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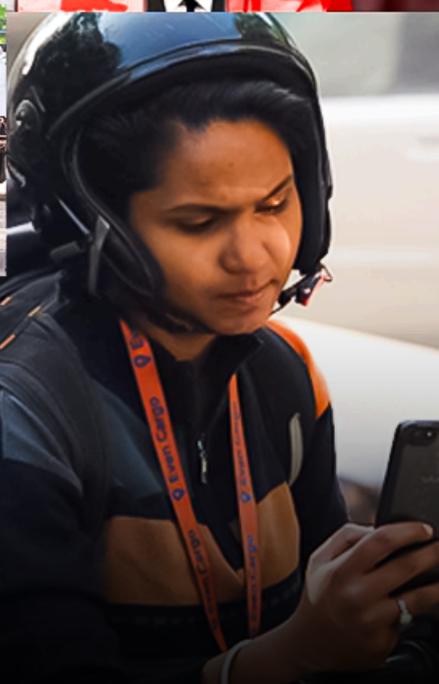
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CONSTITUTION, POLITY & GOVERNANCE

1. SC Slams Punitive Custody: Upholding Article 21 in Bail Jurisprudence

Context:

The Supreme Court, in a January 2026 judgment, strongly **criticized enforcement agencies and lower courts for denying bail merely to teach the accused a "lesson."** While granting bail in a case involving **Dewan Housing Finance Limited (DHFL)**, the Court reiterated that pre-trial incarceration cannot be used as a punitive measure before conviction.

I. Key Highlights / Key Provisions:

- **Bail is the Rule, Jail is the Exception:**
 - ✓ The Court reaffirmed this essential legal principle, highlighting that **an accused individual is presumed innocent until proven guilty.**
 - ✓ It determined that the severity of allegations alone does not constitute a valid reason to deny bail indefinitely.
- **Prohibition on Punitive Custody:**
 - ✓ The ruling explicitly indicated that detaining an undertrial merely to provide them with a "taste of imprisonment" infringes upon their constitutional rights.
 - ✓ It described such extended detention without trial as "disproportionate, arbitrary, and excessive."
- **Conditions for Bail:**
 - ✓ The Court specified that bail should be granted unless there is a clear risk of flight, a danger to society, or a potential for tampering with evidence or witnesses.
 - ✓ It remarked that if a prompt trial is not feasible, the accused should generally be released on bail to ensure that incarceration does not serve as a form of punishment in itself.

II. Significance:

- **Protection of Personal Liberty (Article 21):**
 - ✓ This decision strengthens the Right to Life and Personal Liberty as outlined in Article 21, ensuring that the justice process does not devolve into a form of punishment.
- **Check on Executive Excess:**
 - ✓ It acts as a cautionary note to enforcement agencies (such as CBI, ED) against employing extended custody as a means of harassment or to "teach a lesson" without obtaining a conviction.
- **Reducing Prison Overcrowding:**
 - ✓ By discouraging the unnecessary detention of undertrials, this ruling contributes to alleviating the persistent problem of overcrowding in Indian prisons, where a significant proportion of inmates are undertrials.

III. Challenges / Concerns:

- **Implementation at Lower Courts:** Despite SC rulings, trial courts often hesitate to grant bail in high-profile or serious cases due to fear of public perception or strict statutory provisions (like in UAPA or PMLA).

- **Investigation Delays:** Agencies often file lengthy chargesheets (as seen in the DHFL case with 4 lakh pages) to delay trials, effectively ensuring the accused remains in jail despite the "bail is rule" principle.

IV. Way Forward:

- **Timely Trials:** Special courts must be expedited to ensure that trials, especially in economic offences and serious crimes, are concluded within a reasonable timeframe.
- **Judicial Training:** Sensitizing lower judiciary officers to apply the "bail is rule" principle fearlessly, even in sensitive cases, to uphold constitutional liberties.

SC SLAMS DENIAL OF BAIL TO GIVE ACCUSED A 'TASTE OF IMPRISONMENT' AS A LESSON

Context: The Supreme Court, in a January 2026 judgment, strongly criticized enforcement agencies and lower courts for denying bail merely to teach the accused a "lesson."

While granting bail in a case involving **Dewan Housing Finance Limited (DHFL)**, the Court reiterated that pre-trial incarceration cannot be used as a punitive measure before conviction.

I. Key Highlights / Key Provisions:

- ✓ **Bail is the Rule, Jail is the Exception**
 - ✓ The Court reaffirmed this fundamental legal principle, emphasizing that an accused is **presumed innocent** until proven guilty.
 - ✓ It ruled that **seriousness of allegations alone** is not a sufficient ground to **deny bail indefinitely**.
- ✓ **Prohibition on Punitive Custody**
 - ✓ The judgment explicitly stated that keeping an undertrial in custody solely to give them a "**taste of imprisonment**" violates their constitutional rights.
 - ✓ It termed such **prolonged incarceration without trial** as "**disproportionate, arbitrary, and excessive.**"
- ✓ **Conditions for Bail**
 - ✓ The Court clarified that bail should be granted **unless** there is a clear flight risk, a threat to society, or a possibility of tampering with evidence/witnesses.

II. Significance / Analysis:

- ✓ **Protection of Personal Liberty (Article 21):**
 - This ruling reinforces the **Right to Life** and Personal Liberty under Article 21, ensuring that the process of justice does not become a punishment.
- ✓ **Check on Executive Excess:**
 - It serves as a warning to enforcement agencies (like CB, ED) against using prolonged custody as a tool for harassment or "teaching a lesson" without securing a conviction.
- ✓ **Reducing Prison Overcrowding:**
 - By discouraging unnecessary **detention of undertrials**, the judgment aids in addressing the chronic issue of overcrowding in Indian prisons, where a **vast majority** of inmates are undertrials.

2. Land Acquisition Bottlenecks Persist, Centre Opts for Administrative Solutions over Legislative Change:

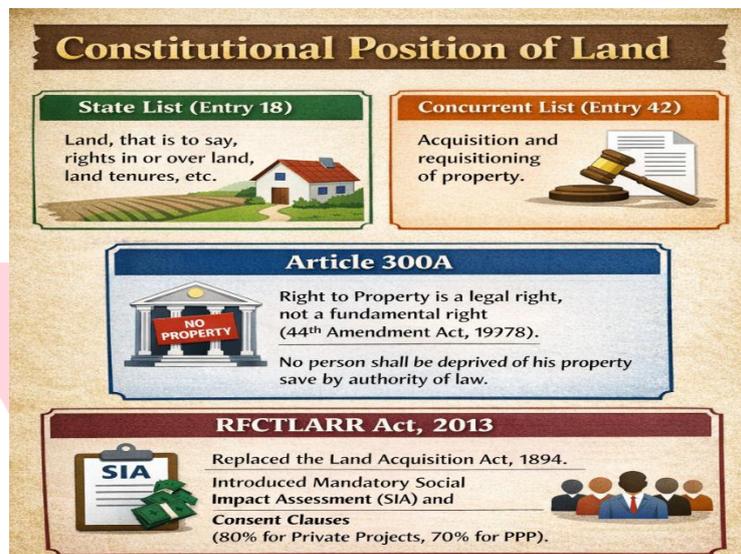
Context:

- In January 2026, Cabinet Secretary T.V. Somanathan clarified that the Union Government has no plans to amend the existing land acquisition policy, despite it being identified as a major hurdle in infrastructure projects.
- This statement was made following the 50th PRAGATI (Pro-Active Governance and Timely Implementation) meeting chaired by the Prime Minister.

I. Key Highlights:

- **Land Acquisition as a Major Bottleneck:**
 - ✓ Data from PRAGATI meetings revealed that out of over 7,156 resolved issues in projects worth ₹85 lakh crore, 35% were related to land acquisition delays.

- ✓ Other major hurdles included forest/wildlife clearances (20%) and Right of Way (RoW) issues (18%).
- **Government Stance on Policy:**
 - ✓ The Cabinet Secretary explicitly stated, "There is no plan to change the land acquisition policy," signaling the Centre's intent to work within the existing legal framework (RFCTLARR Act, 2013) rather than diluting it.
 - ✓ The focus remains on better administrative coordination between the Centre and States to resolve specific bottlenecks rather than legislative changes.
- **Role of PRAGATI Platform:**
 - ✓ The platform has been effective in "unblocking" stalled projects by bringing Union Secretaries and State Chief Secretaries on one platform.
 - ✓ It was highlighted that States, irrespective of political affiliation, have been responsive in resolving land issues when escalated through this mechanism.



II. Significance:

- **Upholding Social Justice vs. Economic Efficiency:**
 - ✓ By not changing the 2013 Act, the government is signaling a commitment to the rights of landowners (fair compensation, rehabilitation), even at the cost of some delay.
 - ✓ It avoids the political controversy of returning to the easier acquisition norms of the colonial 1894 Act.
- **Cooperative Federalism:**
 - ✓ Since land is a State List subject (Entry 18) but "Acquisition" is in the Concurrent List (Entry 42), the Centre's reliance on coordination (via PRAGATI) rather than top-down legislative imposition strengthens federal cooperation.
- **Infrastructure Push:**
 - ✓ The resolution of 35% of land issues through administrative push shows that bureaucratic inertia, rather than the law itself, may often be the primary cause of delays.

III. Challenges / Concerns:

- **Cost Escalation:** Delays in land acquisition lead to significant cost overruns in critical infrastructure projects like highways and railways.

- **State Variations:** While the Centre isn't changing the law, several states (like Tamil Nadu, Gujarat, Telangana) have already amended the central Act in its application to their states, creating a fragmented legal landscape for investors.

IV. Way Forward:

- **Digitization of Land Records:** Accelerating the SVAMITVA scheme and digitization of land titles (ULPIN) to reduce litigation over ownership, which is a primary cause of acquisition delays.
- **Land Banks:** Encouraging states to create land banks for industrial use so that investors have "plug-and-play" options without waiting for fresh acquisition.

3. PRAGATI @ 50: A Decade of Tech-Enabled Governance and Timely Delivery

Context:

- On January 2, 2026, the Cabinet Secretary briefed the media on the outcomes of the 50th PRAGATI (Pro-Active Governance and Timely Implementation) meeting chaired by the Prime Minister.
- The meeting celebrated a decade of the platform, which has successfully accelerated projects worth over ₹85 lakh crore and institutionalized a culture of timely delivery and accountability.



I. Key Highlights / Key Provisions:

- **Scale and Impact:**
 - ✓ Since its inception in 2015, PRAGATI has reviewed 377 major projects and programs.
 - ✓ A total of 2,958 out of 3,162 identified issues (94%) have been resolved, significantly reducing cost overruns and delays.
 - ✓ The platform has unlocked long-pending projects like the Bogibeel Bridge (Assam), Navi Mumbai International Airport, and the Jammu-Udhampur-Srinagar-Baramulla rail link.
- **Three-Tier System:**
 - ✓ It operates on a unique three-tier structure: PMO, Union Government Secretaries, and Chief Secretaries of States.
 - ✓ This structure enables direct, real-time interaction between the Prime Minister and the highest administrative officials of both the Centre and States.

- **Escalation Mechanism:**
 - ✓ The Cabinet Secretary highlighted a structured "Project and Issue Escalation Mechanism."
 - ✓ Issues are first addressed at the Ministry level; only complex, unresolved bottlenecks are escalated to PRAGATI for the PM's intervention.

II. Significance / Analysis:

- **Cooperative Federalism:**
 - ✓ PRAGATI breaks down "silos" by bringing Centre and State officials onto a single platform. It fosters a "Team India" spirit where development goals supersede political differences.
- **E-Accountability & E-Transparency:**
 - ✓ By using real-time data, visual evidence (from drones/satellites), and video conferencing, the platform ensures that officials cannot hide behind bureaucratic excuses.
- **Paradigm Shift in Governance:**
 - ✓ It marks a shift from a "file-pushing" culture to an "outcome-oriented" culture. The focus is not just on starting projects but on completing them.

III. Challenges / Concerns:

- **Centralization of Monitoring:** While effective, it places a heavy reliance on the Prime Minister's personal intervention, potentially centralizing routine administrative monitoring.
- **State-Level Replication:** While the Centre has PRAGATI, many states lack similar robust mechanisms to monitor district-level projects effectively.

IV. Way Forward:

- **Institutionalizing at State Level:** As urged by the PM, State Governments should institutionalize PRAGATI-like mechanisms (e.g., at the Chief Secretary level) for social sector schemes.
- **AI Integration:** Future iterations could leverage AI to predict potential bottlenecks (like land acquisition delays) before they occur, moving from "reactive" to "predictive" governance.

4. 9th Siddha Day 2026: Siddha for Global Health

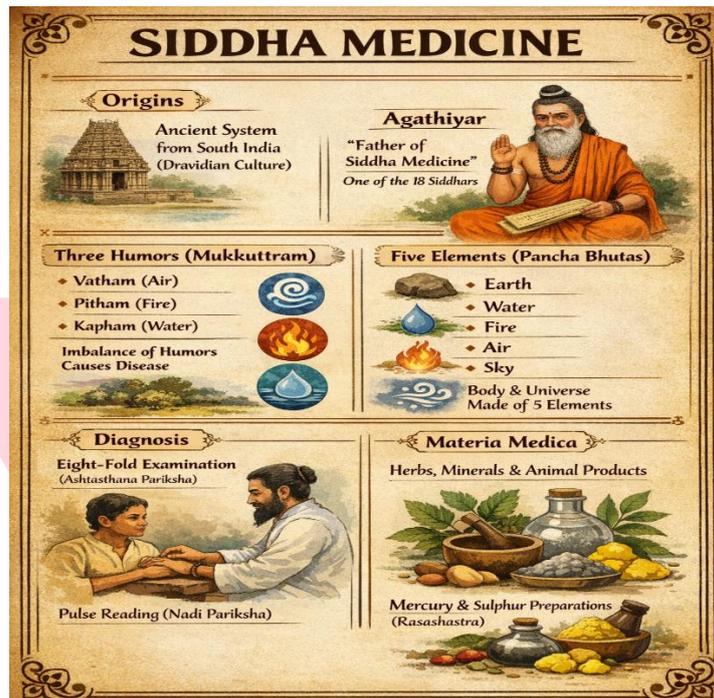
Context:

- The 9th Siddha Day was observed in January 2026 to honor the **birth anniversary of Sage Agathiyar (Agastya)**, who is esteemed as the progenitor of Siddha medicine.
- The principal event took place in Chennai, inaugurated by the Vice President, under the theme "**Siddha for Global Health.**"

I. Key Highlights:

- **Theme "Siddha for Global Health":**
 - ✓ This year's emphasis was on establishing Siddha as a global healthcare solution rather than merely a regional tradition (Tamil Nadu).

- ✓ It underscored the system's significance in addressing lifestyle disorders, stress, and chronic diseases on a global scale.
- **Integrative Health Approach:**
 - ✓ Dignitaries underscored the necessity of merging traditional knowledge with contemporary scientific research to develop evidence-based therapies.
 - ✓ The event highlighted Siddha's contribution to preventive health, especially through its distinctive principles of diet and lifestyle.
- **Institutional Support:**
 - ✓ The event was co-organized by the National Institute of Siddha (NIS), the Central Council for Research in Siddha (CCRS), and the Ministry of Ayush.
 - ✓ Five distinguished Siddha figures were honored for their significant contributions to the discipline.



II. Significance:

- **Cultural Heritage & Soft Power:**
 - ✓ Elevating Siddha on an international platform strengthens India's "soft power," akin to the worldwide recognition of Yoga and Ayurveda. It safeguards the ancient wisdom of Tamil civilization.
- **Holistic Healthcare:**
 - ✓ Amidst the rising challenges of antimicrobial resistance (AMR) and non-communicable diseases (NCDs), Siddha's comprehensive methodology (addressing the underlying causes rather than merely alleviating symptoms) presents a crucial alternative or supplementary option.
- **Economic Potential:**
 - ✓ The globalization of Siddha paves the way for "Medical Value Travel" (Medical Tourism) to Southern India and enhances the exportation of herbal products.

III. Challenges / Concerns:

- **Standardization Issues:** In contrast to contemporary medicine, the standardization of raw materials (such as herbs and minerals) and manufacturing processes in Siddha poses a significant obstacle to its acceptance on a global scale.
- **Regional Confinement:** Siddha is predominantly practiced in Tamil Nadu and certain regions of Kerala. The limited awareness in other Indian states hampers its integration at the national level when compared to Ayurveda.

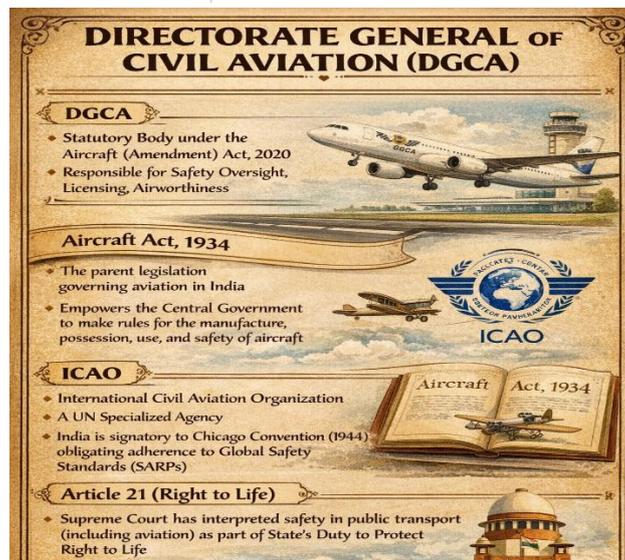
IV. Way Forward:

- **Evidence-Based Research:** Comprehensive clinical trials and thorough documentation are essential to substantiate Siddha therapies for inclusion in international medical journals.
- **Digitization of Manuscripts:** There is a pressing need to expedite the digitization of ancient palm-leaf manuscripts (as part of the National Mission for Manuscripts) to safeguard and interpret lost formulations.

5. India's Aviation Safety Oversight: Credibility Deficit and Reform Imperatives

Context:

- Concerns regarding the credibility of aviation safety in India have reemerged in the wake of the tragic crash of Air India Flight 171 in Ahmedabad, as well as a subsequent fatal incident involving a Deputy Chief Minister from Maharashtra.
- A "credibility deficit" in the oversight of safety in India has been underscored, particularly due to prolonged investigations and a deficiency in transparency when compared to international benchmarks such as the US National Transportation Safety Board (NTSB).



I. Critical Issues in India's Aviation Safety Framework:

- **Systemic Flaws Revealed:**
 - ✓ Recent incidents have brought to light persistent problems, including delays in accident reporting (for instance, the follow-ups related to the 2020 Kozhikode

crash) and a perceived lack of independence within the Aircraft Accident Investigation Bureau (AAIB).

- ✓ Critics contend that regulatory agencies such as the DGCA frequently encounter political influence or lack the necessary autonomy to impose stringent penalties, resulting in a culture characterized by "regulatory capture."
- **International Comparison:**
 - ✓ In contrast to the US FAA or NTSB, which promptly provide public briefings and safety directives following accidents, Indian agencies have faced criticism for their lack of transparency and slow response times, which fuels speculation and diminishes public trust.
 - ✓ The existing "credibility deficit" poses a risk to India's reputation within the International Civil Aviation Organization (ICAO) and may adversely affect insurance costs and international collaboration.
- **Operational Risks:**
 - ✓ The rapid expansion of aviation (with India being the third-largest domestic market) has surpassed the capacity of regulatory frameworks.
 - ✓ Challenges such as pilot fatigue (as highlighted in the debate over FDTL norms), a shortage of qualified air traffic controllers, and insufficient infrastructure at regional (UDAN) airports present considerable risks.

II. Implications of India's Aviation Safety Deficit:

- **Economic Consequences:** A compromised safety record may dissuade foreign investment in Indian airlines and diminish India's appeal as a global aviation center (a primary objective of the government).
- **Institutional Integrity:** The situation highlights the necessity of distinguishing between "investigation" and "regulation." When the regulator (DGCA) also has sway over the investigator (AAIB), it leads to conflicts of interest that hinder a truthful analysis of root causes.
- **Safety versus Growth Dilemma:** The urge to maintain low fares and broaden routes (UDAN) should not result in the neglect of maintenance or pilot training.

III. Key Structural Challenges:

- **Workforce Deficiency:** The DGCA and ATC divisions experience persistent staff shortages, hindering their capacity to perform regular, thorough surprise audits.
- **Regulatory Autonomy:** The AAIB, while ostensibly independent, continues to function under the Ministry of Civil Aviation, which restricts its ability to objectively assess shortcomings in government policies.

IV. Way Forward:

- **Statutory Independence for AAIB:** Completely separate the AAIB from the Ministry of Civil Aviation, using the US NTSB as a model to guarantee impartial investigations.
- **Transparency Norms:** Require the timely public dissemination of initial accident reports and safety recommendations to restore public confidence.
- **Modernizing Oversight:** Introduce AI-based predictive safety monitoring (as proposed in PRAGATI meetings) to detect risks prior to the occurrence of accidents.

6. Digital Policing in India: Social Media Monitoring and Its Implications

Context:

As per the most recent Data on Police Organisations (DoPO) reports spanning 2020 to 2024, published in 2026, law enforcement agencies throughout Indian states have markedly enhanced their social media surveillance capabilities. The count of specialized monitoring units has increased from 262 in 2020 to 365 in 2024, indicating a distinct transition towards "digital policing" designed to tackle changing crime patterns.



I. Key Developments in Social Media Monitoring by Police:

- **Rapid Expansion of Monitoring Cells:**
 - ✓ **Leading States:** Bihar is at the forefront with 52 monitoring cells, followed closely by Maharashtra with 50, Punjab with 48, West Bengal with 38, and Assam with 37.
 - ✓ **Strategic Development:** States such as Assam and West Bengal experienced remarkable growth, increasing their cell count from 1 or 2 to nearly 40 within a span of two years. Manipur also saw a rise in its monitoring cells from 3 to 16, despite enduring prolonged internet shutdowns, underscoring the importance of digital intelligence even in areas of conflict.
- **Shift to Specialized Units:**
 - ✓ Prior to 2021, the monitoring of social media was typically an ancillary responsibility of cybercrime units. Currently, these operations are conducted as independent units, distinct from the 624 cybercrime police stations, with a dedicated focus on platforms such as Facebook, X (formerly Twitter), WhatsApp, and Instagram.
 - ✓ **Objectives:**
 - **Proactive Law Enforcement:** To monitor "emerging criminal patterns" including organized protest coordination, hate speech mobilization, and radicalization prior to their manifestation in public spaces.
 - **Verification of Information:** To combat misinformation and "false news" that may incite communal violence or disrupt public order.

II. Significance of Social Media Monitoring in India's Policing Framework:

- **Evolving Nature of Crime:** As offenders transition from physical streets to "digital highways," law enforcement must adapt accordingly. Recent data indicates a 41% national surge in cybercrimes, which aligns with the increase in digital platforms.

- **Internal Security Management:** The utilization of real-time social media intelligence (SOCMINT) serves as an "early warning system" for potential riots and law enforcement challenges, enabling police to allocate resources in a proactive manner rather than a reactive one.
- **Digital Sovereignty:** By fortifying these digital platforms, there is a diminished dependence on foreign intermediaries for prompt threat identification, thereby granting the state enhanced control over the information narrative during emergencies.

III. Key Challenges in Digital Policing

- **Evolving Nature of Crime:** As offenders transition from physical streets to "digital highways," law enforcement must adapt accordingly. Recent data indicates a 41% national surge in cybercrimes, which aligns with the increase in digital platforms.
- **Internal Security Management:** The utilization of real-time social media intelligence (SOCMINT) serves as an "early warning system" for potential riots and law enforcement challenges, enabling police to allocate resources in a proactive manner rather than a reactive one.
- **Digital Sovereignty:** By fortifying these digital platforms, there is a diminished dependence on foreign intermediaries for prompt threat identification, thereby granting the state enhanced control over the information narrative during emergencies.

VI. Future Directions for Digital Policing:

- **Standard Operating Procedures (SOPs):** The Ministry of Home Affairs (MHA) ought to promulgate standardized SOPs to guarantee that monitoring is focused, essential, and commensurate, thereby averting any potential abuse against political adversaries or activists.
- **Oversight Mechanism:** The creation of independent judicial or legislative oversight committees is essential to evaluate the operations of these monitoring units and to uphold accountability.

7. ECI's Special Intensive Revision: Citizenship, Franchise, and Electoral Integrity

Context:

The Election Commission of India (ECI) presented a significant affidavit to the Supreme Court, justifying its current **Special Intensive Revision (SIR)** of electoral rolls. It emphasized its constitutional obligation to guarantee that "**not a single foreigner**" is part of the voter list. This affidavit was submitted in reaction to petitions contesting the SIR process, with detractors claiming that it functions as a "parallel NRC" (National Register of Citizens).

I. Constitutional and Electoral Safeguards: Key Provisions

- **Constitutional Duty over Statutory Rules:**
 - ✓ The Election Commission of India (ECI) contended that its authority is derived directly from Article 324 (which pertains to the superintendence, direction, and control of elections) and Article 326 (which addresses adult suffrage for citizens).
 - ✓ It underscored that although the Central Government possesses the authority to revoke citizenship (as stipulated in the Citizenship Act of 1955), the ECI holds an independent responsibility to verify citizenship specifically for the purpose of electoral rolls.

- **Distinction from NRC:**
 - ✓ The Commission elucidated that while the National Register of Citizens (NRC) serves as a comprehensive register of all citizens (including minors), the Electoral Roll is exclusively for citizens who are 18 years of age and older.
 - ✓ It characterized the comparison to the NRC as mere "rhetoric," asserting that the exclusion of foreigners is a standard procedure in upholding the "purity" of the electoral process.
- **"Inquisitorial" Inquiry:**
 - ✓ The ECI defended the authority of Electoral Registration Officers (EROs) to perform "inquisitorial enquiries" regarding a voter's status.
 - ✓ Should there be uncertainty regarding a voter's citizenship, the ERO has the capacity to remove that individual from the electoral roll.
 - ✓ The ECI maintained that such removal does not equate to "deportation" (which falls under the jurisdiction of the Centre), but rather signifies "disenfranchisement" aimed at safeguarding the votes of legitimate citizens.



II. The Hidden Fault lines in Democracy:

- **Purity of Electoral Rolls:** The primary contention is that the inclusion of non-citizens in voter registries undermines the democratic expression of "We, the People." It is essential for national sovereignty that only citizens participate in elections.
- **Institutional Autonomy:** By claiming that it is not obligated to await a declaration from the Centre to classify an individual as a "foreigner" prior to their removal from the electoral rolls, the ECI is asserting a significant degree of institutional autonomy in its operational functions.
- **Shift in Burden of Proof:** Detractors contend that this shifts the burden of proof, effectively placing the onus on citizens to validate their status to Electoral Registration Officers (EROs), who may lack the judicial expertise necessary to resolve intricate citizenship issues.

III. Key Issues and Risks:

- **Risk of Disenfranchisement:** There exists a concern that legitimate citizens, particularly those from impoverished backgrounds who do not possess necessary documentation (such as birth certificates or land records), could be unjustly removed from the electoral rolls under the pretext of eliminating foreign nationals.
- **Absence of an Appellate Mechanism:** In contrast to the National Register of Citizens (NRC), which included Foreigners' Tribunals, the decisions made by the Electoral

Registration Officer (ERO) are purely administrative. Should an individual be removed from the rolls, their recourse is through a convoluted appeal process that may be inaccessible to disadvantaged groups.

- **Federal Dispute:** Numerous state administrations (including West Bengal and Kerala) have expressed their opposition to the SIR, labeling it as a covert method of implementing citizenship verification without the agreement of the states.

IV. Way Forward:

- **Standardized Documentation:** It is essential for the government to explicitly outline a definitive list of acceptable documents for citizenship verification in order to avoid arbitrary decision-making by local officials (EROs).
- **Judicial Oversight:** The Supreme Court is required to reconcile the Election Commission of India's (ECI) responsibility to "purify" electoral rolls with the fundamental voting rights of citizens, potentially by requiring judicial review prior to the permanent removal of names.

8. Youth Power for Viksit Bharat

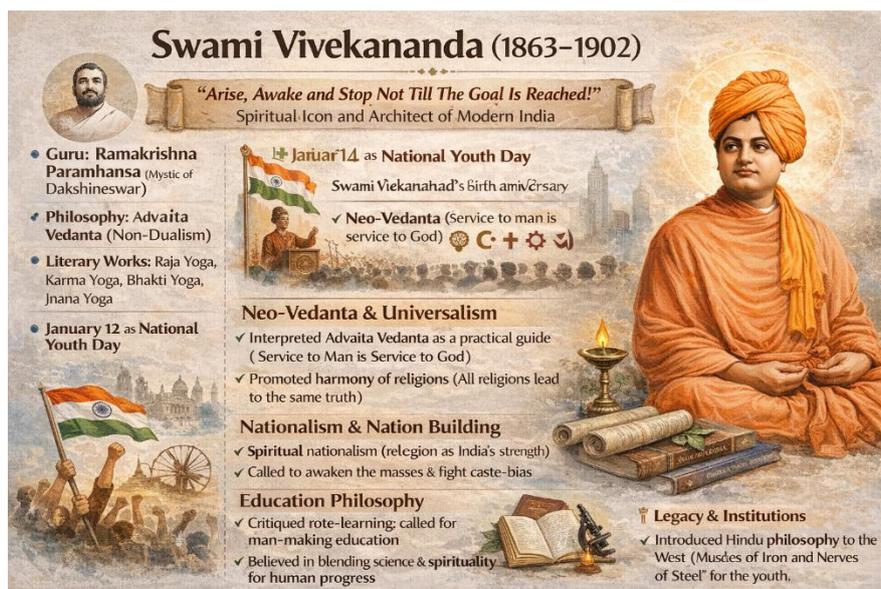
Context:

On 12 January 2026, celebrated as National Youth Day to mark Swami Vivekananda's birth anniversary, the Prime Minister addressed the Viksit Bharat Young Leaders Dialogue (VBYLD) 2026 at Bharat Mandapam, New Delhi.

The dialogue, envisioned as a reimagined platform beyond the traditional National Youth Festival, enabled young leaders to present their ideas directly to the nation's leadership, thereby reinforcing the government's vision of engaging youth as active partners in governance and policy-making to achieve the goal of a developed India by 2047.

I. Salient Features of VBYLD 2026:

- **Viksit Bharat Young Leaders Dialogue (VBYLD):**
 - ✓ This marked the second iteration of the dialogue, reimagined from the conventional National Youth Festival.
 - ✓ It involved nearly 3,000 young leaders aged 15-29, who were chosen through a stringent selection process that included a digital quiz, essay writing, and presentations of state-level visions.
- **10 Thematic Tracks:**
 - ✓ Participants shared actionable proposals on ten significant themes, such as "Tech for Viksit Bharat," "Design for Bharat," "Youth in Democracy," and "Start-up Ecosystem."
 - ✓ A particular emphasis was placed on engaging youth from non-political backgrounds in public affairs, in line with the Prime Minister's Independence Day appeal to incorporate new viewpoints into governance.
- **New Initiatives Launched:**
 - ✓ **Essay Compilation Release:** A collection of selected essays by young participants regarding India's developmental priorities was published.
 - ✓ **Mera Yuva Bharat (MY Bharat) Platform:** This was underscored as a vital digital facilitator linking over 50 lakh youth to opportunities for volunteering and skill development.



II. Significance of VBYLD 2026:

- **Demographic Dividend:** With an average age of 29 and nearly 20% of the world's youth population, India's growth narrative is fundamentally tied to the productivity and leadership of its younger citizens.
- **Participatory Democracy:** Transitioning from mere beneficiaries, the youth are now recognized as "co-architects" of national policy. This transformation alters the governance framework from a "top-down" model to a more inclusive, grassroots approach.
- **Cultural & Global Integration:** The involvement of the Indian diaspora and international representatives in VBYLD 2026 enhances India's soft power and aligns global best practices with local ambitions.

III. Challenges / Concerns:

- **Skills Gap:** Despite initiatives like Skill India, a significant gap remains between industry requirements and the employability of the youth workforce.
- **Digital Divide:** While platforms like MY Bharat are digital-first, rural youth with limited internet access may miss out on these leadership opportunities.

IV. Path Ahead:

- **Institutionalizing Youth Contributions:** Recommendations from VBYLD should transcend mere formality; they need to be incorporated into genuine ministry strategies (for instance, NITI Aayog policy documents).
- **Enhancing Mentorship:** amplifying mentorship initiatives where industry experts support young entrepreneurs hailing from tier-2 and tier-3 urban areas.

9. Judicial Green Governance: Balancing Activism and Uncertainty

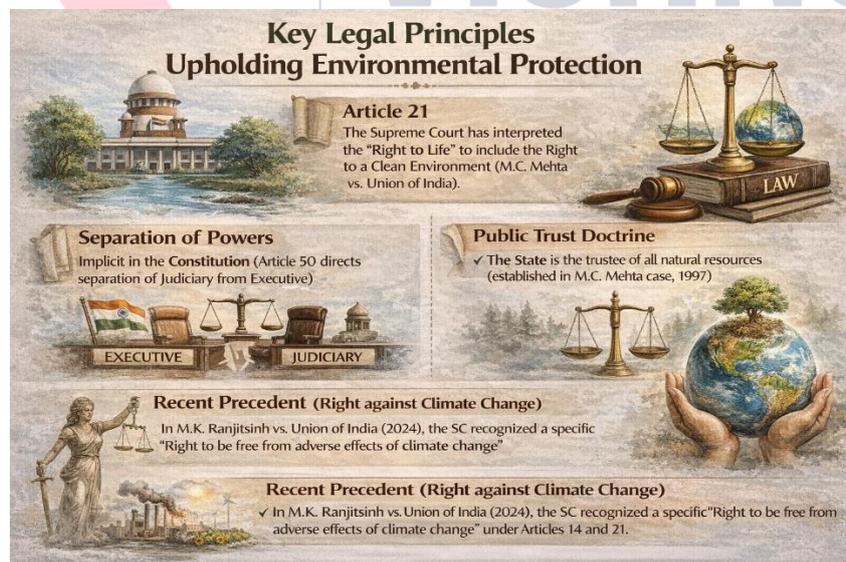
Context:

In recent times, apprehensions have grown regarding the Supreme Court's expanding influence in environmental governance, as it increasingly intervenes to address a regulatory void. Although these actions seek to remedy deficiencies in enforcement, the Court's inclination to

provide managerial and anticipatory directives—frequently replacing statutory regulators—has prompted inquiries about consistency and generated both legal and economic uncertainty for stakeholders.

I. Salient Features of Judicial Green Governance:

- **Transition to "Managerial" Role:**
 - ✓ Historically, the Court's function was to assess the legality of executive actions.
 - ✓ Nevertheless, in recent years (for instance, the Great Indian Bustard case, Firecracker bans), the Court has shifted towards actively managing issues by establishing committees, defining technical standards, and issuing "continuing mandamus" (keeping cases open for extended periods to ensure compliance).
- **Policy Reversals & "U-Turns":**
 - ✓ **Eco-Sensitive Zones (ESZ):** In 2022, the Court required a 1-km buffer zone surrounding all protected areas. In 2023, it relaxed this directive after States contended it was not being implemented.
 - ✓ **Ex-Post Facto Clearances:** In May 2025, the Court ruled them illegal; by November 2025, it suspended its own ruling to avert economic disruption.
 - ✓ These recurrent changes complicate long-term planning for investors and state governments.
- **Diminishing of Statutory Bodies:**
 - ✓ By making decisions that ought to be reserved for specialized bodies (such as the CPCB or Forest Advisory Committee), the Court may inadvertently weaken the very institutions it aims to reform. The "fear of the Court" supplants scientific regulatory frameworks.



II. Green Governance: Promise and Pitfalls

- **Judicial Activism versus Overreach:**
 - ✓ **Advantage:** The intervention of the Court is essential as the Executive frequently neglects to implement environmental regulations (for instance, managing stubble burning or pollution in rivers).
 - ✓ **Disadvantage:** Courts do not possess the necessary technical knowledge and feedback mechanisms essential for intricate policy formulation (such as assessing the precise chemical makeup of "Green Crackers").

- **Economic Implications of Ambiguity:**
 - ✓ The judiciary's approach to "Green Governance" often overlooks initial economic trade-offs, only to reconsider when costs become evident.
 - ✓ This inconsistent approach obstructs India's "Ease of Doing Business" and does not necessarily ensure improved environmental results.

III. The Fault Lines in Judicial Green Governance:

- **Division of Powers:** The current trend obscures the distinction between the Judiciary (responsible for interpreting laws) and the Executive (charged with implementing policies), which may infringe upon the fundamental framework of the Constitution.
- **Discriminatory Enforcement:** Comprehensive directives (such as the prohibition of all older vehicles in the NCR) frequently encounter challenges in execution, resulting in a diminishment of the Court's authority when its directives are broadly disregarded.

IV. Way Forward:

- **Reestablishing Regulatory Discipline:** The Court ought to emphasize the necessity for statutory bodies to fulfill their responsibilities (through penalties for failure to act) instead of undertaking their duties on their behalf.
- **Enhancing Institutional Capacity:** Bolstering the National Green Tribunal (NGT) and State Pollution Control Boards (SPCBs) with financial resources and technical personnel to enable them to operate as efficient primary regulators.
- **Adjudication Based on Evidence:** The Court should depend on independent, scientific evaluations of impact prior to enacting sweeping bans that it might later need to retract.

10. SC Verdict on Judges (Inquiry) Act: Autonomy of Houses and Judicial Accountability

Context:

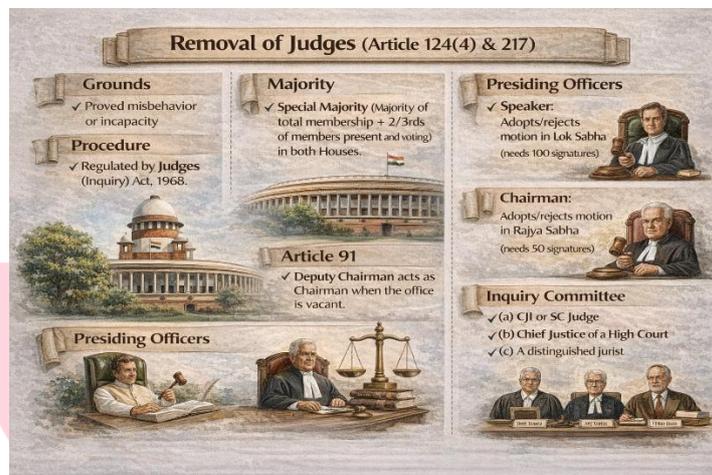
Recently, the Supreme Court issued a notable ruling rejecting the petition submitted by Justice Yashwant Varma of the Allahabad High Court, who contested the establishment of an Inquiry Committee formed by the Lok Sabha Speaker to investigate corruption claims against him.

The matter centered on the interpretation of the Judges (Inquiry) Act of 1968, specifically addressing whether the Speaker had the authority to independently create such a committee when notices were presented in both Houses on the same day but were later dismissed in the Rajya Sabha by the Deputy Chairman.

I. Salient Features of the SC Verdict:

- **Autonomy of Houses (Article 118):**
 - ✓ The Court determined that the denial of a removal motion in one House (Rajya Sabha) does not inhibit the other House (Lok Sabha) from taking action. The independence of each House is of utmost importance.
 - ✓ It stated that the initial proviso to Section 3(2) of the Judges (Inquiry) Act—which requires a joint committee if notices are accepted in both Houses—only applies when motions are genuinely accepted in both.
 - ✓ Given that the Rajya Sabha rejected it, the Lok Sabha Speaker was justified in proceeding autonomously.

- **Role of Deputy Chairman (Article 91):**
 - ✓ Justice Varma contended that the Deputy Chairman of the Rajya Sabha lacked the power to dismiss the motion, as the Act explicitly refers to the "Chairman."
 - ✓ The Supreme Court dismissed this argument, asserting that under Article 91, when the position of the Chairman (Vice President) is unoccupied (as it was due to resignation), the Deputy Chairman assumes all responsibilities of the office, including statutory duties under the Judges (Inquiry) Act. To decide otherwise would result in a "constitutional vacuum."
- **No "Square One" Consequence:**
 - ✓ The Court noted that endorsing the petitioner's claim—that a rejection in one House nullifies the motion in the other—would absurdly compel Members of Parliament to restart the entire process from "square one," thereby undermining the legislative purpose of accountability.



II. Significance of the Supreme Court Verdict:

- **Judicial Accountability vs. Independence:** The ruling establishes a middle ground: while it is essential to shield judges from baseless complaints, legal protections must not serve as instruments to obstruct valid investigations into serious misconduct (such as the allegations regarding "burnt cash" in this instance).
- **Clarification on "Vacancy":** It affirms the legal understanding that a Deputy Chairman or Deputy Speaker possesses full authority to exercise the statutory powers of the presiding officer during a vacancy, thereby averting administrative standstill.
- **Precedence of Admission:** The decision elucidates that the "admission" of a motion acts as the catalyst for the formation of a committee. Simply providing "notice" in both Houses does not automatically require the establishment of a joint committee.

