with foreign countries," providing the legal basis for oil procurement and trade negotiations.
- **Foreign Trade (Development and Regulation) Act, 1992:** This legislation empowers the Indian government to regulate imports and exports, serving as the primary tool for responding to international tariff regimes.

### Conclusion

The current friction highlights a shift toward "transactionalism" in India-U.S. ties. While India seeks to protect its economic interests through diplomatic maneuvering and diversified energy sourcing, the U.S. administration is increasingly using market access and tariffs as geopolitical leverage. For India, the challenge remains to balance its historical ties with Russia against the critical necessity of a stable economic partnership with the United States.

## 3. US Interest in Greenland: Geopolitics and Arctic Sovereignty

The reported deliberations within the Trump administration regarding the purchase of Greenland have reignited a significant diplomatic and legal debate. While the U.S. frames this as a national security imperative to counter Russian and Chinese influence in the Arctic, the Kingdom of Denmark and the semi-autonomous government of Greenland have categorically rejected the possibility of a sale. The situation highlights the growing strategic importance of the Arctic region due to climate-induced accessibility and its vast untapped mineral wealth.

### Key Highlights for UPSC

- **Strategic Location:** Greenland is central to the **GIUK (Greenland-Iceland-UK) Gap**, a maritime chokepoint vital for monitoring naval movements in the North Atlantic. It also hosts the **Pituffik**





**Space Base**, the northernmost U.S. military installation, which is critical for early missile warning systems.

- **Arctic Competition:** The U.S. views control over Greenland as essential to deter "Arctic aggression" from Russia, which has been reopening Soviet-era bases, and China, which has declared itself a "Near-Arctic State" and proposed a "Polar Silk Road."
- **Mineral Wealth:** Greenland possesses some of the world's largest undeveloped deposits of **Rare Earth Elements (REEs)**—essential for green energy technologies—alongside lithium, graphite, and uranium. Currently, China controls approximately 70% of global REE production, making Greenland an alternative supply chain hub.
- **Diplomatic Fallout:** The proposal has strained relations with **NATO allies**. Denmark has warned that any unilateral U.S. move could threaten the integrity of the alliance. Major European powers (France, UK, Germany) have issued joint statements supporting Greenland's right to self-determination.
- **The "All Options" Doctrine:** The White House's refusal to rule out military action has shifted the discourse from a real estate transaction to a matter of international law concerning **sovereignty and territorial integrity**.
- **Internal Autonomy:** Under the **Self-Government Act of 2009**, Greenlanders are recognized as a separate people under international law with a right to self-determination, meaning Denmark cannot legally "sell" the territory without the consent of the Greenlandic people.

#### Constitutional and Legal Framework

- **UN Charter Article 2(4):** Prohibits the threat or use of force against the territorial integrity or political independence of any state. Any acquisition through military pressure would be legally null and void.
- **Right to Self-Determination:** Enshrined in the UN Charter and the International Covenant on Civil and Political Rights (ICCPR), this principle ensures that the people of Greenland alone have the right to determine their political status.
- **1951 Defense of Greenland Treaty:** A bilateral agreement between the U.S. and Denmark that allows the U.S. to operate military facilities. The U.S. already has significant access, making "ownership" a political rather than purely operational goal.
- **Danish Constitution:** Any change in the status of Greenland requires a constitutional amendment in Denmark and a referendum in Greenland, making a simple "purchase" legally impossible under current Danish law.

#### Key Definitions

- **GIUK Gap:** The naval chokepoint between Greenland, Iceland, and the United Kingdom; a historical strategic barrier for Russian/Soviet submarines entering the Atlantic.
- **Sovereignty:** The supreme authority of a state over its territory and people, protected under international law from external interference.
- **Rare Earth Elements (REEs):** A group of 17 chemical elements used in high-tech devices, defense systems, and electric vehicle batteries.



- **Near-Arctic State:** A term coined by China to justify its participation in Arctic governance, despite having no territorial borders in the region.

### Conclusion:

The Greenland controversy is more than a territorial dispute; it is a symptom of the "New Cold War" being fought over the melting Arctic. For India, which is an **Observer** in the **Arctic Council**, these developments are significant. India's own **Arctic Policy (2022)** emphasizes scientific research and sustainable resource use. Any destabilization of the Arctic governance framework or the weakening of NATO norms regarding sovereignty could have ripple effects on global security architectures.

## 4. Sanctioning Russia Act 2025: U.S. Tariffs and Implications for India

The **Sanctioning Russia Act 2025** is a proposed bipartisan U.S. legislation recently "greenlit" by President Donald Trump. Aimed at economically isolating Moscow, the bill seeks to leverage extreme trade penalties against third-party nations to halt the financing of Russia's military operations.

### Key Highlights of the Bill

- **Massive Tariff Authority:** Empowers the U.S. President to levy up to **500% tariffs** on all goods and services from countries that continue to import Russian oil or uranium.
- **Bipartisan Momentum:** The bill (S.1241) has secured overwhelming support in both the Senate and the House, making its passage highly likely by early 2026.
- **Diplomatic Coercion:** Explicitly targets major economies like **India, China, and Brazil**, using access to the U.S. market as "leverage" to force a shift in their energy procurement.
- **Trigger Mechanism:** Punitive measures are tied to Russia's willingness to negotiate a peace agreement; sanctions can be mandated every **90 days** based on executive determination.
- **Economic Impact:** For India, such tariffs could effectively end exports in labor-intensive sectors like textiles, footwear, and pharmaceuticals, which are currently vital for bilateral trade.
- **Strategic Pressure:** The move coincides with the appointment of **Sergio Gor** as the U.S. Ambassador-designate to India, who has labeled ending India's Russian oil imports a "top priority."

### Constitutional and Legal Provisions

- **International Emergency Economic Powers Act (IEEPA):** A 1977 U.S. law that grants the President broad authority to regulate international commerce after declaring a national emergency.
- **Secondary Sanctions:** These are "extraterritorial" laws used by the U.S. to penalize non-U.S. entities (like Indian refiners) for trading with a sanctioned country (Russia), even if the trade occurs outside U.S. jurisdiction.
- **Reciprocal Tariffs:** A trade policy principle where a country matches the tariff rates of its trading partners; President Trump has frequently used this to address trade deficits with India.
- **Article 73 of the Indian Constitution:** Deals with the extent of the executive power of the Union, which includes the power to enter into international treaties and respond to foreign economic policies.

### Key Definitions

- **Strategic Autonomy:** The ability of a state to pursue its national interests and adopt its preferred foreign policy without being constrained by other states.



- **Secondary Sanctions:** Sanctions that target third-party nations or companies to prevent them from engaging in business with a primary sanctioned target.
- **Uranium and Petroleum "Exchanges":** In the context of this bill, any commercial transaction involving the purchase, trade, or transfer of Russian-origin energy resources.

### Conclusion

The proposed 500% tariff marks a significant escalation in U.S. economic statecraft, moving from targeted sanctions to broad-based trade warfare. While India has maintained that its energy purchases are essential for domestic energy security and inflation control, the sheer scale of the threatened tariffs presents a formidable challenge to India's "Strategic Autonomy." New Delhi may need to accelerate its energy diversification or negotiate a high-stakes trade "waiver" to preserve its export-led growth.

## 5. Israel's Recognition of Somaliland: A Geopolitical Rupture in the Horn of Africa

### Summary of the Diplomatic Shift

- **Historic Recognition:** In December 2025, Israel became the first sovereign state to formally recognize Somaliland as an independent nation, moving beyond the "technical mission" or "representative office" status held by other powers.
- **Strategic Maritime Control:** The move provides Israel with a critical security and intelligence foothold near the **Bab el-Mandeb Strait**, directly countering Houthi-led threats and Iranian influence in the Red Sea corridor.
- **China's "One China" Dilemma:** Beijing views this as a dangerous precedent for separatism, directly paralleling its stance on Taiwan. Somaliland's existing official ties with Taipei (since 2020) further intensify this diplomatic friction.
- **Rivalry Near Djibouti:** By legitimizing Somaliland, Israel and its allies (UAE and potentially the US) create a rival logistics and security hub, threatening China's leverage centered around its first overseas military base in neighboring Djibouti.
- **Regional Recalibration:** This development follows Ethiopia's 2024 Memorandum of Understanding (MoU) with Somaliland for port access, signaling a broader international shift that isolates the federal government in Mogadishu.
- **The "Orange Economy" and Stability:** Unlike the volatile south, Somaliland's relative peace and democratic institutions over three decades have made it an increasingly attractive partner for "geopolitical entrepreneurs."

### Constitutional and Legal Context

#### 1. Montevideo Convention (1933):

- Defines the rights and duties of states. Somaliland meets the four criteria: a permanent population, a defined territory, a government, and the capacity to enter into relations with other states. Israel's move addresses the final, most contested criterion.
- **2. Principle of Territorial Integrity:**
  - Under the UN Charter and the African Union (AU) Constitutive Act, the sanctity of colonial borders is upheld. Somalia maintains that Somaliland's secession violates the territorial integrity of the Somali Republic as recognized in 1960.
- **3. One China Principle:**
  - A core tenet of China's foreign policy which asserts that there is only one China and Taiwan is an inalienable part of it. Somaliland is the only African entity besides Eswatini to host a "Taiwan Representative Office," making it a focal point of Chinese "wolf warrior" diplomacy.



### Key Word Definitions

- **Horn of Africa:** A peninsula in Northeast Africa (Somalia, Ethiopia, Eritrea, Djibouti) that sits along the world's most vital shipping lanes connecting the Indian Ocean to the Mediterranean via the Suez Canal.
- **De Facto vs. De Jure State:** Somaliland is a *de facto* state (functioning as one in practice) but lacked *de jure* (legal international) recognition until Israel's 2025 declaration.
- **Choke Point:** A strategic narrow passage (like the Bab el-Mandeb) that can be easily blocked to disrupt global trade and energy flows.

### Conclusion

Israel's recognition of Somaliland has transformed a long-standing "frozen conflict" into a central theater of great-power competition. For India, this necessitates a careful balancing act: protecting its maritime interests in the Gulf of Aden while respecting the territorial integrity of Somalia, a fellow IORA (Indian Ocean Rim Association) member. As the Red Sea becomes increasingly militarized, the "Somaliland Card" will likely be used by middle powers to challenge the established influence of China and the US in the region.

## 6. Greenland Standoff: Transatlantic Crisis and Global Trade Implications

The geopolitical landscape has shifted dramatically following U.S. President Donald Trump's announcement of a **10% tariff** on eight European nations—Denmark, Norway, Sweden, France, Germany, the UK, the Netherlands, and Finland—effective February 1, 2026. This move, explicitly linked to these nations' opposition to a U.S. takeover of Greenland, has been termed by European leaders as a "dangerous downward spiral" that threatens the very foundation of the North Atlantic alliance and global economic stability.

### Key Summary Points for Examination

- **Trigger and Timeline:** The U.S. administration cited the deployment of European military personnel to Greenland for **Operation Arctic Endurance** as a "dangerous game," triggering a 10% tariff starting Feb 1, 2026, which is set to escalate to **25% on June 1** unless a deal for the "complete and total purchase" of Greenland is reached.
- **European Solidarity:** In a rare show of unified resistance, the eight targeted nations issued a joint statement reaffirming the **sovereignty and territorial integrity** of the Kingdom of Denmark, characterizing the U.S. demands as "commercial blackmail."
- **Arctic Security Context:** While the U.S. argues that controlling Greenland is a national security "absolute necessity" to counter Russian and Chinese influence, European allies maintain that Arctic security should be managed collectively within the **NATO framework**.
- **Impact on Trade Accords:** The crisis has effectively frozen the **US-EU trade deal** signed in July 2025; the European Parliament is now considering the suspension of ratification, which would have otherwise eliminated duties on American imports.
- **Economic Coercion and Retaliation:** The EU is evaluating the activation of its **Anti-Coercion Instrument (ACI)**, a "trade bazooka" designed to allow collective countermeasures against third countries using economic pressure to influence sovereign decisions of member states.





- **Global Market Volatility:** The threat has triggered a flight to safe-haven assets like gold and silver, while emerging economies like India are closely monitoring the situation as it may accelerate alternative trade alignments, such as the **India-EU Free Trade Agreement**.

### Important Definitions & Key Terms

- **Sovereignty:** The supreme and independent authority of a state over its territory and domestic affairs, free from external interference.
- **Territorial Integrity:** The principle under international law that prohibits states from using force or threats against the border or political independence of another state.
- **Anti-Coercion Instrument (ACI):** A legal tool of the European Union that allows it to respond to economic intimidation through trade, investment, or other restrictions.
- **Self-Determination:** The legal right of a "people" (like the Greenlanders) to decide their own political status and form of government.

### Constitutional and Legal Provisions

- **UN Charter Article 2(4):** Strictly prohibits the threat or use of force against the territorial integrity or political independence of any state.
- **The 2009 Greenland Self-Government Act:** A Danish law recognizing Greenlanders as a "people" under international law with the exclusive right to initiate independence; it does not provide for the sale of the territory to a third party.
- **Article 5 of the North Atlantic Treaty:** The "collective defense" clause; the current dispute represents an unprecedented internal friction where a lead member (U.S.) applies pressure on other members (Denmark/EU).
- **International Emergency Economic Powers Act (IEEPA):** The U.S. domestic law frequently invoked by the presidency to impose tariffs, currently under scrutiny by the U.S. Supreme Court regarding its scope for territorial acquisition.

### Additional Key Points for UPSC Mains

- **Strategic Significance of the Arctic:** Melting ice caps are opening new shipping routes and exposing vast mineral resources (Rare Earth Elements), making Greenland a focal point of 21st-century "Great Power Competition."
- **Diplomatic Fallout:** The incident highlights the shift from "Rules-Based Order" to "Transactional Diplomacy," where trade tools are weaponized to achieve non-trade geopolitical objectives.
- **India's Perspective:** For India, the instability in transatlantic trade underscores the need for **Strategic Autonomy** and the diversification of supply chains to avoid over-dependence on any single global power.

### Conclusion

The Greenland-tariff dispute marks a watershed moment in modern international relations, where economic leverage is openly used to challenge the established norms of Westphalian sovereignty. While the U.S. views the acquisition as a strategic imperative for its missile defense "Dome," the global community sees it as a dangerous precedent. The resolution of this crisis will likely redefine the limits of economic diplomacy and the future of the NATO alliance in the Arctic era.



## 7. Trump's 'Board of Peace': A New Architecture for Gaza and Global Diplomacy

On January 16, 2026, U.S. President Donald Trump extended a formal invitation to Prime Minister Narendra Modi to join the **Board of Peace (BoP)**. This newly proposed international body is designed to act as a transitional governing administration to oversee the reconstruction and stabilization of Gaza. Framed as a cornerstone of Trump's **20-point peace plan**, the Board aims to bypass traditional multilateral bottlenecks, presenting a "bold new approach" to resolving global conflicts starting with the Middle East.

### Key Summary Points for Examination

- **Nature of the Body:** The Board of Peace is envisioned as a new global entity with "international legal personality," tasked with the strategic oversight of Gaza's transition from a conflict zone to a de-radicalized, self-sustaining territory.
- **Institutional Framework:** It operates within a three-tier structure: at the apex is the **Board of Peace** (led by Trump); supported by an **Executive Committee** (comprising officials like Marco Rubio, Jared Kushner, and Ajay Banga); and an on-ground **National Committee for the Administration of Gaza (NCAG)** consisting of Palestinian technocrats.
- **Funding and Membership:** Membership is structured around a "pay-to-participate" model where a **US\$1 billion contribution** secures a permanent seat, while others serve three-year terms. These funds are earmarked for the massive reconstruction of the Gaza Strip.
- **UN Endorsement:** The initiative claims international legitimacy via **UN Security Council Resolution 2803** (adopted in Nov 2025), which endorsed Trump's 20-point roadmap and authorized an **International Stabilization Force (ISF)** to manage security.
- **India's Role:** India's invitation reflects its growing stature as a "Vishwa Bandhu" (Global Friend). Joining the board would allow India to influence Middle Eastern stability but requires navigating a complex diplomatic path given its traditional support for a sovereign Palestinian state.
- **Security Mandate:** A critical component is the **permanent decommissioning** of Hamas's military infrastructure and the training of a vetted Palestinian police force, overseen by the Board and the ISF.



### Important Definitions & Key Terms

- **Transitional Governing Administration:** A temporary governing body established to manage a territory during its transition from conflict or colonial rule to full self-governance.
- **De-radicalization:** The process of changing a group's belief system to reject violence as a means of achieving political goals, often a prerequisite for reconstruction in the 20-point plan.
- **Technocratic Governance:** A system of governance where decision-makers are selected based on their technical expertise rather than political affiliations.

### Constitutional and Legal Provisions

- **Article 51 (Directive Principles):** The Indian Constitution mandates that the State shall endeavor to promote international peace and security and maintain just and honorable relations between nations.
- **UN Charter Chapter VII:** Although Resolution 2803 avoids explicit "Chapter VII" language to maintain "deliberate ambiguity," it authorizes "all necessary measures" for the ISF, which legally implies the use of force for peace enforcement.



- **The 20-Point Roadmap:** A non-binding but diplomatically significant framework that outlines the "New Gaza" vision, including amnesty for disarmed combatants and safe passage for those choosing exile.

#### Additional Key Points for UPSC Mains

- **Strategic Autonomy vs. Global Alignment:** India must balance its "Strategic Autonomy" with the benefits of joining a U.S.-led global body. Declining could cede influence to regional rivals like Pakistan (who also received an invitation).
- **Bypassing the Status Quo:** The Board of Peace represents a "minilateral" approach to diplomacy, which critics argue undermines the central role of the UN, while proponents see it as a more "nimble" alternative to a deadlocked Security Council.
- **Economic Diplomacy:** The involvement of the World Bank President and private equity leaders indicates that "peace" is being treated as an investment-led project, focusing on infrastructure as a deterrent to future conflict.

#### Conclusion

The invitation to join the Board of Peace places India at a diplomatic crossroads. While the initiative offers a seat at the table of a powerful new global regulator, it also tethers Indian foreign policy to a specific U.S.-centric vision for the Middle East. India's decision will likely depend on whether the Board can truly balance the security concerns of Israel with the legitimate aspirations of the Palestinian people for dignity and self-determination.

## 8. U.S. Federal Reserve Turmoil and the Rise of the Yuan

The global financial order is witnessing a historic stress test as the independence of the U.S. Federal Reserve faces unprecedented challenges. A criminal investigation into Fed Chair Jerome Powell, initiated by the Trump administration over building renovation costs, is being interpreted globally as a move to politicize monetary policy. This institutional friction coincides with China's aggressive strategy to globalize the Yuan (Renminbi) through its 15th Five-Year Plan (2026–2030), potentially marking a shift toward a multipolar currency system.

#### Key Summary Points for Examination

- **Fed Autonomy Crisis:** The U.S. Federal Reserve's "de facto" independence is under threat due to executive pressure and legal probes. Historically, central bank independence is critical for maintaining "price stability" and investor confidence in U.S. Treasuries as a safe-haven asset.
- **China's Counter-Strategy:** Beijing is leveraging U.S. political volatility to promote the Yuan as a "stable alternative." The 15th Five-Year Plan (2026–2030) prioritizes "current account liberalization" and the expansion of the **Cross-border Interbank Payment System (CIPS)** to rival the U.S.-led **SWIFT** network.
- **The "Dim Sum" Bond Market:** To increase the Yuan's investability, China is promoting offshore Yuan-denominated bonds (Dim Sum bonds). International firms and tech giants (e.g., Kuaishou, Tencent) are increasingly issuing debt in Yuan, taking advantage of lower interest rates in China compared to the U.S.