III. The Grey Areas of Judicial Accountability:

- **Speaker's Discretion:** The ruling underscores the extensive discretionary authority held by the Speaker/Chairman in the acceptance or dismissal of motions, a power that critics contend is frequently exercised without clear justification (as evidenced in previous impeachment efforts).
- **Political Timing:** Given that the inquiry is initiated by political figures, there exists an inherent risk that the timing of motion acceptance or rejection may be influenced by political considerations, although the Supreme Court highlighted the importance of the procedural aspects rather than the underlying motives.

IV. Recommendations for Strengthening the Process:

- **Codified Standards:** In order to minimize ambiguity, subsequent amendments or parliamentary regulations might delineate objective criteria for the "admission" of a motion, thereby guaranteeing that significant allegations are not disregarded due to technicalities.
- **Permanent Mechanism:** As previously proposed by the Law Commission, transitioning to a permanent National Judicial Oversight Committee could eliminate the improvised character of these parliamentary investigations.

11. The POCSO Paradox: Speed vs. Substantive Justice

Context:

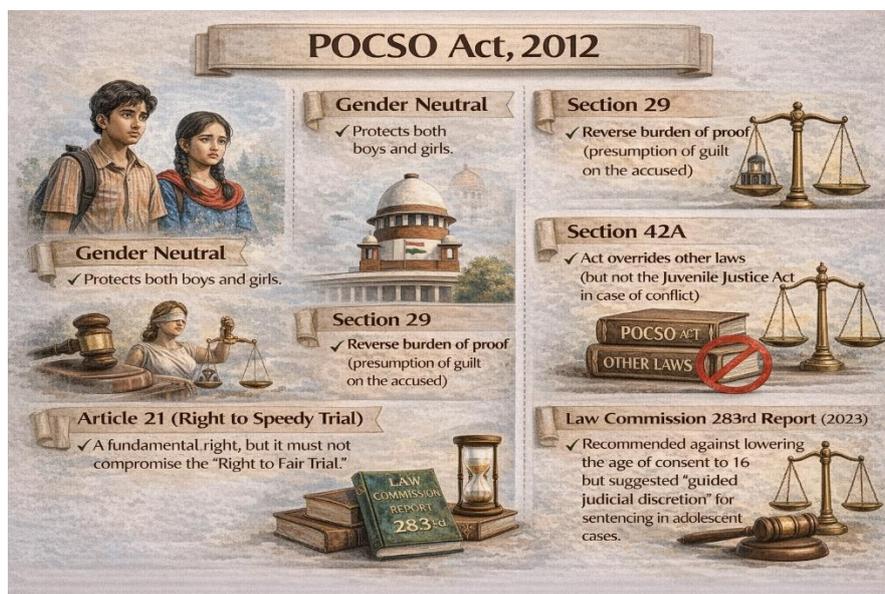
Recently, various reports have underscored a significant contradiction within India's justice system regarding child sexual abuse: although Fast Track Special Courts (FTSCs) achieved a disposal rate of 109% in 2025—resolving more cases than were filed—this numerical success has been realized at the cost of meaningful justice.

Concurrently, the Supreme Court, in the case of State of UP vs. Anurudh, raised concerns about the exploitation of the POCSO Act by parents attempting to criminalize consensual relationships among adolescents, and recommended that the government contemplate the introduction of a "Romeo-Juliet" exception to mitigate this issue.

I. Major Concerns in POCSO Implementation:

- **The "Disposal" vs. "Justice" Gap:**
 - ✓ **Declining Conviction Rates:** In spite of unprecedented disposals, the national conviction rate under POCSO has decreased from 35% in 2019 to 29% in 2023. Specifically within FTSCs, this rate is even lower at 19%, indicating that 4 out of 5 individuals accused are acquitted.
 - ✓ **Accelerated Justice:** The urgency to fulfill disposal targets has resulted in "accelerated investigations" where law enforcement submits incomplete chargesheets without awaiting critical DNA or forensic reports, which consequently leads to acquittals due to insufficient evidence.
- **Misuse in "Romeo-Juliet" Cases:**
 - ✓ **Parental Manipulation:** The Supreme Court has observed that a considerable number of POCSO cases are initiated by parents of girls as a means of punishment for eloping with their boyfriends. This practice criminalizes "young love," transforming a natural developmental stage into a statutory offense, given that consent is deemed invalid for individuals under 18.
 - ✓ **Romeo-Juliet Provision:** The Court has recommended that the Centre establish a legal exception (similar to those in the UK and Canada) for consensual relationships between peers who are close in age (for instance, within a range of 3-4 years) to avert such misuse.
- **Systemic Failures:**
 - ✓ **Lack of Support:** Critical "Support Persons" and Para-Legal Volunteers (PLVs)—who are required to assist victims—are notably absent in numerous states (for example, Tamil Nadu has no PLVs across more than 1,500 stations), leaving children to face adversarial court environments without guidance.

- ✓ **Delays in Compensation:** Courts frequently postpone interim compensation until the final ruling is made. By that time, the child's educational opportunities or rehabilitation efforts may have already been adversely affected.



II. Key Implications of Judicial and Policy Gaps:

- **Forensic Bottlenecks:** The persistent delays in State Forensic Science Labs (SFSL) constitute a significant obstacle. In the absence of prompt DNA reports, expedited trials become ineffective.
- **Risk of Loophole:** Lawmakers are concerned that a "Romeo-Juliet" exception might be misused by groomers or traffickers who assert "consent" to evade consequences.

III. Way Forward for Strengthening POCSO Implementation:

- **Outcome-Oriented Monitoring:** Transition the emphasis from "number of cases resolved" to metrics concerning "quality of convictions" and "rehabilitation of victims".
- **Tiered Age of Consent:** Revise the POCSO legislation to incorporate a "close-in-age" exception, permitting judicial discretion for consensual interactions among individuals aged 16-18.
- **Organizational Support:** Promptly appoint PLVs at every police station and guarantee that interim compensation is disbursed during the trial process, rather than post-trial.

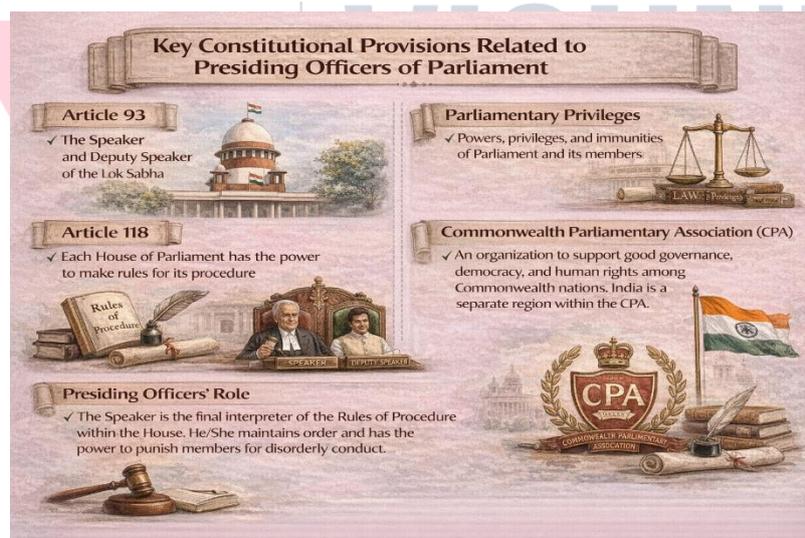
12. Strengthening Democratic Institutions: Transparency, Inclusivity & Accountability

Context:

In recent times, Lok Sabha Speaker Om Birla addressed the valedictory session of the 28th Conference of Speakers and Presiding Officers of the Commonwealth (CSPOC) held in New Delhi. Inaugurated by Prime Minister Narendra Modi, the conference concluded with a renewed commitment to strengthening democratic institutions by making them more people-centric, transparent, and responsive to modern technological challenges such as artificial intelligence and social media.

I. Key Highlights of the CSPOC Conference:

- **Three Pillars of a Robust Democracy:**
 - ✓ **Transparency:** The Speaker underscored the importance of openness in decision-making as essential for fostering public trust.
 - ✓ **Inclusivity:** It is vital to ensure that every voice, particularly from marginalized groups, is acknowledged within the legislative framework.
 - ✓ **Accountability:** Institutions are required to be answerable to the populace to maintain their legitimacy.
- **Technology & AI in Legislative Bodies:**
 - ✓ A significant focus of the conference was the "responsible application of Artificial Intelligence" in legislative functions.
 - ✓ While recognizing the efficiency of AI, the Speaker warned against its potential misuse (such as deepfakes and misinformation) and advocated for ethical guidelines to avert "social polarization."
- **Consensus and Dissent:**
 - ✓ The Speaker remarked that although dissent is a vital aspect of democracy, it should be articulated within the confines of "parliamentary propriety."
 - ✓ He emphasized the importance of Presiding Officers in upholding the dignity of the House in the face of increasing disruptions.



II. Significance of the CSPOC Conference:

- **Global Soft Power:** Hosting the 28th CSPOC with unprecedented participation (over 50 nations) reinforces India's reputation as the "Mother of Democracy" and a prominent leader in the Global South.
- **Modernizing Legislatures:** The initiative for "e-Parliament" and digital innovations seeks to transition Indian legislatures from a colonial-era operational model to a contemporary, data-driven governance approach.
- **Oversight of the Executive:** By emphasizing accountability, the conference highlighted the legislature's fundamental role: to serve as a watchdog over the Executive, ensuring that power is regarded as a "public trust" rather than a privilege.

III. Challenges in Legislative Functioning:

- **Reduction in Assembly Sessions:** In spite of demands for accountability, numerous State Assemblies convene for fewer than 30 days annually, thereby diminishing the time allocated for substantial examination.
- **Interruption versus Discussion:** The regular interruption of Parliamentary activities frequently makes the conceptual notion of "transparency" irrelevant, as legislation is enacted without deliberation.

IV. Way Forward for Strengthening Legislatures:

- **National Legislative Index:** The suggestion made in the concurrent 86th AIPOC (Lucknow) to establish an index for evaluating the performance of state assemblies may promote constructive competition.
- **Institutionalizing AI:** The creation of a "sovereign AI" instrument tailored for Indian legislative research aims to assist Members of Parliament in comprehending intricate bills more effectively.

13. Section 17A: Safeguard or Shield for Corruption?

Context:

On January 13, 2026, a two-judge panel of the Supreme Court issued a divided ruling concerning the constitutional legitimacy of Section 17A of the Prevention of Corruption Act, 1988. Given the differing judicial perspectives on the requirement of prior approval for the investigation of public officials, the issue has been forwarded to the Chief Justice of India for consideration by a larger bench.

I. Supreme Court's Split Verdict Sends Section 17A to Larger Bench:

- **Split Verdict:** Justices B.V. Nagarathna and K.V. Viswanathan expressed differing opinions on whether Section 17A serves as a vital protection for honest officials or merely acts as a cover for corrupt individuals.
- **Justice Nagarathna's Position:** She deemed Section 17A unconstitutional, describing it as "old wine in a new bottle" that infringes upon Article 14 (Right to Equality) and hampers efforts to combat corruption.
- **Justice Viswanathan's Position:** He supported the provision to avert "policy paralysis" and the "play-it-safe syndrome" among officials, but stipulated that the sanction should originate from an independent entity such as the Lokpal or Lokayukta, rather than the government.
- **Referral:** The matter, Centre for Public Interest Litigation vs. Union of India, is set to be reviewed by a larger three-judge bench.

II. About Section 17A:

- **Origin:** The Prevention of Corruption (Amendment) Act, 2018 introduced Section 17A, which requires that investigative bodies, such as the CBI or police, secure prior consent from the "competent authority" (either the central or state government) before commencing any enquiry or investigation concerning a public servant.
- **Objective:** The government contended that this prerequisite is essential to safeguard honest civil servants from baseless, politically motivated, or harassing complaints that may arise from their official actions.

- **Scope:** This provision is applicable to decisions made in the "discharge of official functions or duties".

III. Judicial Divide: Two Visions of Section 17A:

The bench articulated two opposing perspectives regarding the equilibrium between administrative efficiency and adherence to the rule of law.

- **The Argument for Unconstitutionality (Justice Nagarathna):**
 - ✓ **Breach of Article 14:** The provision establishes a distinct category of citizens (public servants) who are exempt from the standard criminal procedures, which constitutes discrimination.
 - ✓ **Concealing Corruption:** By mandating governmental approval to initiate any investigation into a crime, this section enables the executive to obstruct unwelcome inquiries, thereby effectively protecting corrupt officials.
 - ✓ **Superfluity:** She contended that Section 19 of the Act already necessitates authorization at the prosecution phase (prior to the court's cognizance), rendering an additional barrier at the investigation phase unnecessary and obstructive.
- **The Argument for Safeguards (Justice Viswanathan):**
 - ✓ **Avoidance of Policy Stagnation:** In the absence of protective measures, honest officials may be reluctant to make decisive actions due to the fear of harassment, resulting in administrative stagnation.
 - ✓ **The "Independent Sanction" Approach:** While affirming the section, Justice Viswanathan sought to rectify its shortcomings by determining that the authority to grant sanction should be removed from the government (which may exhibit bias) and assigned to independent entities such as the Lokpal (Centre) or Lokayuktas (States).

IV. Judicial Precedents: How Past Rulings Shape the Section 17A Debate

This is not the first occasion on which the Supreme Court has contended with the concept of "prior sanction."

- In the case of *Vineet Narain vs. Union of India (1998)*, the Supreme Court invalidated the "Single Directive," which mandated government approval for the Central Bureau of Investigation (CBI) to probe officers holding the rank of Joint Secretary and above, deeming it unconstitutional.
- In the case of *Subramanian Swamy vs. Director, CBI (2014)*, the Court annulled *Section 6A of the Delhi Special Police Establishment (DSPE) Act*, which regulates the CBI, asserting that a classification based on status for the purpose of shielding individuals from investigation contravenes Article 14.
- **Current Discussion:** Detractors contend that *Section 17A* effectively reinstates these previously invalidated provisions, extending its application to all public servants instead of being limited to senior officials.

V. The Road Ahead: Reforming India's Anti-Corruption Framework

The ultimate ruling by the larger bench will shape the trajectory of India's anti-corruption framework.

- **Independent Oversight:** Transferring the authority to impose sanctions to the Lokpal, as proposed by Justice Viswanathan, may serve as a balanced approach that safeguards honest officials while minimizing political meddling.
- **Time-Bound Sanctions:** To avert prolonged delays, it is essential to implement stringent deadlines for the approval or rejection of sanctions.
- **Deterrence:** The emphasis should be on the prompt resolution of cases to ensure that procedural protections do not become mechanisms for avoidance.

14. When Governors Rewrite the Script: Tamil Nadu & Kerala Showdowns

Context:

Recently, the legislative assemblies of Tamil Nadu and Kerala experienced constitutional tensions as their respective Governors strayed from traditional practices during the customary address. The **Governor of Tamil Nadu**, R.N. Ravi, declined to deliver the speech prepared by the government, citing "factual inaccuracies," whereas the **Governor of Kerala**, Rajendra Arlekar, excluded sections that were critical of the Union Government, leading to discussions regarding the boundaries of gubernatorial discretion.

I. Tamil Nadu and Kerala: Constitutional Conventions in Conflict:

- **Tamil Nadu Standoff:**
 - ✓ For the third consecutive year, Governor R.N. Ravi walked out of the Assembly.
 - ✓ He declined to deliver the traditional address prepared by the DMK government, asserting that it included "unsubstantiated claims" concerning investment statistics and the safety of women.
 - ✓ Additionally, he alleged that his microphone was silenced and that the national anthem was disrespected.
- **Kerala Controversy:**
 - ✓ Governor Rajendra Arlekar presented the policy address but failed to include specific references that had been sanctioned by the Cabinet, especially those that criticized the Centre for "fiscal strangulation" and the withholding of funds.
- **State Responses:**
 - ✓ **Tamil Nadu:** Chief Minister M.K. Stalin introduced a resolution to consider the government-prepared text as "read" and officially recorded in the assembly proceedings, circumventing the Governor's objections.
 - ✓ **Kerala:** Chief Minister Pinarayi Vijayan "rectified" the record in the Assembly, asserting that the text approved by the Council of Ministers takes precedence over the verbal omissions made by the Governor.

II. Constitutional Mandate behind the Governor's Speech:

- **The Provision:** According to Article 176 of the Constitution, it is required that the Governor deliver an address to the Legislative Assembly at the beginning of the first session each year and at the start of the first session following each general election.
- **Purpose:** This address serves to delineate the policies and legislative agenda of the government. It is important to note that it is not a personal address from the Governor, but rather a declaration of the intentions of the elected government.
- **Procedure:** The preparation of the address is the responsibility of the State Cabinet. The role of the Governor is constitutionally regarded as a ceremonial function, wherein the

Governor reads the text that has been prepared with the assistance and counsel of the Council of Ministers.

III. Discretion vs. Duty: The Constitutional Debate on the Governor's Address

- **Limited Discretion:**
 - ✓ According to Article 163, the Governor is obligated to act based on the aid and advice of the Council of Ministers, except in instances where the Constitution specifically mandates them to exercise their discretion (for example, in reserving a bill or recommending President's Rule).
- **Reading the Address:**
 - ✓ Experts in constitutional law contend that the act of reading the address does not constitute a discretionary power.
 - ✓ Modifying or declining to read the speech compromises the tenets of parliamentary democracy, given that the Governor is an unelected representative of the Centre, whereas the speech embodies the intentions of the elected mandate.
- **Dissenting Perspective:**
 - ✓ Governors contend that they cannot be forced to engage with statements or content deemed "patently false" or that contravenes "constitutional morality."
 - ✓ They assert their right to modify the speech in order to uphold the dignity of their position.

IV. Judicial Pronouncements on the Governor's Address:

- **Shamsher Singh vs. State of Punjab (1974):** This pivotal ruling by a seven-judge Constitution Bench established that the Governor serves as a constitutional head (titular) and is required to exercise powers (including delivering the address) solely based on the aid and advice of ministers.
- **Nabam Rebia vs. Deputy Speaker (2016):** The Supreme Court reaffirmed that the Governor lacks discretionary authority in convening the House or delivering the address, emphasizing that these actions are executive functions carried out under ministerial guidance.
- **Calcutta High Court View:** Historically, courts have determined that if a Governor reads the introduction and conclusion of a speech, or if the text is acknowledged as read by the Speaker, the constitutional obligation of Article 176 is effectively met, thereby averting a procedural lapse.

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15. Reservation in Private Institutions: The Article 15(5) Debate

Context:

The Congress party has called upon the Centre to implement legislation that requires reservations for Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs) within private higher educational institutions. This request coincides with the 20th anniversary of Article 15(5) and the suggested "Viksit Bharat Shiksha Adhishthan Bill, 2025," which aims to establish a unified higher education regulatory body.

I. Legislative Gaps and the Push for Action:

- **Legislative Void:**
 - ✓ Jairam Ramesh, the General Secretary of Congress, emphasized that although the 93rd Constitutional Amendment (2006) introduced Article 15(5), allowing the state to require reservations in both private aided and unaided institutions, no central legislation has been passed to implement this in the past twenty years.
- **Parliamentary Committee Support:**
 - ✓ This demand is supported by a report from the Parliamentary Standing Committee on Education, dated August 2025, which described the representation of marginalized communities in private universities as "abysmally low" and urged for prompt legislative measures.
- **Bill Linkage:**
 - ✓ Congress contends that the proposed "Viksit Bharat Shiksha Adhishthan Bill," aimed at establishing a unified regulatory body for higher education, should explicitly incorporate provisions to monitor and enforce these social justice mandates.



II. Article 15(5): Constitutional Basis for Reservation in Private Institutions:

- **The Provision:** Enacted through the 93rd Constitutional Amendment Act of 2005, Article 15(5) grants the State the authority to establish special legal provisions aimed at promoting the advancement of socially and educationally disadvantaged groups, including Scheduled Castes (SCs) and Scheduled Tribes (STs), in relation to their admission into educational institutions.
- **Scope:** This provision applies to both privately funded and publicly funded educational institutions.
- **Exception:** It specifically excludes minority educational institutions as defined in Article 30(1).

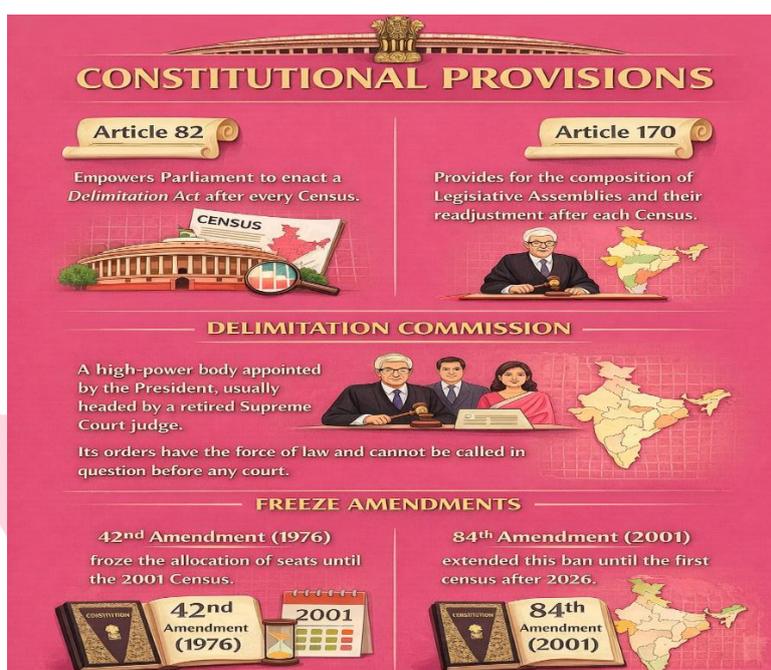
III. Judicial Evolution and Constitutional Validity of Article 15(5):

- **Ashoka Kumar Thakur vs. Union of India (2008):**
 - ✓ The Supreme Court affirmed the legitimacy of the 93rd Amendment while leaving the issue of its implementation in private unaided institutions unresolved, as these institutions were not involved as petitioners in this particular case.
- **Pramati Educational and Cultural Trust vs. Union of India (2014):**
 - ✓ A five-judge Constitution Bench resolved the controversy by declaring that Article 15(5) is constitutionally valid and does not infringe upon the "basic structure" of the Constitution.
 - ✓ The court determined that the State is permitted to impose reservations in private unaided institutions (excluding minority institutions) to fulfill the objective of equality.

16. Delimitation After 2027: Constitutional Mandate and Federal Challenges

Context:

As the constitutional freeze on delimitation is set to conclude after the initial census post-2026 (anticipated to be Census 2027), India stands at a crucial juncture in its democratic framework. The forthcoming delimitation process will mark the first inter-state redistribution of Lok Sabha seats since 1976. This initiative seeks to rectify the representation disparity resulting from population increases; however, it poses the risk of disadvantaging states that have effectively managed their demographic growth, igniting discussions on federalism and fair representation.



I. Constitutional Mandate and the Demographic Dilemma:

- **Constitutional Mandate:**
 - ✓ Article 82 of the Constitution requires the redistribution of seats following each census.
 - ✓ Nevertheless, the 42nd Amendment (1976) and subsequently the 84th Amendment (2001) have maintained the seat allocation at the 1971 level to promote population control initiatives.
- **The Demographic Dilemma:**
 - ✓ This freeze has resulted in a situation where, despite India's population increasing threefold to exceed 1.4 billion, the number of parliamentary seats has remained unchanged at 543, which was based on a population of 548 million.
 - ✓ Consequently, this has caused significant under-representation, especially in northern states that have experienced higher population growth.
- **The Power Shift:**
 - ✓ Forecasts for a larger Lok Sabha (estimated to comprise between 848 and 888 seats) indicate a substantial redistribution of political power.
 - ✓ Uttar Pradesh may witness its representation nearly doubling from 80 to approximately 151 seats, while southern states such as Tamil Nadu and Kerala would experience a reduction in their total seat allocation, thereby diminishing their influence in national policymaking.

- **Southern Opposition:**
 - ✓ Leaders from southern states contend that relying solely on a population-based criterion penalizes them for their advancements in social metrics (such as literacy, healthcare, and lower fertility rates).
 - ✓ Politicians from Tamil Nadu and Andhra Pradesh have labeled this prospective change as "unjust" and a potential threat to the federal framework.

II. The Way Forward: Models to Balance Equality and Federalism:

Experts and policymakers are engaged in discussions regarding various models aimed at reconciling democratic equality (one person, one vote) with federal justice:

- **Weighted Formula:** In a manner akin to the approach taken by the Finance Commission, delimitation could employ a composite index that assigns weight to demographic performance (population control) in conjunction with absolute population figures.
- **Expanding the Lok Sabha:** A significant increase in the total number of seats would ensure that no state experiences a reduction in its current seat allocation, even if its percentage share diminishes. This concept is reminiscent of the "Emolument Assurance" principle.
- **Strengthening Rajya Sabha:** Reforming the Upper House to operate as a genuine federal chamber—potentially by equalizing representation across all states (similar to the US Senate) or reinstating domicile requirements—would serve to counterbalance the population bias present in the Lok Sabha.
- **Phased Implementation:** The process of redistribution could be executed in stages (for instance, during 2034 and 2039) to facilitate the adaptation of political systems without causing immediate disruption.

INTERNATIONAL RELATIONS

17. Bangladesh at the Crossroads: Extremism, Leadership, and the Battle for the Centre

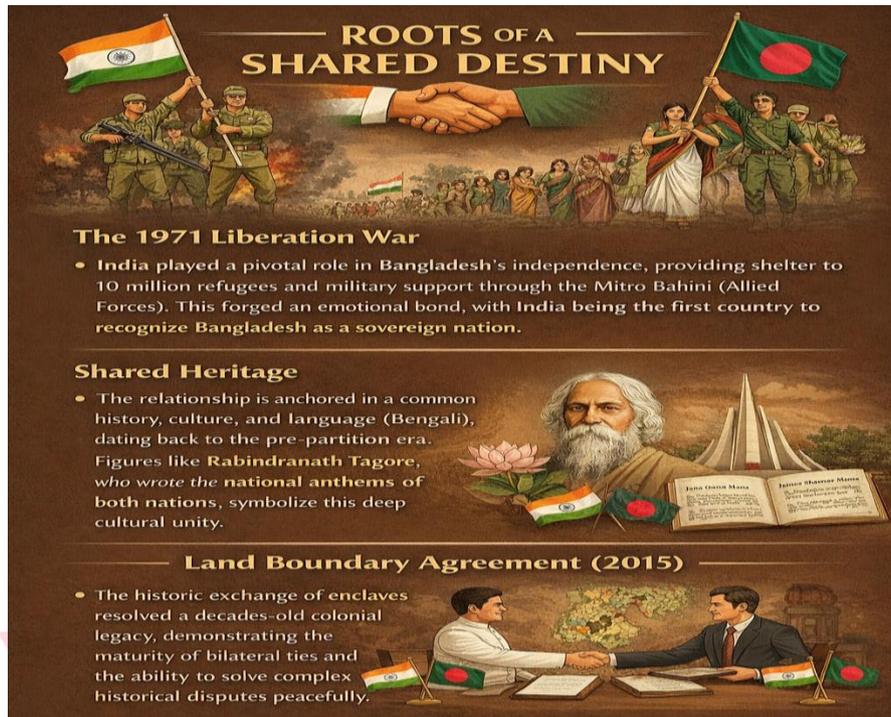
Context:

As Bangladesh gears up for the elections in February 2026, in the wake of Khaleda Zia's passing and Sheikh Hasina's removal from power, the country finds itself at a pivotal moment. The editorial underscores the pressing necessity for a centrist leader to mitigate the escalating extremism and to reestablish stability in the context of the struggling interim government.

I. Key Highlights: Bangladesh's Political Transition

- **End of an Era:** The passing of Khaleda Zia and the exile of Sheikh Hasina signify the conclusive end of the "Battle of the Begums," a conflict that has shaped the political landscape of Bangladesh for thirty years.
- **Leadership Vacuum:** With the Awami League prohibited and its leaders in exile, the Bangladesh Nationalist Party (BNP) stands as the sole significant organized political entity.
- **Tarique Rahman's Test:** Tarique Rahman, the acting chairman of the BNP, has returned after 17 years in exile. His primary challenge lies in reconciling divided factions and articulating an inclusive vision, rather than engaging in vendetta-driven politics.

- **Interim Struggles:** The interim administration under Muhammad Yunus has encountered challenges in upholding law and order, as demonstrated by incidents of mob violence and the lynching of minority groups.



II. The Extremist Challenge: Secularism at Risk and the Call for Centrist Leadership

- **Resurgence of Radicals:** Reports suggest that members of prohibited groups such as Jama'atul Mujahideen Bangladesh (JMB) are re-emerging into activity.
- **Political Legitimacy:** The National Citizen Party, which emerged from the student protests, has established coalitions with the Islamist Jamaat-e-Islami. Should Jamaat, which opposed Bangladesh's independence in 1971, assume a pivotal role, it poses a risk to the nation's secular constitutional framework.
- **Need for Centrist Leadership:** The editorial posits that Bangladesh requires a leader capable of "holding the centre"—staving off the drift towards fundamentalism while reinstating public confidence in democratic institutions.

III. India's Strategic Stakes in Bangladesh's Stability:

- **Neighborhood First Policy:** A stable and secular Bangladesh is essential for the security of India, especially concerning the Northeast region, as it helps to prevent the establishment of insurgent safe havens.
- **Connectivity Projects:** Instability jeopardizes important transit initiatives such as the Akhaura-Agartala rail link and energy cooperation pipelines.
- **Refugee Crisis:** An increase in extremism frequently results in the persecution of minorities, particularly Hindus, which could lead to an influx of refugees into West Bengal and Assam, thereby affecting India's internal demographics and security.

18. Maduro Captured: A New Chapter in Venezuela's Crisis and Global Power Politics

Context:

Recently, U.S. military forces executed a dramatic operation in Venezuela, resulting in the capture of President Nicolás Maduro and his spouse, Cilia Flores. They were transported to New York to confront charges related to "narco-terrorism." This arrest signifies a significant intensification of U.S. policy under President Trump, sparking an international discourse regarding sovereignty, oil, and the United States' influence on Venezuela's future.

I. Operation Absolute Resolve and Its Fallout:

- **The Operation:**
 - ✓ Codenamed "Operation Absolute Resolve," this military strike involved more than 150 aircraft and focused on military infrastructure located in Caracas.
 - ✓ President Trump asserted that the operation was successful, reporting no casualties among U.S. personnel, and indicated that the United States would utilize Venezuela's oil reserves to finance the reconstruction of the country.
- **Charges:**
 - ✓ Both Maduro and his spouse faced indictment on charges associated with drug trafficking and narco-terrorism, which the U.S. government contends legitimized the intervention as a law enforcement measure rather than a conventional act of war.
- **Democratic U.S. Lawmakers' Reaction:**
 - ✓ A number of Democratic lawmakers voiced their indignation, alleging that they had been deceived regarding the administration's true intentions.
 - ✓ They contended that the narrative surrounding "drug interdiction" served as a pretext for effecting regime change without the necessary congressional approval.

II. India's Stance and Energy Security Concerns:

- **Official Response:**
 - ✓ The Ministry of External Affairs (MEA) conveyed its "deep concern" regarding the recent developments, urging all involved parties to prioritize the safety of the Venezuelan populace and to address issues through peaceful dialogue.
 - ✓ India has deliberately refrained from taking sides, which is indicative of its longstanding non-aligned position.
- **Energy Implications:**
 - ✓ Although Venezuela possesses the largest oil reserves globally, the immediate repercussions on India's energy security are anticipated to be minimal.
 - ✓ Since 2019, India has significantly curtailed its oil imports from Venezuela due to U.S. sanctions, with current imports representing merely about 0.3% of its overall oil consumption.
- **Strategic Equilibrium:**
 - ✓ Despite the current low levels of trade, reports indicate that a return to Venezuelan heavy crude—should sanctions be lifted or stabilized—might enable India to save as much as \$3 billion annually by diversifying its oil sources away from Russian or Middle Eastern supplies.

INDIA-VENEZUELA RELATIONS

- 1. HISTORICAL FOUNDATION: THE Era of Solidarity (1959–2000s)**
 - **Diplomatic Ties:** India and Venezuela established diplomatic relations in 1959, sharing a strong bond through the Non-Aligned Movement (NAM).
 - **Shared Vision:** Both nations historically advocated for the interests of the **Global South**, opposing hegemony and supporting multipolar global governance.
 - **Hugo Chávez Era:** The relationship deepened significantly under President **Hugo Chávez**, who visited India in 2005, cementing ties based on **anti-imperialist rhetoric and energy cooperation**.
- 2. THE ENERGY ANCHOR: PEAK PARTNERSHIP (2000s–2018)**
 - **Strategic Oil Supplier:** Venezuela, home to the world's largest oil reserves, became India's **third-largest oil supplier** at its peak. Its heavy crude was particularly suited for India's **complex refineries** (eg, Reliance Jamnagar, Nayara Energy).
 - **Indian Investments:** India's flagship overseas arm, **ONGC Videsh Ltd (OVL)**, invested heavily in Venezuelan oil fields, acquiring stakes in the **San Cristobal and Carabobo** projects to secure equity oil.
- 3. THE SANCTIONS FREEZE: THE DIPLOMATIC DIP (2019–2025)**
 - **US Sanctions Impact:** The imposition of harsh U.S. sanctions on PDVSA (Venezuela's state oil company) in 2019 forced India to halt direct oil imports to avoid secondary sanctions (but practically respecting US financial
 - **Stuck Dividends:** Hundreds of millions of dollars in **dividends** owed to OVL got stuck due to payment channel blockades, turning a lucrative asset into a **"stranded"** one.
- 4. CURRENT STATUS: NAVIGATING THE CRISIS (2026)**
 - **Diplomatic Tightrope:** Following Maduro's capture, India's MEA has expressed "concern" for the welfare of the Venezuelan people but has refrained from condemning U. S. action, reflecting a pragmatic "play-it safe" approach, turning a lucrative asset

19. Beyond the Border: India–China Relations in an Era of Fragile Confidence

Context:

As the year 2026 commences, the relationship between India and China presents a multifaceted paradox. Beijing demonstrates a stance of both "hubris and caution"—showing strategic assurance internationally while contending with significant economic pressures domestically.

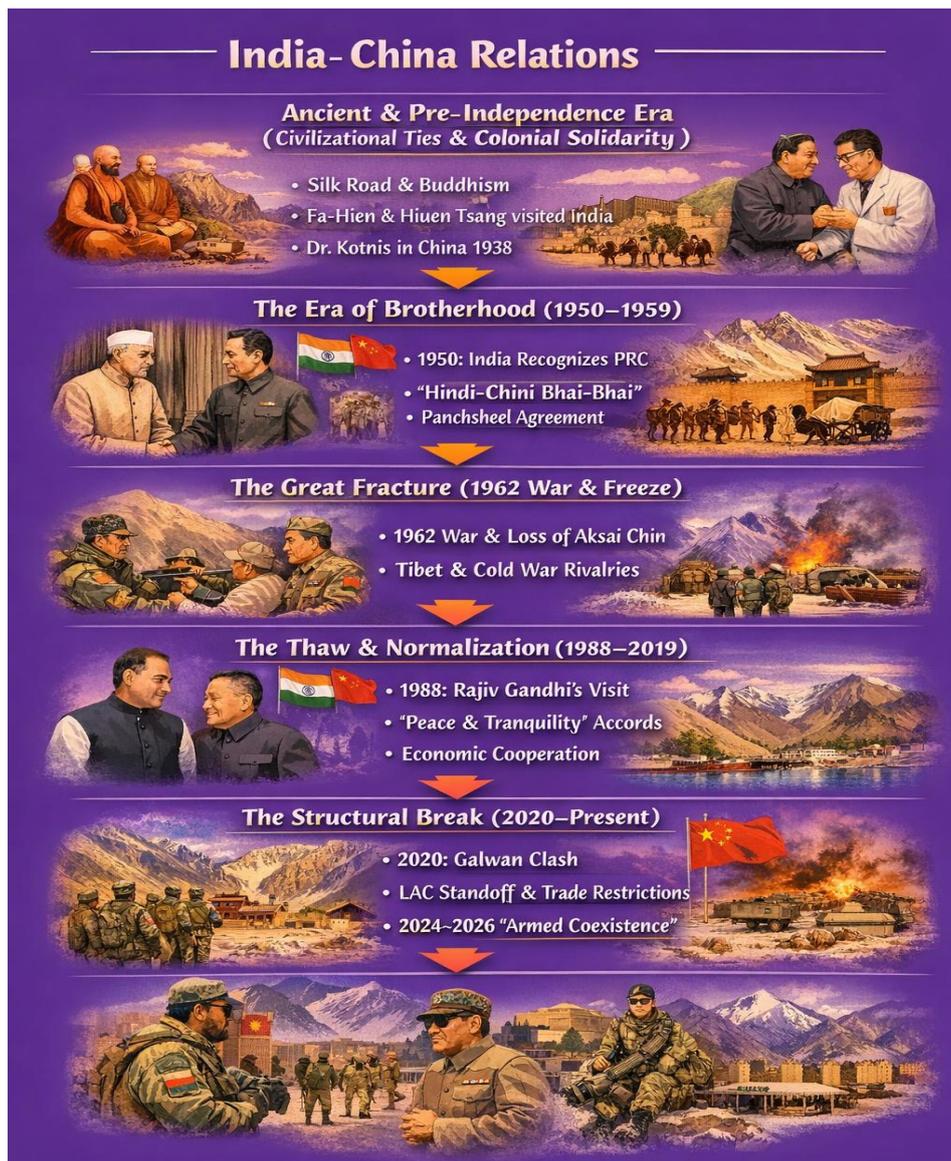
Concurrently, India is caught in a strategic quandary: aiming to reduce its dependence on China for the sake of national security, yet acknowledging that to effectively compete on a global scale, it may ironically require Chinese resources and investments. This complexity characterizes the diplomatic and economic discussions at the outset of 2026.

I. From Borders to Supply Chains: Navigating the India–China Puzzle

- **China's "Hubris and Caution" Posture:**
 - **Strategic Confidence (Hubris):** Beijing perceives that it has effectively stabilized its competition with the United States, particularly following the

transactional agreement known as "G2" with Trump 2.0, while simultaneously strengthening its alignment with Russia and the Global South.

- **Domestic Fragility (Caution):** This sense of confidence conceals significant internal difficulties, including sluggish economic growth, a crisis in the property sector, deflationary pressures, and elevated youth unemployment rates. In response, the leadership is intensifying political control to mitigate these risks.
- **Implications for India:** China interprets its relationship with India through the framework of competition with the United States. As tensions between the U.S. and China appear to be transitioning into a more transactional phase, Beijing feels less compelled to address New Delhi's concerns, likely persisting with its "grey zone" strategies along the border.
- **The Economic Paradox: "To Compete with China, India May Need China":**
 - **Dependency Trap:** In spite of initiatives such as the PLI scheme, India continues to rely significantly on imports from China for essential sectors, including electronics (where over 60% of components are sourced), pharmaceuticals (APIs), and solar energy.
 - **FDI Rethink:** India is contemplating the relaxation of the stringent restrictions imposed on Chinese FDI after 2020. The understanding is that dismissing Chinese investment and technology could adversely affect India's export competitiveness, as Indian manufacturers require affordable, high-quality Chinese intermediates to expand their operations and compete globally.
 - **The "Vietnam Model":** Analysts propose that India should follow Vietnam's example by importing raw materials from China, processing them domestically, and then exporting the finished products—essentially focusing on "de-risking" rather than complete "decoupling."
- **Way Forward:**
 - **Calibrated Engagement:** India should adopt a "security-screened" investment strategy that permits Chinese foreign direct investment (FDI) in non-sensitive sectors that enhance Indian exports, while maintaining stringent protections over strategic domains such as telecommunications and defense.
 - **Internal Balancing:** The emphasis should be on developing domestic capabilities (Atmanirbhar Bharat) to diminish critical dependencies in the long run, while allowing for tactical engagement in the short term.



20. Parallel Tracks, Diverging Futures: U.S.-India in 2026

Context:

As 2026 progresses, the relationship between the U.S. and India reveals a complex dual narrative. On one side, the partnership demonstrates significant resilience through extensive institutional collaboration, despite ongoing political tensions. Conversely, the U.S.'s increasing "inward turn" during the Trump administration raises international concerns regarding the surge of ethno-nationalism and the erosion of multilateral obligations, thereby posing challenges to the liberal international order that India has historically maneuvered.

I. Recent developments key highlights:

- **Resilience Beyond Politics: The U.S.-India Framework:**
 - ✓ **The "Parallel Track" of Resilience:** In spite of political challenges—such as the delay of the Quad Leaders' Summit and ongoing trade conflicts—institutional relationships continue to be strong. Collaboration is thriving in the areas of

defense and critical technologies, remaining unaffected by the fluctuations of daily diplomatic interactions.