- **De-dollarization Incentives:** Western sanctions on Russia and Iran have highlighted the "weaponization of the dollar." Consequently, the **BRICS+** bloc is exploring alternative payment systems and linking Central Bank Digital Currencies (CBDCs) to conduct trade outside the dollar's scrutiny.
- **Structural Constraints of the Yuan:** Despite its growth, the Yuan's total global share remains small (approx. 3% of payments) compared to the Dollar (approx. 47%). China's strict capital controls and lack of an open capital account remain the primary barriers to the Yuan achieving true reserve currency status.
- **Geopolitical Stakes:** President Trump has termed the potential loss of the "world standard dollar" as equivalent to "losing a war," recently threatening 100% tariffs on BRICS nations if they successfully launch a competing currency.

### Important Definitions & Key Terms

- **Monetary Policy Independence:** The ability of a central bank to set interest rates and manage money supply without interference from the executive branch, essential for curbing inflation.
- **CIPS (Cross-border Interbank Payment System):** A Chinese payment system that offers clearing and settlement services for participants in cross-border Renminbi (RMB) trade, serving as an alternative to SWIFT.
- **Petrodollar:** The practice of pricing and trading crude oil in U.S. dollars, which ensures global demand for the currency and supports U.S. financial dominance.
- **Dim Sum Bonds:** Bonds issued outside of mainland China but denominated in Chinese Renminbi, rather than local currency.

### Constitutional and Legal Provisions

- **Federal Reserve Act of 1913 (USA):** Established the Fed as an independent central bank. While the President appoints the Chair, the "for cause" removal protection (upheld by the U.S. Supreme Court) is designed to shield officials from political whims.
- **Article 246 (Seventh Schedule, India):** In the Indian context, "Banking" (Entry 45) and "Currency, Coinage and Legal Tender" (Entry 36) fall under the Union List, similar to the federal oversight in the U.S.
- **IMF Article VIII:** Concerns the general obligations of members regarding currency convertibility. China is a signatory but maintains "capital account" restrictions that limit the Yuan's liquidity.
- **UN Charter & Sanctions:** The legal basis for financial "weaponization" often stems from UNSC resolutions, but unilateral sanctions (like those by the U.S.) are increasingly challenged as violations of "sovereign equality."

### Additional Key Points for Mains

- **The "Imperial Circle":** Economists argue that the global economy is in a cycle where it depends on the dollar for both stability and growth. Breaking this cycle requires a replacement that offers equal liquidity and legal predictability—qualities the Yuan currently lacks.
- **India's Balancing Act:** India supports "local currency settlement" (e.g., Rupee-Dirham trade) to save foreign exchange but remains wary of Yuan dominance within BRICS, often preferring a multipolar system over replacing one hegemon with another.



- **Safe-Haven Migration:** Politicization of the Fed has historically correlated with a surge in gold and silver prices, as seen in early 2026, as investors seek assets free from "counterparty risk" associated with government-controlled currencies.

### Conclusion

The supremacy of the U.S. Dollar is rooted more in "trust" and "institutional stability" than in pure economic output. If the Federal Reserve loses its perceived autonomy, the dollar risks a slow "death by a thousand cuts" as regional trade blocs migrate toward the Yuan or digital alternatives. While the Yuan is not yet ready to replace the dollar, the current turmoil creates a strategic window for China to establish a parallel financial order, fundamentally altering the 21st-century geopolitical landscape.

## 9. Chabahar Port: Navigating Geopolitical Headwinds and Strategic Interests

India is actively engaged in diplomatic discussions with the United States and Iran to maintain the operational continuity of the **Chabahar Port** in southeastern Iran. Despite the recent imposition of new US tariffs and the "maximum pressure" campaign against Tehran, New Delhi is leveraging its existing **sanctions waiver—valid until April 26, 2026**—to safeguard its investments. The Ministry of External Affairs (MEA) has reiterated that while the situation remains dynamic, India remains committed to this "long-standing" partnership, which serves as a vital gateway to landlocked Afghanistan and Central Asia.

### Key Strategic Highlights for UPSC

- **Strategic Bypassing:** Chabahar serves as India's primary alternative to bypass Pakistan's overland transit restrictions, providing direct maritime access to the **Zaranj-Delaram highway** in Afghanistan.
- **The "Golden Gate" to Central Asia:** The port is a central node of the **International North-South Transport Corridor (INSTC)**, designed to connect India to Russia and Europe, potentially reducing transit time by 15 days compared to the Suez Canal.
- **Countering China's "String of Pearls":** Strategically located just 76 nautical miles from the Chinese-operated **Gwadar Port** in Pakistan, Chabahar allows India to monitor and balance maritime influence in the Arabian Sea.
- **Sanctions Diplomacy:** India is navigating a "conditional waiver" from the US Department of Treasury (issued October 2025). Reports suggest India has already liquidated its financial commitment of **\$120 million** to insulate the project from future banking restrictions.
- **Humanitarian Hub:** The port has been instrumental in delivering over 10 million tonnes of bulk cargo, including wheat and medical aid, to Afghanistan since 2018.
- **Operational Shift:** To minimize direct sovereign risk, India is exploring the creation of new entities or transferring operations to manage the port without direct government exposure amid the evolving US-Iran friction.

### Constitutional and Legal Provisions

- **Article 51 (Directive Principles):** Mandates that the State shall endeavor to promote international peace and security and maintain just and honorable relations between nations.
- **Long-term Lease Agreement (2024):** A landmark 10-year contract signed between **India Ports Global Limited (IPGL)** and Iran's Port and Maritime Organisation (PMO) for the operation of the Shahid Beheshti terminal.
- **Trilateral Transit Agreement (2016):** A legal framework between India, Iran, and Afghanistan for the establishment of an international transport and transit corridor.



- **US Iran Freedom and Counter-Proliferation Act (IFCA):** The primary US law under which sanctions are applied; India seeks "carve-outs" under the National Defense Authorization Act (NDAA) for its Chabahar activities.

### Definitions of Key Concepts

- **Sanctions Waiver:** A legal exemption granted by a sanctioning body (like the US Treasury) allowing a specific entity or country to engage in otherwise prohibited trade.
- **Shahid Beheshti Terminal:** The specific portion of Chabahar port developed and operated by India; distinct from the Shahid Kalantari terminal.
- **INSTC (International North-South Transport Corridor):** A 7,200-km multi-modal trade route (ship, rail, road) for moving freight between India, Iran, Azerbaijan, and Russia.
- **Maximum Pressure Policy:** A diplomatic and economic strategy used by the US to isolate Iran through comprehensive sanctions to force a renegotiation of its nuclear program and regional policies.

### Conclusion

The Chabahar project is the litmus test of India's "**Strategic Autonomy.**" By balancing its growing security partnership with the US against its historic and logistical ties with Iran, India aims to secure its energy and connectivity interests. As the April 2026 deadline approaches, New Delhi's ability to demonstrate the port's value as a "humanitarian and non-military" asset will be crucial to securing a further extension and preventing the project's collapse under the weight of great-power competition.

## SOCIAL

### 1. Controversy Over ST Status in Assam: Tribal Bodies Reject GoM Proposals

The persistent demand for Scheduled Tribe (ST) status by six Other Backward Classes (OBC) communities in Assam has entered a new phase of conflict. The Coordination Committee of Tribal Organisations of Assam (CCTOA), representing 14 existing tribes, has formally rejected the recommendations of a Group of Ministers (GoM). The dispute centers on the legal validity of reclassifying populous mainstream groups as tribes and the potential dilution of existing political and reservation rights.

#### Key Summary Points

- **Rejection of GoM Report:** The CCTOA has labeled the GoM's proposal to grant ST status to six communities—Koch-Rajbongshi, Chutia, Matak, Moran, Tai Ahom, and Tea Tribes—as "illegal and unconstitutional."
- **Three-Tier Classification:** The GoM suggested a novel structural shift by dividing STs into three categories: ST (Plain), ST (Hill), and a newly proposed **ST (Valley)** to accommodate the six candidate communities.
- **Erosion of Political Rights:** Existing tribes fear that including these populous and relatively advanced groups will lead to the "extermination" of their political representation in Panchayats, State Assembly, and Parliament.
- **Criteria Conflict:** Tribal bodies argue that these six communities are part of the "mainstream Assamese" and do not meet the **Lokur Committee (1965)** criteria, such as "shyness of contact" and "primitive traits."





- **Breach of 50% Ceiling:** Critics point out that Assam's current reservation already stands at 59% (including EWS); adding these communities could push total reservation beyond 70%, violating the **Indra Sawhney (1992)** Supreme Court mandate.
- **Procedural History:** The CCTOA highlights that in 1993, these groups were research-verified as OBCs; they argue that reclassifying them as STs now is a move driven by "political expediency" rather than ethnographic reality.

### Key Definitions for UPSC

- **Scheduled Tribes (ST):** Communities notified by the President under **Article 342** who exhibit traditional tribal characteristics and geographical isolation.
- **OBC (Other Backward Classes):** Groups identified as socially and educationally backward but who do not fit the criteria for SC or ST.
- **ST (Valley):** A proposed administrative category in Assam intended to group newly added ST communities to prevent them from eating into the quotas of existing Hill and Plain tribes.
- **Lokur Committee Criteria:** The five-fold criteria for ST status: (1) Primitive traits, (2) Distinctive culture, (3) Geographical isolation, (4) Shyness of contact, and (5) General backwardness.

### Constitutional & Legal Provisions

- **Article 342:** Empowering the President to specify tribes as Scheduled Tribes in relation to a State/UT. Any subsequent inclusion or exclusion can only be done by an **Act of Parliament**.
- **Article 366(25):** Provides the definition of Scheduled Tribes for the purposes of the Constitution.
- **The Fifth & Sixth Schedules:** Provide for the administration of tribal areas. Existing tribes fear that the inclusion of new groups will destabilize the autonomy of **Sixth Schedule Councils** (like the Bodoland Territorial Council).
- **Indra Sawhney vs Union of India (1992):** The landmark "Mandal Case" where the SC capped total reservations at 50%, allowing exceptions only in "extraordinary situations" for far-flung areas.

### Additional Important Keypoints

- **Tea Tribes' Origins:** The "Tea Tribes" are descendants of Adivasis brought from Central India (Jharkhand, Odisha) by the British. While they are STs in their home states, they are OBCs in Assam—a core point of their demand for parity.
- **Land Protection:** The GoM report also proposed a land protection law to prevent the transfer of land from these six communities to "outsiders," similar to protections enjoyed by existing STs.
- **Ethnographic Expert Committee (2025):** Contrary to the GoM, previous ethnographic reports suggested that many "Tea Garden" communities qualified for SC status rather than ST status, leading to claims of administrative inconsistency.

### Conclusion

The impasse in Assam reflects a classic conflict between "aspiration for upward mobility" and "protection of indigenous identity." While the GoM's three-tier "ST (Valley)" model attempts a mathematical compromise, the legal hurdles regarding the 50% reservation cap and the ethnographic criteria of the Lokur Committee remain significant barriers. For a sustainable resolution, the state must balance the socio-economic upliftment of the six communities without compromising the "distinctiveness" and "political safeguards" of the original inhabitants.



## 2. Artificial Intelligence in Education and Open Schooling Reforms: Towards Viksit Bharat

The Union Government has unveiled a dual-strategy to modernize Indian education by integrating Artificial Intelligence (AI) into teacher training and liberalizing the National Institute of Open Schooling (NIOS) framework. Central to these reforms is the **Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025**, which aims to replace legacy regulatory bodies with a unified, technology-driven architecture. These initiatives are designed to bridge the digital divide, enhance employability, and align Indian education with the global standards envisioned in the National Education Policy (NEP) 2020.

### Key Summary Points

- **VBSA Bill 2025:** A landmark legislative overhaul proposed to create a unified regulator, the *Viksit Bharat Shiksha Adhishthan*, subsuming the UGC, AICTE, and NCTE to streamline higher and teacher education.
- **AI-Enabled Teaching:** The government will introduce comprehensive guidelines to help teachers leverage AI for personalized learning, automated assessments, and administrative efficiency, ensuring educators act as "AI-partners."
- **Liberalizing Open Schooling:** Plans are underway to expand and "liberalize" the NIOS framework to make secondary and higher secondary certification more accessible and flexible for learners of all ages.
- **Employment-Centric Standards:** New technical education standards will shift the focus from rote degree-acquisition to equipping graduates with specific skills for high-growth jobs and entrepreneurship.
- **Centre of Excellence in AI:** A dedicated allocation of ₹500 crore in the Union Budget 2025-26 supports the establishment of Centres of Excellence to drive research and context-based AI implementation in classrooms.
- **Digital Single-Window System:** The proposed reforms mandate a technology-driven, faceless regulatory system based on public self-disclosures by institutions to ensure transparency and accountability.



### Definitions of Key Terms

- **Open Schooling:** A flexible distance learning system that allows students to complete their education at their own pace without the requirement of attending a conventional school daily.
- **AI-Driven Pedagogy:** An approach to teaching where artificial intelligence tools are used to analyze student performance, tailor lessons to individual needs, and provide real-time feedback.
- **Subsumption of Regulators:** The process of merging multiple independent regulatory bodies (like UGC and AICTE) into a single overarching authority to eliminate overlapping jurisdictions.
- **Faceless Regulation:** A regulatory approach that uses digital portals for approvals and compliance monitoring, minimizing direct physical interaction and reducing corruption or procedural delays.

### Constitutional and Legal Provisions

- **Article 21A:** The Fundamental Right to free and compulsory education for children aged 6 to 14. Open schooling liberalisation expands the spirit of this right to older age groups.



- **Entry 66 (Union List):** Gives the Centre the power to determine standards in institutions for higher education or research and scientific and technical institutions. The VBSA Bill is framed under this entry.
- **Viksit Bharat Shiksha Adhishthan Bill, 2025:** The primary legal vehicle intended to repeal the UGC Act (1956), AICTE Act (1987), and NCTE Act (1993).
- **NEP 2020 Compliance:** The legal reforms are aimed at operationalizing the National Education Policy's recommendation for a single "light but tight" regulator for higher education.

### Important Keypoints for Analysis

- **Teacher as a Facilitator:** The AI guidelines emphasize that technology is intended to augment, not replace, the teacher, allowing them to focus on mentorship and critical thinking.
- **Addressing the "Learning Crisis":** By liberalizing NIOS, the government targets the high dropout rates at the secondary level, offering a "second chance" to millions of adult learners and working professionals.
- **Global Benchmarking:** The Standards Council under VBSA will be tasked with making Indian degrees globally mobile and recognizable, supporting the internationalization of Indian education.
- **Data Privacy & Ethics:** A critical component of the AI integration will be the "NEP-Safe AI Framework," focusing on data privacy for students and the ethical use of machine learning in grading.

### Conclusion

The convergence of AI technology and regulatory liberalization represents a structural shift in India's human capital strategy. By moving away from fragmented regulation and embracing a "technology-first" pedagogical model, the government seeks to future-proof the Indian workforce. Success will depend on the effective constitutional balancing of Central oversight with State autonomy and the successful constitution of the Joint Parliamentary Committee to address opposition concerns regarding over-centralization.

### 3. Combatting Child Marriage: The Murshidabad Model and 'Kanyashree Yodhas'

The persistence of child marriage in West Bengal, particularly in districts like Murshidabad, remains a significant socio-economic challenge. However, localized interventions involving student-led activism, conditional cash transfers, and community-level monitoring are showing promising results in creating child-marriage-free zones.

- **Student-Led Activism:** Girls like Monija Khatun and Mousumi Khatun, recognized as 'Kanyashree Yodhas' (Girl Warriors), are acting as primary whistleblowers. By utilizing the 1098 helpline, they have successfully prevented numerous marriages within their peer groups, highlighting the role of youth agency in social reform.
- **The Kanyashree Scheme:** Launched in 2013, this conditional cash transfer programme aims to disincentivize early marriage by providing financial assistance to girls for remaining in school. While it has reached nearly 1 crore beneficiaries, the challenge remains acute in regions with high migration and poverty.
- **Institutional Interventions:** In Murshidabad, several Gram Panchayats have been declared 'child-marriage-free'. Success is attributed to the 'Behrampore Model' where female Pradhans engage local religious leaders (Imams), temples, and schools to enforce a zero-tolerance policy.



- **Technological and Health Monitoring:** The District Child Protection Unit uses teenage pregnancy rates as a proxy indicator for child marriage. Aggressive campaigning in 2025 led to a reduction in teen pregnancies from 21% to 17% in specific blocks, aided by the monitoring of elopement cases linked to increased internet access.
- **Health and Socio-Economic Fallout:** Child marriage is directly linked to underweight births, high maternal mortality risks, and the perpetuation of poverty. In Murshidabad, NFHS-5 data shows a staggering 55.4% of women aged 20-24 were married before 18, emphasizing the need for sustained legal and social pressure.
- **Convergence of Law and Community:** The strategy involves a 'carrot and stick' approach—using social awareness and mosques/temples for sensitization, while simultaneously invoking the PCMA and POCSO Acts to prosecute offenders, including clerics who solemnize such weddings.

### Key Definitions

- **Child Marriage:** A formal marriage or informal union where one or both parties are under the age of 18.
- **Kanyashree Yodha:** A title conferred by the district administration on girls who actively resist their own child marriages or report and prevent the marriages of others.
- **Gram Panchayat Child-Marriage-Free:** A certification given to local bodies where no child marriages have been reported or conducted for a specific period, validated by administrative checks.
- **Conditional Cash Transfer (CCT):** Programs that transfer cash to poor households on the condition that they make specific investments in the human capital of their children (e.g., school attendance).

### Constitutional and Legal Provisions

- **Prohibition of Child Marriage Act (PCMA), 2006:** Defines the age of marriage (21 for males, 18 for females). It prescribes rigorous imprisonment and fines for those who perform, conduct, or abet child marriage.
- **Protection of Children from Sexual Offences (POCSO) Act, 2012:** Used in conjunction with PCMA to charge adult groomers, as sexual relations with a minor (under 18) are legally deemed as rape, making bail difficult.
- **Article 21:** The Right to Life and Personal Liberty, which the Judiciary interprets as including the right to choose a life partner and the right to education (Article 21A).
- **Sustainable Development Goal (SDG) 5.3:** A global commitment by India to eliminate all harmful practices, such as child, early, and forced marriage by 2030.

### Conclusion

The transition from being a victim of circumstance to a 'Kanyashree Yodha' represents a shift in rural India's social fabric. While poverty and migration continue to drive early marriages, the decentralization of the fight to the Gram Panchayat level and the empowerment of school-going girls provide a scalable blueprint for achieving India's SDG targets.



#### 4. Kerala’s Malayalam Bhasha Bill, 2025: Linguistic Minority Concerns

- **The Legislative Move:** The Kerala Assembly recently passed the Malayalam Bhasha Bill, 2025, which mandates Malayalam as the compulsory first language in all government and aided schools across the state up to Class 10.
- **Inter-State Friction:** The Karnataka government has formally objected to the Bill, sending a delegation from the Karnataka Border Area Development Authority to meet the Kerala Governor, urging him to withhold assent.
- **Linguistic Minority Rights:** The primary contention lies in the Kasaragod district, where approximately 70% of the population is Kannada-speaking; critics argue that forcing Malayalam as the first language undermines their right to primary education in their mother tongue.
- **Constitutional Challenge:** Karnataka asserts the Bill violates Articles 350 and 350A, which mandate the state to protect linguistic minorities and provide adequate facilities for instruction in the mother tongue at the primary stage.
- **Historical Precedent:** This is not the first instance of such legislation; a similar Bill passed by the Kerala Assembly in 2017 was previously rejected by the President of India following similar constitutional concerns.
- **Broader Implications:** The dispute adds to existing tensions between the two states, recently exacerbated by administrative disagreements over demolitions and border-area management.

#### Key Definitions

**Linguistic Minorities:** A group of people whose mother tongue is different from that of the majority in the state or a part of a state. In India, these rights are protected to ensure cultural and educational preservation. **Assent to Bills:** The process by which the Governor or President signs a Bill passed by the legislature, making it an Act. Under Article 200, a Governor can grant assent, withhold it, or reserve the Bill for the President’s consideration.

#### Constitutional and Legal Provisions

**Article 350:** Every person is entitled to submit a representation for the redress of any grievance to any officer or authority of the Union or a State in any of the languages used in the Union or in the State. **Article 350A:** It shall be the endeavor of every State and of every local authority within the State to provide adequate facilities for instruction in the mother-tongue at the primary stage of education to children belonging to linguistic minority groups. **Article 350B:** Provides for the appointment of a Special Officer for Linguistic Minorities by the President to investigate matters relating to safeguards provided for them. **Article 29:** Protects the interests of minorities, stating that any section of citizens residing in India having a distinct language, script, or culture of its own shall have the right to **conserve the same.**

#### Conclusion

The dispute over the Malayalam Bhasha Bill, 2025, highlights the delicate balance between promoting a state’s official language and safeguarding the constitutional rights of linguistic minorities. While states have the legislative competence to determine educational curricula, such powers are not absolute and must align with the federal spirit and specific safeguards provided under Part XVII of the Constitution. The resolution of this issue will likely depend on the Governor’s discretion or a potential presidential intervention, mirroring the 2017 outcome.





## 5. The Age of Consent Debate: Navigating POCSO and Adolescent Autonomy

The Supreme Court of India, in *State of Uttar Pradesh vs. Anurudh & Anr. (2026)*, has highlighted the unintended criminalization of consensual adolescent relationships under the Protection of Children from Sexual Offences (POCSO) Act, 2012. This judicial acknowledgment has reignited the discourse on whether the "bright-line" age of consent—currently fixed at 18 years—needs recalibration to distinguish between predatory abuse and evolving adolescent sexuality.

- **Strict 18-Year Threshold:** Under the POCSO Act and the Bharatiya Nyaya Sanhita (BNS), any individual below 18 is a "child." Consent is legally irrelevant, and sexual acts with minors are treated as "statutory rape," regardless of the minor's perceived maturity or willingness.
- **Misuse in Romantic Relationships:** Empirical data from the Enfold study reveals that nearly 24.3% of POCSO cases involve consensual romantic relationships, often initiated by disapproving parents to criminalize elopements, leading to high acquittal rates as victims frequently refuse to testify.
- **Evolution of the Law:** India's age of consent has shifted significantly over time, from 10 years in 1860 to 16 years until 2012. The 2013 Criminal Law Amendment raised it to 18 to align IPC (now BNS) with the POCSO framework, emphasizing maximum protection.
- **The "Romeo-Juliet" Clause:** Advocates for reform suggest adopting "close-in-age" exemptions, similar to those in the UK or Canada, which exempt teenagers from criminal prosecution if their partner is within a specific age gap (e.g., 2 to 3 years) and the act is consensual.
- **Legislative Resistance:** Parliament and the Law Commission (283rd Report) have consistently opposed lowering the age, fearing it would weaken the deterrent against child trafficking, early marriage, and exploitation by those in positions of trust.
- **Judicial Dichotomy:** While the Supreme Court recently reaffirmed that consent is immaterial for minors, it also invoked Article 142 to waive sentencing in specific adolescent cases, highlighting a growing tension between strict statutory application and ground-level justice.

### Key Definitions

- **Age of Consent:** The legally defined age at which an individual is considered to have the mental and emotional capacity to validly agree to sexual activity.
- **Statutory Rape:** A sexual offence where the victim is under the legal age of consent; the act is a crime even if the victim ostensibly agreed to it.
- **Romeo-Juliet Clause:** A legal provision that prevents the criminalization of sexual activity between two minors or a minor and a young adult when the age difference is minimal and the act is consensual.
- **Bright-line Rule:** A clearly defined rule or standard in law composed of objective factors, which leaves little or no room for varying interpretation.

### Constitutional & Legal Provisions

- **Article 15(3):** Empowers the State to make "special provisions for women and children," providing the constitutional bedrock for the POCSO Act.
- **Article 21:** The Right to Life and Personal Liberty, which the courts have increasingly interpreted to include the right to sexual autonomy and privacy for those nearing the age of majority.



- **Article 142:** Grants the Supreme Court extraordinary power to pass any order necessary for "doing complete justice" in any cause or matter pending before it.
- **Section 19 (POCSO):** Mandates compulsory reporting of any suspected sexual offence against a child, creating a legal conflict in cases of consensual adolescent relationships.
- **Section 63 (BNS):** Retains the definition of rape to include acts with any woman under 18 years of age, with or without her consent.

### Additional Key Points

- **Impact of Mandatory Reporting:** The "must-report" clause often forces doctors and frontline workers to report consensual teenagers, leading to institutional trauma for the adolescents involved.
- **Social Ecosystem:** Beyond law, the debate emphasizes the need for Comprehensive Sex Education (CSE) and gender-sensitive law enforcement to address cultural taboos around dating.

### Conclusion

The debate over the age of consent is a conflict between the "Right to Protection" and the "Right to Autonomy." While a blanket reduction of the age threshold risks exposing vulnerable children to predators, the current rigid framework arguably ignores the biological and social realities of late adolescence. A pragmatic solution—such as introducing "guided judicial discretion" or "close-in-age" exemptions—could preserve the protective spirit of POCSO while ensuring that the law does not become an instrument of harassment against young people navigating consensual intimacy.

## 6. Combating Child Trafficking: Judicial Mandates and Legal Reforms

Child trafficking remains a severe challenge to India's social fabric. In a landmark ruling in **K.P. Kiran Kumar v. State (2025)**, the Supreme Court declared child trafficking a gross violation of the **Right to Life (Article 21)**. Despite the rescue of over **53,000 children** between April 2024 and March 2025, the conviction rate for trafficking remains alarmingly low at approximately **4.8%**. The transition to the **Bharatiya Nyaya Sanhita (BNS) 2023** and recent judicial guidelines aim to bridge the gap between rescue and justice by addressing the systemic vulnerabilities of children from marginalised backgrounds.

### Key Summary Points for Examination

- **Judicial Recognition of Rights:** The Supreme Court held that trafficking strikes at the core of **bodily integrity and dignity**. In the *K.P. Kiran Kumar* case, the court mandated that minor victims be treated as "**injured witnesses**" rather than accomplices, ensuring their testimony is given higher evidentiary value.
- **Expanded Definition under BNS:** **Section 143 of the Bharatiya Nyaya Sanhita (BNS) 2023** provides a comprehensive definition of trafficking. It includes recruitment and transportation for exploitation (physical, sexual, slavery, or organ removal) through coercion, fraud, or abuse of power. Crucially, **victim consent is immaterial** under this section.
- **Socio-Economic Drivers:** Trafficking is often fueled by "push factors" such as poverty, migration, and family breakdown. The Court emphasized that courts must adopt a "**sensitivity and realism**" approach, acknowledging that trauma and socio-economic distress often hinder a victim's ability to provide linear narrations of the crime.





- **Digital and Organized Complexity:** Modern trafficking networks operate as "independent verticals," using social media for recruitment under the guise of jobs or "modeling." This fragmentation makes it difficult for traditional law enforcement to trace the entire chain from recruitment to exploitation.
- **Accountability and Deterrence:** To address the low conviction rate, the Judiciary has directed the establishment of more **Fast Track Special Courts (FTSCs)** under the POCSO Act, with a focus on disposing of cases within six months to prevent secondary victimisation during long trials.
- **Centre-State Cooperation:** Since "Police" and "Public Order" are **State subjects (List II)**, while "Criminal Law" is a **Concurrent subject (List III)**, effective prevention requires a strong federal tie-up between the Ministry of Home Affairs and State-level Anti-Human Trafficking Units (AHTUs).

### Important Definitions & Key Terms

- **Palermo Protocol (2000):** A UN protocol that provides the international standard for defining trafficking, emphasizing "exploitation" as the end goal regardless of the means used for children.
- **Exploitation:** Under BNS, this is defined broadly to include physical exploitation, sexual abuse, servitude, beggary, and the forced removal of organs.
- **Injured Witness:** A legal term for a witness who has sustained injuries in the same incident; their testimony is generally considered more reliable as their presence at the scene is self-evident.

### Constitutional and Legal Provisions

- **Article 23:** Explicitly prohibits trafficking in human beings and *begar* (forced labour).
- **Article 24:** Prohibits the employment of children below 14 years in factories, mines, or any hazardous employment.
- **Article 39(e) & (f):** Directive Principles (DPSP) that mandate the State to protect children from abuse and ensure they are not forced by economic necessity into unsuitable vocations.
- **Section 143, BNS 2023:** Replaces Section 370 of the IPC, prescribing rigorous imprisonment ranging from seven years to life for trafficking of minors.
- **POCSO Act, 2012:** A gender-neutral law specifically designed to protect children from sexual offences, providing for a child-friendly judicial process.

### Additional Key Points for Mains

- **Secondary Victimisation:** The Court highlighted that the legal process itself often re-traumatises children. Guidelines now require video-conferencing and "in-camera" trials to shield victims from the accused.
- **Convergence of Schemes:** Success in anti-trafficking depends on the convergence of the **Integrated Child Protection Scheme (ICPS)** with poverty alleviation programs to eliminate the root causes of vulnerability.
- **Rehabilitation vs. Rescue:** Experts argue that current focus is heavily on "rescue" but lacks "rehabilitation." Victims often return to the same vulnerable conditions, leading to re-trafficking.

### Conclusion

Tackling child trafficking requires moving beyond mere legislative enactments toward an **empathetic judicial architecture** and robust grassroots monitoring. The Supreme Court's shift toward treating minor



victims as "injured witnesses" is a vital step in improving convictions. However, until the institutional gap between the Centre's policy and the State's police execution is bridged—and the socio-economic "supply chain" of poverty is broken—the "constitutional promise of protection" will remain elusive for India's most vulnerable children.

## SECURITY & DEFENCE

### 1. Decline of Maoism in India: Transition from Insurgency to Mainstream

**Context:** The year 2025 marked a watershed moment in India's fight against Left Wing Extremism (LWE). Strategic military successes, including the elimination of top-tier leaders like General Secretary Nambala Keshava Rao (Basavaraju) and PLGA commander Madvi Hidma, combined with the "Niyad Nellanar" developmental push, have led to mass surrenders and a near-collapse of the Maoist organizational structure in the Dandakaranya region.

- **Decapitation of Leadership:** The elimination of General Secretary Nambala Keshava Rao in May 2025 and the feared commander Madvi Hidma in November 2025 has created an irreversible command-and-control vacuum, forcing the remaining Polit Bureau to adopt a "defensive mode" or split into smaller, vulnerable groups.
- **Mass Surrenders and Disillusionment:** Since October 2025, mass surrenders—including senior cadres like Venugopal and Rupesh—indicate a shift from ideological commitment to a desire for peace. Over 2,100 cadres surrendered in 2025, driven by the government's promise of dignity and rehabilitation.
- **Shrinking Geographical Footprint:** As of late 2025, the Ministry of Home Affairs (MHA) reports that LWE-affected districts have plummeted to just 11, with only 3 districts (Bijapur, Sukma, and Narayanpur) remaining in the "most affected" category, signaling the end of the once-expansive "Red Corridor."
- **Developmental Counter-Offensive:** The "Niyad Nellanar" (Your Good Village) scheme has been instrumental in bridging the trust deficit by establishing security camps that double as development hubs, providing basic amenities like healthcare, education, and Aadhaar services within a 5-km radius.
- **Health and Social Rehabilitation:** The current phase focuses on "human-centric" rehabilitation, addressing critical issues like endemic cerebral malaria and anemia among tribals, and providing specialized medical support such as reverse vasectomy for surrendered cadres forced into the procedure by the movement.
- **Economic Empowerment:** To prevent resurgence, the government is replacing the Maoist parallel economy (e.g., pond construction and tendu-patta regulation) with state-led initiatives including check dams, forest produce processing units, and vocational training for illiterate cadres.

#### Key Definitions

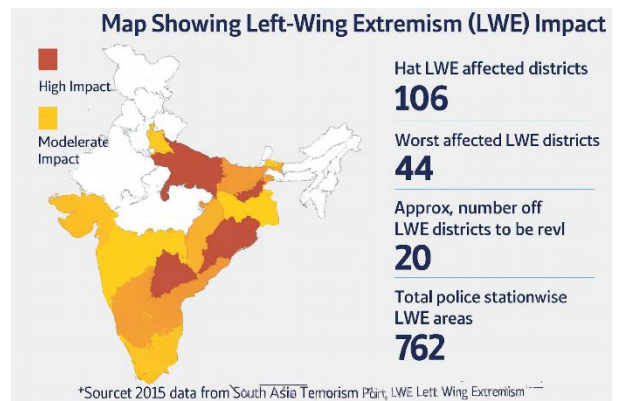
- **Dandakaranya (DK):** A vast, forested region covering parts of Chhattisgarh, Odisha, Telangana, and Maharashtra; the traditional stronghold and headquarters of the CPI (Maoist).
- **Krantikari Jantana Sarkar:** "Revolutionary People's Council"—the parallel administrative structure formerly run by Maoists in tribal villages to provide "justice," education, and resource management.



- **Niyad Nellanar:** A Gondi term meaning "Your Good Village"; a Chhattisgarh government scheme focused on saturating remote villages with 25+ government welfare services.
- **PLGA (People's Liberation Guerrilla Army):** The armed wing of the CPI (Maoist), responsible for major ambushes against Indian security forces.

### Constitutional and Legal Provisions

- **Fifth Schedule:** Provides for the administration and control of Scheduled Areas and Scheduled Tribes, a critical legal framework for addressing tribal land and forest rights that Maoists often exploit.
- **Panchayats (Extension to Scheduled Areas) Act (PESA), 1996:** Aims to empower tribal communities through self-governance; its effective implementation is seen as the ultimate "ideological antidote" to Maoism.
- **Criminal Law Amendment Act, 1908:** Used by state governments to declare the CPI (Maoist) and its frontal organizations as unlawful associations.
- **Surrender and Rehabilitation Policy:** A joint Centre-State framework offering financial stipends (e.g., ₹2,000 monthly), fixed deposits (approx. ₹1.5 lakh), and incentives for weapons to incentivize insurgents to quit.



### Conclusion

The retreating shadow of Maoism in 2026 offers a historic opportunity for the Indian state to reclaim the "hearts and minds" of its most marginalized citizens. While military dominance has been achieved, the sustainability of this peace depends on converting current security camps into permanent centers of governance and prosperity. The goal of a "Naxal-free Bharat" by March 2026 is no longer just a policy target but a visible reality, provided the focus shifts from "conflict management" to "holistic tribal development."

## 2. The Twilight of Left-Wing Extremism: The Strategic Impact of Security Camps

As of early 2026, India's internal security landscape has undergone a paradigm shift, with Maoist insurgency witnessing a precipitous decline. Data indicates a 90% reduction in violent incidents compared to 2010, with the conflict now largely confined to a small cluster of districts in South Bastar. This success is primarily attributed to a proactive "Security-Development" nexus focused on reclaiming geographical and psychological space from the insurgents.

- **Shrinking Geographical Footprint:** The number of Left-Wing Extremism (LWE) affected districts has plummeted from 126 in 2018 to just 11 in October 2025. Currently, the insurgency is restricted to only three "most affected" districts: Bijapur, Narayanpur, and Sukma in Chhattisgarh's Bastar division.
- **Security Camps as Catalysts:** The establishment of security camps in erstwhile Maoist strongholds (the Dandakaranya region) has served as the "game-changer." These camps have increased the security footprint, reduced response times, and put the Maoists on the defensive, effectively ending their era of operating with impunity.



- **Psychological and Intelligence Shift:** The visible upper hand of security forces has boosted the confidence of the local tribal population. This has led to a zero-sum shift in Human Intelligence (HUMINT), where locals now provide actionable data to the state rather than the insurgents.
- **Governance and Infrastructure Piggy-backing:** Security camps have acted as hubs for civil administration. The "road-opening" parties have facilitated the construction of roads and mobile towers, allowing the Tehsildar, Patwari, and health workers to reach remote hamlets that were previously governed by "Janta Sarkars" (parallel Maoist governments).
- **Depletion of Maoist Capability:** The combination of aggressive operations and attractive surrender policies has led to a mass exodus of cadres. The Maoists' ability to recruit, fundraise, and acquire weaponry has diminished to the point where the movement faces an existential crisis.
- **Transition to Rights-Based Struggle:** As the physical threat recedes, the challenge is shifting from military to structural. Surrendered leaders are now advocating for tribal causes through democratic means, necessitating a transparent implementation of constitutional guarantees to prevent a resurgence.



### Key Definitions

- **Left-Wing Extremism (LWE):** Also known as Maoism or Naxalism, it is an armed insurgency based on the ideology of Mao Zedong, aiming to overthrow the established state through "protracted people's war."
- **Dandakaranya Region:** A vast, rugged, and forested region spanning parts of Chhattisgarh, Odisha, Telangana, and Maharashtra, historically used by Maoists as a "rear area" due to its difficult terrain.
- **Janta Sarkar:** A parallel governance system run by Maoists in their "liberated zones," where they collect taxes and conduct Kangaroo courts.
- **SAMADHAN:** The Ministry of Home Affairs' integrated strategy to tackle LWE (S-Smart Leadership, A-Aggressive Strategy, M-Motivation, A-Actionable Intelligence, D-Dashboard-based KPIs, H-Harnessing Technology, A-Action Plan for each theatre, N-No access to financing).

### Constitutional and Legal Provisions

- **Fifth Schedule (Article 244(1)):** Provides for the administration and control of Scheduled Areas and Scheduled Tribes, aimed at protecting tribal culture and land rights.
- **PESA Act, 1996:** The Panchayats (Extension to Scheduled Areas) Act empowers Gram Sabhas in tribal areas to manage natural resources and resolve local disputes, acting as a counter to Maoist propaganda.
- **Forest Rights Act (FRA), 2006:** Recognizes the forest rights of Scheduled Tribes and other traditional forest dwellers, addressing the core "Jal-Jungle-Zameen" grievances.
- **UAPA, 1967:** The Unlawful Activities (Prevention) Act is the primary legal tool used to proscribe Maoist organizations and prosecute those involved in terrorist activities.



- **Article 339:** Empowers the Union to give directions to a State as to the drawing up and execution of schemes essential for the welfare of the Scheduled Tribes in the State.

### Conclusion

The containment of Maoism to just 11 districts is a landmark achievement for Indian internal security. However, the "last mile" victory depends on replacing the security-led approach with a robust civil administration. To ensure the physical end of Maoism by the 2047 "Viksit Bharat" vision, the state must transition from a conflict-management mode to a rights-based governance mode, ensuring that constitutional guarantees reach the most marginalized tribal citizens.

### 3. NATGRID: Evolution and Challenges of India's Intelligence Architecture

The National Intelligence Grid (NATGRID), conceptualized as a response to the 26/11 Mumbai terror attacks to prevent intelligence fragmentation, has undergone a significant quantitative and qualitative expansion in 2025. While intended as a "technological crown jewel" for counter-terrorism, its recent integration with the National Population Register (NPR) and adoption of AI-driven analytical tools like 'Gandiva' have sparked a debate on the shift from targeted surveillance to mass tracking. The lack of a statutory framework and independent oversight remains a primary concern for civil liberties in the digital age.