- ✓ **Institutional Depth:** The "parallel track" is supported by bureaucratic and military structures such as the Defence Framework Agreement (2025), iCET (Initiative on Critical and Emerging Technology), and INDUS-X, which guarantee stability irrespective of any tensions at the leadership level.
- ✓ **Defense Interoperability:** Agreements such as LEMOA, COMCASA, and BECA have established a significant level of military coordination, rendering the partnership essential for the stability of the Indo-Pacific region.
- **The Dangers of U.S. Isolationism ("Inward Turn"):**
 - ✓ **Withdrawal from Global Engagement:** The choice made by the Trump administration to withdraw from the UN Framework Convention on Climate Change, along with more than 60 other international organizations, represents a form of "pure isolationism" that emphasizes national self-interest at the expense of global governance.
 - ✓ **Ethno-Nationalism and Racism:** The editorial cautions that this inward-focused approach promotes "ethno-nationalism and racist animosity" by dismissing diversity and initiatives deemed as "woke." This "narrow perspective" poses a risk of creating a void that adversaries such as China and Russia may exploit, thereby undermining the established rules-based international order.

BRIEF HISTORY OF INDIA-U.S. RELATIONS

1947-1990 ESTRANGED DEMOCRACIES

- Relations were cool due to **Cold War** dynamics.
- **India's non-alignment** and **1971 Treaty** with the USSR contrasted with the U.S.'s alliance with Pakistan.

1991-1998 THE THAW & THE BUMP

- Economic liberalization in **India** opened doors, but the **1998 Pokhran-II nuclear tests** led to U.S. sanctions, hitting a new low.

2000-2008 STRATEGIC TRANSFORMATION

- **President Clinton's 2000 visit** was a turning point
- The **2008 Civil Nuclear Deal** ended India's nuclear pariah status and became the cornerstone of a new strategic partnership.

2016-PRESENT MAJOR DEFENSE PARTNER

- The U.S. designated India a "**Major Defense Partner**" in 2016.
- Since then, the signing of foundational agreements (LEMOA, COMCASA, BECA) and the formation of the **Quad (2017)** have elevated ties to a comprehensive **global strategic partnership**.

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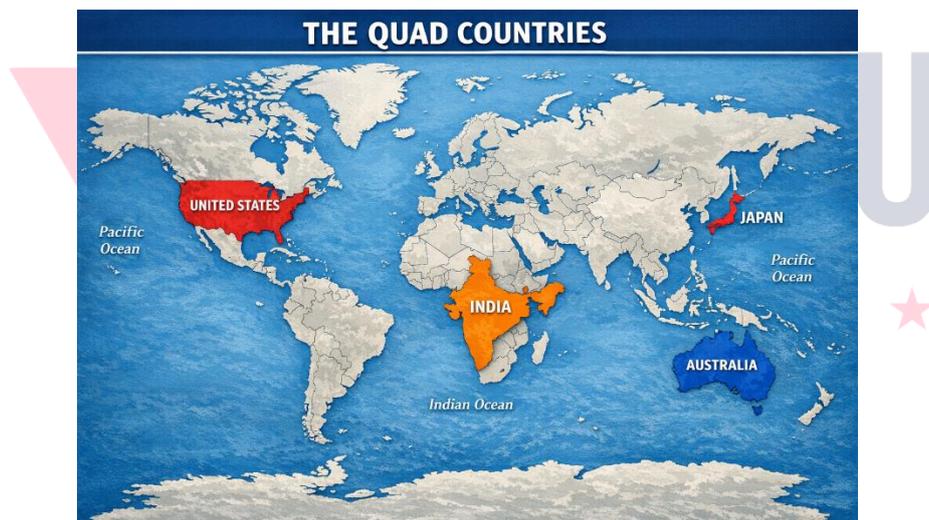
II. Way Forward:

- **Insulating Ties:** It is imperative for both nations to persist in fortifying the "institutional pilot light"—the collaboration between bureaucratic and military entities—to maintain a warm relationship, even amidst fluctuating political climates.
- **Navigating Isolationism:** India must position itself as a stabilizing force within the Global South, taking initiative in areas where the U.S. withdraws, all the while judiciously balancing its strategic independence in an increasingly fragmented global order.

21. The Quad in 2025: A Year of Strategic Interregnum

Context:

The year 2025 represented a "strategic interregnum" for the Quad, noted for the lack of a leader-level summit as a result of leadership changes in both the U.S. and Japan. Although operational collaboration continued, the political momentum experienced a halt, prompting significant inquiries regarding the future direction of the grouping under the new Trump administration.



I. The Summit Vacuum: A Pause, Not a Collapse

- **The Summit Vacuum:**
 - For the first time since 2021, the Quad was unable to conduct a leader-level summit in 2025.
 - India, which was supposed to host the meeting, could not organize it due to domestic elections and the logistical challenges posed by changes in leadership in the U.S. and Japan.
 - This disruption in the annual schedule is referred to as an "interregnum"—a temporary hiatus rather than a complete breakdown.
- **Operational Resilience:** In spite of the political quietude, the "institutional pilot light" remained active. Collaborative efforts persisted through:
 - **Quad-at-Sea Ship Observer Mission:** Initiated in 2025 to enhance coast guard interoperability.
 - **IPMDA (Indo-Pacific Partnership for Maritime Domain Awareness):** Continued to supply essential information regarding illegal fishing and "dark shipping" to regional allies.

- **Malabar Exercise:** Successfully executed off the coast of Guam, indicating that military interoperability is still preserved.
- **The Trump Factor:**
 - The re-emergence of Donald Trump has brought about a degree of uncertainty.
 - His "America First" policy emphasizes transactional bilateralism over multilateral engagements.
 - Nevertheless, analysts point out that the Quad was revitalized in 2017 during Trump's administration, implying that he may consider it a valuable instrument against China, as long as it provides concrete burden-sharing.

II. India's Role in the Quad:

- **Strategic Hedging:** India maintains its perspective of the Quad as an essential non-military counterbalance to China. It utilizes this platform to enhance its overall power—diplomatic, economic, and technological—without committing to a formal alliance structure.
- **Public Goods Provider:** India has established itself as the "first responder" and healthcare provider within the Quad, capitalizing on this grouping to supply vaccines, Humanitarian Assistance and Disaster Relief (HADR), and climate finance to the Global South, thereby counteracting China's Belt and Road Initiative (BRI).
- **Navigating Divergence:** India has adeptly ensured that the Quad remains concentrated on the Indo-Pacific and maritime security, successfully averting distractions from the Ukraine crisis or European security matters, despite pressures from other member states.



III. Impact on India:

- **Maritime Security:** The IPMDA initiative represents a transformative development for the Indian Navy, significantly improving its surveillance capabilities in the Indian Ocean Region (IOR) to track incursions by the Chinese PLA Navy.
- **Technological Leap:** The collaboration under the iCET (Initiative on Critical and Emerging Technology)—while primarily bilateral with the US—aligns closely with the objectives of the Quad. This partnership supports India in cultivating its own capabilities in sectors such as semiconductors, space exploration, and artificial intelligence.
- **Supply Chain Resilience:** The Quad's emphasis on 'China-plus-one' strategies is instrumental in helping India draw in manufacturing investments, which are crucial for diminishing its reliance on Chinese imports, particularly for active pharmaceutical ingredients (APIs) and rare earth minerals.

IV. Way Forward:

- **Early Summit:** It is essential to restore political signaling; thus, convening an early summit in 2026 is vital to reassure the region that the "interregnum" was simply a temporary pause rather than a regression.
- **Institutionalization:** The group might require a minimal secretariat or ongoing working groups to sustain momentum amid political transitions in member nations.
- **Agenda Alignment:** India should strive to synchronize the priorities of the new U.S. administration with the Quad's current agenda to guarantee the group's continued effectiveness.

22. Soaring Higher Together: India and Germany's New Chapter

Context:

Recently, India–Germany relations reached a pivotal moment with the first official visit of German Chancellor Friedrich Merz to India. Against the backdrop of global geopolitical volatility, the two nations elevated their "Strategic Partnership"—celebrating its 25th year—by signing key agreements to deepen defence industrial cooperation, trade resilience, and green technology. This marked a clear shift from a transactional relationship to a comprehensive strategic alignment.

I. Key Highlights:

- **Defence Industrial Roadmap:**
 - ✓ A significant outcome was the establishment of a "Joint Declaration of Intent" aimed at formulating a roadmap for collaboration in the defence industry.
 - ✓ This initiative emphasizes co-development, co-production, and technological partnerships, transcending the traditional buyer-seller dynamic.
- **Submarine Deal Progress:**
 - ✓ The discussions regarding the Project-75I (P-75I) agreement, which entails the acquisition of six state-of-the-art conventional submarines equipped with Air-Independent Propulsion (AIP) from Germany's ThyssenKrupp Marine Systems (TKMS), have advanced considerably, with a final agreement anticipated by March 2026.
- **Green & Sustainable Partnership:**
 - ✓ The two parties assessed the "Green and Sustainable Development Partnership" (GSDP), highlighting that nearly €5 billion of Germany's €10 billion pledge (for

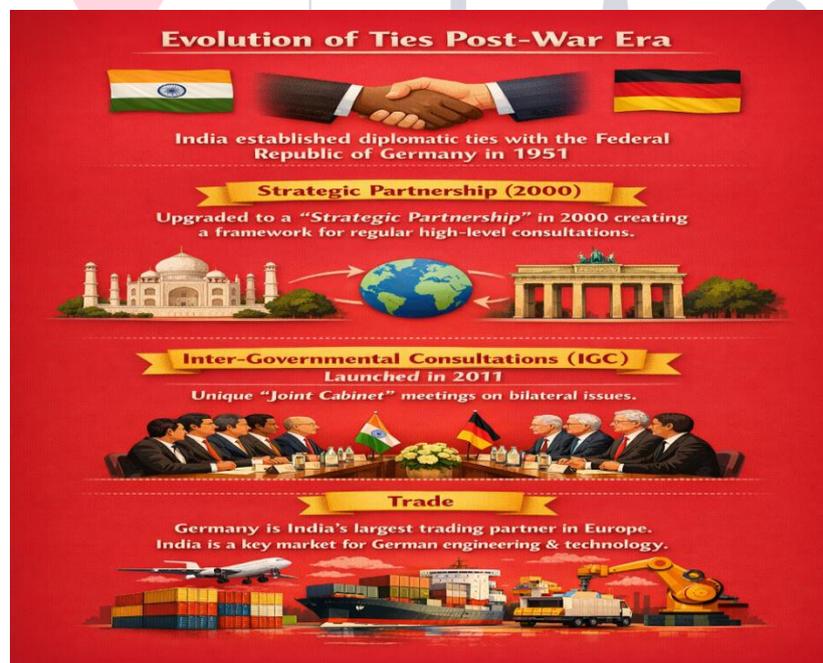
the period 2022-2030) has already been allocated to renewable energy and climate initiatives.

- **Symbolism & Trust:**

- ✓ The visit was characterized by significant symbolic gestures, including the Chancellor engaging in kite flying with PM Modi in Ahmedabad, which represented the "soaring" aspirations of their partnership.
- ✓ This event bolstered mutual trust, with Germany reaffirming its commitment to a free and open Indo-Pacific and introducing a new consultation framework for the region.

II. India's Role & Impact:

- **Diversifying Defence:** This collaboration enables India to lessen its long-standing reliance on Russian military equipment by expanding its procurement to include superior German technology (such as submarines and tank engines).
- **Supply Chain Resilience:** Germany's 'China Plus One' approach is in harmony with India's 'Make in India' initiative, facilitating the introduction of German manufacturing and technology (particularly from Mittelstand companies) into India, thereby enhancing domestic industry and generating employment opportunities.
- **Technology & Skills:** The agreements concerning migration and mobility permit Indian professionals (notably in the healthcare and technology sectors) to enter the German labor market, which helps mitigate Germany's demographic challenges while offering international prospects for Indian youth.
- **Global Governance:** Both countries advocate for each other's aspirations for a permanent position in a reformed UN Security Council (as part of the G4 nations), thereby reinforcing India's influence in global multilateral discussions.



23. Pax Silica and India's Strategic Tech Leap

Context:

Recently, the newly appointed U.S. Ambassador to India, Sergio Gor, declared that India would receive an invitation to become a full member of the "Pax Silica" initiative. This strategic

coalition, led by the United States, seeks to ensure the security of global supply chains for semiconductors, essential minerals, and Artificial Intelligence (AI). The invitation represents a significant shift in India–U.S. technology relations, addressing previous exclusions and trade tensions that existed during the earlier Trump administration.

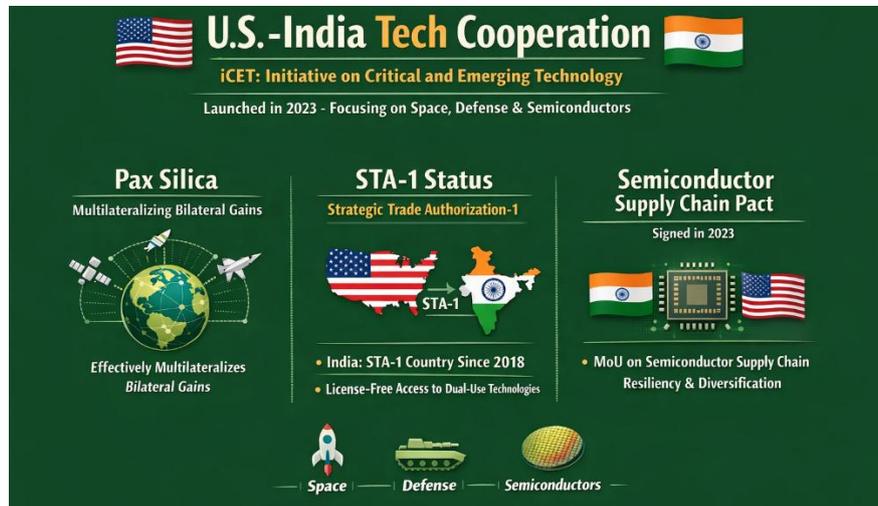
I. Key Highlights:

- **The Invitation:**
 - ✓ Ambassador Sergio Gor has confirmed that India will receive a formal invitation to join Pax Silica in February 2026.
 - ✓ This rectifies India's exclusion from the inaugural summit held in December 2025, which featured other Quad members and significant U.S. allies such as Japan, South Korea, and Israel.
- **What is Pax Silica?**
 - ✓ It represents a flagship initiative of the U.S. Department of State aimed at establishing a "secure, prosperous, and innovation-driven silicon supply chain."
 - ✓ This initiative encompasses the entire technology lifecycle—from the extraction of critical minerals and energy inputs to advanced manufacturing, AI infrastructure, and logistics.
- **Strategic Objective:**
 - ✓ The phrase "Pax Silica" (Latin for "Silicon Peace") embodies a vision of enduring stability and prosperity fostered by reliable technology partners.
 - ✓ Its primary objective is to diminish "coercive dependencies" (implicitly referring to China) and to guarantee that democracies maintain control over the materials and capabilities essential for the AI era.
- **India's Entry:**
 - ✓ The inclusion of India recognizes its expanding role as a reliable technology partner and a prospective center for semiconductor manufacturing and AI applications.
 - ✓ Furthermore, it aligns with India's own "Semiconductor Mission" and its ambition to secure critical mineral resources on a global scale.

II. Importance of Pax Silica for India:

- **Securing Critical Minerals:**
 - ✓ By joining the alliance, India gains access to a reliable network for procuring rare earth elements and critical minerals that are vital for its electronics and defense industries, thereby diminishing its dependence on Chinese supremacy.
- **Boost to Semiconductor Mission:**
 - ✓ Membership incorporates India into the lucrative global chip ecosystem.
 - ✓ It enables access to cutting-edge technology, financial resources, and collaborations with industry leaders such as NVIDIA and ASML, thereby expediting India's ambition to establish itself as a global hub for chip manufacturing.
- **AI Leadership:**
 - ✓ As a participant, India has the opportunity to influence global governance standards concerning "trustworthy AI."
 - ✓ This positions India not merely as a consumer of AI technologies but as a co-creator of sovereign AI infrastructure, capitalizing on its extensive pool of STEM talent.

- **Geopolitical Balancing:**
 - ✓ While it enhances technological alignment with the United States, it necessitates that India carefully manage its "strategic autonomy."
 - ✓ New Delhi must ensure that its involvement does not limit its capacity to collaborate with other partners or the Global South, thus avoiding the risk of the initiative evolving into a solely exclusionary anti-China coalition.



24. The Great Reckoning: Iran's Struggle Within and Without

Context:

Recently, Iran has entered a phase of "great reckoning" driven by a convergence of internal dissent and external pressure. The country is grappling with a severe economic crisis, a collapsed currency (the rial has devalued 20,000-fold since 1979), and mass protests triggered by a cost-of-living crisis.

At the same time, the return of Donald Trump has reignited the "maximum pressure" campaign, with threats of 25% tariffs and demands for regime change. This has forced Tehran into a corner where it must choose between structural reform or another cycle of repression and conflict.

I. From Bazaar Strikes to Mass Protests: Iran's Unrest Widens

- **Internal "Conundrum":**
 - ✓ The ongoing unrest is not merely episodic but rather structural in nature.
 - ✓ It originated in late 2025 when merchant classes (Bazaaris) initiated strikes against currency devaluation, subsequently expanding to encompass the working class.
 - ✓ The regime has reacted with a well-known "four-stage playbook": police repression, dual messaging (attributing blame to foreigners while providing token relief), attrition (through internet shutdowns), and ultimately, retaliation via show trials and executions.
- **Trump's Tariff Threat:**
 - ✓ President Trump has issued a warning of a 25% tariff on countries engaging in trade with Iran.
 - ✓ Nevertheless, analysts anticipate that this will exert "little impact on India."

- ✓ India's direct trade with Iran is already quite limited due to pre-existing sanctions (which halted oil imports in 2019), and its primary interest, the Chabahar Port, typically benefits from a U.S. humanitarian waiver.
- **Regime's Reaction:**
 - ✓ Rather than yielding, Tehran has indicated a hardline approach.
 - ✓ Iranian officials have suggested that imminent executions and trials for protesters are forthcoming to suppress dissent.
 - ✓ Additionally, they have classified EU armies as "terrorist groups" in response to the EU's designation of the Revolutionary Guards (IRGC) as terrorists, further exacerbating their isolation.



II. The Great Reckoning: Reform vs. War

- **The Appeal for Liberty:** Editorials contend that Iran requires "greater freedoms and swift reforms, rather than another conflict." The internal credibility of the theocratic regime is diminishing as the divide between the governing elite and the destitute populace expands.
- **External Influence as a Two-Edged Sword:** Although the United States and Israel advocate for the downfall of the regime, analysts caution that outside intervention (such as Trump's threats) frequently enables the regime to consolidate nationalist feelings and discredit authentic domestic demonstrations as foreign conspiracies.

III. Impact on India:

- **Energy Security:** Any increase in tensions within the Persian Gulf may lead to a surge in oil prices and disrupt LNG supplies, thereby influencing India's energy expenditures even if it does not directly purchase Iranian oil.
- **Regional Stability:** The instability in Iran poses a threat to India's connectivity initiatives such as the International North-South Transport Corridor (INSTC) and the Chabahar Port, which are crucial for accessing Central Asia and circumventing Pakistan.
- **Diaspora & Remittances:** An expanded conflict could jeopardize the 9 million Indians residing in the Gulf region, affecting remittances and requiring extensive evacuation operations.

25. India Weighs Role in Trump's Gaza Peace Board

Context:

Recently, U.S. President Donald Trump invited India to join a newly constituted "Board of Peace" aimed at overseeing the post-war reconstruction and transitional governance of Gaza. While key regional players such as Israel, the UAE, and Pakistan have accepted the invitation, India has adopted a cautious "wait and watch" approach, balancing its strategic partnership with the U.S. against its traditional support for a two-state solution and multilateralism.

I. The Initiative and Its Framework:

- **The Initiative:**
 - ✓ The "Board of Peace" is an element of President Trump's "20-point Gaza Peace Plan.
 - ✓ It is intended to serve as an international organization responsible for overseeing Gaza's reconstruction, security, and governance, effectively circumventing the United Nations.
 - ✓ To secure a permanent seat, membership necessitates a contribution of \$1 billion, whereas a non-contributory membership is valid for a duration of three years.
- **Global Response:**
 - ✓ **Accepted:** Israel, the UAE, Egypt, Jordan, Pakistan, Argentina, and Hungary have consented to participate. The UAE has indicated that its involvement is in line with the execution of the peace plan aimed at realizing Palestinian rights.
 - ✓ **Hesitant/Rejected:** India, along with European countries such as France and Germany, has yet to provide a formal response. Detractors contend that the board lacks legitimacy under international law and enables affluent nations to "purchase" influence.
 - ✓ **India's Dilemma:** New Delhi is confronted with a strategic decision. Joining would align it with the U.S. and Israel, granting it the opportunity to influence the region's future. However, this could lead to India's isolation from the Global South and Arab communities, who perceive the board as an "imperial trusteeship" that undermines Palestinian sovereignty.

II. India's Role & Impact:

- **Strategic Balancing:** Engaging in this manner could enhance India's position as a net security provider and a vital stakeholder in West Asia, which is essential for its energy security and the 9 million-strong Indian diaspora.
- **Economic Opportunities:** Indian enterprises may secure substantial contracts for the reconstruction of Gaza, capitalizing on their expertise in infrastructure, pharmaceuticals, and digital governance.
- **Moral & Diplomatic Standing:** By participating in a non-UN organization, India may risk undermining its enduring commitment to UN-led multilateralism. Conversely, abstaining from involvement could result in a lack of influence in a pivotal conflict zone where it holds significant interests.

26. India-UAE Relations Enter Strategic Defence Era

Context:

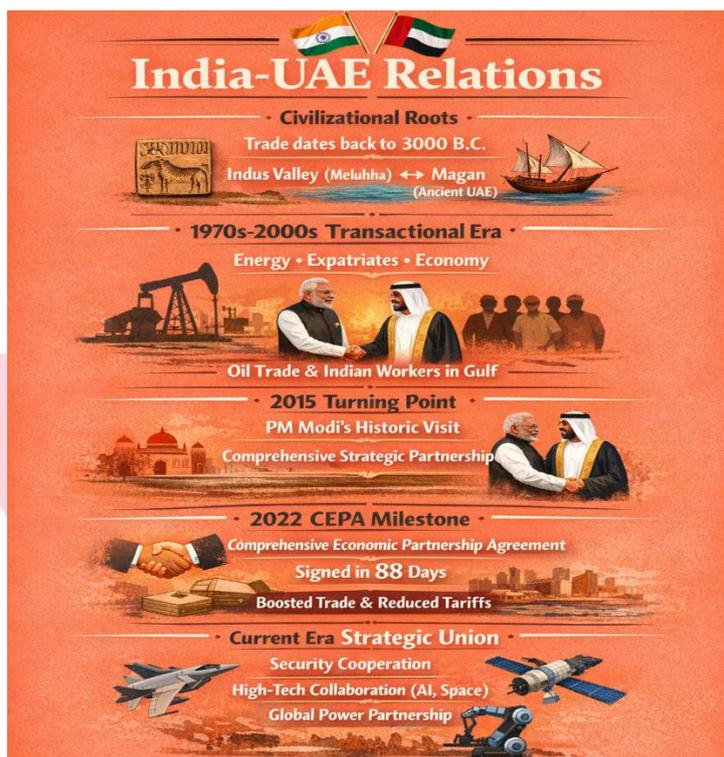
Recently, the visit of UAE President Sheikh Mohamed bin Zayed Al Nahyan (MbZ) to India marked a decisive shift in bilateral relations, elevating them from a primarily economic partnership to a "Strategic Defence Partnership." Amidst global geopolitical volatility, the two nations signed a Letter of Intent (LoI) to deepen defense cooperation and committed to doubling their bilateral trade to \$200 billion by 2032, signaling a convergence of strategic and security interests.

I. Strategic Defence Partnership: From Buyer-Seller to Co-Production:

- **Strategic Defence Partnership:**
 - ✓ The signing of the Letter of Intent represents the most crucial outcome, with the objective of institutionalizing collaboration in defense manufacturing, technology transfer, and joint military training.
 - ✓ This development elevates the relationship from mere buyer-seller interactions to co-production and interoperability.
- **Economic & Energy Anchors:**
 - ✓ **Trade Target:** Both parties have established an ambitious goal to double bilateral non-oil trade to \$200 billion by 2032, building upon the achievements of the 2022 CEPA.
 - ✓ **LNG Deal:** A long-term contract was finalized for ADNOC Gas to deliver 0.5 million metric tonnes per annum of LNG to India's HPCL for a duration of 10 years commencing in 2028, thereby strengthening India's energy security.
- **Investment & Infrastructure:** The UAE has pledged to invest in the Dholera Special Investment Region (Gujarat) and has extended an invitation to India to engage in its "Bharat Mart" initiative in Dubai, which is intended to function as a warehousing hub for Indian MSMEs to access markets in Africa and Europe.
- **Digital & Space:** New agreements have been established to interlink payment platforms (UPI-AANI) and to foster collaboration in the space sector between ISRO and the UAE Space Agency for commercial launch services, embodying a "future-oriented" agenda.

II. India's Role & Strategic Impact:

- **Regional Security Provider:** By strengthening defense relationships with the UAE, India expands its presence in the western Indian Ocean and the Gulf, serving as a stabilizing force in a region vital for its energy and diaspora security.
- **Economic Gateway:** The UAE is establishing itself as India's "gateway to the world," especially for exports to Africa and Europe through initiatives such as the India-Middle East-Europe Economic Corridor (IMEC), notwithstanding existing regional tensions.
- **Energy Diversification:** Transitioning from spot purchases to long-term LNG agreements with the UAE enables India to shield its economy from unpredictable global energy prices, which is essential for its expanding industrial requirements.



27. India–Poland Diplomatic Exchange: Autonomy vs. Security

Context:

Recently, a diplomatic exchange in New Delhi saw External Affairs Minister S. Jaishankar and Polish Foreign Minister Radosław Sikorski publicly airing differences regarding their respective neighborhoods. While India cautioned Poland against validating Pakistan's "terrorist infrastructure," Poland raised sharp concerns over India's participation in Russian military exercises, highlighting the friction between New Delhi's strategic autonomy and European security anxieties.

I. Partnership Amidst Discord: Resilience of Strategic Ties

- **The "Terrorism" Rebuttal:**
 - ✓ S. Jaishankar called upon Poland to implement a "zero-tolerance" stance against terrorism.
 - ✓ This statement was a direct reaction to Sikorski's visit to Pakistan in October 2025, during which a joint declaration addressed the Kashmir issue.

- ✓ Jaishankar cautioned that diplomatic backing should not unintentionally "support terrorist infrastructure" in the vicinity of India.
- **The "Russian" Counter:**
 - ✓ Radosław Sikorski responded by voicing significant apprehension regarding India's involvement in Russia's Zapad-2025 military exercises.
 - ✓ He described these maneuvers as "threatening" to Poland, particularly in light of the ongoing conflict in Ukraine, and raised concerns about India's persistent military collaboration with Moscow.
- **Double Standards on Criticism:**
 - ✓ Jaishankar condemned the "selective targeting" of India by European countries concerning its energy relations with Russia, labeling it as "unfair and unjustified."
 - ✓ Sikorski recognized the economic rationale but defended sanctions as an essential measure against acts of aggression.
- **Partnership Amidst Discord:**
 - ✓ In spite of their public disagreements, both ministers reaffirmed their commitment to the 2024-2028 Action Plan, which aims to enhance collaboration in defense industries, clean technology, and mining, thereby demonstrating the durability of the Strategic Partnership established in 2024.



II. Impact on India:

- **Diplomatic Balancing:**
 - ✓ This incident highlights the difficulties India encounters in sustaining its strategy of "multi-alignment."

- ✓ As India strengthens its ties with Europe, particularly Poland, it must carefully manage European concerns regarding Russia while safeguarding its own security interests in South Asia.
- **Defense Diversification:**
 - ✓ Poland is becoming a significant defense ally for India by providing "Warmate" loitering munitions.
 - ✓ This disagreement emphasizes the necessity of separating defense trade from political conflicts related to Ukraine or Pakistan.
- **Narrative Control:**
 - ✓ By openly criticizing a European ally concerning Pakistan, India has established a new "red line": its engagement with Europe must not come at the expense of legitimizing Pakistan's stance on Kashmir.

28. The 'Donroe Doctrine': A Broken International Order

Context:

Recently, the global order witnessed a seismic shift with the emergence of the "Donroe Doctrine"—a portmanteau of "Donald" and "Monroe." Triggered by the U.S. military's unilateral abduction of Venezuelan President Nicolás Maduro, this doctrine signifies a return to raw power politics, where the U.S. asserts exclusive dominance over the Western Hemisphere, treating international law and sovereignty as optional constraints.

I. The Doctrine Defined: Offensive, Transactional, and Resource-Drive

- **The Doctrine Defined:**
 - ✓ In contrast to the defensive Monroe Doctrine of 1823, the "Donroe Doctrine" adopts an offensive and transactional approach.
 - ✓ Its explicit objective is to take control of vital resources, such as Venezuelan oil, and to implement regime change to eliminate competitors like China and Russia from the Americas.
- **The Trigger Event:**
 - ✓ The U.S. operation known as "Absolute Resolve" involved the apprehension of a sitting head of state on charges related to "narco-terrorism."
 - ✓ The subdued global reaction underscores a "broken" international order, wherein institutions like the UN lack the capacity to restrain superpowers.
- **Global Fragmentation:**
 - ✓ **Europe:** The U.S. has indicated that security has now become a commercial transaction, insisting that NATO allies either pay for protection or manage their own security independently.
 - ✓ **Precedent for Autocrats:** This action encourages China, particularly concerning Taiwan, and Russia to assert their own "spheres of influence," referencing the U.S. precedent of ignoring sovereignty.

II. Impact on India:

- **Strategic Trap:** The doctrine complicates India's approach to "multi-alignment." With the U.S. imposing tariffs on India for its imports of Russian oil, New Delhi is confronted with a dilemma between its economic interests and its strategic alliances.
- **Loss of Hedging Space:** As the U.S. adopts an inward-looking stance with its "America First" policy, a security void emerges in the Indo-Pacific region, which may enable China

to increase its influence while the so-called "global policeman" is preoccupied with domestic issues.

- **Diplomatic Dilemma:** India's reticence regarding the infringement of Venezuelan sovereignty may alienate the Global South, whereas any criticism could provoke the ire of its most significant strategic ally, the U.S..

III. Evolution of U.S. Hemispheric Policy:

- **Monroe Doctrine (1823):** President James Monroe cautioned European nations that any interference in the Americas would be perceived as an aggressive act towards the United States.
- **Roosevelt Corollary (1904):** Theodore Roosevelt asserted that the United States possessed the authority to implement "international police power" in Latin America (Big Stick Diplomacy).
- **Donroe Doctrine (2026):** The "Trump Corollary"—a hyper-transactional strategy that emphasizes resource extraction and direct intervention rather than fostering democratic nation-building.

29. India–EU Free Trade Agreement: The “Mother of All Deals”

Context:

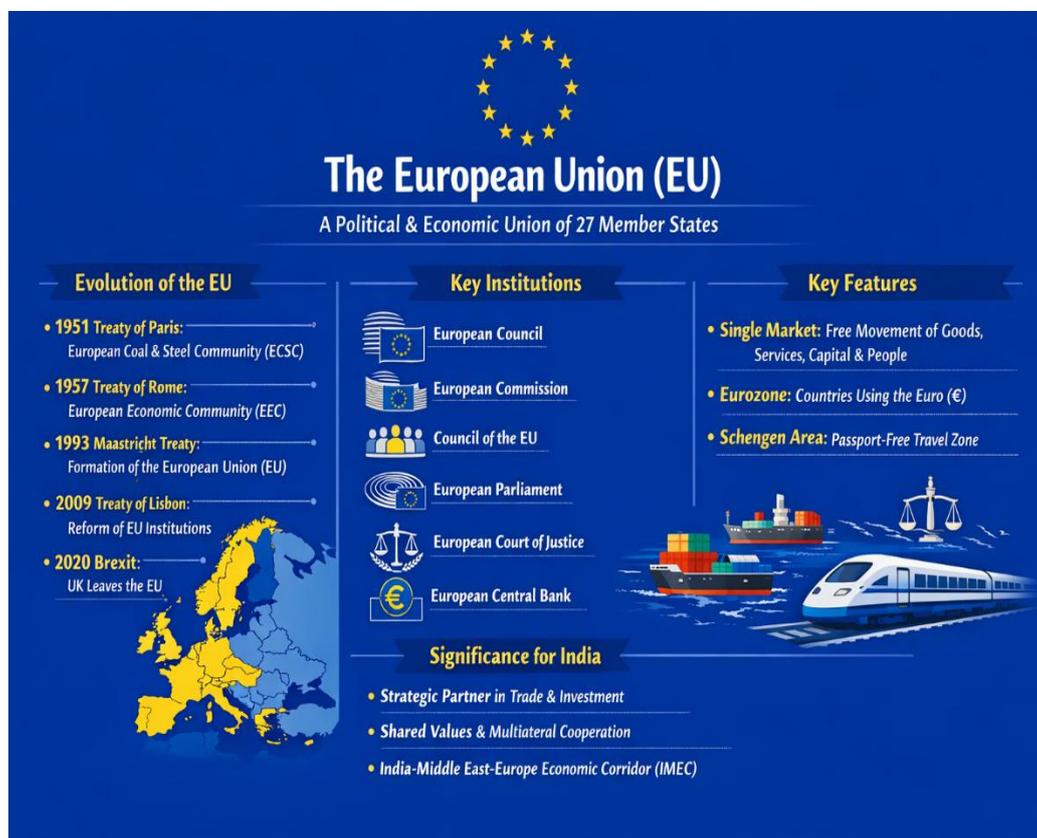
Recently, India and the European Union (EU) finalized discussions regarding a landmark Free Trade Agreement (FTA), often referred to as the "**Mother of All Deals.**" This agreement, revealed on the eve of India's Republic Day, seeks to establish a free trade zone encompassing 2 billion individuals, connecting the world's second and fourth largest economies. The agreement is perceived as a strategic shift by both "giants" to illustrate that even in a divided world—characterized by conflicts in Ukraine and Gaza—collaboration and adherence to established rules remain achievable.

I. Key Highlights:

- **The "Mother of All Deals":**
 - ✓ The Free Trade Agreement (FTA) encompasses almost 99.5% of India's exports to the European Union, while the EU will reciprocate by doing the same for 99.5% of goods from India. European Commission President Ursula von der Leyen described this arrangement as a "win-win" collaboration between two major economies.
- **Sectoral Gains:**
 - ✓ **India:**
 - The country will benefit from immediate zero-duty access for labor-intensive industries such as textiles, leather, gems, and jewelry, which is vital for job creation.
 - Additionally, it will obtain preferential access for agricultural exports and information technology services.
 - ✓ **EU:**
 - The European Union will achieve gradual tariff reductions on automobiles (from 110% to 10%), machinery, and wines/spirits.
 - However, sensitive sectors such as dairy and agriculture (including beef and sugar) will remain largely shielded on both sides.

✓ **Strategic Signaling:**

- Von der Leyen highlighted that this agreement demonstrates to a "fractured world another way to engage," positioning the India-EU partnership as a stabilizing force against authoritarianism and economic coercion, implicitly referencing China.



II. India's Role & Impact:

- **Export Boost:** Commerce Minister Piyush Goyal anticipates that Indian exports to the European Union may potentially double by the year 2032, aiming for a total export target of \$1 trillion at an accelerated pace.
- **Supply Chain Diversification:** This agreement facilitates India's integration into lucrative global supply chains, drawing European manufacturing (particularly the German Mittelstand) in alignment with the "China Plus One" strategy.
- **Geopolitical Balancing:** By establishing a robust economic partnership with Europe, India mitigates the risk of excessive reliance on the United States or Russia, thereby enhancing its strategic independence while gaining access to advanced green technologies.

III. Way Forward:

- **Implementation Challenges:** The current emphasis is on the ratification process (by the European Parliament) and addressing non-tariff barriers such as the Carbon Border Adjustment Mechanism (CBAM), which may still impose penalties on Indian steel and cement exports despite the Free Trade Agreement (FTA).
- **Social Impact:** A critical evaluation of the deal's "inclusive" promise will be ensuring that the benefits derived from sectors like textiles genuinely empower women workers, who predominantly occupy roles in these industries.

30. India-Arab League: Bridging Cultures, Creating Opportunities

Context:

On January 30-31, 2026, India organized the 2nd India-Arab Foreign Ministers' Meeting in New Delhi, representing the first such assembly in ten years (the last occurred in 2016 in Bahrain). Co-chaired by representatives from India and the Arab League Secretary-General, the meeting culminated in the issuance of the "Delhi Declaration," which delineates a redefined partnership centered on trade, energy security, and counter-terrorism in light of the intensifying conflicts in West Asia and the disturbances in the Red Sea.

I. Key Highlights:

- **The Delhi Declaration:**
 - ✓ A thorough document that establishes cooperation across emerging pillars such as green hydrogen, digital infrastructure, and food security.
 - ✓ It clearly endorses the establishment of a sovereign Palestinian state based on the borders of 1967 and denounces terrorism in all its manifestations, including the exploitation of drones and AI by non-state entities.
- **Economic Anchors:**
 - ✓ **Trade & Investment:** Bilateral trade has surpassed \$240 billion, with a new objective to increase it to \$500 billion by the year 2030. The meeting underscored the importance of utilizing the India-Middle East-Europe Economic Corridor (IMEC) to bolster supply chain resilience.
 - ✓ **Energy Security:** The Arab region provides 60% of India's crude oil and 50% of its fertilizers. New long-term contracts for LNG (with Qatar and UAE) and strategic petroleum reserves were emphasized as vital for India's energy transition.
- **Strategic Convergence:**
 - ✓ India and the Arab League have come together on the need to reform the UN Security Council (UNSC) to better reflect current realities.
 - ✓ The declaration also condemned Houthi assaults on shipping in the Red Sea, marking a departure for India, which had previously refrained from direct naming, indicating a mutual interest in maritime security.

II. India's Role & Impact:

- **Stabilizing Power:** By accommodating all 22 Arab nations despite existing regional tensions (such as those between Saudi Arabia and the UAE), India has solidified its position as a neutral and stabilizing force in West Asia, demonstrating its ability to separate its relationships with Israel from those with the Arab nations.
- **Diaspora & Soft Power:** With a population of 9 million Indians residing in the region, the meeting established formal mechanisms aimed at ensuring their welfare. The implementation of UPI and RuPay in nations like the UAE and Qatar was highlighted as a benchmark for digital financial integration.
- **Defence Exports:** The region is becoming a significant market for Indian defense technologies, including Tejas and BrahMos. The emphasis of the declaration on counter-terrorism and maritime security paves the way for enhanced military collaboration.

III. Way Forward:

- **Institutionalize Dialogue:** To avoid another prolonged hiatus, an Executive Program covering the years 2026-2028 was approved, which requires regular meetings across sectors such as energy, education, and media.
- **Modernize Trade:** In order to move beyond oil dependency, the emphasis should transition towards renewable energy, fintech, and food security. The establishment of a Rupee-Rial/Dirham payment system could protect trade from the impacts of geopolitical currency volatility.

ECONOMY

31. The U.S. Tariff Shock: Safeguarding India's Pharma Future

Context:

Recently, the Indian pharmaceutical sector faced a "tariff shock" when U.S. President Donald Trump threatened a 25% tariff on Indian imports, citing trade imbalances and India's ties with Russia. While the initial threat loomed large, a subsequent trade deal framework reduced tariffs to 18% for most goods but maintained exemptions for pharmaceuticals (especially generics) for now. The episode highlights the vulnerability of India's "Pharmacy of the World" status to geopolitical volatility and protectionist U.S. policies.

I. Key Highlights:

- **The Tariff Rollercoaster:**
 - ✓ Initially, the Trump administration suggested imposing tariffs ranging from 25% to 50% on goods imported from India.
 - ✓ Nevertheless, a significant agreement reduced this rate to 18% for general merchandise, while largely exempting the crucial pharmaceutical sector to avert drug shortages within the United States.
- **Generics as a Shield:**
 - ✓ India is responsible for supplying approximately 40% of the generic medications utilized in the United States, resulting in substantial savings for the American healthcare system, amounting to billions each year.
 - ✓ This reliance served as a strategic defense, compelling the U.S. to exclude pharmaceuticals from the most severe tariffs to prevent inflation in domestic healthcare costs.
- **China-Plus-One Opportunity:**
 - ✓ The restructuring of tariffs provides Indian manufacturers with a competitive advantage over their Chinese counterparts, who are subject to significantly higher duties.
 - ✓ This situation may expedite the transition of global supply chains to India, especially in the sectors of medical devices and active pharmaceutical ingredients (APIs).

II. Impact on India:

- **Export Resilience:**
 - ✓ The exemption for generic drugs protects nearly \$9 billion in annual pharmaceutical exports to the United States.

- ✓ Nevertheless, this threat highlights the necessity for Indian companies to broaden their market reach beyond the U.S., which presently constitutes over 35% of pharmaceutical exports.
- **Cost Competitiveness:**
 - ✓ The decrease in general tariffs to 18% (a reduction from a possible 50%) enhances the price competitiveness of Indian medical devices and other exports, enabling them to better compete with rivals such as Vietnam and Bangladesh.
- **Strategic Vulnerability:**
 - ✓ This situation revealed India's significant dependence on imported Key Starting Materials (KSMs) and Active Pharmaceutical Ingredients (APIs) from China, which accounts for approximately 70%.
 - ✓ Any disruption in this supply chain could severely hinder India's capacity to supply the U.S., rendering "backward integration" (the domestic production of APIs) an essential security priority.

III. Way Forward:

- **Diversification:** The Indian pharmaceutical sector must transition towards an "East-West hybrid collaboration," broadening its reach into regions such as Africa, Latin America, and Southeast Asia to mitigate excessive reliance on fluctuations in U.S. policies.
- **Domestic Capability:** It is crucial to expedite the implementation of Production Linked Incentive (PLI) schemes for bulk pharmaceuticals and medical devices to diminish dependency on Chinese imports and ensure sovereignty over the supply chain.
- **Innovation ladder:** The industry must ascend the value chain, evolving from basic generics to more sophisticated generics and biosimilars, which not only yield higher profit margins but are also more challenging to replace, thereby enhancing India's negotiating power in trade discussions.

32. India's Labour Codes: Draft Rules and the Future of Work

Context:

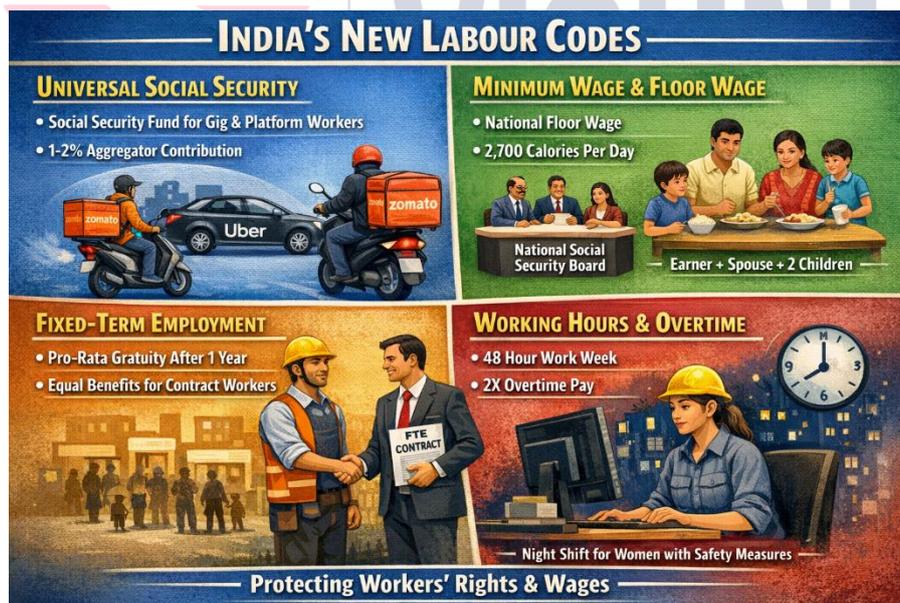
Recently, the Ministry of Labour and Employment pre-published the draft Central Rules for all four Labour Codes—Code on Wages, Industrial Relations Code, Social Security Code, and OSH Code—inviting public feedback within 45 days. This marks a decisive step towards fully operationalizing these codes by April 1, 2026, aiming to consolidate 29 outdated labor laws into a unified framework.

The move comes amidst a "youth employment crisis" where nearly 90% of India's young workforce remains informal, raising critical questions about the codes' ability to secure the "future of work" for gig and platform workers.

I. Key Highlights:

- **Universal Social Security:**
 - ✓ The proposed regulations implement the Code on Social Security, 2020, requiring that gig and platform workers (such as delivery partners) be registered on a centralized portal to avail themselves of benefits.
 - ✓ It suggests the establishment of a National Social Security Board that includes representation from gig workers and obligates aggregators (for instance, Uber, Zomato) to contribute 1-2% of their annual revenue to a social security fund.

- **Minimum Wage & Floor Wage:**
 - ✓ The regulations advocate for a "starvation-proof" National Floor Wage determined by the consumption requirements of a typical working-class family (earner + spouse + 2 children = 3 consumption units) with a daily net intake of 2,700 calories.
 - ✓ This initiative aims to safeguard the 90% of the unorganized workforce from wage exploitation.
- **Fixed-Term Employment (FTE):**
 - ✓ The regulations formalize Fixed-Term Employment, providing contract workers with statutory equality with permanent employees concerning hours, wages, and social security.
 - ✓ Importantly, FTE workers will qualify for pro-rata gratuity after only one year of service, eliminating the previous five-year requirement.
- **Working Hours & Overtime:**
 - ✓ The standard work week is limited to 48 hours.
 - ✓ Any work performed beyond this limit must be compensated at double the wage rate.
 - ✓ Additionally, the regulations permit women to work night shifts (after 7 PM) with required consent and safety measures, thereby enhancing female participation in the labor force.



II. Impact on India's Youth & Gig Economy:

- **Formalization vs. Exclusion:**
 - ✓ Although the codes provide legal acknowledgment for gig workers, detractors contend that the definitions are still quite "skeletal."
 - ✓ The stipulation requiring 90 days of work per year to qualify for social security may inadvertently exclude millions of casual youth who engage in sporadic work across various platforms.
- **Compliance Burden:**
 - ✓ Gig platforms such as Swiggy and Zomato are encountering heightened compliance expenses due to obligatory contributions (ranging from 1-2% of turnover) and newly established data reporting standards.

- ✓ Nevertheless, this is perceived as an essential "compliance reallocation" aimed at guaranteeing fundamental safety nets for the anticipated 23.5 million gig workers by the year 2030.
- **Job Security Paradox:**
 - ✓ The Industrial Relations Code raises the threshold for standing orders (regarding layoff regulations) from 100 to 300 workers, thereby facilitating the hiring and firing processes for medium-sized enterprises.
 - ✓ While this change enhances the "ease of doing business," labor unions express concern that it effectively legitimizes a "hire and fire" approach for the youth demographic.

III. Way Forward:

- **Data-Driven Implementation:** The effectiveness of the codes relies on the comprehensive registration of informal workers on the e-Shram portal. In the absence of precise data, social security benefits will exist only theoretically.
- **Algorithmic Accountability:** Upcoming revisions need to tackle the issue of "algorithmic control" (for instance, the arbitrary blocking of IDs), which represents the main concern of gig workers, a matter that remains unaddressed by the current codes.

33. Export Promotion Mission & Credit Schemes: Strengthening India's Export Competitiveness

Context:

Recently, the Government of India operationalized the Credit Guarantee Scheme for Exporters (CGSE) and unveiled two additional credit-linked interventions under the flagship Export Promotion Mission (EPM). These initiatives aim to address the critical "credit gap" faced by MSME exporters, reduce the cost of credit, and enhance the competitiveness of Indian goods in global markets amidst geopolitical headwinds.

I. Export Promotion Mission (EPM): The Umbrella Framework:

- **Launch & Outlay:** Authorized in November 2025 with a budget of ₹25,060 crore (FY 2025-26 to 2030-31).
- **Objective:** To consolidate disparate schemes into a cohesive, digitally oriented framework aimed at assisting exporters, particularly MSMEs and sectors that are labor-intensive.
- **Two Pillars:**
 - ✓ Niryat Protsahan (Support): Emphasizes financial incentives (Trade finance, Interest subvention).
 - ✓ Niryat Disha (Direction): Concentrates on non-financial facilitators (Market access, branding, logistics, compliance).

II. The New Credit-Linked Plans (Launched Jan 2, 2026):

The New Credit-Linked Plans (Initiated on January 2, 2026) Under the Niryat Protsahan framework introduced two targeted measures aimed at reducing credit expenses and simplifying collateral requirements:

- **Interest Subvention for Pre- and Post-Shipment Export Credit:**
 - ✓ **Advantage:** A 2.75% interest subsidy on rupee export credit.

- ✓ **Limit:** The maximum benefit is capped at ₹50 lakh per exporter (IEC) for each financial year.
- ✓ **Eligibility:** This is accessible to MSME exporters for products listed under a "positive list" of tariff lines (which encompasses approximately 75% of India's tariff lines), with an emphasis on labor-intensive industries.
- ✓ **Execution:** This will be carried out through the RBI on a pilot basis.
- **Collateral Support for Export Credit:**
 - ✓ **Framework:** This is being executed in collaboration with the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE).
 - ✓ **Scope:** It offers guarantee coverage of up to 85% for Micro and Small enterprises and 65% for Medium enterprises.
 - ✓ **Ceiling:** The maximum outstanding guaranteed exposure is set at ₹10 crore per exporter.
 - ✓ **Objective:** The aim is to facilitate MSMEs in obtaining bank financing without the encumbrance of substantial collateral.

III. Credit Guarantee Scheme for Exporters (CGSE):

Independently, the Department of Financial Services has operationalized the CGSE, which will take effect on December 1, 2025, through the Jan Samarth Portal.

- **Implementation:** This initiative is managed by the National Credit Guarantee Trustee Company (NCGTC).
- **Key Feature:** It offers a 100% guarantee coverage to Member Lending Institutions (MLIs) for losses incurred on additional credit provided to exporters.
- **Target:** This program is aimed at both MSME and Non-MSME exporters.
- **Benefit:** It allows banks to provide collateral-free additional working capital (up to 20% of existing limits) as well as term loans.
- **Corpus:** The scheme supports credit up to ₹20,000 crore.

IV. Significance & Impact:

- **Liquidity Injection:** It is essential to address the "working capital trap" as the duration of export cycles increases due to global logistics disruptions (for instance, the Red Sea crisis).
- **Competitiveness:** Elevated logistics and credit expenses frequently make Indian products 5-10% pricier compared to rivals such as Vietnam; interest subvention directly addresses this issue.
- **Formalization:** The digital-first strategy (Jan Samarth, DGFT portals) promotes MSMEs to formalize their operations in order to avail themselves of benefits.

V. Way Forward:

- **Awareness Campaigns:** Guarantee that there is effective "last-mile" awareness among MSMEs located in Tier-2/3 export hubs (for instance, Moradabad, Tirupur).
- **Bank Compliance:** Supervise banks to ensure that the "100% guarantee" genuinely results in "collateral-free" lending in practice, thereby averting risk-averse tendencies among branch managers.



34. India's Fiscal Dilemma: Capex vs. Deficit Target

Context:

Recently, the government's precarious fiscal position has come into sharp focus. Despite a commendable track record of fiscal discipline, the Centre faces an "unenviable choice": either pull back on growth-generating capital expenditure (capex) to meet fiscal deficit targets or sustain spending at the risk of fiscal slippage. This dilemma stems from sluggish tax revenue growth and lower-than-expected nominal GDP growth due to low wholesale inflation.

I. Key Highlights:

- **The Revenue-Expenditure Discrepancy:**
 - **Revenue Pressure:**
 - ✓ Tax revenues have fallen short of expectations. For the period of April to November 2025, total tax revenue was 3.4% less than the previous year.
 - ✓ GST collections in December 2025, amounting to ₹1.74 lakh crore, exhibited only slight growth, dispelling the optimism that recent rate reductions would quickly enhance consumption.
- **Expenditure Inflexibility:**
 - ✓ Although the Centre has vigorously increased capital expenditure (which rose by 28% in Apr-Nov 2025), it has limited authority over revenue expenditure (including salaries, pensions, and interest payments), which remains inflexible.
- **The Nominal GDP Trap:**
 - **WPI Deflation:**
 - ✓ The average wholesale inflation rate has been approximately -0.08%, resulting in a lower "Nominal GDP" than initially projected.
 - ✓ Given that fiscal deficit and debt ratios are determined as a percentage of Nominal GDP, a reduced denominator causes these ratios to appear more unfavorable, even if the level of borrowing remains unchanged.
- **The Trade-off:**
 - **Option A (Cut Capex):**
 - ✓ In order to safeguard the fiscal deficit target (for instance, 4.5%), it would be necessary to significantly reduce capital expenditures.

- ✓ This reduction would hinder the infrastructure boom, which has served as the main driver of India's recent economic growth.
- **Option B (Miss Targets):**
 - ✓ Sustaining elevated capital expenditures would likely result in exceeding the fiscal deficit threshold, which could alarm bond markets and credit rating agencies.



II. Impact:

- **Economic Growth:** A mandatory decrease in public capital expenditure may slow down the construction and manufacturing industries, which are significantly dependent on government contracts.
- **Private Investment:** Should the government increase its borrowing (falling short of targets), it will consume banking liquidity, resulting in the "Crowding Out" of private investors as interest rates rise.
- **Sovereign Ratings:** Following the fiscal glide path is essential for India to preserve or enhance its sovereign credit rating, which in turn influences foreign investment inflows.

III. Way Forward:

- **Asset Monetization:** Actively engage with the National Monetization Pipeline (NMP) to derive revenue from existing brownfield assets (such as roads and power lines) while avoiding an increase in debt.
- **Expenditure Rationalization:** Transition from generalized subsidies to more focused transfers in order to free up fiscal space for capital expenditures.
- **Widening Tax Base:** Enhance compliance and streamline GST brackets to elevate the Tax-to-GDP ratio, thereby decreasing dependence on borrowing.

35. Record Coal Output: India's Push for Energy Security

Context:

The Ministry of Coal has reported a significant steady growth in coal production and dispatches from Captive and Commercial mines for December 2025. This performance underscores the success of private sector participation and operational efficiency in India's coal sector during the Financial Year 2025-26

I. Key Highlights:

- **December 2025 Performance:** Coal production reached 19.48 Million Tonnes (MT), indicating a Year-on-Year (YoY) increase of 5.75%.
- **Dispatches:** The coal dispatches for the month totaled 18.02 MT.
- **Quarterly Achievement (Q3):** The cumulative production for the third quarter (October-December) reached 54.14 MT, reflecting a YoY growth of 5.35%.
- **Fiscal Year Performance (Until December 2025):** The sector has exhibited strong growth, with production increasing by 9.72% and dispatches rising by 6.98% in comparison to the same timeframe in the prior financial year.

II. Drivers of Growth:

- **Strategic Policy Measures:** The Ministry credits the increase to accelerated operational approvals and ongoing policy backing for mine proprietors.
- **Enhanced Monitoring:** Stringent oversight of mine development and production timelines has facilitated improved use of mining capacities.
- **Stakeholder Engagement:** Active collaboration with stakeholders has addressed obstacles in the logistics and production chain.

III. Objectives and Future Outlook:

- **Energy Security:** The Ministry's objective is to guarantee a consistent supply of coal to satisfy the increasing energy requirements of the nation and facilitate continuous industrial activities.
- **Viksit Bharat 2047:** These initiatives are in accordance with the overarching national ambition of achieving developed nation status by 2047 through the promotion of self-sufficiency in energy resources.
- **Operational Environment:** The emphasis continues to be on establishing a stable, performance-oriented atmosphere for commercial mining to draw in greater private investment.

Understanding the Sector

<p>Captive vs. Commercial Mining:</p> <ul style="list-style-type: none">• Captive Mines: Coal produced is for the specific use of the company that owns the mine (e.g., for its own power or steel plant).• Commercial Mines: Introduced via reforms in 2020, these allow private players to mine coal and sell it in the open market, ending the monopoly of state-owned Coal India Ltd (CIL).	<p>Classification of Coal:</p> <p>Coal is categorized into four types based on carbon content:</p> <table border="1"><tbody><tr><td>Anthracite Highest Quality</td><td>Bituminous Most Common</td></tr><tr><td>Lignite Low Quality</td><td>Peat Lowest Quality</td></tr></tbody></table>	Anthracite Highest Quality	Bituminous Most Common	Lignite Low Quality	Peat Lowest Quality	<p>Regulatory Body:</p> <ul style="list-style-type: none">• Ministry of Coal: Responsible for policies and development of coal & lignite sector.• Nominated Authority: Handles the auction and allotment of coal blocks.
Anthracite Highest Quality	Bituminous Most Common					
Lignite Low Quality	Peat Lowest Quality					

36. India Turns Up the Volume: Institutionalizing the 'Concert Economy'

Context:

Following the Prime Minister's emphasis on the creative economy at the World Audio Visual & Entertainment Summit (WAVES) in 2025, the Ministry of Information and Broadcasting (MIB) has operationalized the Live Events Development Cell (LEDC). This move comes as India witnesses a massive surge in live entertainment, with the organized market valued at ₹20,861 crore in 2024, aiming to position India as a global live entertainment hub by 2030.

I. Key Highlights:

- **Nodal Agency:** The LEDC operates under the Ministry of Information and Broadcasting as a comprehensive facilitation mechanism.
- **Objective:** The aim is to enhance the regulatory framework for concerts, festivals, and large-scale cultural events, superseding the previously fragmented permission system that hindered the industry.
- **State-Level Action:** States such as Maharashtra have already appointed agencies (for instance, DGIPR) to liaise with the central LEDC, thereby establishing a "federal structure" for the management of events.
- **Growth Targets:** The objective of the cell is to double the size of the sector and stimulate a Compound Annual Growth Rate (CAGR) of 18%, thereby surpassing traditional media segments.

II. Concert Economy and the Multiplier Effect:

- **Revenue Beyond Ticket Sales:** The "Concert Economy" extends beyond mere ticket transactions; it initiates the Multiplier Effect. For each rupee invested in a ticket, considerable expenditures arise in related sectors such as hospitality, aviation, and local transportation.
- **Emergence of Tier-2 and Tier-3 Cities:** In contrast to the previously metro-focused landscape, cities such as Visakhapatnam (with a remarkable 490% growth), Shillong, and Guwahati have surfaced as new engines of growth, thereby broadening access to entertainment.
- **Optimizing Infrastructure Use:** The policy advocates for the monetization of underused facilities, including stadiums and convention centers, during off-peak sporting seasons.

III. Concert Economy as a Job Creator:

- **Job Creation:** The industry presently sustains more than 10 million jobs. The LEDC intends to create an extra 15-20 million job opportunities, particularly aiding the Gig Economy (including sound engineers, lighting technicians, security personnel, and logistics staff).
- **Skill Development:** There is a renewed emphasis on formalizing the curriculums for "Event Management" and "Technical Production" to align with international standards.

IV. Institutionalizing Emergency Response Protocols:

- **Single Window Clearance:** The LEDC is consolidating approvals for fire, police, traffic, and municipal clearances into a single digital platform (akin to the India Cine Hub).

- **Standardized SOPs:** Development of standardized Standard Operating Procedures (SOPs) for crowd management and emergency response to avert incidents and guarantee safety.

Key Concepts

Concert Economy	Multiplier Effect	Soft Power
 <p style="text-align: center;">Concert Economy</p> <p>A subset of the Experience Economy, where value is created by the memory and experience of the event rather than a tangible good.</p>	<p>An economic term referring to the proportional amount of increase in final income that results from an injection of spending. In this context, a concert acts as an injection that stimulates local businesses.</p>  <p>An economic term referring to the proportional amount of increase in final income that results from an injection of spending. In this context, a concert acts as an injection that stimulates local businesses.</p>	<p>The use of cultural assets (music, festivals) to enhance a country's international appeal and diplomatic standing.</p>  <p>The use of cultural assets (music, festivals) to enhance a country's international appeal and diplomatic standing.</p>

37. Silk Value Chain Set to Double: A ₹1,10,000 Crore Vision by 2030

Context:

Recently, the Central Silk Board (CSB) unveiled an ambitious roadmap to double India's silk value chain. Currently valued at approximately ₹55,000 crore, the sector is targeted to cross ₹1,10,000 crore by 2030. The announcement, made during the Directors' Conference of Sericulture Practicing States in Bengaluru, underscores the government's focus on linking sericulture with the Viksit Bharat 2047 vision.

I. Key Highlights:

- **Production Targets:** India, currently producing 41,121 Metric Tonnes (MT) of raw silk, aims to ramp this up to 54,000 MT by 2030.
- **Export Surge:** The Ministry of Textiles plans to triple exports. From ₹2,300 crore in the last fiscal, exports are projected to cross ₹2,500 crore in FY 2025-26 itself.
- **Dominance of Mulberry:** Mulberry silk continues to constitute over 70% of India's total silk output, serving as the backbone of this expansion.
- **Geographical Expansion:** The "Silk Map" of India has expanded, with 50 new districts added in the last few years, bringing the total number of silk-producing districts to 476.

II. Technological Integration for Productivity Gains:

- **Silk Samagra Scheme:** The current execution of Silk Samagra 2 is crucial for mechanizing the industry and aiding farmers through scientific rearing methodologies.
- **Bivoltine Revolution:** A significant transition is being advocated from cross-breeding to High-Quality Bivoltine Silk (quality that serves as an import substitute) to lessen dependence on silk imports from China.

- **State-Level Engagement:** The Central government is proactively partnering with non-traditional states (such as Gujarat and Rajasthan) to promote Eri (Castor-based) silk, thereby diversifying beyond the conventional strongholds of Karnataka and Andhra Pradesh.
- **Technological Integration:** Emphasis is placed on automatic reeling machines (ARM) and extensive farming practices to enhance productivity per hectare.

About Central Silk Board (CSB):



Status

A Statutory Body established under the Central Silk Board Act, 1948.



Nodal Ministry

Ministry of Textiles



Headquarters:

Bengaluru, Karnataka

Types of Silk in India:

India is the only country producing all four known commercial silks:

Mulberry	Eri	Tasar	Muga
(Karnataka, AP, TN – Major producers)	(Northeast, known as Ahimsa Silk)	(Tribal belt of Jharkhand, Chhattisgarh, Odisha)	(Exclusive to Assam, has a GI Tag)
			

Employment Potential:

Sericulture is highly labour-intensive and has a high employment-to-investment ratio, making it critical for rural livelihood security, especially for women.

III. Challenges Ahead: The Bottlenecks

Despite being the world's second-largest producer, India faces structural hurdles that must be addressed to meet the 2030 targets:

- **Import Dependence on Bivoltine Silk:** India still relies on China for high-grade Bivoltine silk (used in power looms) as domestic production consists largely of Cross-Breed (Multi-voltine) silk, which is of lower quality.
- **Urbanization & Land Shrinkage:** Traditional sericulture hubs like Mysuru and Ramanagara (Karnataka) are facing rapid urbanization, leading to a decline in mulberry plantation acreage.
- **Price Volatility:** The unorganized nature of the cocoon market exposes farmers to severe price fluctuations, often forcing distress sales.
- **Technological Lag:** A significant portion of reeling is still done on traditional Charkhas or Cottage Basins, resulting in uneven yarn quality that cannot compete with standard international grades (3A/4A grade).
- **Competition from Synthetics:** The market is flooded with "Art Silk" (Rayon/Polyester), which mimics natural silk at a fraction of the cost, diluting the brand value of genuine silk.

IV. Way Forward: Strategic Measures

To achieve the ₹1.1 Lakh Crore target, the industry must pivot from "Production" to "Quality and Value Addition".

- **The "Bivoltine" Revolution (Import Substitution):** Focus: Aggressive promotion of Bivoltine sericulture in cold-climate clusters (e.g., Jammu & Kashmir, Uttarakhand) and controlled environments in the South to replace Chinese imports.
- **Technological Interventions:**
 - ✓ **Automatic Reeling Machines (ARM):** Shift from cottage basins to ARMs to produce international standard silk.
 - ✓ **Genomics:** Use of genetic markers to develop silkworm breeds resistant to diseases like Pebrine and Flacherie.
- **Strengthening "Vanya" Silk (Niche Marketing):**
 - ✓ India is the only country producing all five commercial silks. Promoting Muga and Eri (Ahimsa silk) as exclusive, sustainable, and "organic" luxury products to Western markets.
 - ✓ **GI Tag Enforcement:** Strict protection of Geographical Indications like Muga Silk of Assam and Bhagalpuri Tasar.
- **Waste to Wealth:** Utilizing silk waste (pupae) for high-value by-products like cosmetic oils, pharmaceutical proteins, and fish feed, creating an additional revenue stream for farmers.
- **Convergence with MNREGA:** Linking mulberry plantation work with MNREGA to offset labor costs, making sericulture viable for small and marginal farmers.

38. High and Dry? The Quest for Secure Social Security for Gig Workers

Context:

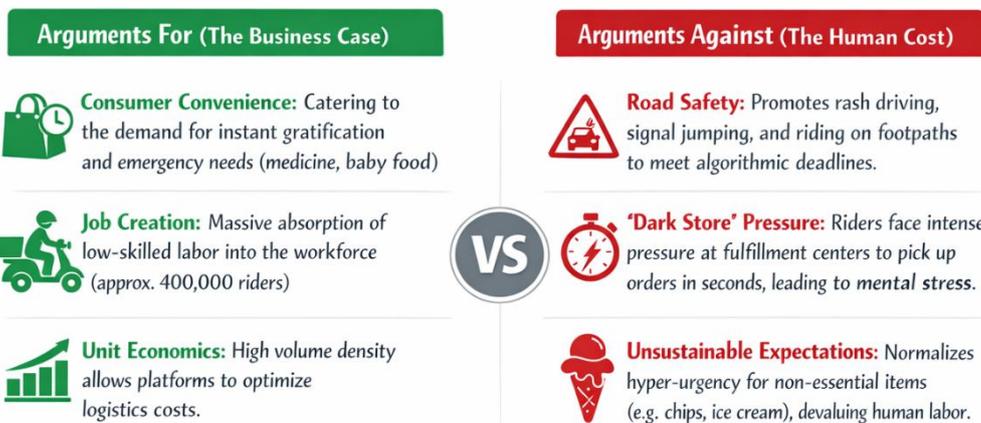
Recently, the Union Labour Ministry released draft rules under the Code on Social Security, 2020, proposing a mandatory 90-day engagement threshold for gig workers to avail social security benefits. At the same time, the government cracked down on the "10-Minute Delivery" marketing model, compelling platforms like Blinkit, Zepto, and Swiggy Instamart to retract these claims amid rising road safety concerns.

I. 90 Days to Security: A New Rulebook

- **The 90-Day Threshold:**
 - ✓ According to the Centre's newly proposed regulations, a gig worker must maintain engagement with an aggregator for a minimum of 90 days within a financial year to qualify for benefits.
 - ✓ Definition of Engagement: Any income earned on a given calendar day is considered one day of engagement.
- **Karnataka Leads the Way:**
 - ✓ On January 27, 2026, the Karnataka government formally established the Gig Workers' Welfare Board in accordance with its 2025 Act.
 - ✓ Levy: The state has instituted a welfare fee (cess) ranging from 1% to 1.5% on aggregator transactions to support social security initiatives.
- **The "10-Minute" Rollback:**
 - ✓ After discussions with the Labour Minister, leading Quick Commerce (Q-commerce) platforms consented to eliminate "10-minute delivery" promises from their applications and advertisements, redirecting their emphasis to "minutes" or "quick" without delineating potentially hazardous time constraints.

Deep Dive: Is the 10-Minute Delivery Model Necessary?

The "Quick Commerce" sector faces an existential question: Is the need for speed worth the human cost?



II. Existing Safeguards & Legal Framework:

- **Code on Social Security, 2020 (Central):**
 - ✓ Acknowledges the existence of "Gig Workers" and "Platform Workers" for the first time.
 - ✓ Suggests the establishment of a Social Security Fund, which would be financed through a 1-2% contribution derived from the revenue of aggregators.
- **State-Level Acts (Rajasthan & Karnataka):**
 - ✓ Registration: All gig workers are required to register on a state portal, receiving a Unique ID.
 - ✓ Grievance Redressal: Establishes legal frameworks that allow workers to contest arbitrary "ID blocking" or deactivation executed by algorithms.
 - ✓ Transaction Fee: Imposes a direct charge on each transaction to support welfare initiatives, including health and accident insurance.

Gig Worker

A person who performs work outside of a traditional employer-employee relationship (e.g., a freelancer)



Platform Worker

A gig worker who uses an online platform to access other organizations or individuals (e.g., Zomato rider, Uber driver)



All Platform Workers are Gig Workers, but not all Gig Workers are Platform Workers

Article 21 & 23:

The Supreme Court is currently examining (IFAT vs UoI)

Whether denial of social security to gig workers violates:

- Right to Life (Art 21)
- Forced Labour (Art 23) Due to Economic Compulsion



III. Challenges Ahead:

- **The "90-Day" Trap:** The suggested 90-day eligibility criterion could potentially exclude casual or seasonal employees who may work fewer days yet encounter similar risks.

- **Data Sovereignty:** Platforms frequently hesitate to provide State Boards with access to live databases due to concerns over potential trade secret disclosures.
- **Algorithmic Opacity:** Workers are often unaware of the reasons behind fluctuations in their payout rates or the rationale for penalties imposed on them, despite the presence of "transparency" clauses.
- **No "Employee" Status:** The legislation falls short of recognizing these individuals as "employees," thereby denying them protections related to minimum wage, provident fund, and fixed working hours.

IV. Way Forward:

- **Dynamic Pricing for Safety:** Delivery charges must consider traffic and weather conditions; riders ought not to be penalized for delays resulting from external circumstances.
- **Algorithmic Audits:** Conducting independent evaluations of platform algorithms is essential to confirm that they do not promote unsafe driving practices.
- **Universal Coverage:** Social security (accident/health) should be effective from the first day of login, irrespective of the 90-day tenure, due to the elevated risk associated with the job.
- **Hybrid Model:** Transitioning from a 'Gig' framework to 'Fixed-Term Employment' for high-frequency riders is necessary to guarantee income stability.

39. Rewarding Performance: The 16th Finance Commission's New Formula

Context:

The 16th Finance Commission, chaired by Dr. Arvind Panagariya, has submitted its report for the period 2026-31. In a historic shift, the Commission has introduced a new criterion—"Contribution to GDP"—in the horizontal devolution formula. This move addresses the long-standing grievance of performing states (especially in the South and West) that they were being "penalized for their progress."

I. Key Highlights of the 16th FC Report:

- **Vertical Devolution:** The proportion of states in the divisible pool of central taxes remains constant at 41%, thereby preserving the status quo established by the 15th Finance Commission.
- **The "Game Changer" Criterion:** For the first time, a 10% weight has been allocated to a state's Contribution to National GDP, superseding the previous "Tax Effort" criterion.
- **Winners:** Industrialized states such as Karnataka, Gujarat, Maharashtra, and Tamil Nadu have experienced an increase in their share of the resources.
- **Losers:** Densely populated states like Uttar Pradesh and Bihar have encountered a slight reduction in their percentage share, although absolute transfers may still increase due to the expanding economy.
- **Fiscal Discipline:** The Commission has advised limiting the State Fiscal Deficit to 3% of GSDP and firmly discontinuing Off-Budget Borrowings.

II. Why "Contribution to GDP"? (The Rationale)

- **Encouraging Development:** The Commission contended that states functioning as "engines of growth" face increased infrastructure and administrative expenses

necessary to maintain that growth. It is essential to provide them with incentives to broaden the national economic base.

- **Tackling "Southern Concerns":** Southern states have claimed that the earlier formulas, which were significantly biased towards Income Distance and Population, penalized them for managing their population and enhancing their economies. This 10% weighting serves as a direct response to address that concern.

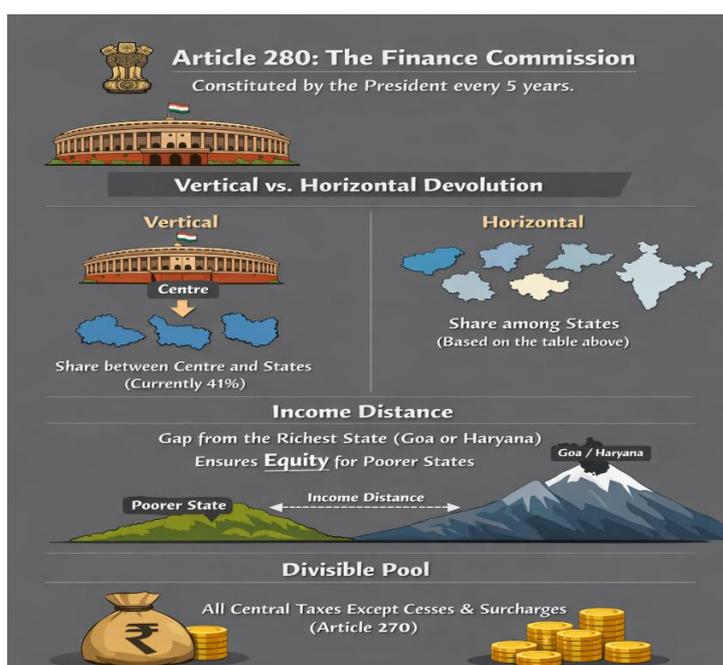
The New Devolution Formula (Horizontal Devolution)

The horizontal devolution determines how the 41% money is split among the 28 states. The 16th FC has shifted the balance slightly from "Equity" to "Efficiency."

Criterion	15 th FC Weight (2021-26)	16 th FC Weight (2026-31)	Change & Impact
Income Distance	45%	42.5%	Reduced: Less focus on redistribution to poorer states.
Population (2011)	15%	17.5%	Increased: Slight gain for populous states.
Contribution to GDP	—	10%	New: Directly rewards states with high GSDP.
Area	15%	10%	Reduced: Disadvantage for large, sparse states (e.g. Rajasthan).
Demographic Performance	12.5%	10%	Reduced: Less reward for controlling population growth.
Forest & Ecology	10%	10%	Unchanged: But now includes "Open Forests" too.
Tax Effort	2.5%	0%	Removed: Replaced by GDP contribution.

III. Other Critical Recommendations:

- **Termination of Revenue Deficit Grants (RDG):** The Commission has proposed the cessation of RDGs, contending that they promote fiscal complacency.
- **Disaster Management:** An updated Disaster Risk Index will dictate the distribution of funds for the State Disaster Response Funds (SDRF).
- **Local Authorities:** Funding for both Rural and Urban local authorities persists, albeit with more stringent auditing requirements.



IV. Challenges & Way Forward:

- **The Equity-Efficiency Trade-off:** Although the new formula is favorable for performing states, it diminishes the resources allocated to the most impoverished states (UP, Bihar), which continue to require substantial funding for essential services. The reduction in the weight of "Income Distance" from 45% to 42.5% signifies this transition.
- **The Cess Issue:** The 16th Finance Commission did not advocate for the inclusion of Cesses and Surcharges in the divisible pool, which is a significant request from all states. This issue continues to be a source of contention.
- **Way Forward:** The Central government must ensure that while it rewards performing states, it also provides support to the "lagging" states through targeted Grant-in-Aids (Article 275) to avert the exacerbation of regional inequality.

40. Revitalizing the Fabric of India: Centre Inks 'Tex-RAMPS' MoUs with 15 States

Context:

Recently, the Ministry of Textiles signed Memorandums of Understanding (MoUs) with 15 States under the newly launched Tex-RAMPS (Textile Raising and Accelerating MSME Performance for States) scheme. This initiative aims to align state-level textile policies with the national vision of Viksit Bharat 2047, with a special focus on strengthening the unorganized and MSME segments of the industry.

I. Key Highlights of the MoUs:

- **State Strategic Investment Plans (SSIPs):**
 - ✓ All 15 signatory states, including key regions such as Tamil Nadu, Gujarat, Maharashtra, and Uttar Pradesh, have presented an SSIP.
 - ✓ These plans delineate particular textile clusters (for instance, Tirupur for knitwear and Surat for man-made fibre) aimed at targeted technological enhancement.
- **Emphasis on "Green Textiles":** A compulsory stipulation mandates that 20% of the allocated funds be utilized for establishing Common Effluent Treatment Plants (CETPs) and fostering circular economy initiatives (recycling textile waste).
- **Digitization of Powerlooms:** The initiative aims to digitize 200,000 powerlooms by 2027, connecting them to the ONDC (Open Network for Digital Commerce) platform to eliminate intermediaries.
- **Dispute Resolution Mechanism:** The creation of state-level grievance redressal cells is intended for textile exporters encountering non-tariff obstacles.



II. Significance of the Initiative:

- **Cooperative Federalism:** By engaging states in the planning process through SSIPs, the initiative shifts away from a "One Size Fits All" model, recognizing that the requirements of a silk cluster in Karnataka are distinct from those of a jute cluster in West Bengal.
- **Boosting MSME Competitiveness:** Given that 80% of India's textile industry is comprised of MSMEs, this focused intervention tackles the "missing middle" issue—facilitating the growth of small units into mid-sized enterprises.
- **Import Substitution:** The emphasis on Technical Textiles (such as medical and geo-textiles) within the scheme seeks to diminish India's reliance on imports in high-value sectors.

III. Challenges in the Textile Sector:

- **Fragmented Value Chain:** The sector is notably fragmented, with spinning, weaving, and processing frequently occurring in various states, which escalates logistics expenses.
- **Obsolete Technology:** A considerable number of powerlooms continue to function using antiquated shuttle technology, resulting in diminished productivity when compared to China or Bangladesh.
- **Raw Material Volatility:** Significant fluctuations in cotton prices and dependence on imported Man-Made Fibre (MMF) feedstock affect profitability.
- **Labor Shortage:** Although there is high unemployment in other areas, textile clusters often encounter a lack of skilled labor willing to engage in factory settings.

INDIA'S TEXTILE SECTOR OVERVIEW



GDP Contribution

The Textile sector contributes approx. 2.3% to India's GDP.



Manufacturing Output

Contributes 13% to industrial production.



Employment

2nd largest employer after agriculture, providing direct employment to over 45 million people.



Exports

India is the 3rd largest exporter of textiles and apparel globally (approx. 11% share).



Key Schemes

- PM MITRA (7 Mega Parks)
- Samarth (Skill Development)
- National Technical Textiles Mission (NTTM).

IV. Way Forward:

- **Collaboration with PLI:** The Tex-RAMPS initiative ought to be aligned with the Production Linked Incentive (PLI 2.0) program to facilitate MSMEs in becoming suppliers for the major beneficiaries of PLI.
- **Emphasis on MMF:** The global market is increasingly leaning towards Man-Made Fibre (MMF). It is imperative for states to allocate Tex-RAMPS resources to broaden their production beyond cotton.
- **Brand India:** Establishing a "Sustainability Label" for Indian textiles aimed at attracting environmentally conscious consumers in the European and American markets.

41. Tourism Infrastructure Gets a Boost: Swadesh Darshan 2.0 & New Initiatives

Context:

The Ministry of Tourism has released a comprehensive progress report on its flagship infrastructure schemes. The focus has firmly shifted from the circuit-based approach of the past to a destination-centric model under Swadesh Darshan 2.0 (SD2.0). The Ministry also highlighted new sub-schemes like Challenge Based Destination Development (CBDD) and tribal welfare initiatives integrated with tourism.

I. Key Highlights

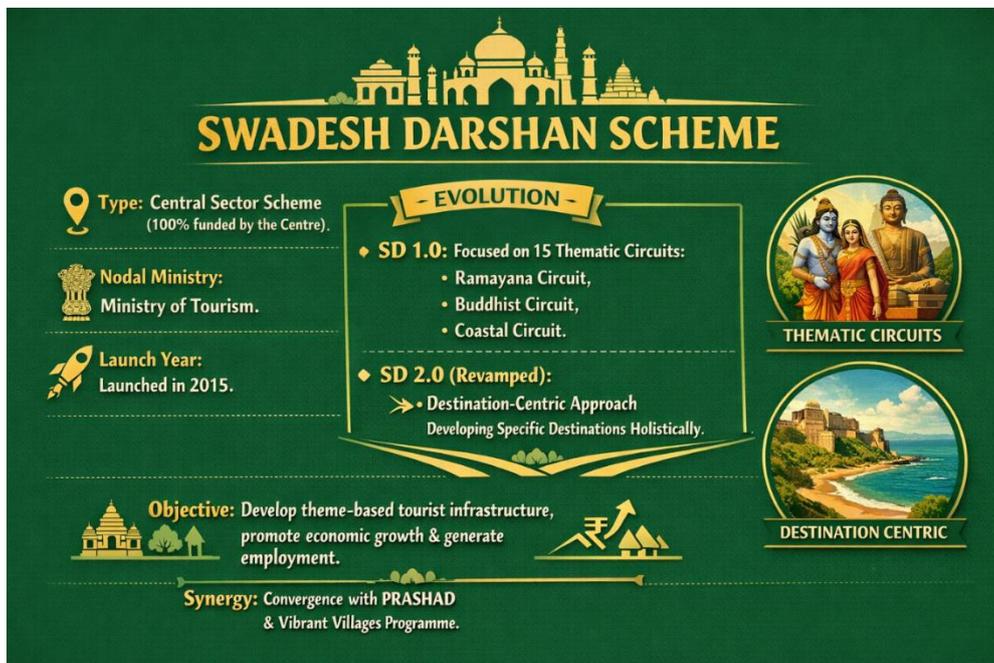
- **Swadesh Darshan 2.0 (SD2.0) Progress:** A total of 53 projects have been sanctioned with an outlay of ₹2,208.27 Crore. The objective has evolved to developing "sustainable and responsible" destinations.
- **Challenge Based Destination Development (CBDD):**
 - ✓ Launched as a sub-scheme under SD2.0 to enhance the tourist experience across the value chain.
 - ✓ 36 projects sanctioned under four specific themes:
 - Spiritual Tourism
 - Culture & Heritage
 - Vibrant Village Program
 - Ecotourism and Amrit Dharohar Sites
- **Tribal Homestays (PM-JUGA):**
 - ✓ Under the Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PM-JUGA), the Ministry will develop 1,000 Tribal Homestays.
 - ✓ This initiative is implemented as a sub-scheme of Swadesh Darshan to improve the socio-economic condition of tribal communities.