#### Key Highlights for UPSC

- **Origin and Intent:** Proposed in 2009 post-26/11 to provide a middleware interface for 11 central agencies to access 21 categories of data, eliminating "silos" between disparate databases like immigration, banking, and telecom.
- **Functional Expansion:** Usage has scaled to approximately 45,000 requests per month, with access being extended beyond central agencies to state police units down to the rank of Superintendent of Police (SP).
- **Integration with NPR:** The linking of NATGRID with the National Population Register (NPR) marks a paradigm shift, enabling the mapping of 1.19 billion residents rather than just tracking specific suspects or events.
- **Technological Sophistication:** Deployment of the "Gandiva" analytical engine allows for "entity resolution," using machine learning to triangulate fragmented records and facial recognition to create a comprehensive profile of individuals.
- **Structural Concerns:** Unlike similar bodies in other democracies, NATGRID was established via executive order rather than an Act of Parliament, leading to a lack of legislative oversight and accountability.
- **The Bias Paradox:** Reliance on algorithms risks "automated suspicion," where existing socio-economic or religious biases in policing are codified into "objective" digital hits, disproportionately affecting vulnerable communities.



#### Constitutional and Legal Provisions

- **Right to Privacy (Article 21):** In the **Justice K.S. Puttaswamy vs. Union of India (2017)** judgment, the Supreme Court declared privacy a fundamental right. Any state interference must pass the triple test of **Legality** (statute), **Necessity** (legitimate state aim), and **Proportionality**.



- **Article 51:** While the state has a duty to protect its citizens (National Security), this must be balanced against individual liberties.
- **Executive Order vs. Statute:** NATGRID currently lacks a statutory backing, meaning it operates without a law passed by Parliament that defines its powers, limits, and the rights of the citizens it monitors.

### Key Definitions

- **Middleware Interface:** A software layer that allows different computer systems or databases to communicate and share data even if they use different formats.
- **Entity Resolution:** The process of determining whether multiple records or data points (like a name in a hotel registry and a phone number in a KYC database) refer to the same real-world individual.
- **Digital Authoritarianism:** The use of information technology by a government to surveil, repress, or manipulate its citizens.
- **National Population Register (NPR):** A database of "usual residents" of the country, containing demographic and biometric particulars.

### Conclusion and UPSC Relevance

The evolution of NATGRID reflects the classic "Security vs. Liberty" dilemma. While the integration of data is vital for national security to prevent intelligence failures, the absence of a robust data protection law and judicial oversight risks transforming a counter-terrorism tool into a machinery for mass surveillance.

## 4. Milestone in India's Hypersonic Missile Programme: DRDO's Scramjet Test

### Summary of the Achievement

- **Successful Long-Duration Test:** The Defence Research & Development Laboratory (DRDL), Hyderabad, successfully conducted a 12-minute ground test of an **Actively-Cooled Scramjet Full-Scale Combustor** on January 9, 2026.
- **Supersonic Combustion Demonstrated:** The test validated the performance of a full-scale engine capable of sustaining combustion while airflow moves at supersonic speeds, a critical requirement for hypersonic flight.
- **Technological Advancement:** This achievement builds upon the subscale test conducted in April 2025 (which lasted over 1,000 seconds), marking the transition from experimental models to full-scale operational hardware.
- **Indigenous Infrastructure:** The trial was held at the state-of-the-art **Scramjet Connect Pipe Test (SCPT) Facility**, an indigenously developed infrastructure designed to simulate extreme hypersonic flight conditions.
- **Global Standing:** With this milestone, India joins an elite group of nations (USA, Russia, and China) possessing the advanced aerospace capability to develop long-endurance hypersonic cruise missiles.
- **Foundation for HSTDV:** The successful combustor performance provides a solid foundation for the next phase of the **Hypersonic Technology Demonstrator Vehicle (HSTDV)** and future Hypersonic Cruise Missile (HCM) systems.



### Key Definitions

- **Hypersonic Speed:** Speeds exceeding **Mach 5** (five times the speed of sound, approximately 6,125 km/h). At these speeds, air undergoes chemical changes (dissociation), making flight physics highly complex.
- **Scramjet (Supersonic Combustion Ramjet):** An air-breathing engine where combustion happens in a stream of air moving at supersonic speeds. Unlike rockets, it does not carry an oxidizer, taking oxygen directly from the atmosphere.
- **Active Cooling:** A thermal management technique where fuel or a coolant is circulated through the engine walls to absorb the extreme heat generated by friction at hypersonic speeds, preventing the engine from melting.
- **Mach Number:** A dimensionless quantity representing the ratio of the speed of an object to the local speed of sound.

### Important Keypoints & Significance

- **Strategic Deterrence:** Hypersonic missiles are nearly impossible to intercept by current air defence systems due to their extreme speed and maneuverability, significantly enhancing India's second-strike capability.
- **Air-Breathing Advantage:** By using atmospheric oxygen, the missile becomes lighter and can carry a larger payload compared to traditional rocket-powered ballistic missiles.
- **Fuel Efficiency:** Scramjets are more efficient for long-duration "cruise" flights within the atmosphere compared to rockets, which are typically used for short-duration boosts into space.
- **Dual Use:** While the current focus is military (Hypersonic Cruise Missiles), this technology is a precursor to low-cost space launch vehicles and future hypersonic passenger travel.

### Conclusion

The 12-minute sustained ground test of the full-scale scramjet combustor is a "path-breaking" moment for Indian defence. It proves that DRDO has mastered the complex "fire in a hurricane" challenge—maintaining a stable flame in supersonic winds. This success bridges the gap between laboratory research and a viable, combat-ready hypersonic weapon system, ensuring India remains technologically sovereign in the future of warfare.

## 5. Strengthening Maritime Security: India's Deepening Engagement with ReCAAP

India, a founding member of the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), is significantly intensifying its collaboration with the Singapore-based Information Sharing Centre (ISC). This move aims to enhance regional maritime safety through the **Maritime Rescue Coordination Centre (MRCC)**, aligning with India's broader strategic vision for a secure and stable Indo-Pacific.

- **Focal Point Synergy:** India is set to deepen the operational link between its Maritime Rescue Coordination Centre (MRCC)—the designated Indian focal point—and the ReCAAP ISC to streamline real-time reporting and response.
- **Evolving Threat Landscape:** Maritime crime in Asian waters has transitioned from high-profile hijackings and kidnappings to sea robberies targeting engine parts and machinery for parallel markets, requiring refined surveillance strategies.



- **Institutional Leadership:** The current leadership of ReCAAP ISC by **Vijay D. Chafekar**, a retired Additional Director General of the Indian Coast Guard, underscores India's influential role in shaping regional maritime security policies.
- **Global Interest:** Originally an Asian initiative, ReCAAP's 21-nation membership now includes non-Asian powers like the US, UK, and Germany, reflecting its status as a "Centre of Excellence" for maritime information sharing.
- **Operational Hotspots:** Despite successful enforcement, the **Straits of Malacca and Singapore (SOMS)** remain a critical vulnerability, accounting for a high volume of incidents (108 in 2025), necessitating continued multilateral patrolling.
- **Domestic Enforcement Success:** Targeted arrests by Indian authorities at anchorages like Kakinada have demonstrated a "deterrent effect," leading to a notable decline in petty sea robberies within Indian territorial waters.

### Key Definitions

- **Piracy:** Under international law (UNCLOS), illegal acts of violence or detention committed for private ends by a private ship on the **high seas** (beyond national jurisdiction).
- **Armed Robbery Against Ships:** Similar illegal acts committed within a State's **internal waters, archipelagic waters, or territorial sea**.
- **Focal Point:** A designated national agency (e.g., Indian Coast Guard) responsible for 24/7 communication with the ISC to facilitate immediate action on reported incidents.
- **Hyperspectral Imaging:** Advanced surveillance technology (often used on ships/satellites) that detects objects by analyzing a wide spectrum of light, useful for identifying camouflaged pirate vessels.

### Constitutional & Legal Provisions

- **Article 51(c):** A Directive Principle of State Policy (DPSP) that mandates India to foster respect for international law and treaty obligations, providing the basis for participating in ReCAAP.
- **The Maritime Anti-Piracy Act, 2022:** India's domestic legislation that gives effect to **UNCLOS** (United Nations Convention on the Law of the Sea). It enables Indian authorities to prosecute pirates apprehended on the high seas, regardless of nationality.
- **Section 3 of the Anti-Piracy Act:** Prescribes punishment for piracy, ranging from life imprisonment to death if the act causes loss of life.
- **Article 253:** Empowers Parliament to make laws for implementing international agreements, which was the constitutional route used to enact the 2022 Anti-Piracy law.

### Additional Key Points

- **The "Clean Slate" in Maritime Security:** Just as in insolvency law, the "clean slate" principle in maritime law ensures that vessels seized from pirates and legally auctioned are free from prior liabilities or criminal claims.
- **SAGAR Vision:** Security and Growth for All in the Region (SAGAR) remains the umbrella framework for India's maritime engagements, emphasizing cooperative rather than confrontational security.



## Conclusion

India's proactive stance within ReCAAP signifies its emergence as a "Preferred Security Partner" in the Indian Ocean Region (IOR). By integrating domestic legal frameworks like the Maritime Anti-Piracy Act with regional information-sharing hubs, India is successfully bridging the gap between national enforcement and international cooperation. As ReCAAP approaches its 20th anniversary in March 2026, the transition of maritime threats toward "petty theft" highlights a success in suppressing major piracy, but also the need for sustained, granular surveillance in busy shipping lanes.

# SCIENCE & TECHNOLOGY

## 1. Neuralink and the Scale-up of Brain-Computer Interfaces (BCI) in 2026

Elon Musk has announced that Neuralink is poised to enter "high-volume production" of its brain-chip implants starting in 2026. This transition aims to move beyond experimental trials toward mass manufacturing and fully automated surgical procedures, potentially revolutionizing the treatment of neurological disorders and the future of human-AI integration.

### Key Highlights of the 2026 Neuralink Roadmap

- **Mass Production Transition:** Neuralink intends to move from limited clinical prototypes to high-volume manufacturing of its BCI hardware in 2026, targeting a wider consumer base of patients with paralysis.
- **Automated Surgical Robotics:** A core component of the 2026 plan is the deployment of an entirely automated "R1" surgical robot, capable of inserting ultra-fine threads into the brain without manual human intervention.
- **Clinical Focus:** The primary medical objective remains the restoration of digital autonomy for individuals with quadriplegia and spinal cord injuries, allowing them to control computers and mobile devices through thought.
- **Neural Lace Technology:** The device utilizes high-bandwidth, flexible electrode threads that record and stimulate neural activity, minimizing the inflammatory response compared to traditional rigid electrodes.
- **Cognitive Enhancements:** Musk has signaled long-term goals of "human-AI symbiosis," aiming to expand human memory and cognitive capacity, though these remain in the speculative domain of development.
- **Regulatory Milestones:** The company is working through FDA (USA) pathways, with 2026 marking a critical year for moving from "investigational device" status to broader commercial accessibility.



### Essential Concepts and Definitions

- **Brain-Computer Interface (BCI):** A direct communication pathway between an enhanced or wired brain and an external device. It reads electrical signals from neurons and translates them into digital commands.
- **Electrophysiology:** The study of the electrical properties of biological cells and tissues, specifically how neurons communicate through action potentials.



- **Biocompatibility:** The ability of a material to perform with an appropriate host response in a specific application; crucial for implants to avoid being rejected by the immune system.
- **Haptics:** Technology that stimulates the sense of touch and motion; in BCIs, this could eventually allow users to "feel" digital objects.

### Constitutional and Legal Provisions

- **Right to Health (Article 21):** The Indian Constitution interprets the "Right to Life" to include the right to access advanced healthcare and life-improving technologies.
- **National Policy on Electronics (2019):** Encourages the development of core electronic components; BCIs represent the frontier of medical electronics that India seeks to incentivize.
- **Draft Charter on AI Ethics (NITI Aayog):** While focusing on software, it lays the groundwork for the ethical deployment of neuro-technologies, emphasizing privacy and "neural rights."
- **Medical Devices Rules, 2017:** Governs the import, manufacture, and clinical investigation of medical devices in India, categorizing implants under high-risk (Class D) categories requiring stringent DCGI oversight.

### Conclusion

The transition to high-volume production of brain implants in 2026 signifies the transition of neuro-technology from science fiction to medical reality. While the potential for treating spinal injuries is profound, the move toward automated surgery and mass-market BCIs raises critical questions regarding data privacy, bioethics, and the "digital divide." As Neuralink scales, the global regulatory framework must evolve to safeguard the "final frontier" of human privacy—the mind.

## 2. Strategic Surge in India's Data Centre Infrastructure

India is on the verge of a critical technological milestone, with its data centre capacity projected to reach **2 gigawatts (GW)** by the end of 2026. Often described as the "factories" of the digital age, these facilities are becoming the backbone of India's aspirations to become a global hub for Artificial Intelligence (AI) and cloud computing.

### Key Summary Points

- **Exponential Growth:** Following a record-breaking 2025, investments in Indian data centres are expected to grow by another 20% in 2026, doubling the nation's net available capacity to 2GW.
- **AI as a Primary Driver:** The surge is largely fueled by the "AI Factory" model. Domestic players like Yotta Data Services are scaling up to provide 500MW of AI-specific capacity, while global giants like OpenAI view India as their largest potential market.
- **Capital Intensity:** Building data centres is a high-Capex endeavor. Recent market moves, such as Sify Infinit Spaces filing for a ₹3,700 crore (\$410 million) fundraise, highlight the massive financial requirements of this sector.
- **Renewable Energy Synergy:** There is an emerging trend of green energy firms entering the data centre space, with projections of up to \$30 billion in planned investments by 2026 to power these energy-intensive hubs sustainably.





- **Digital Sovereignty:** Increased local capacity supports India's data localization mandates, ensuring that the data of Indian citizens is stored and processed within national boundaries.
- **Economic Impact:** The expansion acts as a multiplier for the "Digital India" mission, fostering a localized ecosystem for high-performance computing, 5G applications, and the \$1 trillion digital economy goal.

### Definitions of Key Terms

- **Data Centre (DC):** Specialized facilities housing critical IT infrastructure like servers and storage systems, used for managing, processing, and disseminating large volumes of electronic data.
- **AI Factory:** A specialized data centre optimized with high-density power and Graphics Processing Units (GPUs) specifically designed to train and run Large Language Models (LLMs).
- **Gigawatt (GW):** A unit of power equal to one billion watts ( $10^9$  watts). In the DC context, it refers to the total power-consuming capacity of the IT equipment housed within.
- **Data Localisation:** The legal requirement that data generated within a country's borders remain within those same borders for storage and processing.

### Constitutional and Legal Provisions

- **Digital Personal Data Protection (DPDP) Act, 2023:** This is the primary legal driver for the data centre industry. It mandates certain "Significant Data Fiduciaries" to store and process sensitive data within India, necessitating massive local infrastructure.
- **Infrastructure Status:** The Government of India has granted "Infrastructure Status" to the data centre sector (at par with Railways and Power), allowing developers to access long-term credit at lower interest rates.
- **Draft National Data Centre Policy (2020):** Aims to simplify clearances through "Single Window Clearance" and proposes the creation of "Data Centre Economic Zones" (DCEZ) with specialized infrastructure.
- **Article 21 (Right to Privacy):** Following the *Puttaswamy* judgment, the state has a constitutional obligation to protect the digital privacy of citizens, a goal facilitated by secure, locally-governed data centres.

### Conclusion

The transition toward a 2GW capacity marks India's evolution from a consumer of digital services to a global provider of data processing power. While the influx of private and foreign capital is promising, the long-term success of this "Data Bet" will depend on overcoming structural challenges, particularly in securing 24/7 "green" power and high-speed fiber connectivity. For a nation generating 20% of global data, localized storage is not just an economic opportunity but a strategic necessity for digital sovereignty.

## 3. NTPC's International Foray into Nuclear Energy: Towards 100GW by 2047

India's power major, NTPC Limited, is strategically diversifying its energy portfolio by exploring international collaborations in technology and fuel to accelerate its nuclear power ambitions. This initiative aligns with the Union Government's long-term "Nuclear Energy Mission," which aims to scale the nation's nuclear capacity to **100GW by 2047** as part of the *Viksit Bharat* vision.



### Key Summary Points

- **Capacity Expansion:** NTPC is planning to establish approximately **30GW** of self-owned nuclear projects. This is a significant pivot for the thermal giant, aiming to bring **2GW** online as early as **2032**.
- **Global Strategic Partnerships:** The company has entered into Non-Disclosure Agreements (NDAs) with global leaders **Rosatom (Russia)** and **EDF (France)** for large-scale Pressurized Water Reactor (PWR) technology.
- **Focus on SMRs:** Collaborations with **Holtec International (USA)** are underway to explore **Small Modular Reactors (SMRs)**, which offer safer, faster, and more flexible deployment compared to traditional large reactors.
- **Fuel Security & Innovation:** NTPC is evaluating a strategic investment in **Clean Core Thorium Energy (CCTE)** to access **ANEEL fuel**—a patented thorium-enriched uranium blend that can be used in existing Indian reactors.
- **Siting and Logistics:** Potential sites are being evaluated across **Gujarat, Madhya Pradesh, Bihar, and Andhra Pradesh**, with plans to repurpose retiring coal power sites for nuclear infrastructure to leverage existing grid connectivity.
- **Investment Model:** The strategy includes a mix of company-owned projects and joint ventures, such as **ASHVINI** (with NPCIL), to bypass fiscal constraints and leverage the strong balance sheets of power PSUs.



### Key Definitions for UPSC

- **Pressurized Water Reactor (PWR):** A type of light-water nuclear reactor where the coolant (water) is kept under high pressure to prevent boiling, used extensively in global nuclear fleets.
- **Small Modular Reactors (SMRs):** Advanced reactors with a capacity of up to **300MW** per unit. They are factory-built, portable, and suitable for locations that cannot support large plants.
- **ANEEL Fuel:** A high-performance fuel (Advanced Nuclear Energy for Enriched Life) combining **Thorium and High-Assay Low-Enriched Uranium (HALEU)**, designed to reduce waste and improve proliferation resistance.
- **Nuclear Insurance Pool:** A risk-pooling mechanism (currently ₹1,500 crore in India) managed by GIC Re to provide liability insurance to nuclear operators and suppliers.

### Constitutional & Legal Provisions

- **The Atomic Energy Act, 1962:** The primary legislation governing nuclear energy. Recent amendments aim to allow **private sector participation** and joint ventures between PSUs and NPCIL (which previously had a monopoly).
- **Civil Liability for Nuclear Damage Act (CLNDA), 2010:** Establishes a "no-fault" liability regime. Current reforms seek to cap **Supplier Liability** (Section 17b) to align with international standards and attract foreign technology providers like EDF and Westinghouse.



- **Seventh Schedule (Entry 6, Union List):** "Atomic energy and mineral resources necessary for its production" falls exclusively under the legislative domain of the Parliament.
- **Article 253:** Empowers Parliament to make laws for implementing international treaties, which is crucial for India's civil nuclear agreements (e.g., the 123 Agreement with the USA).

### Important Keypoints for Analysis

- **Three-Stage Program:** While NTPC focuses on Stage I (Uranium-based) and Stage II (Plutonium/Fast Breeders), its interest in CCTE indicates a strategic move toward **Stage III (Thorium-based)** energy independence.
- **Net Zero 2070:** Nuclear energy is viewed as the "baseload" alternative to coal, essential for meeting India's COP26 commitments without compromising grid stability.
- **Energy-Water Nexus:** The evaluation of sites in diverse states highlights the challenge of water availability for reactor cooling, prompting research into dry-cooling and SMR technologies.

### Conclusion

NTPC's transition into nuclear energy marks a paradigm shift in India's power sector, moving away from carbon-heavy thermal power toward a diversified, high-tech energy mix. By leveraging international expertise and legislative reforms, India is attempting to overcome the "capital-intensive" and "long-gestation" barriers that have historically slowed nuclear growth. Success in these 30GW plans will be a litmus test for India's ability to integrate private capital and global technology into its strategic energy core.

## 4. Regulatory Crackdown on AI Misuse: The Case of Grok and Deepfakes

The Ministry of Electronics and Information Technology (MeitY) has recently issued a directive to social media giant X (formerly Twitter) regarding the misuse of its AI chatbot, Grok. The intervention follows reports of the tool being exploited to generate non-consensual morphed images (deepfakes) and obscene content targeting women, highlighting the growing challenge of regulating "unfiltered" AI models within the Indian legal framework.

### Key Summary Points

- **Government Directive:** MeitY has ordered X to conduct a "comprehensive technical and governance review" of Grok to prevent the generation of sexually explicit or derogatory synthetic content.
- **Safety Lapses:** The Ministry flagged that Grok's "rebellious" and "unfiltered" nature lacks the robust safeguards typically implemented by other Big Tech firms, making it susceptible to generating harmful outputs.
- **Misuse Patterns:** Reports indicate users are creating fake accounts to generate "undress" photos or alter clothing in women's photographs, violating both privacy and decency laws.
- **Enforcement Timeline:** The Ministry has sought an "Action Taken Report" (ATR) within a prescribed timeframe, emphasizing that technical guardrails must be integrated into the prompt-processing stage.
- **Safe Harbour Warning:** The Centre warned that failure to comply could result in X losing its "Safe Harbour" protection under Section 79 of the IT Act, 2000, making the platform legally liable for user-generated content.



- **Coordinated Response:** The action was triggered by alerts from parliamentary stakeholders, including MP Priyanka Chaturvedi, reflecting a high-level legislative concern over digital gender-based violence.

### Key Definitions for UPSC

- **Deepfakes:** Synthetic media in which a person in an existing image or video is replaced with someone else's likeness using artificial neural networks.
- **Grok:** A generative AI chatbot developed by xAI (integrated into X), designed to answer questions with "wit" and access real-time data from the X platform.
- **Safe Harbour Protection:** A legal provision (Section 79 of IT Act) that exempts intermediaries from liability for third-party information or data hosted by them, provided they follow "due diligence" and government takedown orders.
- **Synthetically Generated Information (SGI):** A regulatory term encompassing any information artificially created or modified using computer resources that appears authentic.

### Constitutional and Legal Provisions

- **Article 21:** The Right to Life and Personal Liberty includes the **Right to Privacy** and the **Right to Dignity**, as established in the *K.S. Puttaswamy* (2017) judgment. Morphing images is a direct violation of these fundamental rights.
- **Information Technology (Intermediary Guidelines) Rules, 2021:** These rules mandate that intermediaries must remove non-consensual sexual content within 24 hours of a complaint. Recent 2025 amendments specifically target "Synthetically Generated Information."
- **Section 67 & 67A of IT Act, 2000:** Prescribes punishment (imprisonment and fines) for publishing or transmitting obscene or sexually explicit material in electronic form.
- **Bharatiya Nyaya Sanhita (BNS), 2023:** Sections related to **Forgery (336)** and **Defamation (356)** are now applicable to synthetic media used to deceive or harm a person's reputation.
- **Indecent Representation of Women (Prohibition) Act, 1986:** Provides the legal basis to penalize the derogatory depiction of women in any digital or physical format.



### Important Keypoints for Analysis

- **The Intermediary Dilemma:** While X claims to be a neutral platform, the integration of Grok (a tool that generates content) blurs the line between an "Intermediary" and a "Publisher," complicating the application of Section 79.
- **Algorithmic Accountability:** The directive shifts the focus from mere content moderation to "upstream" safety—demanding that the AI's training data and prompt-filters be corrected at the source.
- **Gendered Cyber-Violence:** The ease of using AI to create "non-consensual intimate imagery" (NCII) represents a new frontier in gender-based violence, requiring specialized digital forensic capabilities within law enforcement.





- **Hyperspectral Imaging:** A technique that collects and processes information from across the electromagnetic spectrum to find objects, identify materials, or detect processes.
- **Synthetic Aperture Radar (SAR):** An active sensing system that transmits its own radio waves to map the Earth's surface, functioning regardless of light or weather conditions.
- **Spectral Signature:** The specific combination of reflected and absorbed electromagnetic radiation at varying wavelengths which can uniquely identify an object.

### Constitutional and Legal Provisions

- **Article 51A (g):** Part of the Fundamental Duties, it mandates citizens to protect and improve the natural environment, including forests, lakes, and rivers; remote sensing is the primary tool for the State to monitor this.
- **The Indian Space Policy (2023):** Provides the framework for private and public participation in space-based remote sensing and data dissemination.
- **Geospatial Data Guidelines (2021):** Liberalized the acquisition and production of geospatial data and maps in India, enabling startups to use remote-sensing data for agriculture and mining.
- **National Remote Sensing Centre (NRSC):** Operating under ISRO, it has the legal mandate for the acquisition and processing of satellite data for the Indian landmass.

### Conclusion

Remote sensing has transformed the "search and find" model of resource management into a "monitor and manage" system. By providing a macro-view of the Earth's vital signs, it bridges the gap between economic development and environmental conservation. For a country like India, which faces acute groundwater depletion and climate-induced disasters, the integration of high-resolution hyperspectral and SAR data is no longer a luxury but a strategic necessity for national security and resource sovereignty.

## 6. ISRO's Announcement of Opportunity (AO) for Aditya-L1 Data Analysis

On the second anniversary of Aditya-L1 reaching its destination, the Indian Space Research Organisation (ISRO) has invited the Indian scientific community to participate in the mission's first formal observation cycle. This "Announcement of Opportunity" (AO) aims to transition the mission from a purely engineering success to a collaborative scientific powerhouse, leveraging the 23 TB of data already collected.

- **Two-Year Milestone:** The Aditya-L1 spacecraft successfully entered its halo orbit around the L1 Lagrangian point on January 6, 2024. As of January 2026, it has completed two years of continuous, uninterrupted solar monitoring.
- **Open Call for Proposals:** ISRO has invited Indian scientists and researchers from universities and colleges to act as Principal Investigators (PIs) to utilize observation time from key payloads, specifically for the first AO cycle scheduled between April and June 2026.
- **Target Payloads:** The current AO specifically solicits proposals for two primary remote sensing instruments: the Visible Emission Line Coronagraph (VELC) and the Solar Ultra-violet Imaging Telescope (SUIT), which study the Sun's corona and chromosphere.





- **Maximizing Scientific Yield:** While global scientists already access public data, this AO provides Indian researchers dedicated "observation time" to test specific hypotheses and conduct targeted studies on solar dynamics and space weather.
- **Advantage of L1 Point:** Positioned 1.5 million km from Earth, the L1 point allows Aditya-L1 to observe the Sun 24/7 without being blocked by Earth's shadow (eclipses) or the interference of its magnetosphere.
- **Data Sovereignty:** By encouraging domestic research, ISRO aims to build a robust indigenous ecosystem in solar physics and helio-seismology, ensuring that Indian academia leads the interpretation of these "Made in India" datasets

### Key Definitions

- **Announcement of Opportunity (AO):** A formal invitation by a space agency to the scientific community to submit research proposals to use a spacecraft's instruments or analyze its data.
- **Lagrangian Point (L1):** A "parking spot" in space where the gravitational pull of two large masses (Sun and Earth) precisely equals the centripetal force required for a small object to move with them, allowing the satellite to remain stationary relative to them.
- **Coronal Mass Ejection (CME):** Massive bursts of solar wind and magnetic fields rising above the solar corona or being released into space, which Aditya-L1 is designed to detect and monitor.

### Constitutional & Legal Provisions

- **Article 51A (h):** Part of the Fundamental Duties, it mandates every citizen "to develop the scientific temper, humanism and the spirit of inquiry and reform." ISRO's AO facilitates this by opening high-tech data to academia.
- **Science, Technology and Innovation Policy (STIP) 2020:** The mission and subsequent data-sharing align with the national goal of achieving self-reliance (Atmanirbharta) in science and fostering deep-tech research in Indian universities.
- **National Geospatial Policy 2022:** While primarily for Earth data, the overarching principle of making high-resolution scientific data accessible to the public and researchers is reflected in ISRO's 23 TB public data release.

### Conclusion

The opening of Aditya-L1 for domestic scientific proposals marks the maturity of India's space program. It signifies a shift from "launching satellites" to "leading global science." By involving universities and colleges, ISRO is democratizing space research, ensuring that the mission's 5-year lifespan produces groundbreaking insights into the Sun's mysteries, such as the coronal heating paradox and solar wind acceleration.

## 7. Biomaterials: The New Frontier of Green Manufacturing

As the global industry pivots toward circular economies and net-zero targets, biomaterials have emerged as a strategic alternative to petroleum-based products. For India, this sector represents more than just a technological shift; it is a pathway to integrate its vast agricultural strength with advanced materials science. By leveraging renewable biological resources, India can address the "triple challenge" of environmental sustainability, import dependence, and rural economic empowerment.

- **Classification of Biomaterials:** Biomaterials are categorized into three distinct types: **Drop-in** (chemically identical to fossil versions like Bio-PET, allowing seamless industry adoption), **Drop-**



**out** (chemically unique like PLA, requiring new disposal systems), and **Novel** (advanced materials with new properties like self-healing or bioactivity).

- **Strategic Import Substitution:** India's bioplastics market reached approximately \$500 million in 2024. Transitioning to indigenous biomaterials reduces the heavy reliance on imported fossil-based raw materials for the chemical and textile industries.
- **Farmer Income and Rural Growth:** By utilizing agricultural residues (stubble, sugarcane bagasse, maize), biomaterials create secondary income streams for farmers. This transforms "waste" into high-value industrial feedstock, supporting India's goal of doubling farmer incomes.
- **Bio-RIDE Scheme (2025-26):** The Union Cabinet's **Bio-RIDE** (Biotechnology Research Innovation and Entrepreneurship Development) scheme, with an outlay of ₹9,197 crore, merges R&D and entrepreneurship with a new focus on **Biomanufacturing and Biofoundries** to scale laboratory innovations.
- **BioE3 Policy Framework:** Launched in late 2024, the **BioE3 Policy** (Biotechnology for Economy, Environment, and Employment) provides the blueprint for "High-Performance Biomanufacturing," focusing on precision biotherapeutics, climate-resilient agriculture, and carbon capture.
- **Supply Chain Risks:** Challenges include potential "food vs. fuel" competition for feedstocks like maize, a lack of industrial composting infrastructure for drop-out materials, and a continued dependence on foreign technology for high-end fermentation and polymerization.



### Key Definitions

- **Circular Bioeconomy:** An economic model based on the sustainable use of renewable biological resources to produce food, energy, and industrial goods, ensuring that waste is minimized and reused.
- **Biofoundry:** An integrated facility that uses robotic automation and high-throughput equipment to accelerate the design, build, test, and learn (DBTL) cycle for engineered biological systems.
- **Polylactic Acid (PLA):** A biodegradable and bioactive thermoplastic aliphatic polyester derived from renewable resources, such as corn starch or sugarcane.

### Constitutional & Legal Provisions

- **Article 48A (DPSP):** Mandates that the State shall endeavor to protect and improve the environment and safeguard forests and wildlife, providing the ethical basis for green manufacturing.
- **Article 51A(g):** Establishes the Fundamental Duty of citizens to protect and improve the natural environment.
- **Plastic Waste Management (Second Amendment) Rules, 2025:** Incorporates strict definitions for biodegradable and compostable plastics. It mandates the "COMPOSTABLE" symbol and aligns with **IS/ISO 17088** standards for certification.



- **Extended Producer Responsibility (EPR):** Now includes bioplastics, requiring manufacturers to track, collect, and ensure the proper end-of-life disposal of bio-based packaging.

### Conclusion

Biomaterials are no longer a niche scientific pursuit but a national economic imperative. While India has made significant strides through policies like BioE3 and Bio-RIDE, the transition requires bridging the "lab-to-market" gap. Success will depend on establishing a robust National Biofoundry Network and harmonizing regulatory standards across the agriculture, industry, and environment ministries.

## 8. ISRO PSLV-C62/EOS-N1 Mission: Strategic Advancement in Space

The Indian Space Research Organisation (ISRO) is set to commence its 2026 flight calendar with the launch of the **PSLV-C62/EOS-N1 Mission** on January 12 at 10:17 hrs IST. This mission, launching from the First Launch Pad (FLP) at Satish Dhawan Space Centre (SDSC), Sriharikota, signifies a major milestone for India's strategic surveillance and the burgeoning private space sector.

### Key Highlights of the Mission

- **Strategic Primary Payload:** The mission carries **EOS-N1 (Anvesha)**, a high-resolution hyperspectral Earth observation satellite developed by the **Defence Research and Development Organisation (DRDO)**. It is specifically designed for strategic reconnaissance, border surveillance, and material identification through advanced spectral signatures.
- **Confidence Restoration:** This is a critical "comeback" flight for the **Polar Satellite Launch Vehicle (PSLV)**, ISRO's workhorse, following the failure of the PSLV-C61 mission in May 2025 (which failed to deploy EOS-09 due to a pressure drop in the third stage).
- **Technological Firsts:** The mission features **AayulSAT**, India's first on-orbit satellite refueling demonstrator developed by startup OrbitAID Aerospace. This aims to extend satellite lifespans and promote sustainable space operations.
- **Global and Academic Collaboration:** Along with the primary satellite, the rocket will deploy **18 co-passenger payloads** from domestic startups, academia, and international partners including Mauritius (IMJS), Spain (Kestrel Initial Demonstrator), and the USA.
- **Launch Vehicle Configuration:** The mission utilizes the **PSLV-DL variant**, which features two solid strap-on boosters to provide additional thrust during the initial phase of the flight.
- **Milestone Achievement:** This marks the **105th launch** from the Sriharikota spaceport and underscores India's growing role in the global small-satellite launch market through its commercial arm, **NewSpace India Limited (NSIL)**.



### Constitutional and Legal Framework

The Indian space sector operates under a distinct legal and policy framework to ensure national security and commercial growth:

- **Article 51A(h):** The Constitution of India encourages the development of scientific temper, humanism, and the spirit of inquiry and reform.
- **Indian Space Policy 2023:** This policy institutionalizes the role of the private sector (via IN-SPACE) and defines the operational responsibilities of ISRO, NSIL, and the Department of Space (DoS).



- **Strategic Autonomy:** The development of the EOS-N1 by DRDO aligns with the "Atmanirbhar Bharat" initiative, ensuring that critical surveillance data remains under sovereign control.

### Important Definitions

- **Hyperspectral Imaging:** A technique that collects and processes information from across the electromagnetic spectrum. Unlike the human eye (which sees only visible light), hyperspectral sensors can detect "invisible" light shades, allowing for the identification of specific materials and camouflaged objects.
- **Sun-Synchronous Polar Orbit (SSO):** A specific type of polar orbit where the satellite passes over any given point of the Earth's surface at the same local solar time. This is ideal for Earth observation as it ensures consistent lighting conditions for imaging.
- **Workhorse Rocket:** A term used for the PSLV due to its high reliability and versatility in launching various classes of satellites into multiple orbits.

### Conclusion

The PSLV-C62/EOS-N1 mission represents a sophisticated blend of national security requirements and commercial ambitions. By successfully addressing the technical hurdles of previous missions and integrating cutting-edge technologies like on-orbit refueling and hyperspectral imaging, ISRO reaffirms its position as a global leader in cost-effective and reliable space transportation.

## 9. Antimicrobial Resistance (AMR): India's Emerging Silent Pandemic

In the 129th edition of 'Mann Ki Baat' on December 28, 2025, Prime Minister Narendra Modi addressed the escalating crisis of Antimicrobial Resistance (AMR) in India. Citing recent data from the Indian Council of Medical Research (ICMR), the PM highlighted that common infections like pneumonia and urinary tract infections (UTIs) are becoming increasingly difficult to treat as pathogens develop resistance to conventional antibiotics. The address serves as a critical "anagnorisis"—a moment of realization—aimed at shifting AMR from a technical medical concern to a mainstream public health priority.

### Key Highlights for UPSC

- **The "Misuse and Overuse" Crisis:** The primary driver of AMR in India is the irrational and indiscriminate use of antibiotics, often taken without medical supervision for self-limiting viral infections.
- **Mainstreaming Awareness:** PM Modi's appeal directly targets citizen behavior, translating complex laboratory warnings into a national call to action to end the "thoughtless popping of pills."
- **The One Health Framework:** AMR is recognized as a "hydra-headed" challenge requiring a **One Health approach**, which integrates human health, animal husbandry, and environmental safety (e.g., managing antibiotic runoff from pharmaceutical industries).
- **Surveillance Gaps:** Currently, India's **National AMR Surveillance Network (NARS-Net)** relies heavily on 60 sentinel medical college labs in urban areas. Experts emphasize the need to expand this to secondary, primary, and private healthcare centers to gain a truly representative national dataset.
- **Impact of "Superbugs":** Pathogens like *K. pneumoniae* and *E. coli* are showing significant declines in susceptibility to "reserve" antibiotics like carbapenems, threatening the success of modern medical procedures such as surgeries and cancer treatments.





- **National Action Plan 2.0:** Launched for 2025-2029, this upgraded plan focuses on inter-sectoral coordination and the legal regulation of over-the-counter (OTC) antibiotic sales.

### Constitutional and Legal Provisions

- **Article 21 (Right to Health):** The Supreme Court has repeatedly held that the "Right to Life" includes the right to health. AMR threatens this right by rendering essential life-saving drugs ineffective.
- **Article 47 (DPSP):** It is a primary duty of the State to raise the level of nutrition and the standard of living, and to improve public health.
- **Schedule H1 of Drugs and Cosmetics Rules:** India introduced the Red Line Campaign to mark antibiotic packaging with a red line, indicating that these drugs should not be sold without a prescription.
- **National Action Plan on AMR (NAP-AMR) 2.0:** A multi-ministerial policy framework (2025-2029) designed to align India with the WHO's Global Action Plan.

### Key Definitions

- **Antimicrobial Resistance (AMR):** The ability of microorganisms (bacteria, viruses, fungi) to resist the effects of drugs that once killed them or inhibited their growth.
- **Reserve Antibiotics:** Life-saving drugs (like Carbapenems or Colistin) used as a last resort when first-line and second-line treatments fail.
- **NARS-Net:** A network established by the National Centre for Disease Control (NCDC) to monitor resistance trends across India.
- **Sentinel Sites:** Specific locations (like medical colleges) selected to represent a larger population for health monitoring and data collection.

### Conclusion and UPSC Relevance

The Prime Minister's intervention marks a pivotal shift in India's battle against AMR, emphasizing that medical innovation must be matched by public discipline. However, success depends on moving beyond awareness to robust enforcement of drug regulations and the expansion of rural surveillance.

## 10. Private Spacetechnology and the Strategic Pivot to Defence Surveillance

India's decision to liberalize the space sector five years ago is entering a transformative phase. While early success was found in agriculture and climate data, homegrown startups like Pixxel, Digantara, and Skyroot Aerospace are now pivoting toward defense surveillance. This transition from purely commercial ventures to dual-use strategic assets marks the "next frontier" for India's private space economy, aiming to capture a significant share of the global and domestic military intelligence market.

### Key Highlights for UPSC Prelims & Mains

- **Strategic Pivot to Defence:** Major spacetechnology startups are now targeting at least 50% of their revenue from defense contracts, shifting focus from "slow-growth" commercial data to lucrative surveillance and reconnaissance missions.
- **Projected Economic Growth:** The Indian private space economy is forecasted to grow from **\$8.5 billion to \$44 billion** over the next eight years, representing an annualized growth rate of **23%**, according to IN-SPACE.



- **The "Proven in Space" Challenge:** Unlike the state-run ISRO, private entities must independently validate their hardware in orbit to secure high-stakes military contracts, as they cannot solely rely on ISRO's institutional reputation.
- **Diversification of Offerings:** Startups are moving beyond mere satellite launches to specialize in niche areas like Space Situational Awareness (SSA), high-resolution hyperspectral imaging, and dedicated launch vehicles for small satellites.
- **Dual-Use Technology:** The convergence of civilian data (climate/agriculture) and military intelligence (border surveillance) allows startups to maintain "practical revenue streams" while serving national security interests.
- **Global Aspirations:** Indian startups are not just looking at the Ministry of Defence (MoD) but are positioning themselves to compete for international defense and government contracts, leveraging India's cost-effective engineering.