II. Strategic Sub-Themes:

- **Vibrant Villages as Tourist Hubs:**
 - ✓ Specific border villages have been identified for tourism infrastructure under the CBDD scheme.
 - ✓ Key Villages: Kibitho (Arunachal Pradesh), Rakchham-Chhitkul (Himachal Pradesh), Grathang (Sikkim), and Jadung & Mana (Uttarakhand).
- **Iconic Tourist Centres (SASCI):**
 - ✓ To develop world-class infrastructure, 40 projects across 23 States have been sanctioned under the Special Assistance to States for Capital Investment (SASCI).
 - ✓ This involves long-term interest-free loans (for 50 years) to States for branding and global marketing of these centers.

III. Community & Skill Initiatives:

- **Paryatan Mitra & Paryatan Didi:** A national initiative for responsible tourism aimed at training local individuals as "Ambassadors & Storytellers." This program has been implemented in seven locations, including Orchha, Gandikota, and Srinagar.
- **MICE Tourism:** A detailed Digital MICE Catalogue has been introduced to establish India as a worldwide center for Meetings, Incentives, Conferences, and Exhibitions, encompassing infrastructure across more than 60 cities.



42. Reimagining Higher Education: The Higher Education Commission of India (HECI) Bill

Context:

In a landmark move to overhaul India's education sector, the government has accelerated the legislative process for the Higher Education Commission of India (Repeal of University Grants Commission Act) Bill. This Bill seeks to replace the decades-old University Grants Commission (UGC), the All India Council for Technical Education (AICTE), and the National Council for Teacher Education (NCTE) with a single, overarching regulator—the Higher Education Commission of India (HECI). This aligns with the vision of the National Education Policy (NEP) 2020.

I. Key Highlights of the Bill

- **Single Regulator:**
 - ✓ The HECI will act as a "single window" regulator for all higher education institutions (excluding Medical and Legal education).
 - ✓ It effectively dissolves the fragmented regulatory landscape (UGC, AICTE, NCTE) into one unified body.
- **Four Independent Verticals:** To ensure a separation of functions and avoid conflict of interest, the HECI will operate through four distinct pillars:

- ✓ **National Higher Education Regulatory Council (NHERC):** The primary regulator for regulation (excluding medical/legal). Focuses on "Light but Tight" regulation.
- ✓ **National Accreditation Council (NAC):** Responsible for accreditation of institutions based on basic norms, public self-disclosure, good governance, and outcomes.
- ✓ **Higher Education Grants Council (HEGC):** Handles funding and financing of higher education (scholarships, developmental funds). Note: This separates the grant-giving function from the regulatory function.
- ✓ **General Education Council (GEC):** Frames expected learning outcomes for higher education programs (National Higher Education Qualification Framework).
- **Focus on Academic Quality:**
 - ✓ Unlike the UGC, which focused heavily on financial grants, the HECI will prioritize academic standards and learning outcomes.
 - ✓ It empowers the Commission to penalize institutions that fail to meet minimum academic standards, including the power to shut them down.

II. Significance:

- **End of 'Inspector Raj':** The current system relies on heavy-handed inspections. HECI proposes a transparent, faceless, and technology-driven regulatory mechanism.
- **Separation of Powers:** Currently, the UGC handles both regulation and funding, creating a conflict. HECI separates these roles.
- **Multidisciplinary Approach:** The distinct barriers between "Technical" (AICTE) and "General" (UGC) education are dissolved, encouraging multidisciplinary universities as envisioned in NEP 2020.

Constitutional Status

Education was moved from the State List to the Concurrent List by the 42nd Amendment Act, 1976.

Legislative Power

Entry 66 (Union List): Coordination and determination of standards in institutions for higher education or research.
This gives the Centre the primacy to set up HECI.

Existing Body



UGC (University Grants Commission):
A statutory body set up under the UGC Act, 1956.
It is unique as it handles both funds and standards.

NEP 2020



The policy recommended setting up HECI to replace multiple regulators.

III. Challenges & Concerns:

- **Federalism Issues:** Education is on the Concurrent List. States are concerned that a central HECI might infringe upon their autonomy in managing state universities.

- **Bureaucratic Control:** Critics argue that if the HECI members are appointed solely by the Centre without adequate academic representation, it could lead to excessive bureaucratic control over university syllabi and administration.
- **Exclusion of Medical/Legal:** Keeping Medical (NMC) and Legal (BCI) education outside HECI's ambit retains some fragmentation, preventing a truly "single" regulator.

IV. Way Forward:

- **Consensus Building:** The Centre must engage with States to address federal concerns, ensuring the HECI structure includes representation from State Higher Education Councils.
- **Autonomy:** The "Light but Tight" approach must ensure that while standards are enforced, top-performing universities are granted full academic and administrative autonomy (Graded Autonomy).

43. Fueling the Future: An Exploration of India's Minerals Diplomacy

Context:

Recently, India has aggressively recalibrated its foreign policy to secure "Critical Minerals"—the building blocks of the 21st-century economy (EVs, semiconductors, defence). With China controlling over 60% of global processing, India's strategy has shifted from simple trade to "Strategic Minerals Diplomacy," aiming to break this monopoly through a mix of domestic reforms and high-level international alliances.

I. Key Highlights:

- **The "Rare Earth Corridors" Initiative (Budget 2026-27):**
 - ✓ The Union Budget unveiled in February 2026, which references the planning conducted in January 2026, introduced Dedicated Rare Earth Corridors in the states of Odisha, Kerala, Andhra Pradesh, and Tamil Nadu.
 - ✓ **Objective:** The aim is to establish integrated hubs for the mining, processing, and manufacturing of Rare Earth Permanent Magnets (REPMs), thereby circumventing reliance on Chinese supply chains.
- **USA-India Critical Minerals Agreement:**
 - ✓ In January 2026, External Affairs Minister S. Jaishankar announced that a "Critical Minerals Memorandum of Understanding (MoU)" with the United States is nearing completion.
 - ✓ This agreement is part of a larger India-US Trade Deal designed to mitigate risks associated with supply chains.
- **KABIL's International Operations:**
 - ✓ Khanij Bidesh India Ltd (KABIL) has ramped up its activities. Following the initiation of lithium exploration in Argentina's Catamarca province in late 2024, KABIL is currently engaged in advanced negotiations for acquiring copper and cobalt assets in Zambia and Namibia.
- **Support for Domestic Manufacturing:**
 - ✓ The government has implemented the ₹7,280 Crore REPM Manufacturing Scheme, which was approved in November 2025. This initiative offers sales-linked incentives to firms establishing integrated facilities for converting rare earth oxides into finished magnets.

II. The Two-Pronged Strategy:

India's approach is defined by simultaneous external acquisition and internal capability building.

External (Diplomacy)	Internal (Capability)
Minerals Security Partnership (MSP): India is actively leveraging its membership in this US-led alliance to access projects in Africa and Latin America.	Recycling (Urban Mining): New rules mandate 5% recycled content in non-ferrous products by 2027-28, pushing for recovery of Lithium and Cobalt from e-waste.
"Plus One" Partner: Positioning India as an alternative processing hub for the EU and Japan, moving beyond just being a market.	Offshore Mining: The MMDR Act amendments have opened up offshore blocks in the Exclusive Economic Zone (EEZ) for private exploration.

III. Challenges to India's Ambitions:

- **The "Midstream" Gap:** While India is securing raw ore (upstream), it lacks the processing and refining technology (midstream) to convert ore into battery-grade material. Currently, even mined lithium often has to be sent to China for refining.
- **Geopolitical Resource Nationalism:** African nations (like Zimbabwe and Namibia) are banning the export of raw lithium, demanding local processing facilities which India is yet to build.
- **Long Gestation Periods:** Mining projects take 10-15 years to become operational. Diplomacy today will yield physical minerals only in the 2030s.
- **Chinese Dominance:** China's "first mover advantage" means they already own the best assets globally; India is entering the race late.

Critical Minerals

Essential for Economic Development & National Security

• Supply Chain Vulnerabilities •

Examples: Lithium | Cobalt | Nickel | Graphite | Rare Earth Elements (REEs)



KABIL (Khanij Bidesh India Ltd)



- A Joint Venture Company
- Promoters: NALCO, HCL & MECL (CPSEs)
- Mandate: Acquire Critical Minerals Overseas for India

India's Critical Minerals List 2023



30 Minerals Identified

- First Official List Released in 2023

MMDR Act, 1957

- Primary Mining Legislation in India
- 2023 Amendment
- **6 Minerals** (incl. **Lithium**) Removed from Atomic Minerals List
- Private Sector Auction & Mining Allowed



Minerals Security Partnership (MSP)

- US-Led Alliance of 14 Countries & EU
- Goal: Boost Responsible Mineral Supply Chains
- India Joined in June 2023

IV. Way Forward:

- **Technology Transfer:** Diplomacy must focus not just on buying mines but on acquiring "separation technologies" from partners like Japan and the US to refine rare earths domestically.
- **The "Japan Model":** India should emulate Japan's strategy of Strategic Stockpiling of critical minerals to buffer against short-term supply shocks.
- **Leveraging the Diaspora:** Using the Indian diaspora in Africa to navigate local political complexities and secure mining rights.

44. Digital Rupee Goes Global? RBI Pushes for CBDC Linkage on BRICS 2026 Agenda

Context:

As India prepares to host the BRICS Summit later this year (2026), the Reserve Bank of India (RBI) has formally recommended to the central government that the "interlinking of Central Bank Digital Currencies (CBDCs)" be included as a priority agenda item. This move follows the foundational work laid during the 2025 Rio de Janeiro summit and represents a strategic shift from "discussing" alternative payment mechanisms to "operationalizing" them.

I. Key Highlights: The Proposal

- **Interoperability over Integration:** Unlike the proposal for a common "BRICS Currency" (which India has consistently opposed), the RBI's plan focuses on linking independent sovereign digital currencies (e.g., e-Rupee, Digital Yuan, Digital Ruble, Digital Real).
- **Target Segments:** The immediate focus is on two low-friction areas:
 - ✓ **Cross-border Trade settlement:** Enabling exporters/importers to pay in local digital currencies instantly.
 - ✓ **Tourism Payments:** Allowing travelers from BRICS nations to use their home digital wallets in India (and vice versa) without dollar conversion.
- **The "Plug-and-Play" Model:** RBI Governor Shaktikanta Das has advocated for a plug-and-play system where nations can connect their domestic CBDC platforms to a common interface without sacrificing monetary sovereignty.

II. Economic Dimensions: Why is this Crucial?

- **Reducing Transaction Costs (The "SWIFT Tax")**
 - ✓ **Current Model:** A trade settlement between India and Brazil currently routes through US banks (Correspondent Banking). This involves multiple intermediaries, taking T+2 days and costing 2-3% in fees.
 - ✓ **CBDC Model:** A direct CBDC-to-CBDC transfer eliminates correspondent banks.
 - ✓ **Impact:** Transaction costs could drop to near zero, and settlement becomes Atomic (Instant/T+0), freeing up working capital for exporters.
- **Hedging against Currency Volatility:**
 - ✓ In the current system, emerging markets must hold massive USD reserves to defend their currencies.
 - ✓ By settling in local digital currencies, the demand for USD in intra-BRICS trade (which exceeds \$500 billion) decreases. This reduces the "imported inflation" caused when the Dollar strengthens.

- **Addressing the "Rupee Surplus" Issue:**
 - ✓ One of the biggest hurdles in India-Russia trade was Russia accumulating billions in surplus Rupees it couldn't use.
 - ✓ **Digital Solution:** A programmable CBDC bridge could allow these surplus Rupees to be instantly swapped or invested in specific Indian Government Bonds or corporate debt markets, creating a more fluid liquidity ecosystem.

CENTRAL BANK DIGITAL CURRENCY (CBDC)

 A legal tender issued by a central bank in digital form.
 Exchangeable at par with cash.

Types:

<p style="text-align: center;">Retail (CBDC-R)</p> <p style="text-align: center; font-size: small;">For general public use (like cash)</p> 	<p style="text-align: center;">Wholesale (CBDC-W)</p> <p style="text-align: center; font-size: small;">For interbank settlements</p> 
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Project mBridge

BIS • China • UAE • Thailand • Hong Kong

"CBDC Bridge" Settling Trades in Seconds



RBI's Proposal: "BRICS Version of mBridge"

<p>Nostro / Vostro Accounts:</p> <p>Vostro Account:</p> <ul style="list-style-type: none"> • Foreign Bank Account in Domestic Currency (e.g. Sberbank holding a Rupee account with SBI) 	<p>CBDCs to Modernize Archaic Ledger System</p> 
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III. Challenges & The Way Forward:

- **The "China Problem":**
 - ✓ China's e-CNY (Digital Yuan) significantly surpasses other BRICS CBDCs in terms of advancement.
 - ✓ There exists a concern that a unified platform could result in the "Yuan-isation" of BRICS trade, thereby supplanting American hegemony with Chinese influence.
 - ✓ It is imperative for India to ensure that the protocol remains impartial.
- **Geopolitical Backlash:**
 - ✓ In light of the US's warnings regarding "de-dollarization" initiatives, transitioning to a non-SWIFT framework may provoke sanctions or tariffs, particularly from the new US administration.
 - ✓ India must navigate this delicate situation by presenting it as "currency diversification" instead of an "anti-dollar" stance.

- **Liquidity Management:**

- ✓ For this initiative to succeed, there needs to be a market maker prepared to engage in the buying and selling of INR-BRL (Real) or INR-ZAR (Rand). At present, these markets are relatively illiquid.

The proposal to include CBDC linkages in the 2026 agenda indicates that India is poised to take a leadership role in the "Global South" regarding financial innovation, transitioning from an ideological opposition to the West towards a practical development of alternatives.

45. Empowering Rural Women: Ministry Launches 'National Campaign on Entrepreneurship'

Context:

To accelerate the socio-economic empowerment of rural women, the Ministry of Rural Development launched a "National Campaign on Entrepreneurship" on January 12, 2026. The campaign aligns with the broader vision of creating 3 Crore 'Lakhpati Didis', focusing on shifting women from subsistence-level livelihoods to sustainable, high-growth rural enterprises.

I. Key Highlights:

- **Motto:** "Har Ghar Udyam, Har Gaon Samridh" (Every Home an Enterprise, Every Village Prosperous).
- **Nodal Agency:** Launched under the Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM).
- **Core Objectives:**
 - ✓ **Massive Training:** To train and build the capacity of 50,000 Community Resource Persons (CRPs) specifically for enterprise promotion.
 - ✓ **EDP for SHGs:** To impart Entrepreneurship Development Programme (EDP) training to 50 Lakh SHG members under DAY-NRLM.
- **Strategic Partnerships:** The launch saw participation from NITI Aayog, NABARD, Bill & Melinda Gates Foundation, EDII (Entrepreneurship Development Institute of India), and IIM Calcutta Innovation Park, signaling a multi-stakeholder approach.



DAY-NRLM

(Deendayal Antyodaya Yojana - National Rural Livelihoods Mission)

Ministry: Ministry of Rural Development.

Launch Year: Launched as NRLM in 2011, renamed DAY-NRLM in 2015.

Objective: To organize the rural poor into Self Help Groups (SHGs) and continuously support them until they come out of abject poverty.

Lakhpati Didi: A government initiative to enable rural SHG women to earn at least ₹1 Lakh per annum.

SVEP: Start-up Village Entrepreneurship Programme:
A sub-scheme of DAY-NRLM that has already demonstrated successful models of village-level enterprise support.



II. Significance of the Campaign:

- **Creating Grassroots Catalysts:** The 50,000 trained CRPs will act as local mentors ("Business Sakhis") who will help identify viable business ideas, provide startup support, and handhold women entrepreneurs through the initial struggle phase.
- **Non-Farm Focus:** While agriculture is the backbone, this campaign specifically targets Non-Farm Rural Enterprises (e.g., food processing, handicrafts, service centers) to diversify rural income sources.
- **Financial Inclusion:** By formalizing these enterprises, the campaign aims to open opportunities for linkages with formal financial institutions, enabling easier access to enterprise loans (beyond micro-credit).

III. Way Forward:

- **Market Linkages:** Training must be complemented with market access (e.g., onboarding onto GeM portal, ONDC) to ensure products find buyers beyond the village.
- **Credit Access:** Banks must be sensitized to view these trained CRP-backed enterprises as viable borrowers, moving beyond the traditional hesitation in lending to the non-farm sector.
- **Technology Integration:** Leveraging digital tools for bookkeeping and inventory management will be crucial for the scalability of these rural enterprises.

46. Sowing Trust: The New Seeds Bill, 2025 to Replace 1966 Act

Context:

The Ministry of Agriculture & Farmers Welfare has introduced the Seeds Bill, 2025, aimed at replacing the outdated Seeds Act, 1966. The Bill seeks to modernize India's seed regulatory framework, ensuring the availability of high-quality seeds to farmers while curbing the menace of spurious and substandard seeds. It aligns with the government's vision of doubling farmers' income by improving the most critical input in agriculture—the seed.

I. Key Highlights of the Bill:

- **Mandatory Registration:** Unlike the 1966 Act, which only required registration for "notified" varieties, the new Bill makes registration mandatory for all seed varieties sold commercially.
- **Traceability (QR Codes):** Every seed packet must now carry a QR code linked to the SATHI (Seed Authentication, Traceability & Holistic Inventory) Portal. This allows farmers to trace the origin of the seed and verify its authenticity instantly.
- **Stricter Penalties:** The Bill decriminalizes minor administrative lapses but significantly hikes penalties for selling spurious seeds. Offenders can face fines up to ₹30 Lakh and imprisonment, replacing the meager fines (₹500) of the 1966 Act.
- **Farmers' Rights Protected:** The Bill explicitly clarifies that farmers are exempt from mandatory registration. They retain the right to save, use, sow, re-sow, exchange, share, or sell their farm-saved seeds, provided they do not sell them under a brand name.
- **Scientific Evaluation of Imports:** All imported seeds will now undergo rigorous evaluation to ensure they are agronomically suitable for Indian conditions and do not pose bio-safety risks.

II. Institutional Framework:

- **National Level:** Establishment of a Central Seed Committee (CSC) to advise the government on seed policy and minimum standards.
- **State Level:** State Seed Committees to monitor registration and enforcement at the grassroots level.
- **National Register of Seeds:** A central database containing details of all registered varieties, accessible to the public.

Seeds Act, 1966	Seeds Bill, 2025
Covered only "Notified kinds/varieties." — Scope —	Covers all varieties sold commercially.
Voluntary for many varieties. — Registration —	Mandatory for all commercial seeds.
No provision. — Traceability —	Digital Traceability (QR Code / SATHI).
Minimal (₹500), non-deterrent. — Penalties —	Stringent (Up to ₹30 Lakh + Jail).
Silent on GM / Biotech seeds. — Technology —	Addresses modern seed technologies.

III. Significance:

- **Addressing the "Fake Seed" Menace:** Spurious seeds are a major cause of crop failure (e.g., recent cotton pink bollworm attacks). The QR code system empowers the buyer to verify quality before purchase.
- **Boosting Seed Replacement Rate (SRR):** By ensuring quality assurance, the Bill aims to increase the SRR, which directly correlates with higher crop productivity.
- **Balance of Rights:** The Bill attempts to balance the Intellectual Property Rights (IPR) of breeders (to encourage R&D) with the Traditional Rights of farmers (protected under the PPV&FR Act, 2001).

Challenges & Way Forward:

- **Implementation Capability:** State agriculture departments often face staff shortages (Seed Inspectors). Effective enforcement of the new Act requires filling these vacancies.
- **Price Regulation:** There is a concern among private players regarding government control over seed prices. A transparent mechanism for price fixation is needed.
- **MSME Burden:** Small seed companies may find the compliance costs (mandatory registration/testing) burdensome. Support mechanisms for MSMEs should be considered.

47. Harnessing the Deep Blue: India's First Open-Sea Marine Fish Farming Project

Context:

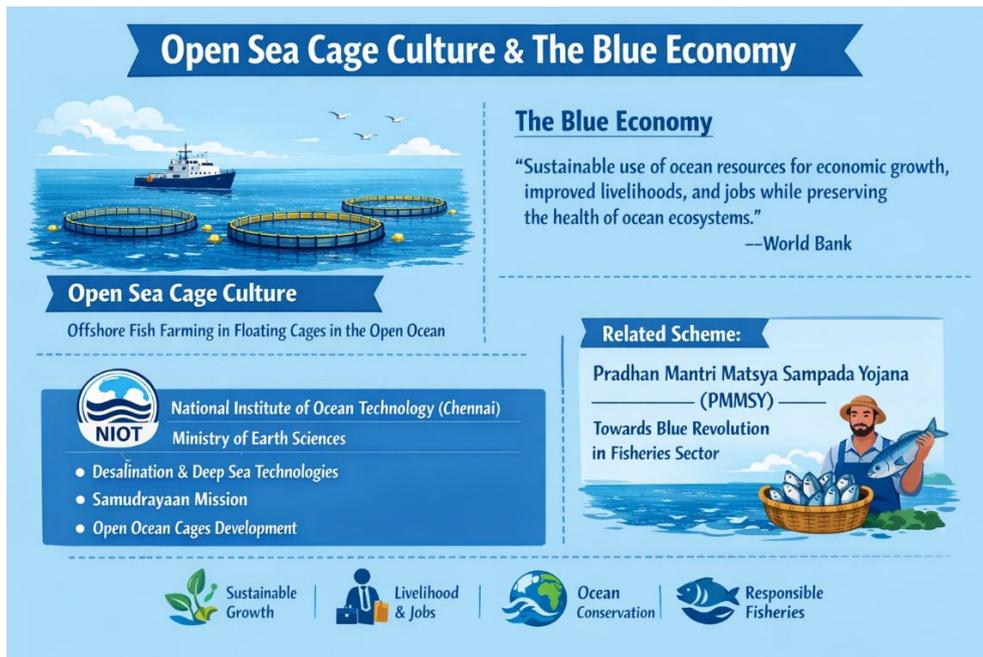
In a historic milestone for India's "Blue Economy," Union Minister Dr. Jitendra Singh launched the country's first-ever Open-Sea Marine Fish Farming Project at North Bay in the Andaman Sea on January 18, 2026. This pilot initiative marks a strategic shift from traditional coastal aquaculture to advanced offshore farming, utilizing the vast potential of India's Exclusive Economic Zone (EEZ).

I. Key Highlights:

- **Location:** North Bay, near Sri Vijaya Puram (formerly Port Blair), Andaman & Nicobar Islands.
- **Implementing Agencies:** A collaborative effort between the Ministry of Earth Sciences (MoES), its technical arm National Institute of Ocean Technology (NIOT), and the UT Administration of Andaman & Nicobar.
- **Technological Innovation:**
 - ✓ The project deploys indigenously developed open-sea cages by NIOT.
 - ✓ Unlike traditional cages, these are engineered to withstand strong ocean currents and high waves, making them suitable for the open sea.
- **Integrated Farming Model:** The project adopts a dual approach:
 - ✓ **Marine Fauna:** Cultivation of high-value finfish like Cobia and Seabass.
 - ✓ **Marine Flora:** Deep-water Seaweed cultivation to create a balanced ecosystem.
- **Community Engagement:** During the launch, seaweed seeds and finfish seeds were distributed to local fishing communities to encourage adoption.

II. Significance of the Project:

- **Unlocking the EEZ:** India has a massive 2.02 million sq. km Exclusive Economic Zone (EEZ), which remains largely untapped. This project demonstrates the technical feasibility of farming in these deep waters.
- **Livelihood Diversification:** It offers a sustainable alternative to traditional capture fisheries, which are facing stagnation due to overfishing in near-shore waters.
- **Import Substitution:** By growing high-value fish like Cobia locally, India can reduce import reliance and boost high-value seafood exports.
- **Scalability:** The government views this as a "Technical and Economic Test Case." Success here will pave the way for Public-Private Partnerships (PPPs) to scale up offshore farming across India's coastline.



Challenges:

- **High Capital Cost:** Setting up robust offshore cages is significantly more expensive than coastal ponds.
- **Logistics:** Maintenance and harvesting in the open sea require specialized vessels and skilled manpower.
- **Bio-security:** Managing disease outbreaks in open waters is complex compared to controlled land-based systems.

To make this a national success, the government must focus on Zonation (identifying specific zones in the sea for farming to avoid conflict with shipping lanes) and providing Viability Gap Funding (VGF) to private players willing to invest in this high-risk, high-reward sector.

48. End of the Standoff: RBI and ESMA Ink Pact on Clearing Corporations

Context:

Recently, the Reserve Bank of India (RBI) and the European Securities and Markets Authority (ESMA) signed a significant Memorandum of Understanding (MoU). This agreement resolves a nearly three-year-long regulatory deadlock that threatened to disrupt the operations of European banks in India's government bond and derivatives markets. The MoU establishes a framework for cooperation and information sharing regarding Central Counterparties (CCPs).

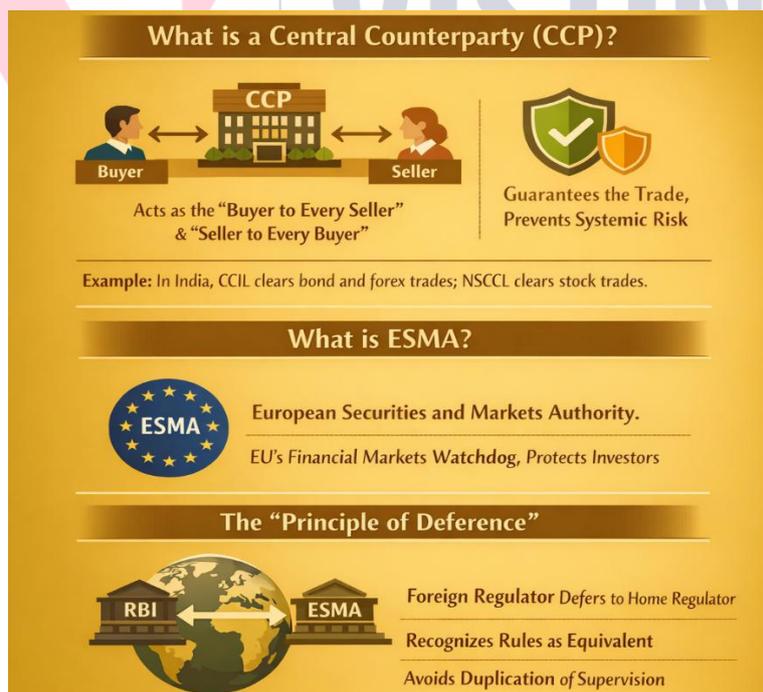
I. Key Highlights of the MoU:

- **Mutual Reliance (The 'Deference' Model):** The most critical aspect of this MoU is that ESMA has agreed to "place reliance" on RBI's regulatory and supervisory activities.
- Previously, ESMA demanded direct audit and inspection rights over Indian clearing houses (like CCIL), which RBI rejected as an infringement on Indian sovereignty.
- Now, ESMA will trust RBI's oversight, acknowledging that RBI remains accountable for the resilience of these entities.

- **Restoration of Recognition:** The MoU paves the way for the Clearing Corporation of India Ltd. (CCIL) to re-apply for recognition under the European Market Infrastructure Regulation (EMIR).
- **Scope:** It covers information exchange and cooperation regarding "Covered CCPs" (CCIL and others regulated by RBI) to ensure they meet the rigorous standards required for global financial stability.
- **Stability for EU Banks:** This removes the "sword of Damocles" hanging over major European lenders (like Deutsche Bank, BNP Paribas, Société Générale), who were facing the threat of punitive capital charges for dealing with "unrecognized" Indian clearing houses.

II. Why was there a Conflict? (The Background)

- **The Trigger:** In October 2022, ESMA de-recognized six Indian CCPs (including CCIL) effective from April 2023.
- **The Demand:** Under its EMIR rules, ESMA wanted the power to inspect and audit Indian CCPs directly.
- **India's Stance:** The RBI (and SEBI) firmly refused, stating that Indian entities are subject to Indian laws and cannot be inspected by a foreign regulator. RBI Governor Shaktikanta Das had famously termed such demands as "extra-territorial overreach."
- **The Consequence:** Without recognition, European banks would have to set aside roughly 50 times more capital to trade in India, making their business unviable.



III. Significance of the Resolution:

- **Sovereignty Upheld:** India successfully defended its regulatory sovereignty, setting a precedent for other emerging economies that foreign regulators cannot demand direct inspection rights.
- **Market Confidence:** It ensures uninterrupted flow of foreign capital into Indian Government Bonds (G-Secs), which is crucial as India is now part of global bond indices (like the JP Morgan Bond Index).

- **Roadmap for Others:** While this MoU is with RBI, ESMA is expected to sign similar agreements with SEBI (for stock exchanges) and IFSCA (for GIFT City) soon.

SOCIAL ISSUES & SOCIAL JUSTICE

49. Challenges Aplenty for Rural, Tribal, and Migrant Groups in Fighting TB

Context:

A new report titled "India's Progress in Addressing the Challenges of Tuberculosis", published by stakeholders including the Women's Collective Forum in January 2026, has highlighted that despite a decline in overall TB incidence, India's vulnerable populations—specifically rural, tribal, and migrant communities—continue to face critical obstacles in accessing care.

I. Key Highlights of the Report:

- **Migrant Workers (The 'Invisible' Carriers):**
 - ✓ **Mobility Barrier:** High mobility and informal employment lead to "disrupted treatment," increasing the risk of Multi-Drug Resistant TB (MDR-TB).
 - ✓ **Housing:** Poor living conditions in non-notified urban slums (often off the government map) make contact tracing difficult.
 - ✓ **Recommendation:** The report calls for "Nationwide Mapping" of non-notified settlements to bring these invisible populations under the health radar.
- **Post-TB Lung Health:**
 - ✓ A significant finding is that TB survivors often suffer from long-term structural lung damage (fibrosis, bronchiectasis) even after being "cured."
 - ✓ **Gap:** There is currently no standardized national framework for Post-TB Care, leading to continued morbidity and disability.
- **Frontline Workers' Plight:**
 - ✓ ASHA and Anganwadi workers, the backbone of the TB program, lack adequate employee welfare.
 - ✓ **Recommendation:** The report urges the government to standardize salaries, provide health insurance, and offer travel reimbursements for these workers.
- **Private Sector Dominance:**
 - ✓ Nearly 60% of patients with TB symptoms still seek initial care from private providers, where notification to the government database (Ni-kshay) remains inconsistent.

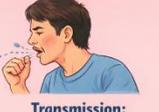
Specific Challenges by Group

 <p>Tribal Populations</p> <p>Geographical Isolation Harsh terrain makes regular travel to DOTS centers difficult.</p> <p>Malnutrition High prevalence of undernutrition in tribal belts acts as a force multiplier for TB bacteria.</p>	 <p>Migrant Workers</p> <p>Loss of Wages Fear of losing daily wages prevents them from visiting hospitals during OP hours.</p> <p>Lack of Portability While Ni-kshay allows portability, lack of awareness often leads to treatment discontinuation when they move home.</p>	 <p>Rural Women</p> <p>Stigma Fear of social ostracization or marital rejection leads to hiding symptoms.</p> <p>Indoor Pollution Exposure to Chulha smoke weakens lungs, making them more susceptible.</p>
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Tuberculosis (TB)



Caused by:
Mycobacterium tuberculosis (Bacteria)



Transmission:
Air-borne (Coughing, Sneezing)



Status:
Notifiable Disease in India (Since 2012)

Key Initiatives:



SDG Target:
End TB epidemic by 2030



Ni-kshay Poshan Yojana
₹500/Month
Nutrition Support



Pradhan Mantri TB Mukat Bharat Abhiyaan
"Ni-kshay Mitras"
Adopt TB Patients



India's Target:
Eliminate TB by 2025
(5 years ahead of global target)
*2026 report: Challenges Ahead



BPaL Regimen
Shorter Treatment for Drug-Resistant TB

II. Way Forward:

- **Integrated Migrant Health Framework:** Combine TB services with HIV and Vector-borne disease programs at common delivery points to reduce the burden on migrants.
- **Inter-State Referral Platform:** An online platform specifically to track migrant patients as they move between "Source" (e.g., Bihar/UP) and "Destination" (e.g., Mumbai/Delhi) states.
- **Active Case Finding (ACF):** Shift from "Passive Case Finding" (waiting for patients to come) to "Active Case Finding" (going to tribal hamlets/slums) using portable X-ray machines driven by AI.

50. The Final Push: Security Camps Dismantle the Red Corridor

Context:

As the Union Home Ministry's March 2026 deadline for a "Naxal-free Bharat" approaches, the security landscape in Left Wing Extremism (LWE) affected areas has undergone a tectonic shift. The establishment of Forward Operating Bases (FOBs) or "Security Camps" deep inside the Maoist core—specifically in the Abujmad forests (Chhattisgarh)—has been identified as the primary "game changer." This strategy has forced Maoists into a rapid retreat, restricting their influence to a few shrinking pockets in South Bastar.

I. Key Highlights: The "Camp" Strategy:

- **Penetrating the 'Liberated Zones':**
 - ✓ Unlike earlier operations based on "search and retreat," the new strategy involves setting up permanent Forward Operating Bases (FOBs).
 - ✓ In 2025 alone, over 30 new FOBs were established in the "security vacuums" of Sukma, Bijapur, and Narayanpur, effectively reclaiming territory where the state previously had no presence.
- **The "Development Piggyback":**
 - ✓ Security camps act as logistical hubs for civil administration. Once a camp is established, it facilitates the construction of roads, mobile towers, and PDS shops.
 - ✓ **Impact:** This has broken the Maoist monopoly on local governance and information control.
- **Operational Success (2025-26 Data):**
 - ✓ **Violence Reduction:** There has been a 90% decline in LWE-related violent incidents from the 2010 peak to January 2026.
 - ✓ **Surrenders:** The pressure from these camps led to a surge in surrenders. In January 2026, over 50 Maoists surrendered in Sukma and Bijapur alone, citing the loss of "safe havens" due to the new camps.
 - ✓ **Leadership Vacuum:** Precision operations launched from these forward bases have neutralized top leadership, leaving the People's Liberation Guerrilla Army (PLGA) leaderless and fragmented.
- **Strategic Shift: From "Containment" to "Eradication"**
 - ✓ **Offensive Defense:** The camps reduce the reaction time for security forces (CRPF, CoBRA, DRG) during ambushes and allow for sustained operations during the monsoon, a period Maoists traditionally used to regroup.
 - ✓ **Human Intelligence (HUMINT):** Constant presence has built trust with tribal communities, leading to a steady flow of actionable intelligence which was previously non-existent.

II. Remaining Challenges:

- **The IED Menace:** As direct confrontations become suicidal, Maoists have resorted to heavy use of Improvised Explosive Devices (IEDs) around the new camps to inflict casualties.
- **Tribal Alienation:** The "militarization" of the region must be balanced with genuine implementation of rights. There are concerns that without the Forest Rights Act (FRA) and PESA being implemented in spirit, the ideological root of Naxalism may survive the military defeat.

- **Rehabilitation Burden:** The massive influx of surrendered cadres requires a robust and dignified rehabilitation policy to prevent recidivism.

SAMADHAN Doctrine
The MHA's One-Stop Solution for LWE:

- S** - Smart Leadership
- A** - Aggressive Strategy
- M** - Motivation & Training
- A** - Actionable Intelligence
- D** - Dashboard Based KPIs
- H** - Harnessing Technology
- A** - Action Plan for Each Theatre
- N** - No Access to Financing

Key Forces

- CoBRA** - CRPF Special Ops Unit
- Greyhounds** - Elite Anti-Naxal Force
- Black Panther** - Chhattisgarh's Anti-Naxal Unit

Legal Framework

- UAPA** - CPI (Maoist) Banned Outfit
- PESA Act, 1996** - Self-Governance in Tribal Areas

Ideology

- Maoism** - "Armed Overthrow of the State"
Inspired by Mao's "Protracted People's War"

III. Way Forward:

- The physical elimination of Maoist cadres is only half the victory.
- The "Security Camps" must transition into "Development Hubs."
- The state must ensure that the vacuum left by Maoists is filled by schools, healthcare, and justice, ensuring that the March 2026 milestone marks not just the end of violence, but the beginning of genuine integration for the tribals of Bastar.

51. PANKHUDI: A Digital Bridge for 'Jan Bhagidari' in Women & Child Welfare

Context:

Recently, the Ministry of Women and Child Development (MWCD) launched PANKHUDI, an integrated digital portal designed to streamline and facilitate Corporate Social Responsibility (CSR) and voluntary contributions for women and child development. The portal was unveiled by Union Minister Smt. Annpurna Devi, marking a shift towards a "transparent, trusted, and technology-enabled" framework for social welfare.

I. Key Highlights of PANKHUDI:

- **Single-Window Platform:** PANKHUDI acts as a unified interface connecting donors (Individuals, NRIs, Corporates/CSR, NGOs) with implementing agencies (Anganwadis, One Stop Centres, Child Care Institutions).
- **Non-Cash Policy:** To ensure absolute financial integrity, the portal accepts only non-cash contributions. Donors can contribute in the form of:
 - ✓ Assets/Materials: (e.g., Water filters for Anganwadis, Smart TVs for schools, Medical equipment).
 - ✓ Services/Activities: (e.g., Medical camps, Skill training, Counseling).
- **Thematic Focus:** The contributions are aligned with the Ministry's three core missions:

- ✓ Mission Saksham Anganwadi & Poshan 2.0 (Nutrition & ECCE).
- ✓ Mission Vatsalya (Child Protection & Welfare).
- ✓ Mission Shakti (Women's Safety & Empowerment).
- **End-to-End Tracking:** The portal features a "Request-to-Fulfillment" workflow. Institutions (like an Anganwadi in a remote village) can post their specific requirements, and a donor in New York or Mumbai can fulfill them, tracking the delivery in real-time.

II. Why is PANKHUDI Necessary? (Significance)

- **Bridging the Trust Gap:** Often, willing donors (especially NRIs and CSR heads) hesitate to contribute due to a lack of verified information on where the help is needed and if it actually reaches the ground. PANKHUDI resolves this by listing government-verified requirements.
- **Resource Optimization:** It prevents duplication of efforts (e.g., two NGOs donating books to the same school while the neighboring one has none) by centralizing data.
- **Leveraging Diaspora:** With specific provisions for Non-Resident Indians (NRIs), it taps into the "emotional capital" of the Indian diaspora who wish to give back to their roots (Jan Bhagidari).

CSR (Corporate Social Responsibility)
Mandated under Section 135 of the Companies Act, 2013. Companies with a certain net worth/profit must spend 2% of their average net profit of the last 3 years on social activities.

Mission Poshan 2.0
Focuses on maternal and child nutrition, addressing stunting, wasting, and anemia. Includes the "Poshan Tracker" for real-time monitoring.

Mission Vatsalya
Focuses on Child Protection Services (e.g. adoption, juvenile justice, care for abandoned children).

Mission Shakti
An integrated women empowerment programme with two sub-schemes:
1. **Sambal** (Safety - One Stop Centres, Beti Bachao Beti Padhao).
2. **Samarthya** (Empowerment - Ujjwala, Swadhar Greh).

III. Challenges & Way Forward:

- **Logistics of Non-Cash:** While the "non-cash" rule ensures honesty, the logistics of transporting physical goods (e.g., furniture) to remote tribal belts remains a challenge for donors. The Ministry may need to empanel logistics partners.
- **Maintenance:** Donating an asset (like a RO purifier) is easy; maintaining it is hard. The portal should eventually include "Annual Maintenance Contracts (AMC)" as a donation category.
- **Digital Divide:** Grassroots workers (Anganwadi Sevikas) must be trained to upload their requirements accurately on the portal to attract donors.

52. NPS Vatsalya: PFRDA Notifies Guidelines to Secure Minors' Financial Future

Context:

Recently, the Pension Fund Regulatory and Development Authority (PFRDA) officially notified the NPS Vatsalya Scheme Guidelines 2025. While the scheme was launched in September 2024, these new guidelines provide the comprehensive operational framework, including lowered contribution limits and flexible exit norms, to operationalize the "intergenerational equity" vision of Viksit Bharat 2047.

I. Key Highlights of the Guidelines:

- **Objective:** To foster a culture of saving and financial literacy from childhood, ensuring a dedicated pension corpus accumulates through the power of compounding.
- **Eligibility & Operation:**
 - ✓ **Who:** All minor citizens (age < 18 years), including NRIs and OCIs.
 - ✓ **Beneficiary:** The minor is the sole beneficiary.
 - ✓ **Operator:** The account is opened and operated by the parent/guardian until the minor attains majority.
- **Revised Contribution Norms:**
 - ✓ **Minimum Contribution:** The guidelines have set the minimum contribution (initial and annual) at ₹250 (making it highly affordable compared to the earlier perceived ₹1,000).
 - ✓ **Maximum Limit:** There is no upper limit on contributions.
 - ✓ **Gifting:** Contributions can be made by parents, relatives, or friends.
- **Withdrawal & Exit Rules:**
 - ✓ **Partial Withdrawal:** Allowed after 3 years. Up to 25% of own contributions (excluding returns) can be withdrawn for education, illness, or disability (>75%).
 - ✓ **Frequency:** Allowed twice before age 18, and twice between ages 18-21.
- **Exit on Majority (18 Years):**
 - ✓ **Standard:** Seamless transition to NPS Tier-I (All Citizen Model). Fresh KYC is mandatory within 3 months.
 - ✓ **Exit Option:** If the accumulated corpus is ≤ ₹8 Lakh, the entire amount can be withdrawn as a lump sum. (Note: This is a significant relaxation, as the limit for adults is typically lower).
 - ✓ **If Corpus > ₹8 Lakh:** At least 80% must be annuitized (invested in a pension plan), and only 20% can be withdrawn as a lump sum.

II. Strategic Significance:

- ✓ **Community Incentivization:** The 2025 guidelines introduce a reward framework for grassroots workers like Anganwadi workers, ASHAs, and Bank Sakhis to encourage them to onboard rural children into the scheme.
- ✓ **Compounding Effect:** By starting as early as infancy, the corpus has 60 years to grow, potentially creating a significantly larger retirement fund compared to starting at age 25 or 30.

Nodal Agency: PFRDA (Pension Fund Regulatory and Development Authority)

Established under the PFRDA Act, 2013.

NPS Architecture

- Tier-I: Non-withdrawable Pension Account (*Vatsalya converts to this*).
- Tier-II: Voluntary Savings Account (*Liquid*).

Defined Contribution Scheme (Market-linked Returns)

Taxation

EEE Status (Exempt-Exempt-Exempt)

- 60% Lump Sum at 60 is tax-free.

Vatsalya Contributions covered under Section 80C.

OCI vs NRI

NRI

- Indian citizen residing outside.

OCI

- Foreign citizen of Indian origin.

Both are Eligible for NPS Vatsalya

53. Digital Leap for Pensioners: SAMPANN Integrates with DigiLocker

Context:

Recently, the Office of the Controller General of Communication Accounts (CGCA) announced the successful integration of the SAMPANN (System for Accounting and Management of Pension) portal with DigiLocker. This move is part of the government's "Digital India" initiative to provide paperless and secure access to essential documents for pensioners of the Department of Telecommunications (DoT).

I. Key Highlights of the Integration:

- **Instant Access to Documents:** Pensioners can now fetch and store critical pension-related documents directly into their DigiLocker wallets. The specific documents available include:
- **e-PPO (Electronic Pension Payment Order):**
 - ✓ Gratuity Payment Order
 - ✓ Commutation Payment Order
 - ✓ Form-16 (Tax certificate)
- **Elimination of Physical Visits:** This integration removes the need for pensioners to visit offices to collect physical copies or duplicate copies of lost documents.
- **Ease of Banking:** Verified documents in DigiLocker are accepted as valid proofs for banking and other administrative purposes (e.g., submitting PPO for loans or KYC), reducing harassment for senior citizens.
- **Additional Update: UMANG Integration**

- ✓ Simultaneously, SAMPANN has also been integrated with the UMANG (Unified Mobile Application for New-age Governance) platform.
- ✓ **Benefit:** This allows pensioners to check their Life Certificate validity status and retrieve their PPO numbers instantly via mobile.

SAMPANN
System for Accounting and Management of Pension

Department of Telecommunications, Ministry of Communications
Launched by the Prime Minister in December 2018

Direct Benefit Transfer (DBT) System
Pension Directly to Beneficiary's Bank Account

- Direct Credit**
No Bank Delays
- Transparency**
SMS Alerts for Every Transaction
- Grievance Redressal**
In-Built Complaint Tracking

For Pensioners of DoT, BSNL, MTNL & Other Telecom Units

II. Significance:

- **Model for "Minimum Government, Maximum Governance":** SAMPANN bypasses the traditional intermediary layer of "Pension Disbursing Banks," saving the government the commission paid to banks (approx. ₹500 crore saved so far) and ensuring faster credit to pensioners.
- **Digital Empowerment:** By integrating with DigiLocker, the government is creating a "single source of truth" for pensioner data, reducing fraud and administrative overhead.

Way Forward:

- **Replicating the Model:** The success of the "Direct Disbursement" model of SAMPANN is being studied to be replicated in other ministries (e.g., Railways, Defence) to reduce the sheer volume of pension grievances related to bank delays.

54. Sampurnata Abhiyan 2.0: The '90-Day Sprint' to Saturation

Context:

Recently, NITI Aayog launched 'Sampurnata Abhiyan 2.0', a 3-month intensive campaign running until April 14, 2026 (Ambedkar Jayanti). Building on the success of the first phase (2024), this campaign aims to achieve 100% saturation of select Key Performance Indicators (KPIs) in 112 Aspirational Districts (ADs) and 513 Aspirational Blocks (ABs).

I. Key Highlights:

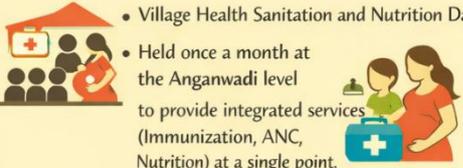
- **The "Saturation" Approach:** Unlike traditional schemes that focus on incremental growth, this campaign adopts a "zero-left-out" policy, ensuring that specific services reach every eligible beneficiary within the 90-day window.
- **Focus Areas:** The campaign targets specific, measurable indicators across Health, Nutrition, Education, and Agriculture.
- **Strategy:**
 - ✓ **Micro-Action Plans:** Each District/Block administration will prepare a dedicated 3-month roadmap.
 - ✓ **Real-time Monitoring:** NITI Aayog will track progress monthly via the Champions of Change dashboard.
 - ✓ **Behavior Change:** Use of Nukkad Nataks, Gram Sabhas, and local influencers to drive demand.

II. The Target Indicators (KPIs):

For Aspirational Districts (5 KPIs)	For Aspirational Blocks (6 KPIs)
1. Newborn Health: Proportion of live births weighed at birth.	1. Nutrition: Regular Supplementary Nutrition for children (6 months - 6 years) under ICDS.
2. TB Elimination: TB case notification rate (Public & Private institutions).	2. Growth Monitoring: Measurement efficiency of children at Anganwadi Centres.
3. Community Health: % of Anganwadis/UPHCs conducting at least one VHSND/UHSND (Village Health Sanitation & Nutrition Day).	3. Sanitation: % of Operational Anganwadis with Functional Toilets.
4. School Infrastructure: % of schools with functional Girls' Toilets.	4. Water: % of Operational Anganwadis with Drinking Water facilities.
5. Animal Welfare: % of animals vaccinated (General).	5. School Infrastructure: % of schools with adequate Girls' Toilet facilities.
	6. Livestock: % of bovine animals vaccinated against FMD (Foot & Mouth Disease).

III. Significance of the Campaign:

- **Cooperative Federalism:** It strengthens the collaboration between the Centre, States, and District Administrations, moving beyond the "one-size-fits-all" approach.
- **Last Mile Delivery:** By focusing on the most backward blocks (ABs), the campaign addresses intra-district inequality. A district might be "developed" on average, but specific blocks within it may lag behind—Sampoornata 2.0 fixes this.
- **Outcome-Based Governance:** The shift from "financial expenditure" to "physical outcomes" (e.g., Are toilets functional? rather than Was money spent on toilets?) ensures accountability.

<p>Aspirational Districts Programme (ADP)</p>  <ul style="list-style-type: none"> • Launched in 2018. • Covers 112 districts. • Focus on 5 Themes: <ul style="list-style-type: none"> • Health, Education, • Agriculture, • Financial Inclusion, • Skill Development. • Ranked on 49 Indicators. 	<p>Aspirational Blocks Programme (ABP)</p>  <ul style="list-style-type: none"> • Launched in 2023. • Covers 500+ blocks across 329 districts. • Takes ADP model deeper to the block level.
<p>Delta Ranking</p>  <ul style="list-style-type: none"> • NITI Aayog releases monthly "Delta Rankings" based on incremental progress. • Top performers receive additional funding as a reward. 	<p>VHSND</p>  <ul style="list-style-type: none"> • Village Health Sanitation and Nutrition Day • Held once a month at the Anganwadi level to provide integrated services (Immunization, ANC, Nutrition) at a single point.

IV. Way Forward:

- **Sustainability:** The challenge lies in maintaining these saturation levels after the 90-day campaign ends.
- **Data Integrity:** Ensuring that the data uploaded on the dashboard matches ground reality is crucial to prevent "data dressing."
- **Convergence:** Success depends on the convergence of line departments (e.g., Education Dept building toilets, Health Dept conducting checkups) rather than working in silos.

GEOGRAPHY, DISASTER MANAGEMENT & ENVIRONMENT

55. Delhi's Air Quality Review 2025: Improvement Amidst Winter Challenges

Context:

As the year 2025 concluded, the Commission for Air Quality Management (CAQM) released a comprehensive review of Delhi's air quality. The report highlights that despite challenging meteorological conditions in December 2025, the overall annual average AQI for 2025 was the lowest in the last seven years (barring the COVID-19 lockdown year of 2020), signaling the impact of sustained policy interventions.

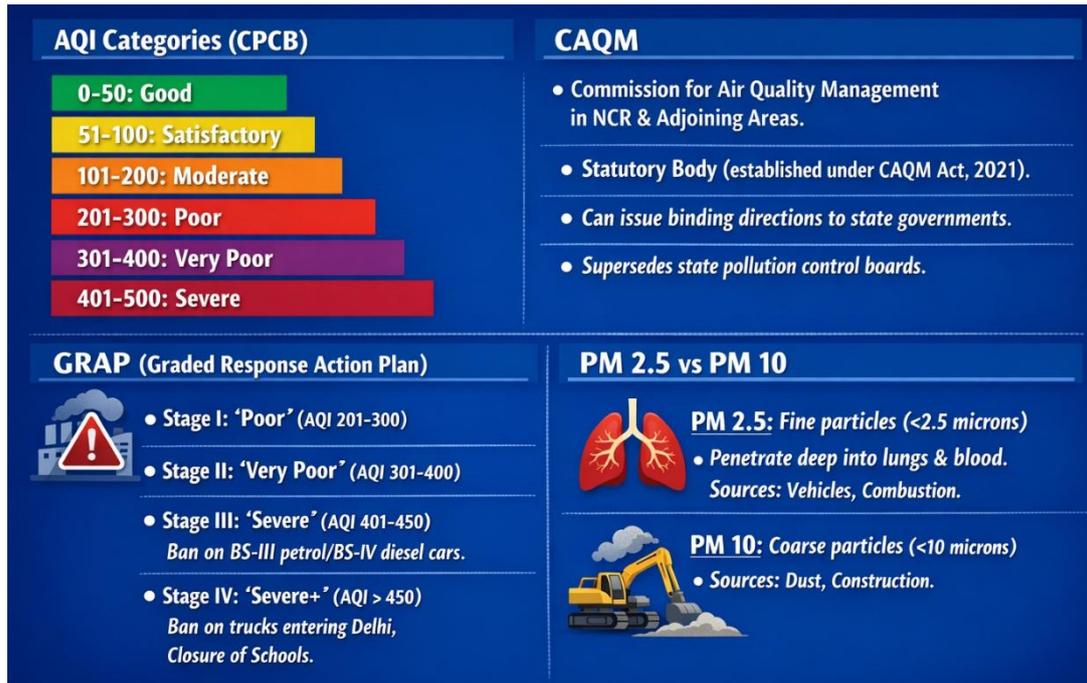
I. Key Highlights (Data for 2025):

- **Best Annual Average AQI:** The annual average AQI for Delhi in 2025 stood at 201, which is an improvement from 209 in 2024 and 204 in 2023.
- **Reduction in Severe Days:** The year 2025 recorded only 8 days in the "Severe to Severe+" category (>401 AQI), the second-lowest since 2018 (lowest was 6 days in 2022).
- **Increase in 'Good' Days:** There were 79 days with 'Good' to 'Satisfactory' AQI (0-100), the highest since 2018 (excluding 2020).
- **Particulate Matter Reduction:**
 - ✓ PM10: Daily average dropped to 197 $\mu\text{g}/\text{m}^3$ (lowest since 2018, excluding 2020).

- ✓ PM2.5: Daily average dropped to 96 µg/m³.
- **December Anomaly:** While the overall year was better, December 2025 saw a spike with an average AQI of 351 (up from 294 in Dec 2024) due to "absolutely still/very low wind speed conditions.

II. Factors Driving Improvement:

- **Policy Interventions:** The CAQM attributes the success to strict enforcement of GRAP (Graded Response Action Plan) measures throughout the year.
- **Stakeholder Coordination:** concerted efforts by state governments of NCR (Haryana, UP, Rajasthan, Delhi) in controlling stubble burning and vehicular emissions.



III. Way Forward:

- **The "December Spike" Concern:** The data shows that while annual pollution is dipping, episodic pollution (winter smog) remains a massive challenge due to meteorology (temperature inversion).
- **Need for Hyper-Local Action:** The focus must shift from city-wide bans to hyper-local interventions in "Hotspots" (e.g., Anand Vihar, Jahangirpuri) using real-time data.
- **Regional Approach:** Since pollution has no borders, the Airshed approach (treating NCR as one common air basin) adopted by CAQM must be strengthened with uniform tax structures for clean fuel vehicles across states.

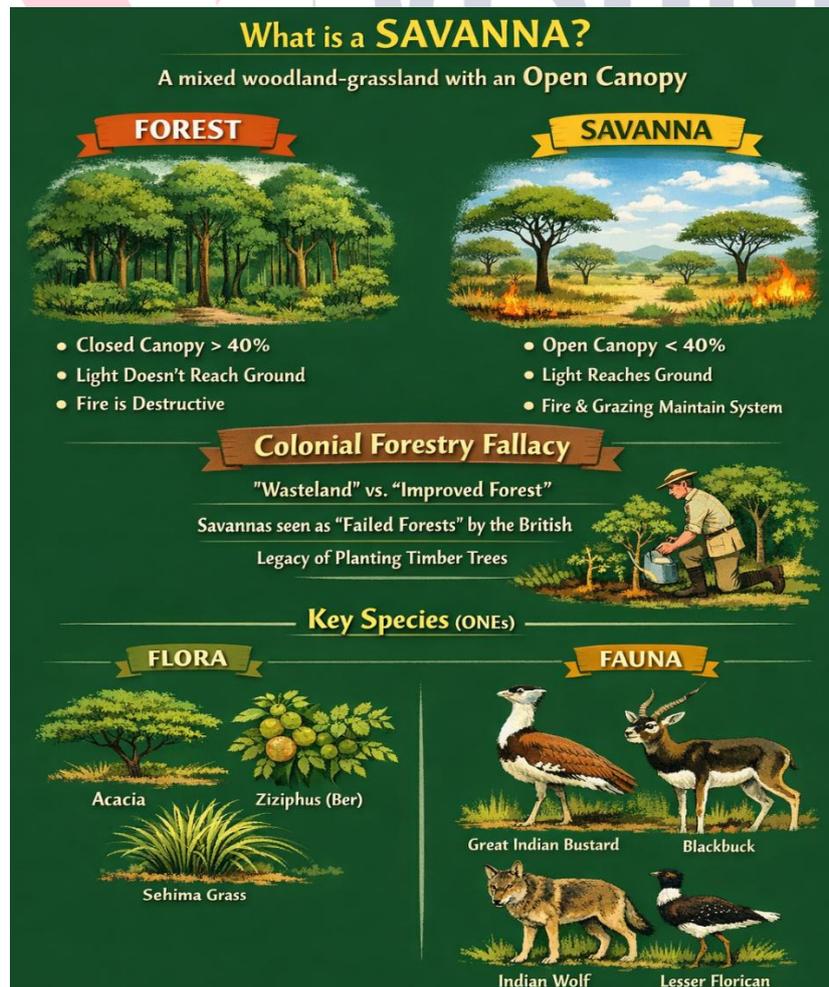
56. Ancient Marathi Literature Reveals: Savannas are 'Old', Not 'Degraded'

Context:

A groundbreaking study titled "Utilizing traditional literature to triangulate the ecological history of a tropical savanna", published by Indian ecologists Ashish Nerlekar and Digvijay Patil, has used 750 years of Marathi literature to prove that the arid savannas of the Deccan Plateau are ancient, natural ecosystems, debunking the colonial and modern forestry view that they are "degraded forests" created by human deforestation.

I. Key Highlights of the Study:

- **The Methodology (Bio-cultural Triangle):**
 - ✓ Researchers analyzed 28 ancient Marathi texts dating from the 13th to the 20th Century.
 - ✓ Key Texts: Lila Charitra (1278 CE), Bhaktavijaya, Adi Parva (16th CE), and oral traditions like Ovis (grindmill songs).
 - ✓ They cross-referenced plant names mentioned in these texts with modern botanical classifications.
- **The Findings (Forest vs. Savanna):**
 - ✓ The study identified 62 plant species in these texts.
 - ✓ 27 species were classic Savanna indicators (e.g., Hivar, Bor, Babhul).
 - ✓ Only 3 species were Forest indicators.
 - ✓ The landscape of Western Maharashtra (Deccan) was dominated by open, thorny, grassy scrublands even 750 years ago, long before the British colonial era or modern urbanization.
- **Specific Evidence:**
 - ✓ **Lila Charitra (1278 CE):** Mentions the Hivar tree (*Vachellia leucophloea*)—a classic savanna species—using it as a metaphor. If it was a dense forest then, this sun-loving tree wouldn't have been common.
 - ✓ **Adi Parva (16th CE):** Describes the Nira River valley as "thorny and empty" but "rich in grass," attracting cowherds. This perfectly describes a healthy savanna, not a destroyed forest.



II. Significance:

- **Challenging the 'Wasteland' Narrative:**
 - ✓ Current Indian policy (e.g., Wasteland Atlas of India) classifies these open scrublands as "Wastelands" or "Degraded Forests" that need to be "greened."
 - ✓ This study proves they are Open Natural Ecosystems (ONES) with a distinct evolutionary history.
- **Against Mindless Afforestation:**
 - ✓ Schemes like Compensatory Afforestation (CAMPA) often plant exotic trees (Gliricidia, Eucalyptus) in these "barren" looking lands.
 - ✓ The study warns that planting trees here is ecological destruction, not restoration, as it destroys the habitat of native species like the Great Indian Bustard and Blackbuck.
- **Validation of Pastoralism:** It validates the lifestyle of pastoral communities (like the Dhangars) who have co-evolved with these landscapes for centuries, rather than being viewed as "encroachers" on forest land.

57. Transforming Urban India: From 'Waste-Ridden' to 'Circular Cities'

Context:

Recently, the Ministry of Housing and Urban Affairs (MoHUA) released the Swachh Survekshan 2025 report, highlighting a mixed picture of urban India's waste management. While processing capacity has jumped to 78%, the report flags the persistent challenge of "Legacy Waste" mountains (dumpsites) in major metros and the stagnating pace of source segregation in Tier-1 cities compared to smaller towns.

I. Key Highlights of the Report:

- **Processing Capacity:** India now processes 1.2 Lakh Metric Tonnes Per Day (TPD) of solid waste, up from just 18% in 2014 to 78% in 2025.
- **Legacy Waste Remediation:** Under the Lakshya Zero Dumpsite mission, 40% of the legacy waste targeted under SBM-U 2.0 has been remediated via Bio-mining. However, cities like Delhi (Ghazipur) and Mumbai (Deonar) are missing deadlines.
- **Plastic Waste:** The report notes a 15% reduction in Single-Use Plastic (SUP) visibility in public areas, credited to stricter enforcement of the Plastic Waste Management (Amendment) Rules, 2024.
- **The "Indore Model" Replication:** More cities (Surat, Navi Mumbai, Vijayawada) have successfully replicated the 6-bin segregation model, achieving 5-Star Garbage Free City (GFC) certification.

II. The Paradigm Shift: "Waste to Wealth"

- **Bio-CNG Revolution:** following the success of Indore's Gobar-Dhan plant, 50 new Bio-CNG plants were commissioned in 2025 across UP and Maharashtra, converting wet waste into transport fuel.
- **Construction & Demolition (C&D) Waste:** New policy guidelines now mandate using 20% recycled C&D materials (like paver blocks made from debris) in all government infrastructure projects to reduce the burden on landfills.

III. Structural Challenges:

- **Source Segregation:** This remains the "Achilles' Heel." While processing plants exist, they often receive mixed waste, rendering technologies like composting and waste-to-energy (WtE) inefficient.
- **Financial Fragility of ULBs:** Most Urban Local Bodies (ULBs) struggle to collect User Fees for waste collection, making them dependent on central grants.
- **The Informal Sector Gap:** Despite policy intent, India's 4 million ragpickers remain largely outside the formal social security net, performing the hazardous job of manual sorting without safety gear.
- **Landfill Fires:** The rising frequency of methane-induced fires in dumpsites during summer remains a critical air pollution source.

Swachh Bharat Mission-Urban 2.0
(Launched in 2021)

Goal: "Garbage Free Cities" by 2026.

Focus:

- Legacy Dumpsite Remediation
- 100% Source Segregation
- C&D Waste Management

Solid Waste Management Rules, 2016

Segregation at Source: Wet | Dry | Hazardous

User Fees: Generators Must Pay Fees

EPR for Packaging Waste

Bio-Mining

- Excavating Old Dumpsites
- Recovering Soil & Recyclables

Waste to Energy (WtE)

- Generating Electricity from Waste
- Critique: Often Fails in India Due to Low Calorific Value of Mixed Waste

IV. Way Forward:

- **Decentralized Processing:** Move away from mega-landfills to Micro-Composting Centers (MCCs) at the ward level (as seen in Alappuzha, Kerala) to reduce transportation costs.
- **Professionalizing Ragpickers:** Integrate informal workers into the formal system as "Swachhagrahis," giving them rights to collect user fees and sell dry recyclables.
- **Behavioral Nudges:** Use "Green Tax" or "Pay-As-You-Throw" models where households generating more non-segregated waste pay higher fees.

58. Seeds of Life from Space: Bennu Samples Confirm 'Panspermia' Hypothesis

Context:

Recent studies published in the journal *Meteoritics & Planetary Science* have provided the strongest evidence yet that the ingredients for life on Earth may have arrived from outer space. The analysis of the 121.6 grams of regolith (soil) returned from asteroid Bennu by NASA's OSIRIS-REx spacecraft reveals a treasure trove of carbon, nitrogen, and organic compounds essential for biology.

I. Key Highlights of the Findings:

- **A "Prebiotic" Chemistry Set:**
 - ✓ The Bennu samples are rich in carbon (nearly 5% by weight) and nitrogen.
 - ✓ Crucially, scientists found amino acids (the building blocks of proteins) and nucleobases (the building blocks of DNA/RNA).
 - ✓ **Phosphate:** The samples contain a unique form of magnesium-sodium phosphate, which is highly water-soluble. This suggests that Bennu is a remnant of an ancient ocean world (a larger parent body) where life-friendly chemistry could occur.
- **The "Left-Handed" Bias:**
 - ✓ Life on Earth uses only "left-handed" amino acids (homochirality). The Bennu samples show an excess of these left-handed molecules, supporting the theory that this specific biological preference was dictated by the space rocks that bombarded early Earth.
- **Water Content:**
 - ✓ The clay minerals in the sample are laden with water (locked in the crystal structure), confirming that asteroids like Bennu could have delivered the vast oceans to a dry, cooling Earth billions of years ago.



II. Significance: Solving the "Origin of Life" Puzzle

- **Panspermia Hypothesis:** These findings bolster the Panspermia theory, which suggests that life (or at least the complex organic molecules required for it) did not originate de novo on Earth but was "seeded" by comets and asteroids.
- **Pristine Time Capsule:** Unlike meteorites found on Earth (which are contaminated by our atmosphere and biology), the Bennu samples are pristine, untouched for 4.5 billion years. They represent the exact chemical mix of the early solar system.
- **Planetary Protection:** Understanding the composition of "Rubble Pile" asteroids like Bennu is critical for Planetary Defense. If a similar asteroid were on a collision course with Earth, knowing its density and cohesion is vital for deflection missions (like DART).

III. The "Grand Tack" Model:

- The findings support the "Grand Tack" hypothesis of Solar System evolution.
- It suggests that giant planets (Jupiter/Saturn) migrated inward and then outward, scattering water-rich asteroids (like Bennu's parent body) from the outer solar system into the inner solar system, eventually bombarding Earth and delivering water/organics.

59. The Cost of Calamity: India Losing 0.4% of GDP Annually to Disasters

Context:

A recent report by the National Disaster Management Authority (NDMA), released in January 2026, has quantified the economic impact of climate change on India. The report reveals that India loses approximately 0.4% of its GDP every year due to natural disasters, amounting to a staggering loss of over ₹1.2 Lakh Crore annually. This finding comes amidst increasing frequency of extreme weather events like the 2025 floods in Chennai and Gujarat. ★

I. Key Highlights of the Report:

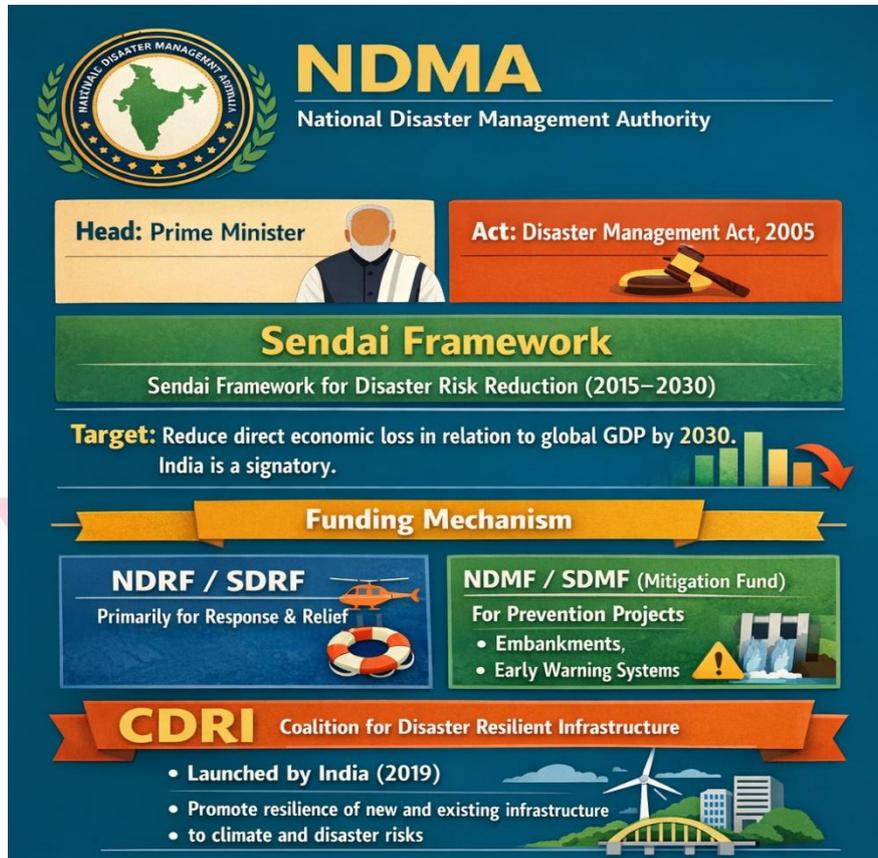
- **Cumulative Loss:** The study analyzed data from 2011 to 2025, finding that the cumulative loss over this period exceeds \$160 Billion.
- **State-wise Vulnerability:**
 - ✓ **Odisha & Bihar:** Face the highest recurring losses due to floods and cyclones, impacting their GSDP by up to 2-3% annually.
 - ✓ **Hill States (Himachal & Uttarakhand):** The recent land subsidence and flash floods have caused infrastructure damage worth ₹15,000 Crore in just two years (2024-25).
- **Sectoral Impact:**
 - ✓ **Agriculture:** Bears the brunt (60% of losses) due to unseasonal rains destroying standing crops.
 - ✓ **Infrastructure:** Roads, bridges, and power grids account for 30% of the financial burden.

II. The "Disaster-Poverty" Cycle:

- **Erosion of Gains:** The 0.4% GDP loss effectively wipes out a significant portion of the annual growth in the agriculture sector (which grows at roughly 3-4%).
- **Fiscal Stress:** The Centre and States end up spending nearly ₹30,000 Crore annually just on relief (SDRF/NDRF), money that could have been used for development (schools, hospitals). This is a "double whammy" for the economy.

III. Climate Finance Gap:

- The report highlights a glaring gap in adaptation finance. While India needs \$1 Trillion by 2030 for climate adaptation, current flows are less than \$40 Billion.
- **Insurance Penetration:** Only 8% of the losses in India are insured (compared to 60% in developed nations). This means 92% of the burden falls directly on the common man and the government exchequer.



IV. Way Forward:

- **Mainstreaming DRM:** Disaster Risk Management (DRM) must be integrated into every development project. No highway or dam should be approved without a mandatory "Disaster Impact Assessment" (similar to EIA).
- **Parametric Insurance:** Shift from traditional indemnity insurance to Parametric Insurance (e.g., if rainfall exceeds X mm, payout is automatic), ensuring faster relief for farmers.
- **Local Resilience:** Empower Panchayats and Urban Local Bodies with funds (XV-FC grants) to clear drains and strengthen local infrastructure before the monsoon.

60. Preserving Heritage: NGT Issues Notice to Centre and UP Over Violations in Taj Trapezium Zone

Context:

The National Green Tribunal (NGT), Principal Bench, has issued stern notices to the Union Ministry of Environment, Forest and Climate Change (MoEF&CC) and the Uttar Pradesh Government following reports of rampant illegal construction and commercial activities within

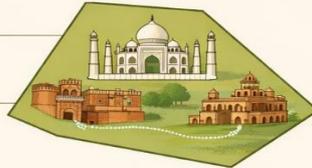
the eco-sensitive Taj Trapezium Zone (TTZ). The Tribunal has taken suo motu cognizance of unauthorized permanent structures coming up on the Yamuna floodplain, posing a direct threat to the Mughal-era monument.

I. Key Highlights:

- **The Violation:** The NGT flagged the construction of unauthorized hotels, resorts, and permanent commercial structures within 500 meters of the Taj Mahal, which is a strictly prohibited "No-Construction Zone."
- **Yamuna Floodplain Encroachment:** The notice specifically highlights that the natural flow of the Yamuna River—vital for the wooden foundation of the Taj Mahal—is being obstructed by debris and illegal embankments created for these constructions.
- **Respondents:** The Tribunal has sought a response from:
 - ✓ Agra Development Authority (ADA)
 - ✓ UP Pollution Control Board (UPPCB)
 - ✓ Archaeological Survey of India (ASI)
- **Air Quality Impact:** The plea noted that despite the TTZ restrictions, the Air Quality Index (AQI) in Agra remains in the 'Very Poor' category due to dust from these illegal construction activities, leading to the yellowing of the marble surface.

Taj Trapezium Zone (TTZ)

- An area of 10,400 sq. km around the Taj Mahal to protect it from pollution.
- Covers Three Monuments: Taj Mahal, Agra Fort, Fatehpur Sikri
- Spans Across: Agra, Firozabad, Mathura, Hathras, Etah & Bharatpur (Rajasthan)



NGT (National Green Tribunal)

- Statutory Body established under the NGT Act, 2010.
- Mandate: Expedient disposal of cases relating to environmental protection.

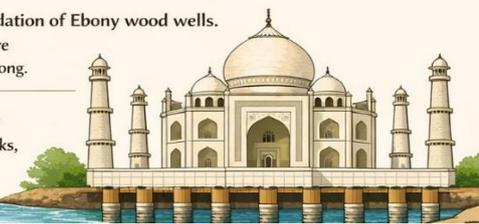


Guided by "Principles of Natural Justice"
Not bound by Code of Civil Procedure, 1908.

Why Yamuna Matters?

The Taj Mahal stands on a foundation of Ebony wood wells. These wells need constant moisture from the Yamuna river to remain strong.

If the river dries up or recedes due to encroachments, the wood shrinks, threatening the structural stability of the monument.



II. The Legal Framework: Why is this Critical?

- **The "Ad Hoc" Taj Trapezium Zone Authority:** The NGT questioned the efficacy of the TTZ Authority, observing that it has failed to curb the mushrooming of illegal colonies.
- **Supreme Court's 1996 Judgment:** In the landmark M.C. Mehta vs. Union of India case, the SC ordered the closure/shifting of polluting industries (foundries, chemical plants) from the TTZ to protect the monument from Acid Rain (Mathura Refinery case). The current violations flout the spirit of this judgment.

III. Way Forward:

- **Satellite Monitoring:** The NGT has suggested using high-resolution satellite imagery (ISRO) to map encroachments in real-time and fix accountability on local officials.
- **Ecological Flow (E-Flow):** Ensuring a minimum flow of water in the Yamuna is non-negotiable for the survival of the Taj.
- **Heritage Impact Assessment:** No new project in Agra should be cleared without a mandatory Heritage Impact Assessment by the ASI.

61. Erode to Become a Global Spice Hub: Regional Office of National Turmeric Board Announced

Context:

During his visit to Erode (Tamil Nadu)—popularly known as "Turmeric City" (Manjal Maanagaram)—on January 5, 2026, Union Minister for Agriculture & Farmers' Welfare, Shri Shivraj Singh Chouhan, announced the establishment of a Regional Office of the National Turmeric Board (NTB) and a state-of-the-art Turmeric Testing Laboratory in the city.



I. Key Highlights:

- **Testing Infrastructure:** The Indian Council of Agricultural Research (ICAR) has been directed to set up an accredited testing laboratory in Erode.

- **Significance:** This will enable farmers to test the Curcumin content and quality of their produce locally, facilitating faster certification and better price realization in export markets.
- **Regional Office:** A regional office of the Nizamabad-headquartered National Turmeric Board will be opened in Erode. This addresses the long-standing demand of Tamil Nadu farmers who previously had to coordinate with headquarters in Telangana.
- **Cold Storage Push:** The Minister emphasized utilizing funds under the Rashtriya Krishi Vikas Yojana (RKVY) to set up cold storage facilities, which are crucial for preventing post-harvest losses in turmeric.
- **Research & Development:** ICAR has been tasked with developing new turmeric varieties with higher Curcumin content to meet the growing demand from the pharmaceutical and nutraceutical sectors.

II. Why Erode Matters?

- **Second Largest Market:** Erode hosts the second-largest turmeric market in India (after Nizamabad, Telangana).
- **Export Hub:** Erode turmeric is exported to countries like Germany, Iran, and Malaysia. The new lab will reduce logistical bottlenecks for exporters who currently face delays in quality certification.
- **Price Discovery:** The Erode Regulated Market is a key center for price discovery in South India.

62. Beyond the Canopy: Why Grasslands Must Be Part of National Climate Plans (NDCs)

Context:

As nations prepare to submit their updated Nationally Determined Contributions (NDCs) for the upcoming climate summits, a coalition of ecologists and climate scientists has urged governments to look "beyond forests." A recent policy paper released in January 2026 argues that excluding Grasslands and Savannas from climate action plans is a critical oversight, especially as these ecosystems are often more resilient carbon sinks than forests in a warming, fire-prone world.

I. Key Highlights: The Case for Grasslands

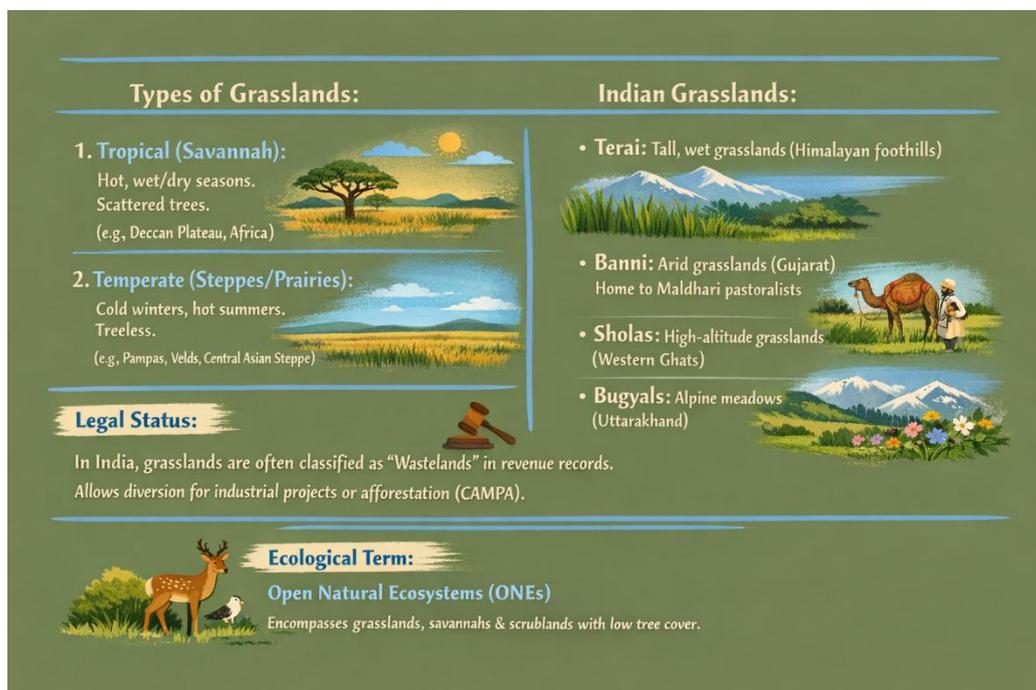
- **The "Underground" Carbon Sink:**
 - ✓ Unlike forests, where most carbon is stored in the biomass (trunks/leaves) above ground, grasslands store nearly 80% of their carbon underground in their massive root systems and soil.
 - ✓ **Fire Resilience:** In an era of "Global Boiling" and frequent wildfires, forest carbon is released instantly when trees burn. Grasslands, however, keep their carbon safely locked underground even during surface fires, making them a more reliable long-term sink.
- **The Albedo Effect (Cooling Power):**
 - ✓ Grasslands are generally lighter in color than dense, dark forests.
 - ✓ This higher Albedo (reflectivity) means they reflect more solar radiation back into space, providing a net cooling effect that dark forest canopies do not.

- **Biodiversity Hotspots:**

- ✓ They support the world's largest migrations of large mammals and are home to critically endangered species (e.g., Great Indian Bustard in India, Cheetahs in Africa) that cannot survive in forests.

II. The "Afforestation" Threat:

- **The Problem:** Many National Climate Plans (including India's earlier NDCs) focus heavily on "increasing green cover" or "afforestation."
- **Misguided Action:** This often leads to planting trees on natural grasslands (e.g., planting Eucalyptus in the Shola grasslands or Prosopis in Banni).
- **Consequence:** This is termed "Afforestation of Open Natural Ecosystems (ONEs)." It destroys the local ecology, dries up the water table (trees consume more water than grass), and actually reduces the land's carbon sequestration potential.



III. Challenges in India:

- **Wasteland Atlas:** The Wasteland Atlas of India still categorizes scrublands and grasslands as "wastelands," prioritizing their "productive" conversion.
- **Invasive Species:** Introductions like *Prosopis juliflora* (Vilayati Kikar) and *Lantana camara* have choked native grasses, destroying fodder for wildlife and livestock.
- **Neglect in Policy:** The Indian Forest Act, 1927 and the Forest Conservation Act, 1980 protect forests, but there is no specific "Grassland Conservation Act."

IV. Way Forward:

- **Revised NDCs:** India's next climate pledge should explicitly mention "Restoration of Grasslands" separate from "Afforestation."
- **Correcting Classifications:** Revenue records must be updated to recognize "Grasslands" as a distinct land-use category, removing the "Wasteland" tag.
- **Community-Led Conservation:** Recognizing the rights of pastoralist communities (under the Forest Rights Act, 2006) who have traditionally managed these lands through rotational grazing.