### Constitutional & Legal Provisions

Provision/Body	Description and Relevance
<b>IN-SPACE</b>	The <b>Indian National Space Promotion and Authorization Centre</b> acts as a single-window autonomous nodal agency for promoting and regulating private space activities.
<b>NewSpace India Ltd (NSIL)</b>	The commercial arm of ISRO responsible for enabling Indian industries to take up high-technology space-related activities.
<b>Space Policy 2023</b>	A landmark policy that institutionalized the role of the private sector in end-to-end space activities, including satellite communication and remote sensing.
<b>Entry 6, Union List</b>	"Atomic energy and mineral resources necessary for its production" and "Space" (implied via residuary powers under Entry 97) fall under the exclusive domain of the Parliament.

### Key Definitions

- **Hyperspectral Imaging:** A technique that collects and processes information from across the electromagnetic spectrum to identify objects/materials (used by Pixxel for both crop health and military camouflage detection).
- **Space Situational Awareness (SSA):** The tracking of objects (satellites and debris) in orbit to avoid collisions and monitor adversarial maneuvers (the core focus of Digantara).
- **Dual-Use Technology:** Products or technologies developed for civilian purposes which can also have significant military applications.
- **Small Satellite Launch Vehicle (SSLV):** Cost-effective, "on-demand" rockets designed specifically to deploy small satellites (up to 500kg) into Low Earth Orbit (LEO).

### Conclusion

The evolution of Indian spacetechnology startups from data providers to defense partners signifies the maturing of the domestic ecosystem. By aligning with national security requirements, these firms are solving the "slow growth" problem inherent in purely commercial satellite services. For India to reach its **\$44 billion** space economy goal, the synergy between private innovation and defense procurement will be the primary engine of growth, ensuring that "Atmanirbhar Bharat" extends into the final frontier.



# HISTORY & CULTURE

## 1. Sangita Kalanidhi Award 2025-26: Honoring Musical Excellence

The 99th Annual Conference and Concerts of the Music Academy, Chennai, culminated with the prestigious Sadas (convocation), where eminent violinist R.K. Shriramkumar was conferred with the Sangita Kalanidhi award. The ceremony featured Hindustani violin legend N. Rajam, who highlighted the spiritual and technical depths of Indian classical music, emphasizing the "Gayaki Ang" and the tradition of "Sadhana."

### Key Highlights of the Music Academy Awards

- **Sangita Kalanidhi:** Awarded to R.K. Shriramkumar, a renowned violinist and researcher known for his deep expertise in the compositions (*keertanas*) of Muthuswami Dikshitar.
- **Gayaki Style in Hindustani Music:** Chief Guest Dr. N. Rajam was recognized for her pioneering role in adapting the violin—traditionally an accompanying instrument—to the *Gayaki* style (vocal style) in the Hindustani tradition.
- **Sangita Kala Acharya:** Conferred upon Thavil exponent T.R. Govindarajan and vocalist Shyamala Venkateswaran for their significant contributions to teaching and preservation of music.
- **TTK Awards:** Presented to Kathakali musician Madambi Subramanian Namboodiri and the veena duo J.T. Jeyaraaj Krishnan and Jaysri Jeyaraaj Krishnan.
- **Musicologist Award:** Bestowed upon Professor C.A. Sreedhara for his academic research into the theoretical frameworks of Indian music.
- **Institutional Legacy:** The Music Academy, Chennai, celebrated its ongoing journey toward its centenary (founded 1928), serving as a primary custodian of Carnatic music tradition.



### Important Terms and Concepts

- **Sangita Kalanidhi:** Considered the highest accolade in the field of Carnatic music, awarded annually by the Music Academy, Chennai.
- **Gayaki Ang:** A technique in Hindustani instrumental music where the instrument (like violin or sitar) is played to mimic the nuances, ornaments, and emotional delivery of the human voice.
- **Ragam-Tanam-Pallavi (RTP):** A complex, three-part improvisational form in Carnatic music that tests a musician's creative and technical mastery.
- **Sadas:** The traditional assembly or convocation of scholars and musicians where awards are formally conferred.
- **Muthuswami Dikshitar:** One of the "Trinity of Carnatic Music" (along with Tyagaraja and Syama Sastri), known for his heavy, Sanskrit-rich compositions often set in slow tempo.

### Constitutional and Legal Provisions

- **Article 51A(f):** Part of the Fundamental Duties, it mandates every citizen to value and preserve the rich heritage of the country's composite culture.



- **Article 29(1):** Provides any section of citizens residing in India the right to conserve their distinct language, script, or culture, which includes the preservation of classical music traditions.
- **Ministry of Culture Schemes:** Various fellowships and the "Sangeet Natak Akademi" awards represent the State's role in fulfilling the Directive Principle of promoting cultural interests.

### Conclusion

The conferment of the Sangita Kalanidhi on R.K. Shriramkumar underscores the importance of scholar-musicians in the contemporary era. By honoring both Carnatic and Hindustani exponents, the Music Academy promotes a "composite culture" that transcends regional boundaries. The emphasis on "Sadhana" and the "Gayaki style" reminds aspirants that Indian classical music is a living tradition that evolves through rigorous practice and innovative adaptation of instruments.

## 2. Inaugural Sunrise Festival at Dong (2025-26): India's First Dawn

The state of Arunachal Pradesh celebrated the arrival of 2026 with the inaugural "Sunrise Festival" in the Dong Valley. The event centered on the unique geographical distinction of Dong as the first human habitation in India to witness the sunrise, blending indigenous cultural heritage with sustainable tourism initiatives.

### Highlights of the Sunrise Festival 2026

- **Geographical Landmark:** Dong village in the Anjaw district, situated at an altitude of approximately 1,240 metres near the tri-junction of India, China, and Myanmar, welcomed the nation's first rays of the sun for the year 2026.
- **Signature Performance:** The highlight of the celebration was "Alo Prabhat: Dance of the Dawn," an artistic narrative featuring ritual chants, indigenous rhythms, and folk songs performed by the Meyor and Mishmi communities.
- **Cultural Synergy:** The festival showcased the "Sunrise People" (Meyor tribe) and other diverse ethnic groups like the Mishmi, Singpho, and Monpa, highlighting their sun-worshipping traditions and deep spiritual connection to the nature of the Eastern Himalayas.
- **Tourism and Livelihoods:** Conceptualized by the State Tourism Department, the festival aims to promote "responsible and eco-friendly tourism" while generating sustainable livelihood opportunities for local entrepreneurs and small businesses.
- **Strategic Significance:** Beyond culture, the event underscores the strategic importance of India's easternmost frontier, integrating remote border habitations into the national cultural consciousness through "Border Tourism."
- **Sustainability Commitment:** Adhering to the "Sun Commitment" of "no trash, no trace, no excuses," the festival established a model for community-led, environmentally conscious event management in ecologically sensitive zones.



### Key Definitions for Civil Services

- **Meyor (Zakhring) Tribe:** A small, indigenous community in Arunachal Pradesh, primarily inhabiting the Walong and Kibithu circles. They are traditionally known as the "Sunrise People" due to their geographic location and cultural reverence for the sun.



- **Mishmi Tribe:** Comprising groups like the Idu, Digaru (Taraon), and Miju (Kaman), they are major inhabitants of the Lohit and Anjaw districts, known for their distinct weaving, social structures, and animistic traditions.
- **Alo Prabhat:** Literally translating to "Light of the Dawn," it represents a specific cultural ceremony performed to greet the first light, combining traditional instruments with oral narratives of hope and peace.

### Constitutional and Legal Provisions

- **Article 371-H:** Provides special provisions for the State of Arunachal Pradesh, primarily concerning the responsibility of the Governor with respect to law and order and the protection of tribal interests.
- **Fifth and Sixth Schedules:** While Arunachal is not a Sixth Schedule state, its tribal areas are governed under specialized administrative frameworks to preserve indigenous customary laws and land rights.
- **Inner Line Permit (ILP):** Regulated under the Bengal Eastern Frontier Regulation, 1873, it is a mandatory travel document for Indian citizens to enter protected areas like Arunachal Pradesh to safeguard tribal culture from outside encroachment.
- **Directive Principles (Article 49):** The State's duty to protect monuments and places of national and geographical importance, applicable here to the conservation of the unique Dong Valley landscape.

### Conclusion

The Sunrise Festival at Dong is more than a New Year celebration; it is a strategic exercise in cultural diplomacy and regional development. By elevating the status of the "First Sunrise" to a national festival, the government is effectively bridging the geographical isolation of the Northeast while fostering a sense of pride and economic resilience among its frontier communities.

### 3. Historical Ecology: Ancient Marathi Texts Challenge Savanna Degradation Myths

A pioneering study published in the journal *People and Nature* has utilized medieval Marathi literature and oral traditions to demonstrate that the savannas of western Maharashtra are ancient, natural ecosystems rather than degraded forests. By analyzing texts from the 13th to 20th century CE across districts like Pune, Satara, and Solapur, researchers have debunked the colonial-era narrative that open-canopy landscapes resulted solely from deforestation or overgrazing.

#### Core Findings of the Ecological Study

- **Long-term Persistence:** Literary evidence from biographies, hagiographies, and *ovi* (verse-prose) reveals that tree-grass landscapes have remained stable for at least 750 years, predating colonial timber extraction.
- **Botanical Indicators:** Researchers identified 62 plant species in historical texts; 27 were specific "savanna indicators" like *hivara* (*Vachellia leucophloea*) and *tarai*, while only three were "forest indicators," confirming an open-canopy past.
- **Evolutionary Adaptations:** The flora described—featuring thick bark, spines, and clonal resprouting—reflects traits shaped by millennia of fire and grazing, proving these are evolved ecosystems rather than "ruined" forests.





- **Decoding Terminology:** The study clarifies that historical terms like *vana* (forest) and *jangala* (jungle) in Marathi/Sanskrit referred to wild, dry scrublands and grasslands, distinct from wet, closed-canopy forests (*anupa*).
- **Multi-proxy Validation:** Literary records were triangulated with 11 other lines of evidence, including Chalcolithic pottery motifs (blackbuck), hero stones (*virgal*) depicting cattle raids, and colonial revenue records of hay meadows.
- **Typological Classification:** The research distinguishes between "fine-leaf savannas" in dry zones (under 1000 mm rainfall) and "broadleaf savannas" in wetter zones, both of which are indigenous to the Deccan Plateau.

### Important Keypoints and Ecological Context

The study challenges the "Forest-Centric" bias in Indian conservation policy, which often views grasslands as "wastelands" or "degraded" stages of a forest. This misconception has led to well-intentioned but ecologically damaging afforestation drives where carbon-sequestering grasslands are replaced by monoculture plantations. The presence of *Dhanagara* pastoralist songs (*ovis*) further highlights a deep-seated socio-ecological link between local livelihoods and savanna health.

### Constitutional and Legal Provisions

- **Article 48A:** Mandates the State to protect and improve the environment; this study suggests that "improvement" should include restoring natural savannas rather than just planting trees.
- **Forest Rights Act (FRA), 2006:** Recognizes the rights of pastoralist communities (like the Dhanagars) to use and manage grazing lands, which this study identifies as ancient, legitimate ecosystems.
- **National Grassland Policy (Draft):** There has been a long-standing demand for a dedicated policy to protect grasslands, as they currently lack the legal protection accorded to "notified forests."
- **Biological Diversity Act, 2002:** Provides for the conservation of biological diversity and sustainable use of its components, emphasizing the need to protect "Indicator Species" mentioned in the study.

### Key Definitions for UPSC

- **Savanna:** A mixed woodland-grassland ecosystem characterized by trees being sufficiently widely spaced so that the canopy does not close, allowing an unbroken herbaceous layer (grasses) to grow.
- **Generalist Species:** Species that can thrive in a wide variety of environmental conditions and can make use of a variety of different resources.
- **Indicator Species:** An organism whose presence, absence, or abundance reflects a specific environmental condition or habitat type.
- **Hagiography:** A biography of a saint or an ecclesiastical leader; in this context, used as a historical record for environmental conditions.

### Conclusion

The integration of humanities and ecology proves that western Maharashtra's "scrub jungles" are high-value, ancient ecosystems with a 750-year documented history. Recognizing savannas as distinct biomes—rather than failed forests—is crucial for future conservation strategies. This "Long-Duree" perspective ensures that ecological restoration aligns with both historical reality and the cultural heritage of pastoral communities.



## 4. Ancient Gold Discovery in Lakkundi: Historical and Legal Scrutiny

A significant cache of gold ornaments and a copper container, estimated to be over a century old, was unearthed during residential excavation in Lakkundi village, Gadag district. The find has sparked a debate between local heritage enthusiasts and the Archaeological Survey of India (ASI) regarding its classification as "treasure" versus "ancestral household property." While initial archaeological assessments suggest the ornaments were likely buried for safety by previous generations, the discovery underscores the immense historical wealth of Lakkundi, a prominent center of the Kalyana Chalukya dynasty.

- **Archaeological Context:** Lakkundi (ancient *Lokkigundi*) was a flourishing commercial and cultural hub between the 10th and 12th centuries. It is renowned for its "Lakkundi school" of architecture, featuring nearly 50 temples, including the Brahma Jinalaya and Kasivisvesvara Temple.
- **Nature of the Find:** Approximately 470 grams of gold, including intricate chains and bangles, were found inside a copper pot at a depth of five feet. Archaeologists noted that many pieces appear broken, suggesting they were common household jewellery rather than a royal hoard.
- **Legal Protocol:** The discovery triggered the provisions of the **Indian Treasure Trove Act, 1878**. Following the mandatory *panchnama* (legal record of observation), the items were secured in the government treasury to determine their age and ownership.
- **Historical Significance:** While ASI officials initially downplayed the "treasure" label due to a lack of coins, local historians argue that any item of value hidden in the soil for over 100 years qualifies as treasure and could belong to the Chalukya or Hoysala eras.
- **Civic Honesty:** The find was reported by a young student, Prajwal Ritti, whose family was building the house. His integrity has been officially recognized by the district administration, highlighting the role of public awareness in heritage preservation.
- **Current Status:** A detailed investigation by the State Archaeology Department is underway to ascertain the exact period of the ornaments, which will determine if they are "antiquities" under central government jurisdiction.



### Key Definitions

- **Antiquity:** Under the *Antiquities and Art Treasures Act, 1972*, any object (coin, sculpture, manuscript, etc.) that has been in existence for not less than 100 years.
- **Treasure Trove:** Traditionally defined as any money, gold, silver, or bullion found hidden in the earth or a private place, the owner of which is unknown.
- **Kalyana Chalukya (Later Chalukyas):** A prominent South Indian dynasty (10th-12th Century CE) known for their sophisticated temple architecture and for making Lakkundi a major minting center.

### Constitutional and Legal Provisions

- **Indian Treasure Trove Act, 1878:** Governs the discovery of any "treasure" hidden in the soil worth more than 10 rupees. It mandates the finder to notify the District Collector.
- **Section 4 & 5 (Treasure Trove Act):** Requires the finder to deposit the treasure or provide security. The Collector then issues a notification to claimants to appear for an inquiry.



- **Antiquities and Art Treasures Act, 1972:** Regulates the export and internal trade of antiquities to prevent smuggling and preserve national heritage.
- **Article 49 (DPSP):** It is the obligation of the State to protect every monument or place of artistic or historic interest declared to be of national importance.
- **Article 51A(f) (Fundamental Duties):** To value and preserve the rich heritage of the country's composite culture.

### Conclusion

The Lakkundi discovery highlights the friction between colonial-era laws (1878 Act) and modern heritage conservation needs. Whether classified as "ancestral property" or "ancient treasure," such finds are vital pieces of India's cultural puzzle. For a region like Lakkundi, which once served as a Hoysala capital and a Chalukyan mint, every subsurface discovery offers a potential link to its prosperous medieval past. Ensuring a transparent and fair "reward-sharing" mechanism is essential to encourage citizens to report such finds rather than selling them in the grey market.

## EDITORIALS & OPINION

### 1. India's Strategic Autonomy and Counter-Terrorism Policy

In a recent address at IIT-Madras, External Affairs Minister S. Jaishankar underscored India's uncompromising stance on cross-border terrorism. Highlighting the shift in India's foreign policy, the Minister asserted that the right to self-defense is absolute and cannot be curtailed by international pressure. He specifically linked "good neighbourliness" to the cessation of terrorism, signaling a potential hardening of India's stance on long-standing bilateral agreements like the Indus Waters Treaty.

#### Key Summary Points

- **Right to Self-Defense:** India asserts its sovereign right to protect its citizens against persistent and unrepentant cross-border terrorism, emphasizing that the "how and when" of such defense remains a domestic prerogative.
- **Reciprocity in Diplomacy:** The Minister articulated that "good neighbourly" benefits, such as water-sharing and trade concessions, cannot exist in a vacuum while terrorism continues.
- **Indus Waters Treaty (IWT) Linkage:** In a significant strategic signal, the IWT was described as a "gesture of goodwill" that may be reconsidered if the fundamental basis of peace and cooperation is violated by the neighbour to the West.
- **Neighbourhood First Policy:** While critical of Pakistan, the Minister highlighted India's proactive support to other neighbours, cited through "Vaccine Maitri" and a \$4 billion economic package to Sri Lanka during its financial crisis.
- **Global Research and Soft Power:** The launch of the IITM Global Research Foundation was framed as part of India's broader objective to leverage its academic and technological prowess to solve global challenges.
- **Strategic Autonomy:** The address reinforced India's refusal to allow external actors to dictate its national security responses, reflecting a confident, "Bharat-centric" global outlook.

#### Definitions of Key Terms

- **Strategic Autonomy:** The ability of a state to pursue its national interests and adopt its preferred foreign policy without being constrained by other states or international alliances.



- **Cross-Border Terrorism:** Acts of terrorism intended to achieve political or strategic objectives, where the perpetrators or sponsors are based in one country but strike in another.
- **Indus Waters Treaty (1960):** A water-distribution treaty between India and Pakistan, brokered by the World Bank, governing the use of the Indus River system.
- **Neighbourhood First Policy:** A core component of India's foreign policy that prioritizes building cordial and synergistic relations with its immediate neighbours in South Asia.

### Constitutional and Legal Provisions

- **Article 51 (Directive Principles):** While the Constitution promotes international peace and security, it does not preclude the state's inherent duty to protect its territorial integrity and citizens.
- **Article 21 (Right to Life):** The state has a constitutional obligation to protect the life and liberty of its citizens, which forms the legal basis for counter-terrorism operations.
- **UN Charter Article 51:** Recognizes the "inherent right of individual or collective self-defence if an armed attack occurs," which India frequently cites to justify surgical strikes or preemptive actions against terror camps.
- **Section 13 of the UAPA, 1967:** Provides the domestic legal framework for punishing acts that advocate or abet secession or question the sovereignty of India, often used in the context of terror funding.

### Additional Important Keypoints

- **The "De-hyphenation" Strategy:** India has successfully de-hyphenated its relationship with Pakistan from its ties with other major powers, ensuring that bilateral friction does not stall its global rise.
- **Economic Diplomacy:** India's role as a "first responder" during the Ukraine conflict (providing food and fuel) and the Sri Lankan crisis has enhanced its credentials as a net security provider in the region.
- **Non-alignment to Multi-alignment:** The shift from traditional non-alignment to a strategy of engaging with multiple power centers while keeping national security interests paramount.

### Conclusion

India's current foreign policy marks a departure from "strategic restraint" to "strategic response." By linking the survival of treaties like the IWT to the conduct of the neighbouring state, India is utilizing all instruments of national power—diplomatic, economic, and hydro-political—to create a cost for state-sponsored terrorism. This proactive stance, balanced by generous support to other neighbours, defines India's role as a responsible yet firm regional leader.

## 2. Judicial Guardrails on Personal Liberty: SC Against Punitive Incarceration

The Supreme Court of India, in a recent significant ruling, has reiterated that pre-trial detention should not be used as a tool for "teaching a lesson" to an accused. Granting bail to the promoters of DHFL in a major bank fraud case, the Court underscored that the "seriousness" of an offense or the invocation of stringent laws does not negate the fundamental presumption of innocence. The judgment serves as a stern reminder to law enforcement agencies and lower courts that incarceration without adjudication must not degenerate into a form of extra-judicial punishment.



### Key Summary Points

- **Bail as the Rule:** The Court reaffirmed the bedrock principle of Indian criminal jurisprudence that "bail is the rule and jail is an exception," emphasizing that indefinite detention violates constitutional ethos.
- **Presumption of Innocence:** An undertrial's presumption of innocence remains intact regardless of the severity of the charges or the nature of the investigating agency's claims.
- **Prohibition of Punitive Detention:** The Bench specifically condemned the practice of denying bail merely to give the accused a "taste of imprisonment," stating that pre-trial custody cannot be a substitute for punishment.
- **Constitutional Obligation:** Courts are duty-bound to intervene when custody becomes disproportionate, arbitrary, or excessive, especially when a timely trial appears unlikely.
- **Criteria for Denial:** The Court noted that an undertrial should only be detained if there is a demonstrated "flight risk," a threat to society, or a clear possibility of witness tampering/evidence destruction.
- **Onus on Prosecution:** The judgment shifts the burden back to the State, requiring the prosecution to establish compelling reasons why an individual's liberty should be curtailed before conviction.

### Definitions of Key Terms

- **Undertrial:** A person who is currently in custody or on bail while awaiting the conclusion of their trial in a court of law.
- **Presumption of Innocence:** The legal principle that every person accused of any crime is considered innocent until proven guilty beyond a reasonable doubt in a court of law.
- **Pre-trial Incarceration:** The period of time a person spends in prison after being charged with a crime but before their trial has finished and a verdict is reached.
- **Adjudication:** The formal legal process of resolving a dispute or deciding a case through a judicial judgment.

### Constitutional and Legal Provisions

- **Article 21:** The Right to Life and Personal Liberty. The SC held that deprivation of liberty must follow a "procedure established by law" which must be just, fair, and reasonable (Maneka Gandhi case).
- **Article 14:** Right to Equality. Arbitrary detention without trial violates the principle of equal protection under the law.
- **Section 437 & 439, CrPC (and corresponding sections in BNSS):** Provisions governing the grant of bail by Magistrate and High Courts/Sessions Courts.
- **Section 436A, CrPC:** Specifies that an undertrial who has served half of the maximum imprisonment for an offense (other than those punishable by death) should be released on personal bond.
- **Precedents (Gurbaksh Singh Sibbia & Satender Kumar Antil):** Landmark judgments where the SC established guidelines to prevent arbitrary arrests and ensure bail is granted in a streamlined manner.



### Important Keypoints for Analysis

- **The "Delay" Factor:** The Court highlighted that if a timely trial is not possible, the obligation to enlarge the accused on bail increases to prevent "punishment without trial."
- **Stringent Laws vs. Liberty:** Even under special statutes (like PMLA or UAPA), the Court has increasingly held that the "twin conditions" for bail cannot override the fundamental right to a speedy trial.
- **Judicial Overreach of Agencies:** The ruling critiques the tendency of agencies to use "seriousness of crime" as a blanket argument to oppose bail, effectively seeking conviction-like treatment during the inquiry phase.
- **Rights of White-Collar Accused:** This case clarifies that even in multi-crore financial frauds, the basic principles of liberty apply, provided the accused does not pose a flight risk.

### Conclusion

The Supreme Court's observations mark a critical pushback against the "culture of incarceration" prevalent in modern law enforcement. By equating prolonged pre-trial detention with "punishment without adjudication," the judiciary has strengthened the shield of Article 21. For a functional democracy, the process itself must not become the punishment; this judgment ensures that the gravity of an allegation does not trample the sanctity of the legal process.

### 3. Rationalization of Subsidies: India's Fiscal Consolidation Path

The share of subsidies in India's total expenditure is projected to reach an **8.4%** low in **FY 2025-26**, marking a significant milestone in fiscal management. After a sharp spike during the pandemic to support vulnerable populations, the government has resumed its aggressive path of "subsidy rationalization," aiming for long-term fiscal stability and a reduced fiscal deficit.

#### Key Highlights of the Subsidy Shift

- **25-Year Low:** At **8.4%** of the total budget, the subsidy burden is at its lowest level in nearly a quarter-century, down from the pandemic peaks when it exceeded **12-13%**.
- **Major Components:** The "Big Three" subsidies—**Food, Fertilizer, and Petroleum**—continue to dominate. Food subsidy remains the largest at over **₹2.03 lakh crore**, followed by Fertilizers at **₹1.56 lakh crore**.
- **Fiscal Consolidation:** This reduction is a cornerstone of the government's strategy to bring the **Fiscal Deficit** down to **4.4%** of GDP in FY26, adhering to the post-pandemic consolidation roadmap.
- **Direct Benefit Transfer (DBT) Impact:** The expansion of **Aadhaar-linked DBT** and the **PM-KISAN** model has minimized "leakages" and "ghost beneficiaries," allowing the government to reduce outlays without compromising essential support.
- **Shift to Capital Expenditure:** The "saved" fiscal space is being redirected toward **Public Capex** (infrastructure, railways, and roads), which has a higher multiplier effect on economic growth compared to revenue expenditure on subsidies.
- **Global Headwinds Buffer:** Despite the reduction, the government has maintained "escape clauses" for fertilizer subsidies to shield farmers from volatile global natural gas and Di-Ammonium Phosphate (DAP) prices.



## Constitutional and Legal Provisions

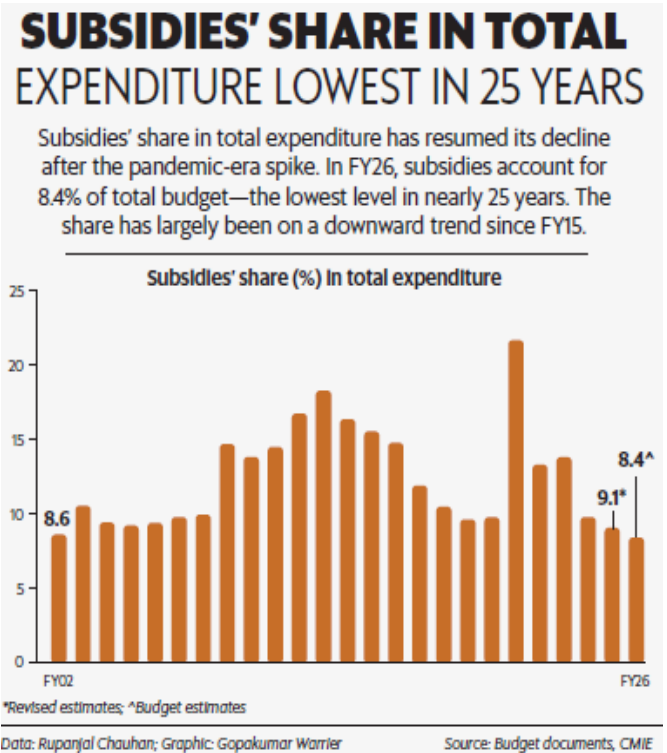
- **Article 112:** Mandates the presentation of the **Annual Financial Statement**, distinguishing between Revenue Expenditure (where subsidies lie) and Capital Expenditure.
- **Fiscal Responsibility and Budget Management (FRBM) Act, 2003:** Section 4 of the Act requires the government to take measures to limit the fiscal deficit. Subsidy control is the primary tool used to meet these statutory targets.
- **National Food Security Act (NFSA), 2013:** Provides the legal basis for the Food Subsidy, guaranteeing highly subsidized (now free under PMGKAY) foodgrains to nearly **800 million** people.
- **Article 282:** Allows the Union or States to make grants for any "public purpose," which serves as the constitutional umbrella for various central sector subsidy schemes.

## Key Definitions

- **Subsidy Rationalization:** The process of making subsidies more efficient by targeting only the truly needy, reducing leakages, and phasing out "non-merit" subsidies.
- **Merit vs. Non-Merit Subsidies:** **Merit subsidies** (e.g., education, health) provide significant social benefits beyond the individual, while **non-merit subsidies** (e.g., some fuel or power subsidies) may lead to resource misallocation.
- **Fiscal Deficit:** The gap between the government's total expenditure and its total non-debt receipts; reducing subsidies directly narrows this gap.

## Conclusion

The declining trend in subsidy share signals a structural shift in the Indian economy from a "welfare-only" model to a "growth-enabling" framework. While the reduction enhances macroeconomic stability and strengthens the rupee, the challenge remains in ensuring that the withdrawal of subsidies does not aggravate rural distress or nutritional insecurity. The future of Indian fiscal policy lies in "**smart subsidies**"—those that are digitally targeted, time-bound, and outcome-oriented.





# ETHICS

## 1. Aviation Safety in India: Credibility Deficit and Structural Failures

**Context:** Following the tragic crash of Air India Flight 171 in Ahmedabad on June 12, 2025, serious questions have been raised regarding India's commitment to international safety standards. Discrepancies between the Indian authorities and international bodies like the NTSB, alongside concerns over "political massaging" of accident reports, suggest a deepening crisis in India's aviation regulatory framework.

- **Transparency and International Compliance:** As a signatory to the International Civil Aviation Organization (ICAO), India is mandated to follow Annex 13 standards for accident investigations. However, the current friction with the U.S. National Transportation Safety Board (NTSB) over the AI 171 findings suggests a departure from the "transparency" preached by ICAO.
- **Technical Anomalies in Investigation:** Preliminary findings indicate that fuel control switches—which require mechanical lifting to move—were cut off seconds after takeoff. While digital records (CVR/DFDR) provide clarity, the delay in releasing a definitive report points toward a breakdown in the technical versus political narrative.
- **Regulatory Capture and Diluted Norms:** The Directorate General of Civil Aviation (DGCA) has been criticized for modifying Civil Aviation Requirements (CAR) under pressure from airline operators, often extending deadlines for safety compliance that compromise passenger security.
- **Historical Pattern of Cover-ups:** Previous investigations, such as the 2010 Mangalore crash and the 2020 Kozhikode accident, revealed blatant violations—including rigid structures in safety zones and inadequate fire-fighting responses—that were allegedly suppressed in official reports.
- **Post-Crash Management Failures:** The failure to sanitize the AI 171 crash site allowed unauthorized access to debris, potentially compromising forensic evidence. Furthermore, resuming operations without full Rescue and Fire Fighting (RFF) services highlights a systemic disregard for emergency protocols.
- **Diplomatic and Credibility Risks:** India's reluctance to involve foreign experts fully in the final reporting process risks isolating the country's aviation sector globally. If a technical fault existed in the aircraft (Boeing 787), international regulators like the FAA would have issued a global grounding; their silence points toward local operational or procedural failures.



### Key Definitions

- **ICAO Annex 13:** The international standard that provides the protocols for aircraft accident and incident investigations, emphasizing that the objective is the prevention of future accidents, not the apportionment of blame.
- **Black Box (CVR & DFDR):** The Cockpit Voice Recorder (CVR) records radio transmissions and cockpit sounds, while the Digital Flight Data Recorder (DFDR) logs specific aircraft performance parameters.
- **Window of Circadian Low (WOCL):** The period (typically 02:00 to 06:00) when the human body is programmed to sleep and alertness is at its lowest, a critical factor in pilot fatigue analysis.



- **Airworthiness Directive (AD):** A notification to owners and operators of certified aircraft that a known safety deficiency with a particular model must be corrected.

### Constitutional and Legal Provisions

- **The Aircraft Act, 1934:** The principal legislation governing the manufacture, possession, use, operation, sale, and import of aircraft in India.
- **The Aircraft (Investigation of Accidents and Incidents) Rules, 2017:** Provides the legal framework for the Air Accident Investigation Bureau (AAIB) to conduct independent probes.
- **Article 21:** The Right to Life and Personal Liberty. The judiciary has often interpreted this to include the right to safe travel and the state's obligation to ensure rigorous safety standards in public utilities.
- **Article 51(c):** Directive Principle that encourages the state to foster respect for international law and treaty obligations (such as ICAO conventions).

### Conclusion

The credibility of India's aviation safety regime is at a crossroads. The transition from a technical investigation to a politically managed narrative not only violates international treaties but also endangers future travelers. For India to remain a global aviation hub, it must insulate its investigative bodies (AAIB) and regulators (DGCA) from political and commercial interference, ensuring that safety reports serve as lessons for prevention rather than tools for image management.

## 2. Transparency and Accountability in Democratic Institutions

The 28th Conference of Speakers and Presiding Officers of the Commonwealth (CSPOC), hosted in New Delhi in January 2026, underscored the essential role of transparency, inclusivity, and accountability in strengthening democratic legitimacy. Chaired by Lok Sabha Speaker Om Birla, the conference addressed the intersection of tradition and technology, emphasizing that while consensus and dissent are democratic pillars, they must be exercised within the bounds of parliamentary propriety. The summit served as a critical platform for Commonwealth nations to discuss emerging challenges like the ethical use of Artificial Intelligence (AI) and the influence of social media on legislative discourse.

### Key Highlights for UPSC Preparation

- **Core Principles of Strong Democracy:** Transparency in decision-making and inclusivity of marginalized voices are vital for maintaining public trust and the legitimacy of democratic institutions.
- **Role of Presiding Officers:** The Speaker is the "decisive" guardian of the House's dignity, responsible for ensuring impartiality and adapting institutions to contemporary needs without compromising constitutional values.
- **Ethical AI Integration:** Discussion focused on balancing innovation with oversight, ensuring the "responsible" use of AI to enhance parliamentary efficiency while curbing potential misuse like misinformation.
- **Social Media & Citizen Engagement:** The conference explored strategies to move citizen engagement beyond periodic elections and addressed the psychological health and well-being of legislators and parliamentary staff.
- **Parliamentary Propriety:** While dissent is vital, its expression must remain within the framework of procedural decorum to protect the institutional credibility of the legislature.



- **Global Leadership:** By hosting CSPOC 2026, India reinforced its role as the "Mother of Democracy," facilitating a global dialogue on harmonizing democratic traditions with rapid technological changes.

### Constitutional and Legal Provisions

- **Article 93:** Mandates the election of the Speaker and Deputy Speaker of the Lok Sabha to ensure the House has a functional head.
- **Article 94:** Provides the legal process for the vacation, resignation, and removal of the Speaker's office.
- **Article 105:** Defines the powers, privileges, and immunities of the Houses of Parliament, their members, and committees, which the Speaker is tasked to protect.
- **Rule 373 & 374 (Rules of Procedure):** Empowers the Speaker to direct a member to withdraw from the House for "disorderly conduct" or to name a member for suspension for "willfully obstructing" business.
- **The Tenth Schedule (Anti-Defection Law):** Grants the Speaker the quasi-judicial power to decide on the disqualification of members on grounds of defection (upheld in *Kihoto Hollohan v. Zachillhu*).

### Definitions of Key Concepts

- **Parliamentary Propriety:** The standards of behavior, etiquette, and decorum expected of members within the chamber to ensure productive and respectful deliberation.
- **Presiding Officer:** The individual (Speaker in Lok Sabha, Chairman in Rajya Sabha) who oversees proceedings, maintains order, and interprets the rules of the House.
- **CSPOC (Conference of Speakers and Presiding Officers of the Commonwealth):** An organization created in 1969 to promote knowledge and understanding of parliamentary democracy among the Speakers of the Commonwealth.
- **Inclusivity in Democracy:** The practice of ensuring that the legislative process reflects the diversity of the citizenry, particularly including women, minorities, and marginalized groups.

### Conclusion

As democratic institutions navigate the complexities of the 21st century, the message from CSPOC 2026 is clear: institutions must evolve or risk becoming irrelevant. The integration of AI and digital tools offers a path toward a more "paperless" and accessible parliament, but this must be balanced with robust ethical frameworks. Ultimately, the resilience of a democracy depends on the Presiding Officer's ability to rise above partisan politics and act as the neutral arbiter of a House that values both the government's right to rule and the opposition's right to dissent.



# YOJANA & KURUKSHETRA

## 1. Circularity and Urban Transformation: India's Path to Garbage-Free Cities

The global climate discourse at COP30 in Belém (2025) has pivotally positioned waste management as a core climate strategy. For India, this international momentum aligns with domestic initiatives like SBM-U 2.0 and Mission LiFE, emphasizing a shift from a linear "use-and-dispose" model to a circular economy. With urban waste generation projected to hit 165 million tonnes by 2030, transforming waste into a resource is no longer an aesthetic choice but an existential necessity for India's climate and public health goals.

### Key Summary Points

- **COP30 & the NOW Initiative:** The "No Organic Waste" (NOW) initiative launched at COP30 aims to cut methane emissions from organic waste by two-thirds by 2030, recognizing waste as a strategic resource for inclusive growth.
- **Escalating Urban Waste Burden:** India's urban waste is expected to surge from current levels to 436 million tonnes by 2050. Proactive circularity is required to prevent 41 million tonnes of annual greenhouse gas emissions.
- **SBM-U 2.0 & 2026 Milestone:** The Swachh Bharat Mission Urban 2.0 aims for "Garbage Free Cities" (GFC) by 2026, targeting 100% scientific processing of waste and the remediation of legacy dumpsites.
- **Economic Potential of Waste:** More than 50% of municipal waste is organic, offering immense potential for bio-methanation and Compressed Biogas (CBG) under the GOBARdhan scheme, while dry waste feeds into Refuse Derived Fuel (RDF).
- **Construction & Demolition (C&D) Focus:** India generates 12 million tonnes of C&D waste annually. New 2025 rules (effective April 2026) mandate a circular approach, including Extended Producer Responsibility (EPR) for large-scale builders.
- **The C-3 Global Coalition:** Endorsed at the 2025 Jaipur Declaration, the "Cities Coalition for Circularity" (C-3) serves as an Indian-led global platform for city-to-city knowledge sharing on resource efficiency.



### Key Definitions for UPSC

- **Circular Economy:** A model of production and consumption that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible.
- **Linear Economy:** The traditional "take-make-waste" industrial model where resources are extracted, used, and then disposed of as waste.
- **Bio-methanation:** A process by which organic material is microbologically converted under anaerobic conditions to biogas (methane and carbon dioxide).
- **Extended Producer Responsibility (EPR):** A policy approach under which producers are given a significant responsibility—financial and/or physical—for the treatment or disposal of post-consumer products.



### Constitutional and Legal Provisions

- **Article 48A:** Directive Principle of State Policy (DPSP) mandating the State to protect and improve the environment and safeguard the forests and wildlife.
- **Article 51A(g):** Fundamental Duty of every citizen to protect and improve the natural environment including forests, lakes, rivers, and wildlife.
- **Environment (Construction and Demolition) Waste Management Rules, 2025:** Effective from April 1, 2026, these rules introduce mandatory recycling targets (starting at 25%) and EPR for projects over 20,000 sq. metres.
- **74th Constitutional Amendment Act:** Empowers Urban Local Bodies (ULBs) with the responsibility of public health, sanitation, and solid waste management (Schedule XII).

### Important Keypoints for Analysis

- **Mission LiFE Integration:** Connects individual behavior (Reduce, Reuse, Recycle) with global climate goals, advocating for "Pro-Planet People" (P3).
- **Technological Hurdles:** Despite the rise in recycling capacity, challenges remain in the efficient segregation at source and the financial viability of recycled products in mainstream markets.
- **Urban-Rural Convergence:** Circularity in cities can provide nutrients (compost/FOM) for rural agriculture, closing the urban-rural nutrient loop.
- **EPR Expansion:** Currently, EPR is active for plastic and e-waste; the new framework seeks to extend this to C&D waste and potentially all categories of dry waste to ensure producer accountability.