63. Green Mile: India Crosses 50% Non-Fossil Capacity, Eyes Net-Zero 2070

Context:

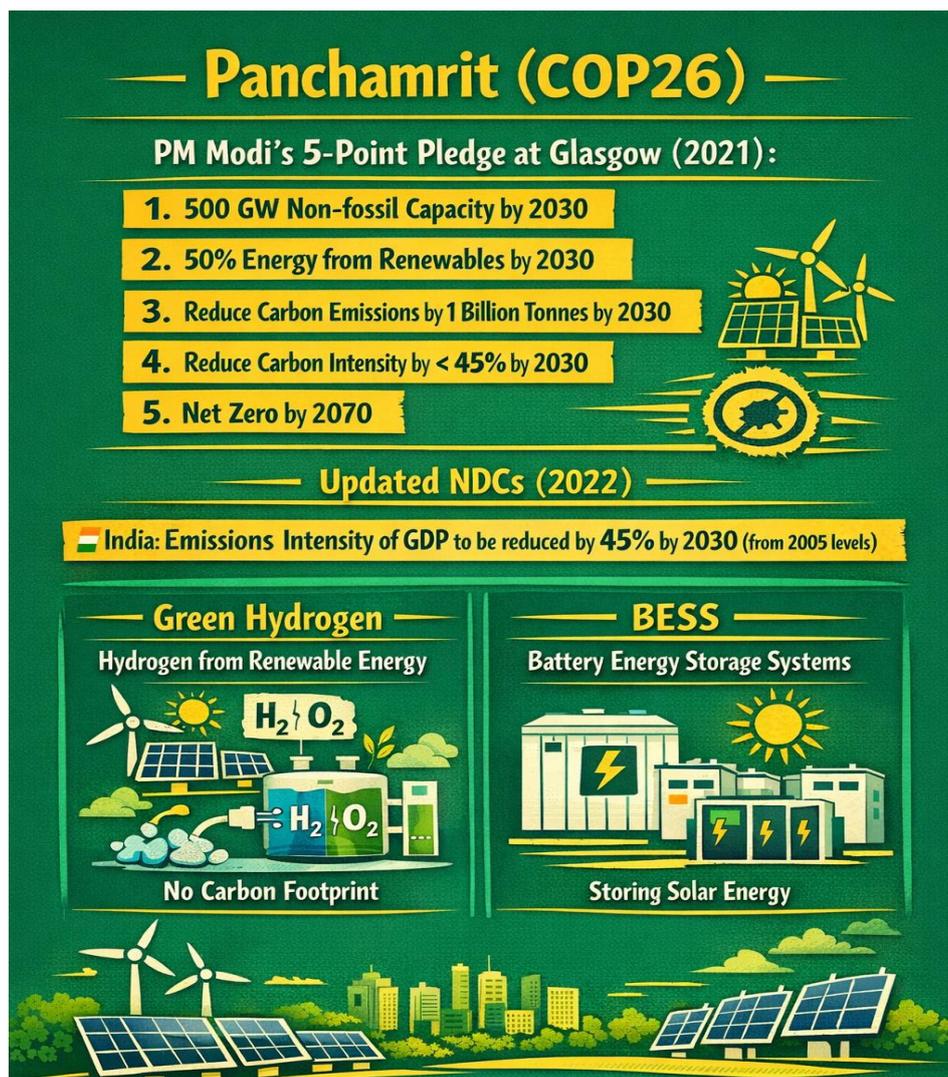
Recent studies reveals that, India has marked a historic milestone in its climate journey. The latest data from the Ministry of Power and the Economic Survey 2025-26 reveals that India has effectively achieved its Nationally Determined Contribution (NDC) target of 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources well ahead of the 2030 deadline. This achievement underscores India's leadership in the Global South, even as developed nations struggle with their climate finance commitments.

Key Highlights: The January 2026 Status Report

- **Surpassing the 50% Milestone:**
 - ✓ **Status:** As of late 2025/January 2026, non-fossil fuel sources (Solar, Wind, Hydro, Nuclear, and Bio-power) account for approximately 51.5% of India's total installed electricity capacity.
 - ✓ **The Surge:** The fiscal year 2025-26 witnessed a record addition of over 35 GW of renewable energy capacity, primarily driven by solar.
- **PM Surya Ghar: Muft Bijli Yojana:**
 - ✓ **Reach:** Since its launch in February 2024, the scheme has achieved significant penetration. By January 2026, over 28 lakh households have benefitted from rooftop solar installations.
 - ✓ **Budget Push:** The Union Budget 2026-27 has increased the allocation to ₹22,000 Crore (a 10% hike) to accelerate the target of reaching 1 crore households.
 - ✓ **Impact:** This has decentralized energy production, turning consumers into "Prosumers" (Producers + Consumers).
- **National Green Hydrogen Mission (NGHM):**
 - ✓ **Execution Phase:** The mission has moved from policy formulation to execution. By January 2026, India successfully concluded auctions for Green Ammonia procurement.
 - ✓ **Pilot Projects:** First-of-their-kind pilot projects in the Steel sector (using hydrogen for direct reduction of iron) and Heavy Mobility (hydrogen trucks) have commenced in Odisha and Gujarat.
- **Carbon Credit Trading Scheme (CCTS):**
 - ✓ **Notification:** The Ministry of Power has notified the final emission intensity targets for 9 hard-to-abate sectors (including Cement, Steel, and Petrochemicals).
 - ✓ **Market Launch:** The domestic carbon market is set to become fully operational in 2026, allowing industries that over-achieve their targets to sell "Carbon Credit Certificates" to under-performers.

II. Challenges Remaining:

- **Generation vs. Capacity:** While Capacity (potential) is >50% non-fossil, actual Generation (electricity produced) is still dominated by Coal (~70%) because renewables are intermittent.
- **Storage Gap:** The growth of Battery Energy Storage Systems (BESS) lags behind solar installation, causing grid instability during evening peak hours.
- **Climate Finance:** India continues to fund its transition largely through domestic resources, with the promised \$100 Billion/year from developed nations remaining elusive.



64. The Private Frontier: Can Private Reserves Restore Wildlife and Keep Tourism Gentle?

Context:

Recently, the debate over "Private Wildlife Reserves" has intensified following the successful reintroduction of several local species in private conservancies in Central India. As state-managed National Parks face "over-tourism" and "carrying capacity" issues, the Ministry of Environment, Forest and Climate Change (MoEF&CC) is reportedly evaluating a framework for Public-Private Partnerships (PPP) in buffer zones. This model seeks to balance high-value, low-impact tourism with rigorous habitat restoration.

I. Key Highlights:

- **Habitat Restoration:** Private reserves often convert degraded agricultural land or "wastelands" adjacent to protected areas into lush forests or grasslands, extending the safe passage for wildlife.
- **Low-Volume, High-Value Tourism:** Unlike the "mass tourism" seen in government-run tiger reserves (e.g., Ranthambore or Corbett), private reserves typically limit guest numbers, ensuring a "gentle" footprint on the ecosystem.

- **Community Stewardship:** Successful models in 2025-26 have shown that private reserves can provide more stable, year-round employment to local indigenous communities compared to seasonal government tourism.
- **Biodiversity Credits:** Emerging in early 2026, the concept of "Biodiversity Credits" allows private owners to earn financial incentives for increasing species counts on their land, making conservation a viable business model.



II. The "Gentle Tourism" Philosophy:

- **Carbon Neutral Stays:** Most top-tier private reserves in India have shifted to 100% solar power and zero-plastic policies as of 2026.
- **Guided Education:** Instead of "tiger-centric" safaris, these reserves focus on Naturalism—teaching guests about insects, birds, and flora, which reduces the pressure on flagship species.
- **Acoustic Ecology:** Strict rules on silent electric vehicles and decibel limits ensure that the "soundscape" of the forest remains undisturbed.

III. Challenges and Criticisms:

- **Elitism in Nature:** Critics argue that private reserves create "islands of excellence" accessible only to the ultra-wealthy, potentially alienating the general public from conservation.
- **Land Rights Issues:** There is a risk of "Green Grabbing," where tribal land rights (under FRA 2006) might be sidelined to create private wildernesses.
- **Dilution of State Responsibility:** Experts warn that private reserves should supplement—not replace—state-funded conservation.
- **Lack of Regulation:** Unlike National Parks, private lands lack a standardized national "Audit Framework" for wildlife safety and breeding protocols.

IV. The Way Forward: The "Hybrid Model"

For private reserves to be successful in India, they must move beyond "Safari Lodges" to become "Ecological Corridors."

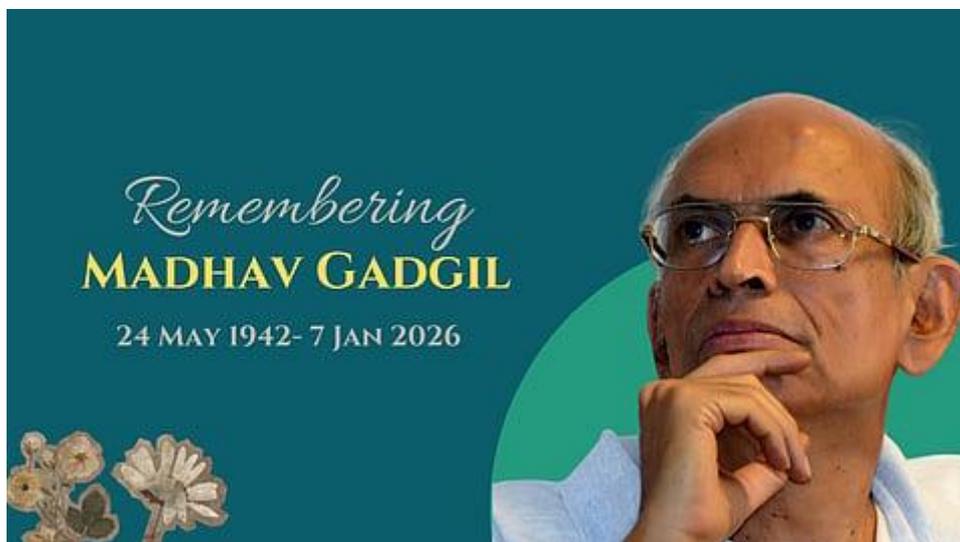
- **Corridor Connectivity:** The government should provide tax breaks to private landowners who maintain "Corridor Land" for elephant or tiger movement.

- **Social Integration:** Private reserves must be mandated to spend a percentage of revenue on local village health and education to prevent "Human-Wildlife Conflict."
- **Standardization:** Establishing a "Green Star Rating" for private reserves based on their contribution to biodiversity, rather than just luxury.

65. The Father of Democratic Conservation: Madhav Gadgil (1942–2026)

Context:

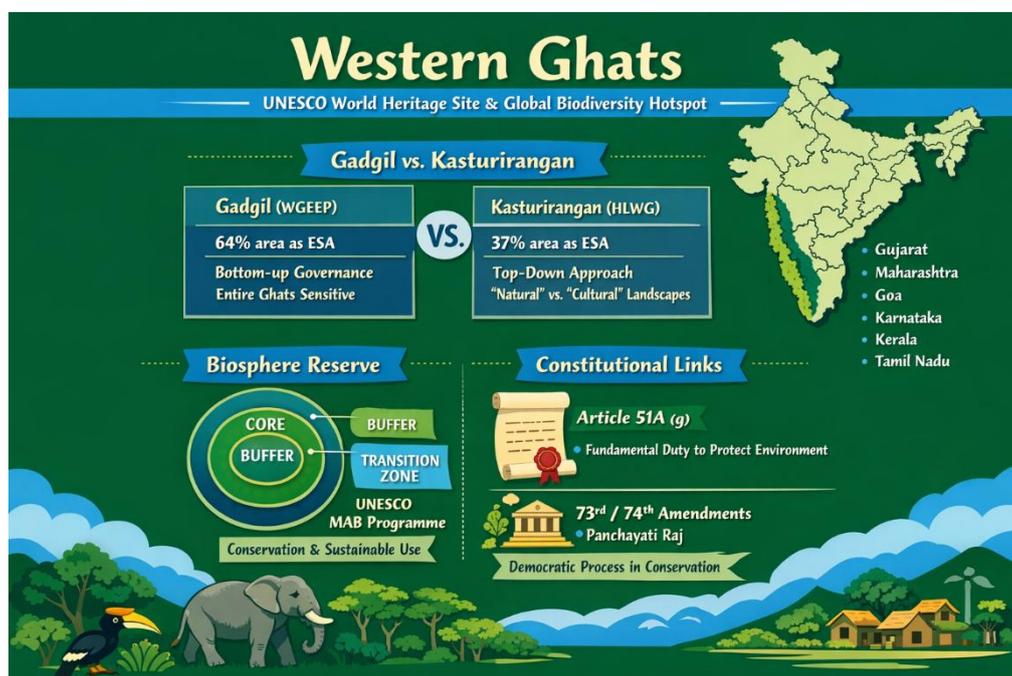
India's ecological landscape lost its most steadfast guardian on January 7, 2026, as Madhav Dhananjaya Gadgil passed away at the age of 83 in Pune. A pioneer who returned from Harvard to ground-level activism, Gadgil's legacy is defined by a "people-centric" conservation philosophy. His demise has sparked renewed national debate on the Western Ghats Ecology Expert Panel (WGEEP) report, which he chaired, especially as Kerala and other states face intensifying climate disasters.



I. Key Highlights: A Life of "Science for People"

- **The WGEEP (Gadgil) Report Legacy:**
 - ✓ In 2011, Gadgil recommended declaring the entire 1.29 lakh sq km of the Western Ghats as an Ecologically Sensitive Area (ESA).
 - ✓ He proposed a "graded" regulatory framework (ESZ-1, 2, and 3) that empowered Gram Sabhas to decide on local developmental projects rather than centralized bureaucracies.
 - ✓ Though initially rejected by all six states, the report is now viewed as a "prophetic document" after successive floods and landslides in the region.
- **Nilgiris Biosphere Reserve (NBR):**
 - ✓ Gadgil was the principal architect of India's first biosphere reserve (1986).
 - ✓ He moved away from the "fortress conservation" model (which excludes people) to a landscape-level approach that integrated indigenous tribes like the Todas and Kurumbas as stakeholders.
- **Institutional Builder:**
 - ✓ He founded the Centre for Ecological Sciences (CES) at IISc Bengaluru in 1983, turning it into India's premier hub for field-based ecological research.

- ✓ **Democratic Tools:** He championed the People's Biodiversity Registers (PBRs), which allowed local communities to document their traditional knowledge and biological resources, later codified in the Biological Diversity Act, 2002.



II. Shaping the Narrative:

- Madhav Gadgil was perhaps the most influential yet contested figure in Kerala's ecological history.
- **From Silent Valley to Gadgil Report:** He was a key figure in the Silent Valley Movement (1970s) that prevented a dam from destroying rainforests.
- **The "Anti-Development" Label:** Political and religious groups in Kerala originally opposed the 2011 report, fearing it would displace farmers.
- **The Turning Point:** Post-2018 floods, "Gadgil" became a household name in Kerala. The narrative shifted from viewing him as an "alarmist" to a "visionary" whose science-based warnings on quarrying and deforestation were ignored at a great human cost.

III. The Gadgil Philosophy: "Democracy is Green"

- Gadgil argued that the "license-permit-quota raj" in forestry leads to corruption and ecological ruin.
- He believed that if local communities are given the legal rights to their forests (as per the Forest Rights Act, 2006), they will protect them more effectively than a forest guard.
- His memoir, *A Walk Up The Hill*, remains a seminal text for understanding the intersection of ecology, equity, and politics in India.

66. Atmospheric Dynamics: Water Vapor Found to Heat the Atmosphere More Than Aerosols

Context:

Recent research published in the Atmospheric Research Journal has fundamentally challenged existing perceptions of regional climate drivers over the Indo-Gangetic Plain (IGP). The study,

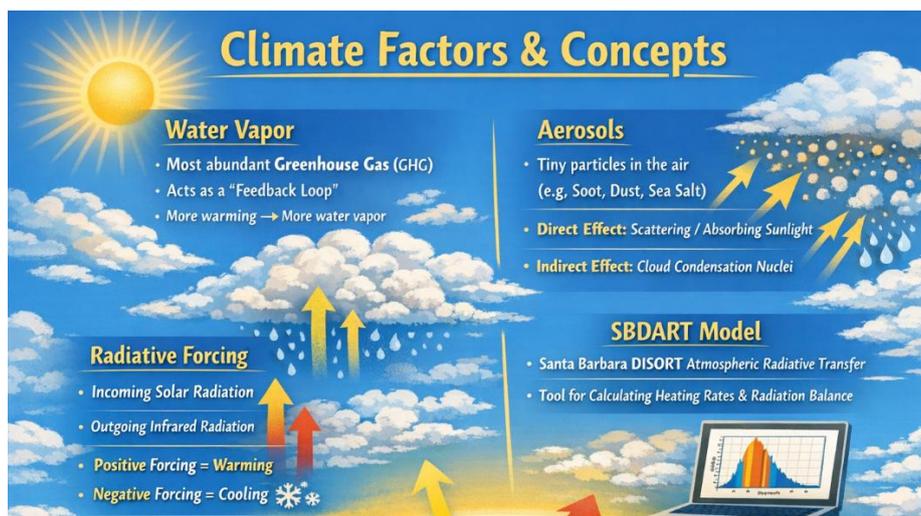
led by the Aryabhata Research Institute of Observational Sciences (ARIES) and the Indian Institute of Astrophysics (IIA), reveals that water vapor has a significantly higher impact on atmospheric heating than aerosols, particularly in one of the world's most polluted hotspots.

I. Key Highlights of the Study:

- **The "Radiative" Revelation:**
 - ✓ The study found that Water Vapor Radiative Effects (WVRE) are more intense than those of aerosols.
 - ✓ While aerosols are often the primary focus of pollution studies, water vapor is the dominant force in influencing the Earth's radiation balance and regional temperatures over the IGP.
- **Aerosol-Water Vapor Interaction:**
 - ✓ The research indicates that water vapor heating is more intense in aerosol-free (clean) atmospheres compared to aerosol-laden conditions.
 - ✓ When aerosols are present, the water vapor effect shifts its intensity toward the Top of the Atmosphere (TOA), showing a complex interrelation where aerosols "modulate" how water vapor heats the air.
- **Impact on Monsoon:** These interactions significantly impact regional atmospheric dynamics and have direct implications for the Indian Summer Monsoon, which is highly sensitive to the radiation budget of the IGP.
- **Methodology:** Scientists used data from six AERONET (Aerosol Robotic Network) sites and radiative transfer simulations (SBDART model) to quantify these effects across the densely populated plain.

II. The Indo-Gangetic Plain (IGP) as a Hotspot:

- The IGP is unique because it experiences high spatio-temporal variability in both aerosol loading (from biomass burning, dust, and industrial emissions) and water vapor content.
- This makes accurate climate projections difficult unless both factors are analyzed in tandem.



III. Significance:

- **Refining Climate Models:** Previous models that focused solely on aerosols may have underestimated the heating potential of the regional atmosphere. Integrating WVRE into future projections is crucial for National Climate Action Plans.

- **Regional Climate Dynamics:** Understanding the heating rates in the IGP is essential for predicting heatwaves and the onset of the monsoon, both of which are life-critical for millions of people in North India.
- **Clean Air Paradox:** The finding that water vapor heats the air more when it is clean (aerosol-free) highlights a complex challenge: as India successfully reduces aerosol pollution (for health reasons), the heating effect of water vapor might become more pronounced, potentially accelerating local warming.

67. The Science of the Smog: How Aerosols Thicken Winter Fog Over North India

Context:

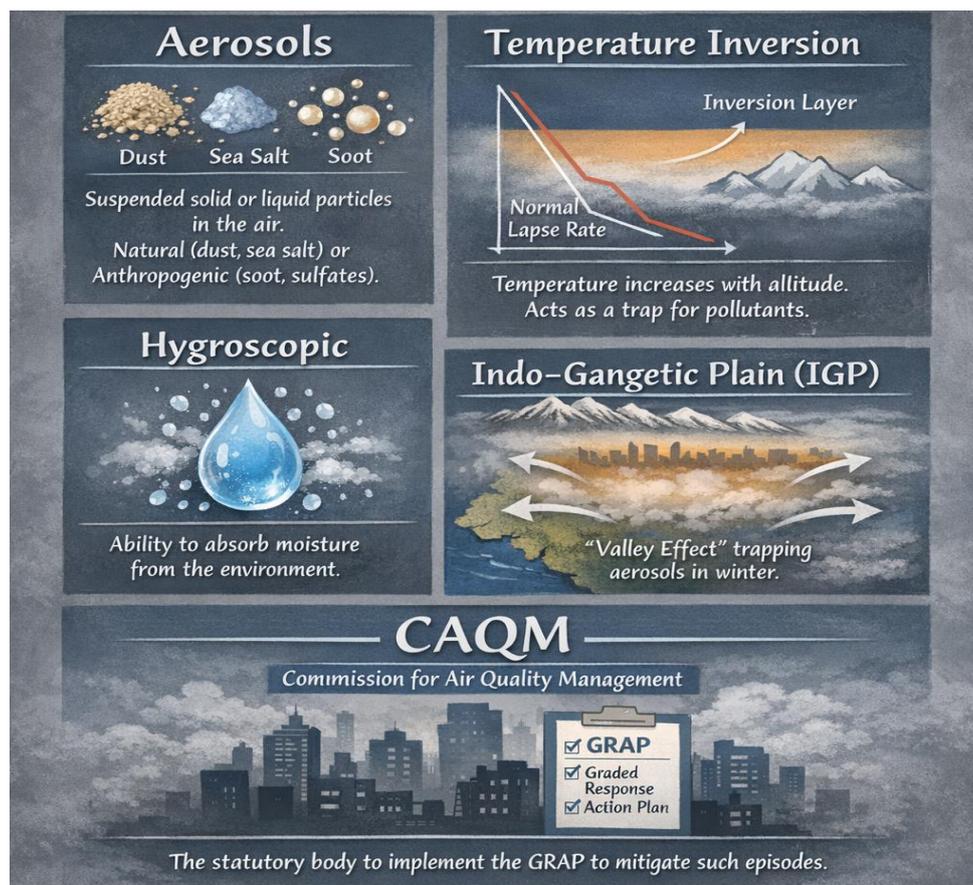
A specialized study conducted by the Indian Institute of Technology (IIT) Madras has provided new insights into the "fog-to-smog" transition in the Indo-Gangetic Plain (IGP). The research explains why North India experiences increasingly dense and persistent fog episodes, revealing that specific types of aerosols aloft (particles in the upper layers of the boundary layer) are responsible for lifting and thickening the winter fog, leading to severe disruptions in aviation and rail transport.

I. Key Highlights: The IIT-M Findings

- **Cloud Condensation Nuclei (CCN):** The study found that high concentrations of black carbon and secondary organic aerosols act as potent "seeds" for fog formation.
- **Aerosol-Radiation Feedback:**
 - ✓ Aerosols at higher altitudes absorb solar radiation, warming the upper air.
 - ✓ This creates a temperature inversion—a layer of warm air trapping cold, moist air underneath.
 - ✓ This "lid" effect prevents the fog from dispersing, causing it to thicken and persist for days.
- **Hydroscopic Growth:** The researchers observed that pollution particles in Delhi-NCR are highly hygroscopic (water-attracting), meaning they swell rapidly even at 70-80% humidity, turning light mist into "Very Dense Fog."
- **Chemical Composition:** The presence of chlorides (from industrial emissions and plastic burning) was found to be a primary driver in lowering the threshold for fog formation.

II. The Mechanism of Dense Fog:

- **Radiative Cooling:** During winter nights, the ground loses heat rapidly. If the air is laden with aerosols, the moisture condenses around these particles.
- **Vertical Distribution:**
 - ✓ The IIT-M study specifically points out that it isn't just ground-level pollution, but the vertical profile of aerosols that determines how long the fog will last.
 - ✓ When aerosols are "lifted," they sustain the fog layer by preventing the sun's rays from reaching the ground to evaporate the moisture.



III. Impact on Infrastructure and Health:

- **Aviation & Railways:** In January 2026, over 500 flights and 1,200 trains were delayed or cancelled due to "Zero Visibility" conditions directly linked to these aerosol-thickened fog banks.
- **Respiratory Health:** Unlike natural fog, this "toxic smog" carries heavy metals and acidic ions deep into the human lungs, leading to a 20% spike in emergency hospital admissions in North India.
- **Agriculture:** Persistent fog reduces Photosynthetically Active Radiation (PAR), affecting the growth of the Rabi crop (especially Wheat and Mustard).

IV. Way Forward:

- **Advanced Forecasting:** Using the IIT-M aerosol data, the IMD (India Meteorological Department) needs to move toward Aerosol-Aware Fog Forecasting to provide more accurate travel advisories.
- **Emission Control:** Beyond stubble burning, there is an urgent need to regulate industrial chloride emissions and small-scale plastic waste burning, which the study identifies as the "thickening agents."
- **Green Belts:** Increasing urban forests to act as biological filters for ground-level aerosols.

68. Unlocking Green Finance: Why Article 6 of the Paris Agreement is a Power Tool for India

Context:

India has transitioned from a passive participant to a proactive leader in the global carbon market. With the finalization of the "Article 6 Rulebook," India is now leveraging international carbon trading to fund its ambitious Net Zero 2070 goals. For a developing economy like India, Article 6 is not just a climate clause; it is a vital mechanism for attracting Foreign Direct Investment (FDI) and high-end green technology.

I. Key Highlights: The Essence of Article 6

- **The "Cooperative" Approach:** Article 6 allows countries to voluntarily cooperate to reach their Nationally Determined Contributions (NDCs).
- **ITMOs (Internationally Transferred Mitigation Outcomes):** This is the "currency" of Article 6. If India reduces more emissions than its target, it can sell these "units" (ITMOs) to a country like Switzerland or Japan that is struggling to meet its own goals.
- **Dual Market Structure:**
 - ✓ Article 6.2: Allows for bilateral agreements between countries (e.g., India-Japan Joint Crediting Mechanism).
 - ✓ Article 6.4: Creates a centralized UN-led global carbon market (replacing the old Clean Development Mechanism - CDM).

Key Climate Concepts

- **Paris Agreement (2015)**
A legally binding international treaty on climate change to limit global warming to well below 2°C (preferably 1.5°C).
- **NDC (Nationally Determined Contributions)**
Climate action plans by each country to reduce national emissions and adapt to climate change.
- **CDM (Clean Development Mechanism)**
The predecessor to Article 6 under the Kyoto Protocol. India was a major beneficiary, but the market collapsed due to low prices and poor oversight.
- **Carbon Intensity**
The amount of carbon emissions per unit of GDP. India aims to reduce this by **45%** by 2030.

II. Economic & Strategic Benefits for India:

- **Financing the Energy Transition:**
 - ✓ The transition to green energy requires trillions of dollars.
 - ✓ Article 6 allows Indian companies (especially in Solar, Wind, and Green Hydrogen) to sell carbon credits globally, providing an additional revenue stream that makes green projects more bankable and reduces the cost of capital.
- **Technology Transfer:**
 - ✓ Unlike simple trade, Article 6 often involves Technology Cooperation.
 - ✓ For example, a European country might invest in a cutting-edge Carbon Capture and Storage (CCS) project in India in exchange for the resulting carbon credits. This brings "first-of-its-kind" technology to Indian soil.
- **Boosting the MSME Sector:**
 - ✓ Through "programmable" carbon credits, clusters of Indian MSMEs (like foundry or textile clusters) can aggregate their emission reductions and sell them on the global market, incentivizing energy efficiency at the grassroots level.
- **Synergizing with the "Green Credit Initiative":**
 - ✓ India is currently aligning its domestic Green Credit Program (GCP) with Article 6 standards.
 - ✓ This allows Indian afforestation and water conservation projects to potentially tap into global climate finance.

III. The Challenge: Avoiding "Double Counting"

- A critical pillar of Article 6 is Corresponding Adjustments.
- **The Rule:** If India sells a carbon credit to another country, it cannot count that same reduction toward its own domestic NDC.
- **The Strategy:** India must carefully decide which sectors it will "export" credits from and which it will "keep" to meet its own 2030 targets.

IV. Way Forward:

- India has already notified a list of 13 activities eligible for trading under Article 6, including Green Hydrogen, Offshore Wind, and High-Efficiency Solar.
- **Institutional Strengthening:** The newly formed National Steering Committee for Indian Carbon Market (NSCCM) must ensure high integrity and transparency to avoid the "junk credit" issues of the past.
- **Global Positioning:** By hosting the 2026 BRICS summit, India can push for a "Global South Carbon Standard" that ensures fair pricing for credits generated in developing nations.

69. The Silicon-Carbon Paradox: India's Dual Challenge of AI Growth and Environmental Impact

Context:

As India positions itself as a global AI powerhouse through the IndiaAI Mission, a critical but overlooked dimension has emerged in January 2026: the environmental cost of the "Compute Revolution." With the government announcing a ₹10,000 Crore investment in AI computing infrastructure, experts are warning that without "Green AI" protocols, India's digital ambitions could collide with its Net-Zero 2070 commitments.

I. Key Highlights: The Environmental Footprint of AI

- **The Energy Gluttony:** Training a single large language model (LLM) can consume as much electricity as 100 Indian households use in a year.
- **The Water Crisis in Data Centers:** Large-scale AI servers generate immense heat, requiring millions of liters of water for cooling. In water-stressed regions of Maharashtra and Telangana, this poses a direct threat to local water security.
- **Carbon Intensive Training:** The carbon footprint of training a model is not just from the electricity used, but also from the embodied carbon in the manufacturing of the specialized GPUs (Graphics Processing Units) required.
- **Electronic Waste (e-Waste):** The rapid obsolescence of AI hardware (with a typical lifespan of only 3–5 years) is contributing to a massive surge in high-value e-waste that India is currently ill-equipped to recycle.

II. Dimensions of the Challenge:

- **The Power-Hungry "Compute"**
 - ✓ AI requires "Always-On" power.
 - ✓ While India is increasing its renewable capacity, the intermittency of solar and wind means that many data centers still rely on the coal-heavy grid for base-load power.
- **"Black Box" Environmental Reporting**
 - ✓ Currently, major AI developers in India are not mandated to disclose the carbon footprint or water consumption of their models.
 - ✓ There is a growing demand for Environmental Transparency in AI to be part of the upcoming Digital India Act.
- **The Cooling Conflict**
 - ✓ Data centers are moving toward "Liquid Cooling" to save electricity, but this significantly increases water evaporation rates.
 - ✓ In cities like Bengaluru, where the groundwater table is depleting, the expansion of data centers is becoming a point of local conflict.

III. The Solution: Moving Towards "Green AI"

- **Algorithmic Efficiency:** Shifting focus from "Red AI" (scaling models for accuracy regardless of cost) to "Green AI" (optimizing models to achieve results with fewer parameters and less energy).
- **Location Strategy:** Incentivizing data centers to move to cooler, high-altitude regions (like Himachal or Ladakh) to utilize "Free Cooling" from the ambient air, or coastal regions to use seawater cooling.
- **Heat Recovery:** Repurposing the waste heat generated by AI servers to provide heating for nearby industrial processes or residential areas.

IV. Way Forward

- India must pioneer a "Sustainable AI Index" to rank models not just on their intelligence, but on their energy efficiency.
- **Mandatory Disclosure:** Standardizing "Carbon-per-Query" labels for AI applications.
- **GPU Recycling:** Establishing specialized "Urban Mining" facilities to recover rare earth metals from discarded AI hardware.
- **Renewable Mandate:** Requiring all new "Data Center Parks" to have at least 40% captive renewable energy supply.

70. Sacred vs. Sylvan: New Norms for Religious Sites in India's Sanctuaries

Context:

Recently, the Standing Committee of the National Board for Wildlife (SCNBWL) established a landmark Standard Operating Procedure (SOP). This policy aims to resolve the perennial friction between religious sentiment and ecological conservation by drawing a "red line" at the year 1980.

I. The Core Guidelines: The "1980" Benchmark

The new SOP is built on the principle that the sanctity of the forest is paramount. The guidelines include:

- **The Cut-off Rule:** Any religious structure built or expanded on forest land after the enactment of the Forest (Conservation) Act, 1980, is categorized as an illegal encroachment.
- **Expansion Restrictions:** "Footprint" expansion is strictly prohibited unless it serves a defensive ecological purpose (e.g., barriers to prevent human-animal conflict) or essential public utilities (sanitation/safety) to manage existing pilgrim pressure.
- **The Burden of Proof:** For any site to be regularized, State Governments must provide documented evidence that the site existed legally before 1980.

A. Constitutional Provisions



- **Article 48A (DPSP):** Mandates that the State shall endeavor to protect and improve the environment and safeguard forests and wildlife.
- **Article 51A(g) (Fundamental Duties):** It is the duty of every citizen to protect and improve the natural environment.
- **Article 25:** Guarantees freedom of religion but subject to public order, morality, and environmental health.

B. Statutory Framework



- **Wildlife (Protection) Act, 1972:** Legal basis for National Parks & Sanctuaries.
- **Forest (Conservation) Act, 1980:** Restricts forest land for "Non-Forest Purposes."
- **Forest Rights Act (FRA), 2006:** Recognizes "Community Forest Resource" rights.

C. The National Board for Wildlife (NBWL)



- **Chaired by:** The Prime Minister.
- **Role:** Apex body for wildlife matters & project approvals.

Standing Committee: Chaired by the Environment Minister

II. Ecological Dimensions: Why the "Floodgate" Matters

The Balaram Ambaji Wildlife Sanctuary case highlighted the "domino effect" of ad-hoc clearances.

- **Habitat Fragmentation:** Even a small 0.35-hectare diversion can require access roads. These roads act as barriers for small mammals and corridors for invasive species.
- **Anthropogenic Pressure:** Religious sites often lead to "unregulated tourism," characterized by noise pollution (loudspeakers) and improper waste disposal.
- **Human-Wildlife Conflict:** Food waste from shrines attracts feral dogs and macaques, which can alter the local food web and increase aggressive encounters with humans.

III. The Way Forward: Green Pilgrimage

The panel emphasizes that faith and forest are not mutually exclusive but require State Accountability:

- **Digitization:** Using GIS and satellite imagery to create a "baseline" of existing structures to prevent incremental "creeping" expansions.
- **Public Trust Doctrine:** A legal principle (affirmed by the Supreme Court in *MC Mehta v. Kamal Nath*) stating that certain resources like air, water, and forests are held by the government in trust for the general public and cannot be converted into private/religious property.
- **Zero-Waste Shrines:** Implementing "Green Pilgrimage" protocols where religious trusts are held responsible for the "cradle-to-grave" management of waste generated by devotees.

71. Bridging the Wild: PM Launches ₹6,957-Crore Kaziranga Elevated Corridor

Context:

In a major boost to both infrastructure and wildlife conservation, Prime Minister Narendra Modi launched the construction of the 34.3-km elevated corridor along National Highway 715 (formerly NH-37) in January 2026. This ambitious project, valued at ₹6,957 crore, aims to resolve the decades-old conflict between high-speed vehicular traffic and the seasonal migration of animals in the Kaziranga National Park and Tiger Reserve (KNPTR).

I. Key Highlights:

- **Project Scale:** A 34.3-km long four-lane elevated highway divided into three distinct sections.
- **Funding & Execution:** Spearheaded by the National Highways Authority of India (NHAI) with state-level coordination from the Assam government.
- **The "Flood-Safe" Design:** The corridor is specifically designed to allow animals to move safely underneath the highway to the Karbi Anglong hills during the annual monsoon floods, which submerge over 80% of the park.
- **Strategic Integration:** The project includes the construction of a large bridge over the Brahmaputra, further improving connectivity between the north and south banks while bypassing the core sensitive zones.

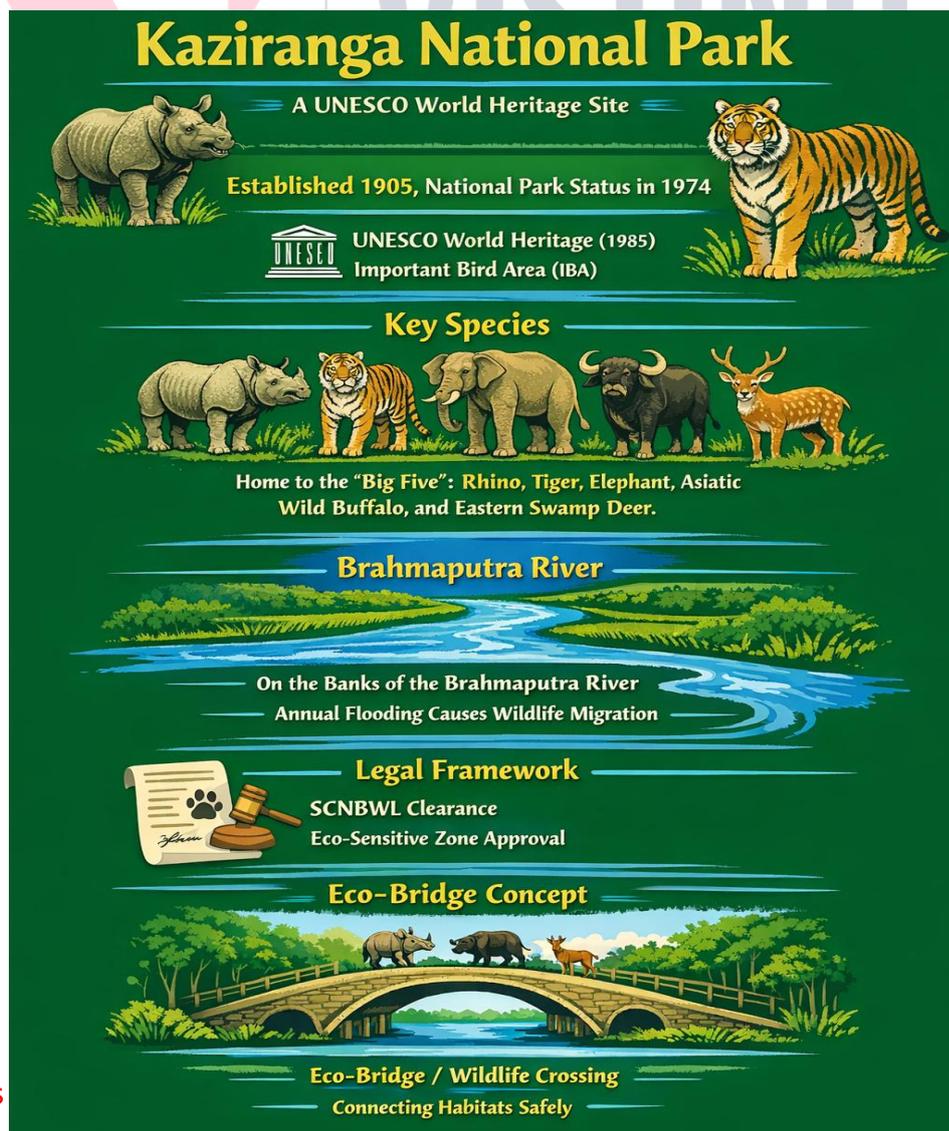
II. Environmental Significance: Breaking the Barrier

For decades, the NH-715 acted as a "death trap" for wildlife. During the floods, animals attempting to reach higher ground in the Karbi Anglong hills were frequently struck by vehicles.

- **Connectivity Restoration:** The elevated structure will restore the natural wildlife corridors that have been fragmented by the highway.
- **Noise and Light Mitigation:** The project includes the installation of sound barriers and specialized lighting to ensure that nocturnal animal movements are not disrupted by the traffic above.
- **Zero-Interference Zones:** By lifting the traffic, the ground-level ecosystem remains undisturbed, allowing for the natural growth of vegetation and free movement of the One-Horned Rhinoceros, Royal Bengal Tiger, and Asian Elephant.

III. Challenges and Construction Dynamics:

- **Strict Environmental Compliance:** Construction is mandated to follow a "Silence Zone" protocol, with heavy machinery prohibited during the peak migratory season (monsoon).
- **Geological Complexity:** Building high-load piers in the soft, alluvial soil of the Brahmaputra floodplain requires advanced seismic-resistant technology.
- **Human-Wildlife Interface:** Managing the local population during construction to ensure that the increased activity does not lead to a spike in human-animal conflict.



IV. Way Forward:

- The Kaziranga Elevated Corridor serves as a global template for "Linear Infrastructure Resilience."
- **Model for NHAI:** The success of this project will likely lead to similar elevated corridors in other sensitive zones like the Western Ghats and the Himalayan foothills.
- **Tourism Potential:** The project includes plans for "viewing decks" that allow tourists to observe wildlife from a distance without entering the core area, promoting Sustainable Ecotourism.

72. India's Climate Resilience: Bridging the Linguistic Divide

Context:

As India grapples with intensifying heatwaves, erratic monsoons, and rising sea levels, a critical barrier has emerged in its climate adaptation strategy: Language. While climate science and policy frameworks are predominantly documented in English, the communities most vulnerable to these changes—farmers, coastal fishers, and forest dwellers—speak a multitude of regional languages and dialects. This "information asymmetry" hinders the grassroots implementation of the National Action Plan on Climate Change (NAPCC) and limits community-based disaster risk reduction.