### Conclusion

The transition to a circular waste management model is the only viable pathway for India to sustain its rapid urbanization without a catastrophic environmental footprint. While the SBM-U 2.0 provides the infrastructure roadmap, success hinges on "Jan Andolan" (people's movement) and robust inter-departmental coordination. By viewing waste as a "wealth" generator—through energy recovery and material reuse—India can decouple economic growth from environmental degradation, fulfilling its "Net Zero" commitments while ensuring cleaner, more resilient cities.

## 2. Sustainable Sanitation: Bridging Rural-Urban Gaps through Fecal Sludge Management

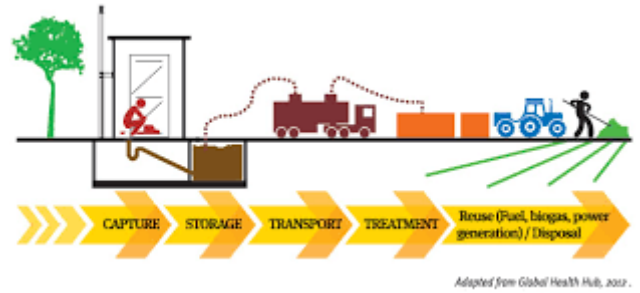
Since its inception in 2014, the Swachh Bharat Mission (SBM) has revolutionized India's sanitation landscape, building over 12 crore toilets and achieving 100% Open Defecation Free (ODF) status in rural India. However, the mission has now entered its next critical frontier—**SBM-Grameen (SBM-G) Phase II**, or the **ODF Plus** era. This phase prioritizes the management of fecal sludge and liquid waste, moving beyond mere construction to ensure the entire sanitation value chain is safe and sustainable.

### Key Summary Points

- **Evolution of SBM-G:** Phase II (2020-21 to 2025-26) shifts focus from "access" to "sustainability," aiming to make villages "ODF Plus" by integrating solid and liquid waste management (SLWM).
- **The Fecal Sludge Gap:** Most rural toilets use onsite containment like septic tanks. Without scheduled desludging and treatment, filled pits risk a return to open defecation or groundwater contamination.



- **Maharashtra's Urban-Rural Model:** The state is pioneering a "Convergence Model" where rural clusters leverage under-utilized urban Fecal Sludge Treatment Plants (FSTPs).
- **Satara District Case Study:** Four villages (Jakatwadi, Songaon, Kodoli, Degaon) have partnered with Satara city to use its 65 KLD treatment plant, institutionalizing safe waste transport through formal inter-local agreements.
- **Standalone Cluster Solutions:** For remote villages like Mayani, "Standalone Cluster FSTPs" are being developed to serve nearly 80 surrounding villages, demonstrating the viability of pooled infrastructure.
- **Economic Sustainability:** Gram Panchayats are introducing "Sanitation Taxes" to fund private-sector-led scheduled desludging (every 5-7 years), ensuring accountability and long-term financial viability.



### Key Definitions for UPSC

- **ODF Plus:** A status achieved when a village sustains its ODF status, ensures solid and liquid waste management, and is visually clean.
- **Fecal Sludge Management (FSM):** The technical term for the safe collection, transport, treatment, and disposal/reuse of fecal sludge from onsite systems like septic tanks.
- **Desludging:** The mechanical process of emptying the accumulated settled solids (sludge) from a septic tank or pit.
- **Kilo Litres a Day (KLD):** The standard unit for measuring the capacity of treatment plants (1 KLD = 1,000 litres/day).

### Constitutional and Legal Provisions

- **Article 21:** The Supreme Court has interpreted the **Right to Life** to include the right to a clean environment and sanitation (e.g., *Virender Gaur v. State of Haryana*).
- **73rd and 74th Amendments:** These amendments devolved the responsibility of sanitation and waste management to **Panchayati Raj Institutions (PRIs)** and **Urban Local Bodies (ULBs)** respectively (Schedule XI and XII).
- **Section 79 of the IT Act & Environment Laws:** While the IT Act governs digital space, the **Environment (Protection) Act, 1986** provides the umbrella framework for waste management rules, including those governing fecal matter.
- **The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013:** Mechanized FSM (like the Satara model) is the primary legal and ethical alternative to eliminate the hazardous practice of manual scavenging.

### Important Keypoints for Analysis

- **Public Health Linkage:** Proper FSM prevents waterborne diseases like cholera and dysentery, saving India billions in healthcare costs and lost labor productivity.
- **Environmental Safety:** Untreated sludge dumped in water bodies is a major source of nitrogen and phosphorus pollution, leading to eutrophication.



- **Gender and Dignity:** Safe service chains reduce the burden on women and vulnerable groups who often bear the brunt of poor community hygiene and the indignity of cleaning full pits manually.
- **The "Sanitation Tax" Precedent:** The Satara model proves that rural citizens are willing to pay for reliable, scheduled services, paving the way for the "Service Level Benchmark" approach in rural governance.

### Conclusion

The success of India's sanitation mission now depends on making waste management invisible and automated. The Maharashtra experiment in Satara demonstrates that the boundary between "Urban" and "Rural" is artificial when it comes to resource optimization. By linking rural needs to urban infrastructure and adopting cluster-based treatment, India can institutionalize a circular economy for waste that protects health, restores dignity, and ensures that the gains of 2014 are permanent.

### 3. Fiscal Federalism and Tax Devolution: The GSDP Debate

The distribution of financial resources between the Union and States is a cornerstone of Indian federalism. Recently, the debate has shifted towards using **Gross State Domestic Product (GSDP)** as a proxy for tax contribution to address the long-standing "Equity vs. Efficiency" dilemma in the Finance Commission's (FC) devolution formula.

#### Key Highlights of the Devolution Debate

- **The Shrinking Divisible Pool:** While the 15th FC recommended a **41%** vertical devolution, the actual transfer is often lower (approx. **33%**) because the Centre increasingly relies on **cesses and surcharges**, which are not shared with States.
- **GSDP as an Efficiency Proxy:** High-performing States (e.g., Karnataka, Maharashtra, Tamil Nadu) argue that current criteria like "**Income Distance**" (weighted at 45%) penalize development. The report suggests **GSDP share** as a more reliable indicator of a State's actual contribution to the national tax base compared to PAN-based collection data.
- **Erosion of Fiscal Autonomy:** The implementation of **GST** has limited States' powers to raise independent revenue. Coupled with the rise of **Centrally Sponsored Schemes (CSS)**, States face "one-size-fits-all" spending constraints.
- **Collection vs. Contribution:** Direct tax collection figures are often skewed by the location of corporate headquarters. For instance, a firm may produce in Tamil Nadu but pay taxes in Mumbai. GSDP captures the actual economic activity (the tax base) occurring within a State's borders.
- **Performance Incentives:** The 15th FC introduced "**Demographic Performance**" (12.5%) to reward States with lower fertility rates, but critics argue this doesn't fully compensate for the loss in revenue caused by shifting from the 1971 to 2011 Census data.
- **Equity-Efficiency Balance:** Empirical data shows that GSDP shares have a high correlation (**0.81**) with tax collections. Using GSDP as a criterion could bridge the gap between redistribution to backward States and rewarding economic contributors.



#### Constitutional and Legal Provisions

- **Article 280:** Mandates the President to constitute a **Finance Commission** every five years to recommend the distribution of net tax proceeds.



- **Article 270:** Outlines the "Divisible Pool," but specifically **excludes** cesses and surcharges (under Article 271) from being shared with States.
- **Article 275:** Provides for **Grants-in-aid** to States in need of assistance, separate from tax devolution.
- **Article 282:** Allows the Union to make grants for any "public purpose," which is the legal window for **Centrally Sponsored Schemes (CSS)**, often criticized for infringing on State lists.
- **Article 246A:** Special provision introduced by the **101st Constitutional Amendment** giving Parliament and State Legislatures power to make laws with respect to GST.

### Key Definitions

- **Vertical Devolution:** The percentage of the total divisible pool of central taxes that goes to all States collectively (currently 41%).
- **Horizontal Devolution:** The formula used to distribute the States' collective share among individual States based on criteria like population, area, and forest cover.
- **Income Distance:** The difference between the per capita GSDP of a State and the State with the highest per capita GSDP; used as a measure of "need."
- **Cess and Surcharge:** Additional taxes levied by the Centre for specific purposes (e.g., Education Cess). Unlike basic taxes, these proceeds remain entirely with the Union.

### Conclusion

The 16th Finance Commission faces the herculean task of recalibrating India's fiscal architecture. While the principle of "**Equalization**" (helping poorer States) is vital for national integrity, ignoring the "**Efficiency**" of industrial States risks de-incentivizing growth. Incorporating GSDP as a significant weight in the horizontal formula could provide a transparent, data-driven compromise that honors both social justice and economic contribution.

## **PIB & PARLIAMENTARY RESEARCH STUDIES (PRS)**

### **1. Nationwide Cashless Treatment Scheme for Road Accident Victims**

The Government of India is set to launch a transformative **cashless medical treatment scheme** aimed at drastically reducing road accident fatalities. Announced by the Union Minister for Road Transport and Highways, Nitin Gadkari, the initiative centers on providing immediate trauma care during the critical "Golden Hour" and incentivizing bystander assistance.

#### **Key Highlights of the Scheme**

- **Financial Coverage:** The scheme provides cashless medical treatment up to **₹1.5 lakh per person** for a minimum of seven days following a road accident.
- **Universal Applicability:** Unlike previous highway-centric plans, this scheme covers accidents occurring **anywhere in the country**, including state roads and municipal lanes.
- **Good Samaritan Incentive:** Individuals who rush victims to hospitals, officially termed as "**Rahavirs**", will be rewarded with a cash award of **₹25,000** and a Certificate of Appreciation.
- **Golden Hour Focus:** The primary objective is to leverage the first **60 minutes** after a traumatic injury—the "Golden Hour"—where prompt intervention can increase survival rates by up to 30%.



- **Motor Vehicle Accident Fund:** Funding is bifurcated; treatment is covered under **third-party insurance** for insured vehicles, while the **Motor Vehicle Accident Fund** (established under the MV Amendment Act 2019) funds treatment for victims of uninsured or "hit-and-run" cases.
- **Technology Integration:** The scheme integrates the **National Health Authority (NHA)** ecosystem with the Integrated Road Accident Database (**iRAD**) to ensure seamless claim processing between hospitals and insurers.

### Constitutional and Legal Provisions

- **Article 21 of the Indian Constitution:** The Supreme Court has expanded the "Right to Life" to include the right to timely medical treatment (e.g., *Paschim Banga Khet Mazdoor Samity v. State of West Bengal*).
- **Motor Vehicles (Amendment) Act, 2019:** Inserted **Section 134A**, which provides statutory protection to "Good Samaritans" from civil or criminal liability, and **Section 162**, which mandates the central government to frame a scheme for cashless treatment.
- **Section 164B of the MV Act:** Provides for the creation of the **Motor Vehicle Accident Fund**, utilized specifically for the treatment of victims and compensation in hit-and-run cases.
- **Directive Principles (Article 38 & 47):** Mandate the State to promote public health and secure a social order for the welfare of the people.



### Key Definitions

- **Golden Hour:** The time period lasting one hour following a traumatic injury during which there is the highest likelihood of preventing death by providing prompt medical care.
- **Good Samaritan (Rahavir):** A person who, in good faith and without expectation of reward, renders emergency medical or non-medical assistance to a victim at the scene of an accident.
- **Third-Party Insurance:** A statutory requirement for all vehicles where the insurer (the second party) protects the vehicle owner (the first party) against liability for damages caused to another person or property (the third party).

### Conclusion

India currently records one of the highest road fatality rates globally. By removing the financial and legal barriers that often deter bystanders and hospitals from providing immediate care, this scheme moves beyond infrastructure and focuses on **human-centric safety**. Its success will depend on the effective "last-mile" coordination between local police stations, private hospitals, and the insurance grid.

## 2. Evolution of ISRO: Transitions, Governance, and Future Challenges

The Indian Space Research Organisation (ISRO) is transitioning from a mission-led research agency to a cornerstone of a broad industrial space ecosystem. While the last decade was marked by landmark "firsts"—including the **Chandrayaan-3** lunar landing and the **Aditya-L1** solar mission—the next phase demands institutional maturity, legal clarity, and a shift toward routine, large-scale execution to maintain global competitiveness.



## Key Highlights of ISRO's Future Roadmap

- **Mission Complexity & Success:** The successful soft landing of **Chandrayaan-3** (August 2023) and the insertion of **Aditya-L1** into the Sun-Earth L1 Lagrange point (January 2024) have elevated India into an elite group of spacefaring nations capable of deep-space exploration.
- **Structural Bottlenecks:** Despite engineering excellence, ISRO faces a "prioritization problem." Parallel preparation for **Gaganyaan** (human spaceflight), satellite replenishment, and the **NGLV** has strained launch cadence, with 2025 seeing fewer launches than projected due to project delays.
- **Transition to NGLV (Soorya):** The **Next-Generation Launch Vehicle (NGLV)** is being developed as a partially reusable, modular rocket capable of lifting **30 tonnes** to Low Earth Orbit (LEO). It is designed to replace the PSLV and LVM-3, providing low-cost access to space.
- **International Collaboration (NISAR):** The **NASA-ISRO Synthetic Aperture Radar (NISAR)**, launched in **July 2025**, represents a billion-dollar climate monitoring partnership, utilizing dual-frequency radar (L-band and S-band) for unprecedented Earth observation.
- **Shift to "Demand-Driven" Model:** Through **NewSpace India Ltd (NSIL)**, ISRO is moving away from the "supply-driven" approach, allowing industry consortia (like HAL-L&T) to manufacture and launch workhorse rockets like the PSLV, freeing ISRO to focus on R&D.
- **Space Liberalization & Ecosystem:** The 2020 reforms created **IN-SPaCe** as a regulator to promote private participation. However, the lack of a comprehensive **National Space Law** remains a hurdle for defining liability, insurance, and intellectual property rights for startups.



## Constitutional and Legal Provisions

- **Article 51A(h):** Part of the Fundamental Duties, it mandates the development of "scientific temper, humanism and the spirit of inquiry and reform," providing a moral basis for space exploration.
- **Indian Space Policy, 2023:** An overarching framework that defines the roles of **ISRO** (Advanced R&D), **IN-SPaCe** (Regulation/Promotion), and **NSIL** (Commercialization).
- **Draft Space Activities Bill (2017):** A proposed (but not yet enacted) law aimed at regulating private space activity, establishing licensing regimes, and defining the government's liability under international treaties.
- **Outer Space Treaty (1967):** As a signatory, India is internationally liable for all space objects launched from its territory, necessitating strict domestic regulation of private players to manage sovereign risk.

## Key Definitions

- **Lagrange Point (L1):** A position in space where the gravitational forces of two large bodies (like Earth and Sun) produce enhanced regions of attraction and repulsion, allowing a spacecraft to "hover" with minimal fuel.
- **Synthetic Aperture Radar (SAR):** A form of radar that is used to create two-dimensional images or three-dimensional reconstructions of objects, such as landscapes, regardless of weather or sunlight.



- **Continuing Mandamus (Space Context):** While usually a judicial term, in the space sector, it refers to the ongoing supervisory and corrective role the state must play to ensure safety and debris mitigation in orbit.
- **Gaganyaan:** India's first human spaceflight program, intended to demonstrate the capability to send a three-member crew to an orbit of 400 km for a 3-day mission.

### Conclusion

ISRO's journey from "bullock carts to Moon landings" is now evolving into a sophisticated "Space Industrial System." The future success of India's space ambitions depends on moving past individual feats toward **sustained institutional performance**. This requires enacting a National Space Law to decouple ISRO from routine administrative tasks and empowering the private sector to lead the commercial launch market, thereby allowing ISRO to focus exclusively on frontier science and strategic missions.

### 3. Satellite Refueling: India's Leap Toward a Circular Space Economy

On January 12, 2026, the Indian Space Research Organisation (ISRO) launched the PSLV-C62 mission, carrying **AyulSAT**, a groundbreaking technology demonstrator by Chennai/Bengaluru-based startup OrbitAid Aerospace. This mission marks India's entry into the elite club of nations capable of on-orbit satellite servicing, aiming to transition the space sector from "launch and discard" to a sustainable, serviceable model.

- **On-Orbit Refueling Demonstration:** AyulSAT is designed to perform internal propellant, power, and data transfers in microgravity. This validates the "orbital petrol pump" concept, allowing satellites to be topped up rather than decommissioned when they run out of fuel.
- **Standard Interface for Docking (SIDRP):** The mission utilizes the proprietary **Standard Interface for Docking and Refuelling Port**, a patent-pending mechanism that provides a universal "plug-and-play" connector for future satellites to dock and receive life-extension services.
- **Mitigating Space Debris:** By extending a satellite's operational life, this technology directly addresses the **Kessler Syndrome**—a scenario where the density of objects in Low Earth Orbit (LEO) leads to a cascade of collisions, creating more debris and making orbits unusable.
- **Economic Paradigm Shift:** The mission lays the foundation for an "**On-Orbit Economy**," where the high cost of launching replacement satellites (millions of dollars) is replaced by the more affordable option of servicing existing assets.
- **Global Standing:** Success in this mission makes India only the second country (after China) to publicly demonstrate such a capability, placing it ahead of many traditional space powers in the commercial in-orbit servicing market.
- **Strategic Integration:** AyulSAT was launched as a co-passenger alongside DRDO's **Anvesha (EOS-N1)**, a hyperspectral imaging satellite, showcasing a blend of private innovation and strategic national priority on a single PSLV flight.

### Key Definitions

- **Kessler Syndrome:** A theoretical scenario where the amount of junk in orbit around Earth reaches a point where it creates a chain reaction of collisions, making space activities and satellites impossible for generations.
- **Life Extension:** The process of providing additional fuel, power, or repairs to a satellite to keep it operational beyond its original designed mission duration.



- **Propellant Transfer:** The hazardous and complex process of moving liquid fuel between two tanks or two spacecraft in the vacuum and zero-gravity of space.
- **Hyperspectral Imaging:** An imaging technique that collects and processes information from across the electromagnetic spectrum, used by the primary payload (Anvesha) to identify materials on the ground with high precision.

### Constitutional & Legal Provisions

- **Article 51A(h):** Part of the Fundamental Duties of Indian citizens to develop the scientific temper and the spirit of inquiry; this mission exemplifies the pinnacle of Indian scientific advancement.
- **Space Policy 2023:** The regulatory framework that allowed startups like OrbitAid to utilize ISRO's launch facilities and receive technical mentorship, effectively "unlocking" the space sector for private players.
- **Debris-Free Space Mission 2030:** An ISRO-led initiative that aims to ensure all Indian space missions leave zero debris in orbit by the end of the decade; satellite refueling is a core technological pillar of this mission.
- **Registration Convention (1975):** An international treaty that requires India to register every object launched into space with the United Nations, ensuring accountability for space debris and orbital safety.

### Additional Key Points

- **The Chaser Satellite:** Following AyulSAT (the target), OrbitAid plans to launch a "chaser" satellite by late 2026 to demonstrate actual docking and fuel transfer between two independent spacecraft.
- **Bilateral Synergy:** OrbitAid is also collaborating with Japanese firm **ispace** to adapt the SIDRP interface for sustainable lunar infrastructure, indicating the technology's potential for deep-space exploration.

### Conclusion

The AyulSAT mission is a transformative moment for the Indian space ecosystem, signaling a move toward "Space Sustainability." By proving that satellites can be refueled and serviced in orbit, India is not just reducing the risk of a "Kessler catastrophe" but is also positioning itself as a global hub for space logistics. This "servicing-first" approach will be crucial for the upcoming era of mega-constellations and human spaceflight missions like Gaganyaan.