I. Key Highlights:

- **The English Hegemony:** Over 90% of primary climate research and policy briefs in India are published in English, a language spoken fluently by less than 15% of the population.
- **Terminology Gap:** Scientific terms like "Carbon Sequestration," "Net Zero," or "Albedo Effect" lack direct equivalents in many Indian languages, leading to conceptual misunderstandings.
- **Early Warning Systems (EWS):** The effectiveness of EWS for cyclones or floods is often diluted when technical jargon is translated poorly into local dialects, leading to delayed evacuations.
- **Knowledge Inequity:** Indigenous communities possess immense traditional ecological knowledge (TEK), but because it is not codified in English, it remains excluded from mainstream climate discourse.

II. Dimensions of the Linguistic Gap:

- **Policy Implementation and Governance:**
 - ✓ The "top-down" approach of climate policy often fails at the "last mile."
 - ✓ State Action Plans on Climate Change (SAPCC) are frequently drafted in English, making them inaccessible to the Panchayat (village council) members responsible for executing them.
 - ✓ Without linguistic localization, climate adaptation remains a bureaucratic exercise rather than a people's movement.
- **Agricultural Vulnerability:**
 - ✓ Farmers rely on agro-met advisories for planting and harvesting.
 - ✓ When these advisories use complex meteorological terms instead of colloquial agricultural wisdom, the risk of crop failure increases.
 - ✓ Bridging this gap is essential for achieving SDG 2 (Zero Hunger) and SDG 13 (Climate Action).

- **Climate Justice and Inclusion:**
 - ✓ Language is a tool of empowerment.
 - ✓ By restricting climate discourse to English, we inadvertently exclude the most marginalized voices (Dalits, Adivasis, and women) from participating in climate negotiations and asserting their rights over natural resources.

Constitutional and Institutional Framework



Articles 343-351

- These articles deal with official languages. Article 350A directs states to provide adequate facilities for instruction in the mother tongue, which can be extended to climate education.

Article 343-351

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The Eighth Schedule

Recognizes 22 languages. Effective climate communication must, at a minimum, permeate these 22 languages to be inclusive.



अ त म ञ य अं
अु क ड च ः अ
ख म वा व व ल

National Action Plan on Climate Change (NAPCC)

Launched in 2008, its "National Mission on Strategic Knowledge for Climate Change" emphasizes the need for better data sharing, but lacks a dedicated mandate for linguistic translation.



III. The Way Forward: Strategies for Linguistic Integration

- **Vernacular Science:** Encouraging scientists to publish summaries in regional languages and supporting "Science Communication" (Vigyan Prasar) in dialects.
- **Tech-Enabled Translation:** Leveraging AI and Bhashini (India's AI-led language translation platform) to translate climate alerts and policy documents in real-time.
- **Community Radio:** Using hyper-local media to translate complex climate data into folk songs, stories, and local metaphors.
- **Curriculum Reform:** Integrating climate change concepts into school textbooks in the mother tongue as per the National Education Policy (NEP) 2020.

Climate change is a global problem, but its solutions are inherently local. For India to meet its Panchamrit targets and build a "Viksit Bharat" by 2047, the language of climate action must transition from the "elite corridors of academia" to the "courtyards of rural India." We cannot solve a crisis that the majority of our population does not have the vocabulary to describe.

73. Guardians of the Blue Arteries: Strengthening Conservation of Riverine Dolphins

Context:

In a significant move towards biodiversity conservation, the Government of India has reaffirmed its commitment to the protection of Riverine Dolphins through enhanced monitoring and international cooperation. The latest updates from the Ministry of Environment, Forest and Climate Change (MoEFCC) emphasize the success of Project Dolphin and India's leadership in the Global Declaration for River Dolphins, aiming to reverse the decline of these apex predators in the Ganga-Brahmaputra-Meghna and Indus river systems.

I. Key Highlights of the Recent Developments:

- **Expansion of Project Dolphin:** The government has integrated advanced satellite tracking and acoustic monitoring to study the migratory patterns of the Ganges River Dolphin.
- **Community-Led Conservation:** Introduction of 'Dolphin Mitras' (Friends of the Dolphin)—local community volunteers engaged in reporting sightings and preventing poaching/accidental entanglement.
- **Transboundary Collaboration:** India is spearheading a regional framework with Bangladesh and Nepal for the "Safe Corridor" initiative to allow seamless movement of dolphins across international river boundaries.
- **Habitat Restoration:** Renewed focus on maintaining Environmental Flows (e-flows) in the Ganga river to ensure sufficient water depth and quality for dolphin survival.

II. The Six Species of River Dolphins:

While the news focuses on India, it is essential to understand that there are only six surviving species of river dolphins globally, all of which are under threat:

- Ganges River Dolphin (India, Nepal, Bangladesh)
- Indus River Dolphin (India, Pakistan)
- Amazon River Dolphin (Pink Dolphin - South America)
- Tucuxi (South America)
- Irrawaddy Dolphin (South/Southeast Asia - primarily estuarine but enters rivers)
- Yangtze Finless Porpoise (China) Note: The Baiji (Yangtze River Dolphin) was declared functionally extinct in 2006.

III. Threats to Riverine Dolphins:

- **Infrastructure Projects:** Dams and barrages fragment habitats, restricting movement and isolating populations, leading to a narrowed gene pool.
- **Bycatch:** Accidental entanglement in nylon gillnets remains the leading cause of anthropogenic mortality.
- **Pollution:** High levels of agricultural runoff (pesticides), industrial effluents, and plastic pollution lead to bioaccumulation of toxins.
- **Noise Pollution:** Since dolphins rely on Echolocation to navigate and hunt (being functionally blind), underwater noise from motorized boats and dredging interferes with their survival.



IV. Institutional & Policy Framework in India:

- **Project Dolphin (2020):** Launched on the lines of Project Tiger, it aims to conserve both riverine and marine dolphins.
- **National Dolphin Research Centre (NDRC):** India's first such center established in Patna, Bihar, specifically to study the Ganges River Dolphin.
- **Vikramshila Gangetic Dolphin Sanctuary:** Located in Bhagalpur (Bihar), it is the only protected area designated specifically for these dolphins in India.
- **Conservation Action Plan for the Ganges River Dolphin (2022-2047):** A long-term roadmap focusing on science-based conservation and sustainable development.

DEFENSE & INTERNAL SECURITY

74. Shielding the Skies: DRDO's Pivotal Role in India's Air Defence Architecture

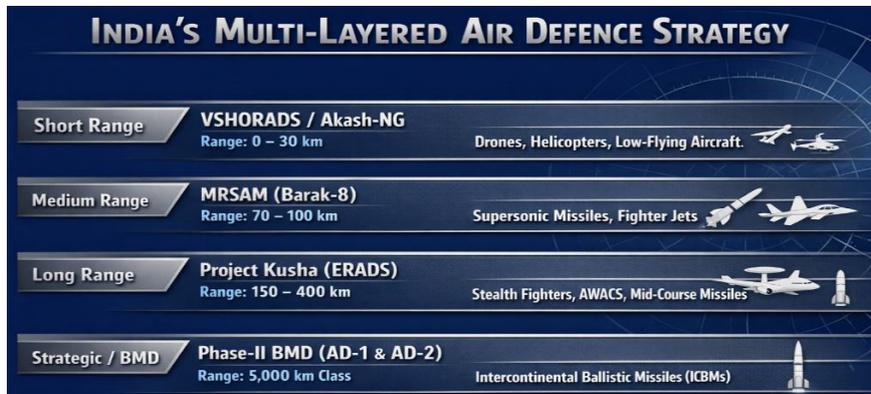
Context:

On January 1, 2026, marking the 68th Foundation Day of the Defence Research and Development Organisation (DRDO), Union Defence Minister Rajnath Singh visited the DRDO headquarters in New Delhi. He emphasized that the DRDO will be the cornerstone of India's future air defence, specifically highlighting its role in the ambitious 'Sudarshan Chakra' initiative. The visit served as a platform to review the roadmap for 2026 and acknowledge the "decisive role" played by indigenous weapon systems in recent national security operations, such as Operation Sindoor.

I. Key Highlights:

- **Project Sudarshan Chakra:** A decade-long initiative aimed at equipping vital installations with a comprehensive, indigenous air defence system to ensure complete aerial protection.
- **Success of Operation Sindoor:** The Raksha Mantri noted that DRDO-developed systems functioned seamlessly during this high-stakes operation, significantly boosting the morale of the armed forces and validating indigenous technology in real-world combat.

- **Transition to 'Deep Tech':** Emphasis was placed on shifting focus toward next-generation technologies, including AI-driven interception, deep tech, and hypersonic countermeasures.
- **Private Sector Synergy:** A renewed push for the "trust-builder" role of DRDO, fostering a collaborative ecosystem involving academia, start-ups, and MSMEs to accelerate the production of air defence hardware.



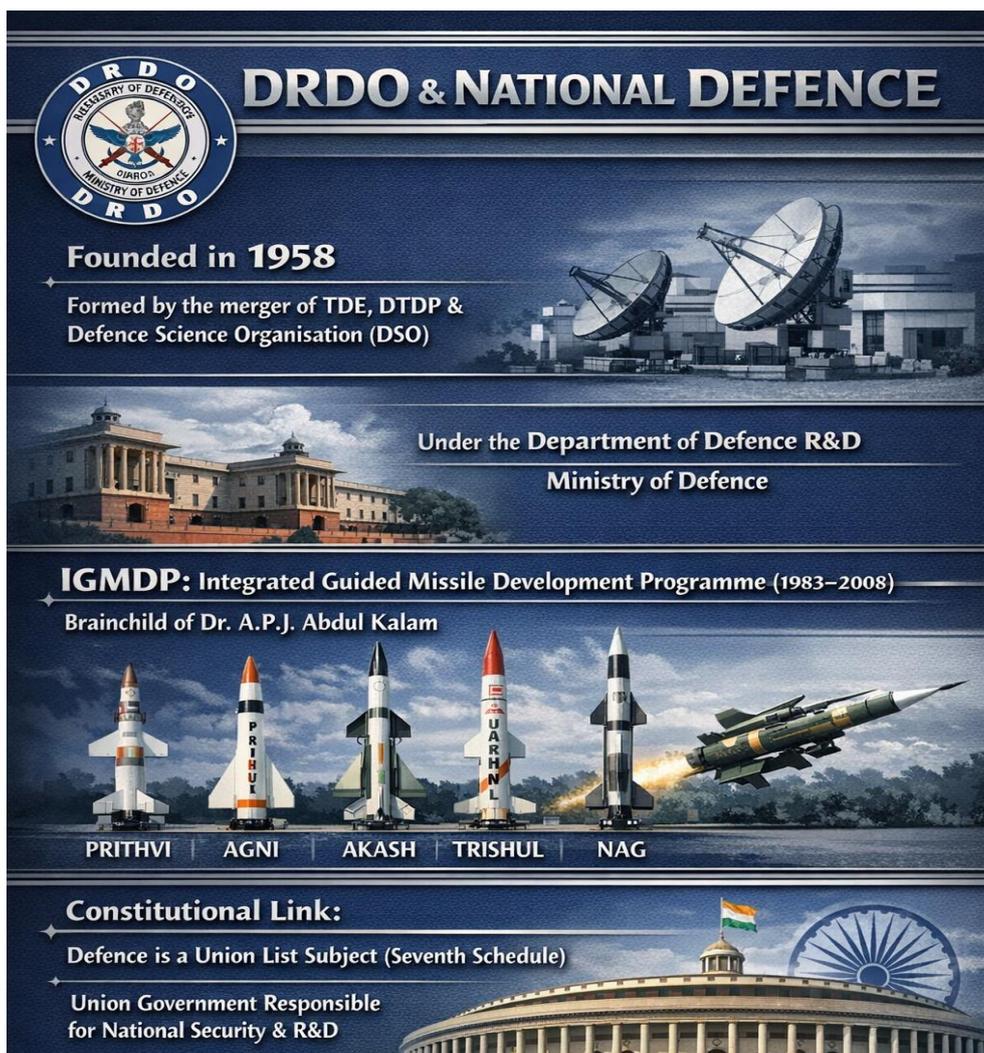
II. Project Kusha: The Indigenous S-400 Equivalent

- One of the most critical projects currently in the trial phase (as of early 2026) is Project Kusha (Extended Range Air Defence System).
- **Objective:** To reduce reliance on foreign systems like the Russian S-400.
- **Components:** It features three variants of interceptors (M1, M2, and M3) with ranges up to 400 km.
- **Technology:** Incorporates indigenous AESA (Active Electronically Scanned Array) radars and dual-pulse solid rocket motors, allowing for high-speed engagement of stealth targets.

III. Operational Evolution: Lessons from Operation Sindoor

The Defence Minister's reference to Operation Sindoor (carried out in May 2025) underscores a shift in India's defensive posture. The operation highlighted:

- **Reliability of Indigenous Sensors:** Ground-based radars and the Netra AEW&C (Airborne Early Warning and Control) systems provided real-time tracking that was critical for the operation's success.
- **Integrated Command and Control:** The importance of the IACCS (Integrated Air Command and Control System), which links all ground-based and airborne sensors into a single network, was fully demonstrated.



The pivot towards Sudarshan Chakra signifies that India is moving beyond mere procurement to a state of strategic autonomy. By leveraging "Deep Tech" and integrating the private sector, DRDO aims to ensure that by 2035, the Indian sky is protected by an AI-augmented, multi-layered shield that is entirely "Made in India."

75. Pralay Missile: Strengthening India's Conventional Deterrence

Context:

Recently, the Defence Research and Development Organisation (DRDO) successfully conducted a salvo launch of two indigenous Pralay missiles in quick succession from the Integrated Test Range (ITR), Chandipur. The successful trial, reported in early January 2026, marks the transition of the missile from the development phase to the User Evaluation Trials, signaling its imminent induction into the Indian Army and the Indian Air Force. This development is a cornerstone of India's plan to establish an Integrated Rocket Force (IRF).

I. Key Highlights:

- **Salvo Launch Capability:** The ability to fire two missiles from the same launcher in rapid succession (simultaneous firing) establishes the system's reliability and its capacity to overwhelm enemy Air Defence (AD) systems.

- **Tactical Precision:** The missile achieved all mission objectives with a Circular Error Probable (CEP) of less than 10 meters, offering "hit-to-kill" accuracy.
- **Indigenous Development:** Developed by Research Centre Imarat (RCI), Hyderabad, in collaboration with other DRDO labs and industry partners like Bharat Dynamics Limited (BDL).
- **Strategic Gap Filler:** It fills the critical void between short-range multi-barrel rocket systems (like Pinaka) and long-range strategic ballistic missiles (like Agni), specifically for conventional (non-nuclear) warfare.

II. Technical Dimensions of Pralay:

- **The Quasi-Ballistic Nature:**
 - ✓ Unlike a standard ballistic missile that follows a predictable high-arc trajectory, Pralay is quasi-ballistic. It travels on a flatter, "depressed" trajectory and possesses the ability to maneuver mid-air.
 - ✓ **Significance:** This unpredictability makes it extremely difficult for enemy interceptor missiles (like the Chinese HQ-9) to track and destroy it.
- **Propulsion and Range:**
 - ✓ **Range:** 150 km to 500 km.
 - ✓ **Propulsion:** Powered by a two-stage solid-propellant rocket motor, ensuring rapid launch readiness (shoot-and-scoot) compared to liquid-fueled missiles.
 - ✓ **Payload:** It can carry conventional warheads weighing 350 kg to 1,000 kg, including High Explosive, Penetration-cum-Blast, and Runway Denial submunitions.
- **Mobility and Evasion:**
 - ✓ The system is integrated into a 12x12 Ashok Leyland Transporter Erector Launcher (TEL).
 - ✓ Being road-mobile and canisterized, it can be hidden in mountainous terrain (LAC/LoC) and deployed quickly, enhancing survivability against pre-emptive strikes.

III. Strategic Significance: The Integrated Rocket Force (IRF)

- The Pralay missile is the primary weapon intended for India's proposed Integrated Rocket Force.
- **Non-Nuclear Deterrence:** India's "No First Use" policy applies to nuclear weapons. Pralay, being purely conventional, gives the military a "long-arm" strike capability to hit high-value targets (airbases, fuel dumps, command centers) without crossing the nuclear threshold.
- **Regional Balance:** It provides a direct counter to China's PLA Rocket Force (PLARF), which utilizes similar tactical missiles like the Dong Feng 12 (DF-12) and DF-15.



- **IGMDP Connection:** While Pralay is a modern project (conceptualized in 2015), it utilizes technologies derived from the Prithvi Defence Vehicle (PDV) exo-atmospheric interceptor and the Prahaar tactical missile.
- **MTCR Compliance:** As a 500-km range missile with a high payload, Pralay represents India's mastery of technologies regulated by the Missile Technology Control Regime (MTCR), which India joined in 2016.

76. Suryastra: India's New Long-Range Precision Strike Capability

Context:

In a decisive push for artillery modernization, the Indian Army signed a ₹293 crore contract in early January 2026 with Pune-based private firm NIBE Limited for the procurement of an advanced, long-range universal rocket launcher system. This system, indigenously branded as Suryastra, is based on the PULS (Precise and Universal Launching System) technology from Israel's Elbit Systems. The deal, executed under Emergency Procurement (EP) powers, marks a significant milestone in Indo-Israel defense collaboration and India's transition toward a specialized "Rocket Force."

I. Key Highlights:

- **Aatmanirbhar Bharat in Defense:** The Suryastra system is India's first "Made in India" universal multi-calibre rocket launcher, manufactured by NIBE Ltd. under a Technology Collaboration Agreement (TCA) signed with Elbit Systems in July 2025.
- **Operational Range:** The system provides a tactical deep-strike capability with precision-guided rockets reaching ranges of 150 km and 300 km.
- **Exceptional Precision:** During trials, the system demonstrated a Circular Error Probable (CEP) of less than 5 metres, far exceeding the accuracy of most existing artillery rocket systems.
- **Multi-Calibre Versatility:** Unlike legacy systems, Suryastra is an "open-architecture" platform that can integrate and fire various rocket calibres (122mm, 160mm, 306mm) and tactical missiles from the same launcher.

- **Loitering Munition Integration:** A unique feature of this system is its ability to launch loitering munitions (like the SkyStriker) up to a range of 100 km, allowing for "search and destroy" missions against moving targets.

II. Technological Dimensions: Why Suryastra is a Game-Changer

- **The "Universal" Advantage:**
 - ✓ Standard Multiple Launch Rocket Systems (MLRS) are usually designed for a specific type of ammunition.
 - ✓ Suryastra breaks this mold by using two multipurpose pods.
 - ✓ This allows the Army to switch between area-saturation rockets and high-precision missiles on a single vehicle chassis (4x4, 6x6, or 8x8), providing immense operational flexibility.
- **Tactical Mobility and Survivability:**
 - ✓ Equipped with advanced fire control systems, GPS, and inertial navigation, the system supports "shoot-and-scoot" tactics.
 - ✓ This allows the launcher to fire and relocate within minutes, significantly reducing its vulnerability to enemy counter-battery fire.
- **Integration with the Integrated Rocket Force (IRF):**
 - ✓ The procurement aligns with the Indian military's vision of an Integrated Rocket Force.
 - ✓ By placing high-precision, long-range conventional firepower in the hands of the Army, India can deter adversaries along the Line of Actual Control (LAC) and Line of Control (LoC) without immediate escalation to strategic missile tiers.

EMERGENCY PROCUREMENT POWERS

▶ After the 2020 Galwan Clash: Vice Chiefs authorized to fast-track purchases up to ₹300 Crore for urgent operational needs.

INDO-ISRAEL DEFENSE TIES

▶ From "Buyer-Seller" to "Co-Development & Co-Production", Barak-8 & Suryastra Programs.

"ARTICLE 51-A"

"It is the duty of every citizen to defend the nation and render national service."

Pinaka (Indigenous)	/	Suryastra (Indo-Israel)
Area Saturation / Precision	/	Universal Precision / Deep Strike
~75–90 km (Mk-II/III)	/	Up to 300 km
~1% of Range	/	< 5 Metres
Specific Calibre	/	Multi-Calibre & Loitering Munitions



III. Strategic Significance:

- The induction of Suryastra addresses a critical "stand-off" gap.
- It allows the Indian Army to strike high-value targets—such as command centers, ammunition dumps, and airfields—deep behind enemy lines with surgical precision.
- This strengthens India's conventional deterrence by providing a middle-ground response between traditional artillery and strategic ballistic missiles.

77. NATGRID: Strengthening National Security or Paving the Way for Digital Authoritarianism?

Context:

In early 2026, the National Intelligence Grid (NATGRID) has come under intense scrutiny from civil liberties groups and legal experts. While the government maintains that NATGRID is a vital "master database" for counter-terrorism, critics have labeled it a "search engine of digital authoritarianism." As the platform integrates more AI-driven predictive analytics and expands its access to 11 central agencies, the debate over the fine line between national security and the right to privacy has reached a fever pitch in the Indian socio-political landscape.

I. Key Highlights:

- **Data Integration:** NATGRID links 21 categories of data—including credit card transactions, tax details (GST & Income Tax), bank accounts, immigration records, and telecom logs—from various providers.
- **AI Integration (2025-26):** Recent updates have introduced "pattern recognition" and "anomaly detection" software to flag suspicious financial trails or travel movements in real-time.
- **Centralized Access:** 11 central agencies, including the IB, RAW, CBI, ED, and NIA, can access this centralized database without a judicial warrant.
- **The Authoritarianism Critique:** Critics argue that without a robust data protection law specifically governing surveillance, NATGRID could be misused for "profile-based" targeting and suppressing political dissent.

Constitutional and Legal Framework

Article 21: The Right to Life and Personal Liberty includes the right to privacy.

Section 69 of the IT Act (2000): Grants the power to issue directions for interception or monitoring of information through any computer resource.

Digital Personal Data Protection (DPDP) Act, 2023:

Section 18 provides broad exemptions to the Central Government for the purposes of "sovereignty and integrity of India" and "security of the State."

Seventh Schedule: "Police" and "Public Order" are State subjects, but "Intelligence and Investigation" for the Union are part of the Union List (Entry 8).

II. The Architecture of NATGRID:

- **Structural Blueprint:**
 - ✓ NATGRID acts as a middle-layer between Data Providers (Airlines, Banks, SEBI, Railways, etc.) and User Agencies (Intelligence and Investigation agencies).
 - ✓ Instead of the agencies going to each bank or airline individually, they use NATGRID to get a 360-degree profile of a suspect.

- **Evolution from 26/11:**
 - ✓ Conceived in the aftermath of the 2008 Mumbai attacks, NATGRID was intended to solve the "intelligence silo" problem.
 - ✓ The logic was that if David Headley's disparate travel and financial records had been linked in one place, the attacks might have been prevented.

III. The "Digital Authoritarianism" Concern:

- **Erosion of Privacy:**
 - ✓ The primary concern is the violation of the Right to Privacy, which was declared a Fundamental Right in the Justice K.S. Puttaswamy (Retd.) vs Union of India (2017) case.
 - ✓ Critics argue that NATGRID enables "mass surveillance" rather than "targeted surveillance."
- **Lack of Legislative Oversight:**
 - ✓ Unlike intelligence agencies in the US or UK, NATGRID was established via an executive order rather than an Act of Parliament.
 - ✓ This lacks the "Legality" and "Accountability" prongs of the three-fold test established by the Supreme Court:
 - Legality: Presence of a law.
 - Need: Legitimate State aim.
 - Proportionality: Rational nexus between objects and means.
- **The Threat of "Chilling Effect":**
 - ✓ Digital authoritarianism refers to the use of technology to monitor, track, and repress citizens.
 - ✓ The fear of being under constant state surveillance can lead to a "chilling effect" on free speech and association, where individuals refrain from legitimate dissent to avoid being flagged by NATGRID's algorithms.



IV. The Way Forward:

To shed the "authoritarian" tag, the government must move toward:

- **A Statutory Framework:** Passing an Act in Parliament specifically for NATGRID to define its powers and limitations.

- **Judicial Oversight:** Requiring an independent judicial authority to sign off on specific data-mining queries.
- **Regular Audits:** Establishing a Parliamentary Committee to audit the usage of NATGRID to ensure it hasn't been used for political surveillance.

While NATGRID is a technological necessity in the era of hybrid warfare and digital terror, its unchecked expansion poses a significant threat to India's democratic fabric. The challenge for 2026 lies in ensuring that while the state's eyes remain open to threats, they do not blink at the constitutional rights of its citizens.

78. The Quantum Frontier: India's Strategic Framework for Military Quantum Missions

Context:

In a landmark move to secure India's digital and physical borders against future technological threats, the Ministry of Defence (MoD) in January 2026 unveiled the Military Quantum Mission (MQM) Policy Framework. This policy serves as the dedicated defense-wing extension of the National Quantum Mission (NQM). It aims to fast-track the development of quantum-leap technologies for the Armed Forces, ensuring that India remains "Quantum-Ready" in an era where traditional encryption and sensing are becoming increasingly vulnerable to advanced adversaries.

I. Key Highlights:

- **Quantum Secure Communication:** Prioritizing the deployment of Quantum Key Distribution (QKD) across the Integrated Command and Control Centers (ICCC) to prevent eavesdropping by quantum computers.
- **Quantum Sensing and Metrology:** Development of highly sensitive quantum sensors for detecting stealth aircraft, submarines, and underground bunkers that are invisible to conventional radar and sonar.
- **Post-Quantum Cryptography (PQC):** A mandate to transition all existing military digital infrastructure to PQC standards by 2030 to withstand "Harvest Now, Decrypt Later" attacks.
- **Funding and Hubs:** Allocation of a dedicated ₹2,500 crore corpus for "Defence Quantum Innovation Hubs" (DQIH) at premier institutes like IITs and DRDO labs.
- **Human Capital:** Launch of specialized "Quantum Warfare" modules in the curriculum of the National Defence Academy (NDA) and Defence Services Staff College (DSSC).

II. Core Pillars of the Military Quantum Mission:

- **Quantum Communication (The Unbreakable Shield):**
 - ✓ The framework emphasizes the creation of a Quantum Backbone for the Indian Army, Navy, and Air Force.
 - ✓ **QKD over Satellite:** Utilizing ISRO's dedicated defense satellites to establish long-distance quantum-secure links between the mainland and far-flung naval assets or mountain divisions.
 - ✓ **Significance:** Unlike classical encryption, which relies on mathematical complexity, quantum communication relies on the laws of physics (Heisenberg's Uncertainty Principle). Any attempt to intercept the key alters its state, immediately alerting the users.

- **Quantum Navigation and Timing:**
 - ✓ One of the most critical military applications is Quantum Positioning Systems (QPS).
 - ✓ **GPS-Independent Warfare:** Modern missiles and platforms rely on GNSS (like GPS or NavIC). In a conflict, these signals can be jammed or spoofed.
 - ✓ **Quantum Inertial Sensors:** These allow for high-precision navigation without the need for external satellite signals, making "dead reckoning" accurate enough for deep-sea submarines and long-range missiles.
- **Quantum Computing for Strategic Simulation:** The mission aims to leverage quantum processors for:
 - ✓ **War-gaming:** Simulating millions of battlefield scenarios in seconds.
 - ✓ **Material Science:** Discovering new superconducting materials for stealth coatings or high-energy propellants.

Institutional Framework

- ◆ **National Quantum Mission (NQM):** Launched in April 2023 (under the Department of Science & Technology) with a budget of ₹6,003 crore. Military framework implementation of NQM's "**Strategic & Defence**" vertical.
- ◆ **DRDO Young Scientist Labs (DYSL-QT):** Mumbai-based lab focused on *Quantum Technologies and nodal agency for the mission.*
- ◆ **The "Four Hubs" Model:** Under NQM, India is setting up Thematic Hubs (T-Hubs) in:
 -  **Quantum Computing**
 -  **Quantum Communication**
 -  **Quantum Sensing & Metrology**
 -  **Quantum Materials & Devices**
- ◆ **Constitutional Link:** Under Article 51A (h), it is a Fundamental Duty to "*develop the scientific temper, humanism and the spirit of inquiry and reform.*" Strategic missions like NQM embody this constitutional ideal.

III. The Challenge of "Quantum Supremacy" in Warfare:

- The framework highlights the "Shor's Algorithm" threat—a quantum algorithm capable of breaking most current RSA-based encryptions.
- If an adversary achieves a high-qubit fault-tolerant quantum computer before India transitions its systems, all current strategic secrets could be compromised.
- This makes the National Quantum Mission not just a scientific goal, but a survival imperative.



IV. The Way Forward:

The Military Quantum Mission is a race against time. The success of this policy depends on:

- **Triple Helix Model:** Seamless collaboration between the Military, Academia, and Private Industry.
- **Indigenization:** Ensuring that the "Quantum Hardware" (trapped ions, superconducting circuits) is not dependent on foreign supply chains.
- **Standardization:** Working with international bodies to set standards for Post-Quantum Cryptography.

As we enter 2026, the battlefields of the future are being drawn in the subatomic realm. India's Military Quantum Mission is not merely about staying ahead in technology; it is about ensuring that the sovereignty of the nation remains intact in a world where the very definition of "secure" is changing.

SCIENCE & TECHNOLOGY

79. India's Space Programme: A People's Space Journey

Context:

In January 2026, as India celebrates its 77th Republic Day, the Indian Space Research Organisation (ISRO) has transitioned from being a purely scientific endeavor to a "Jan Andolan" (People's Movement). With the impending launch of the Gaganyaan-1 crewed mission and the operationalization of the Bharatiya Antariksha Station (BAS)'s first module, the space programme is no longer just about satellites; it is about national identity, grassroots innovation, and socioeconomic transformation.

I. Key Highlights:

- **Gaganyaan Milestone:** Final preparations for India's first human spaceflight, with a focus on indigenous life-support systems.

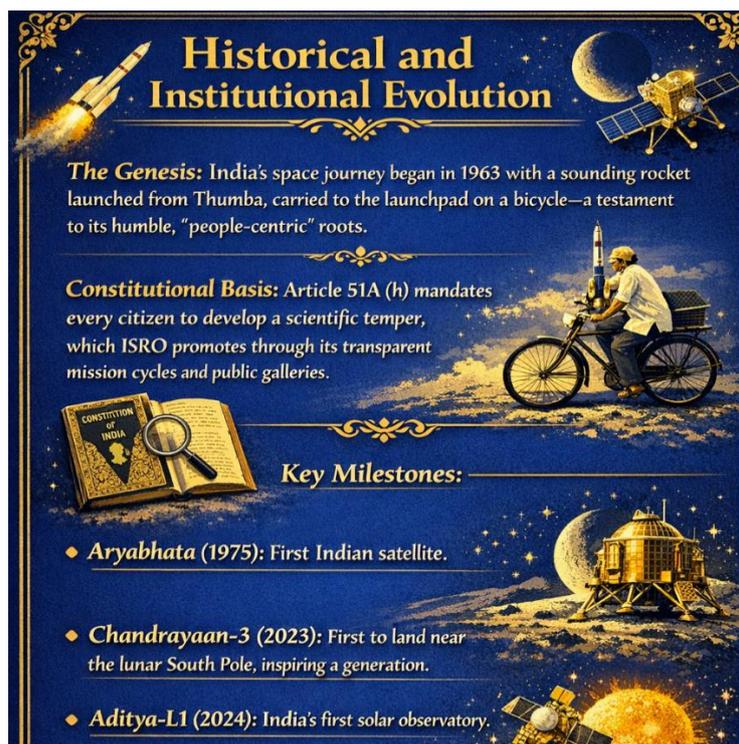
- **Space Democratization:** Over 200 space-tech startups are now active in India, supported by IN-SPACe, shifting the sector from "ISRO-only" to a "Whole-of-Nation" approach.
- **Space for Society:** Enhanced focus on "Space-to-Village" (S2V) initiatives, providing real-time data for precision farming and disaster resilience to the remotest corners.
- **Global Leadership:** India's emergence as a cost-effective hub for small satellite launches via the SSLV (Small Satellite Launch Vehicle).

II. The Shift: From Elite Science to "Jan Shakti"

- **Grassroots Education and STEM (Yuvika):**
 - ✓ ISRO's outreach programs, such as YUVIKA (Yuva Vigyani Karyakram), have bridged the gap between rural students and space science.
 - ✓ By selecting students from every state and union territory, ISRO is creating a decentralized pipeline of future scientists, ensuring that the "space journey" starts in the village classroom.
- **The Startup Revolution and IN-SPACe:**
 - ✓ The creation of IN-SPACe (Indian National Space Promotion and Authorization Centre) has acted as a catalyst.
 - ✓ **Private Participation:** Companies like Skyroot Aerospace and Agnikul Cosmos are now launching indigenous rockets, making space an accessible industry for young entrepreneurs.
 - ✓ **Commercial Viability:** NewSpace India Limited (NSIL) has successfully commercialized ISRO's heavy-lift capabilities (LVM3), bringing in significant foreign exchange.

III. Socioeconomic Dimensions: Space for the Common Man

- **Agriculture:** Bhuvan Portal provides geo-spatial tools for crop insurance and soil health monitoring, empowering farmers with data.
- **Disaster Management:** NAVIC-integrated alerts for fishermen regarding potential fishing zones (PFZ) and cyclone warnings have saved thousands of lives.
- **Tele-medicine & Education:** Satellite-based connectivity (EDUSAT) brings specialist healthcare and elite teaching to aspirational districts.



IV. Challenges on the Horizon:

- **Space Debris:** As more private players join, "Space Traffic Management" becomes a diplomatic and technical challenge.
- **Funding:** While efficient, India's space budget is a fraction of NASA's; increasing private investment is critical for long-term sustainability.
- **Legal Framework:** The need for a comprehensive Space Act to define liability and commercial rights in the era of asteroid mining and space tourism.

The Indian space programme is the ultimate symbol of Atmanirbhar Bharat. By 2047, as India aims to be a developed nation, the space sector will be a primary driver of the digital economy. It is a journey that began on a bicycle and is now destined for its own space station, proving that for India, the sky is not the limit—it is just the beginning.

80. Digital Inclusivity: VoWiFi and the Future of Seamless Communication

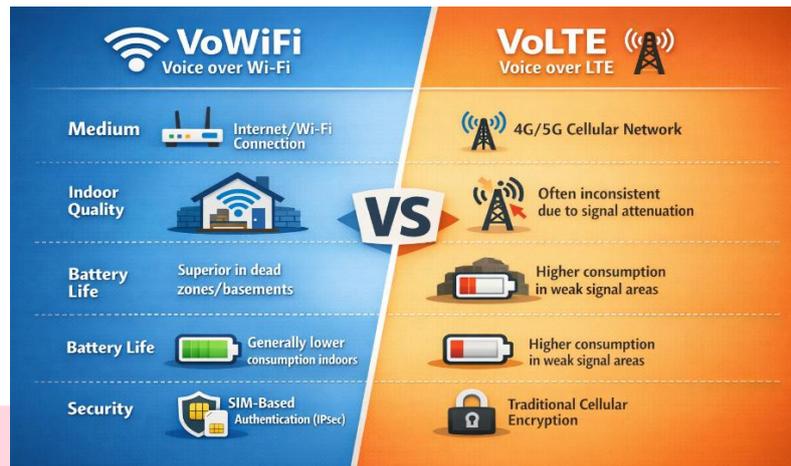
Context:

Recently, Bharat Sanchar Nigam Limited (BSNL), India's state-owned telecommunications giant, announced the nationwide rollout of Voice over WiFi (VoWiFi), commonly known as Wi-Fi Calling. This initiative marks a significant step in the government's effort to address "shadow zones" (areas with zero mobile reception) and indoor coverage gaps. By leveraging existing broadband infrastructure, the service aims to ensure that every citizen stays connected, regardless of their proximity to a physical mobile tower.

I. Key Highlights:

- **Nationwide Accessibility:** The service is now active across all BSNL telecom circles, benefiting millions of subscribers in urban and rural landscapes.

- **Zero Additional Cost:** VoWiFi is offered as a value-added service with no extra charges; calls are billed according to the user's existing voice plan.
- **IMS-Based Technology:** Utilizing the IP Multimedia Subsystem (IMS), the technology allows for high-definition voice quality and seamless transition between cellular and Wi-Fi networks.
- **No App Required:** Unlike Over-the-Top (OTT) apps (e.g., WhatsApp or Skype), VoWiFi uses the phone's native dialer and the user's existing mobile number.
- **Enhanced Indoor Coverage:** Provides a reliable solution for call drops in basements, high-rise concrete buildings, and hospitals where radio waves struggle to penetrate.



II. Technological Dimensions of VoWiFi:

- How it Works (The ePDG Framework):
 - ✓ When a mobile signal is weak, the phone establishes a secure IPsec tunnel over the available Wi-Fi network to an Evolved Packet Data Gateway (ePDG) in the carrier's core network.
 - ✓ This gateway acts as the bridge, allowing the voice packets to reach the mobile exchange as if they were coming from a traditional cell tower.
- **Handover Mechanism:**
 - ✓ One of the most critical aspects of VoWiFi is the seamless handover.
 - ✓ Ideally, if a user starts a call on Wi-Fi and walks out of range, the call should transition to the VoLTE (Voice over LTE) network without dropping.
 - ✓ This is achieved through sophisticated coordination between the Wi-Fi access point and the 4G/5G base stations.
- **Network Congestion Relief:**
 - ✓ By "offloading" voice traffic from the licensed spectrum (cellular towers) to unlicensed Wi-Fi networks, telecom operators can significantly reduce congestion on their physical infrastructure, leading to better data speeds for other users on the mobile network.

III. Socio-Economic Impact and Rural Connectivity:

- **Bridging the Digital Divide:** In remote and hilly terrains where installing towers is geographically challenging, pre-existing public Wi-Fi hotspots (under the PM-WANI scheme) can now function as virtual mobile towers.
- **Emergency Resilience:** During natural disasters when cell towers might be damaged, surviving local Wi-Fi networks (via satellite or fiber) can maintain critical communication channels for rescue operations.

- **Empowering Remote Education:** Enables stable voice communication for teachers and students in "shadow zones," facilitating better synchronization for online learning platforms.

Regulatory and Constitutional Framework



Telecommunications Act, 2023

This act provides the legal backbone for the transition from the legacy Telegraph Act, emphasizing modern digital standards and security.



TRAI (Telecom Regulatory Authority of India)

Established under the TRAI Act, 1997, it plays a crucial role in ensuring quality of service (QoS) standards for technologies like VoWiFi.



Seventh Schedule (Union List)

"Posts and Telegraphs; Telephones, Wireless, Broadcasting and other like forms of communication" (Entry 31) fall under the exclusive jurisdiction of the Union Government.



Article 19(1)(a)

The Right to Freedom of Speech and Expression is increasingly viewed by the judiciary as inclusive of the right to access the means of communication (Internet/Telecom)

IV. The Way Forward:

While the rollout is a major success, the next phase of development must focus on:

- **Device Compatibility:** Ensuring that budget smartphones (not just flagship models) are enabled with the necessary firmware for VoWiFi.
- **Public Wi-Fi Integration:** Integrating VoWiFi with the PM-WANI public Wi-Fi network to create a ubiquitous communication grid.
- **Cybersecurity Standards:** Strict adherence to the Telecom Cyber Security Amendment Rules, 2026 to prevent data interception over public Wi-Fi.

VoWiFi is not merely a technical upgrade; it is a tool for Digital Justice. By turning every Wi-Fi router into a potential mobile tower, India is ensuring that connectivity becomes a true utility, as fundamental as water or electricity, reaching the "last mile" of the nation.

81. Powering the Peak: Accelerating Hydroelectric Potential in Jammu & Kashmir

Context:

Recently, Union Minister for Power, Shri Manohar Lal, concluded a high-level two-day visit to Jammu & Kashmir to review the progress of major hydroelectric projects. The visit focused on accelerating the "Chenab Cascade" to transform the Union Territory from a power-deficit region to a power-surplus hub. As of early 2026, several mega-projects are nearing critical milestones, with the government setting strict year-end deadlines for commissioning to meet India's rising energy demand and renewable energy targets.

Hydroelectric Projects in J&K: At a Glance

Major Commissioned and Under-Construction Projects by River

Project Name	River	Status / Capacity
Salal	Chenab	Commissioned (690 MW)
Baglihar	Chenab	Commissioned (900 MW)
Dulhasti	Chenab	Commissioned (390 MW)
Pakal Dul	Marusudar (Tributary of Chenab)	Under Construction (1000 MW)
Ratle	Chenab	Under Construction (850 MW)
Kiru	Chenab	Under Construction (624 MW)
Kiru	Chenab	Under Construction (624 MW)
Kiru	Chenab	Under Construction (624 MW)
Kiru	Chenab	Under Construction (624 MW)
Kwar	Chenab	Under Construction (540 MW)
Sawalkot	Chenab	Planned / Commencing (1856 MW)
Uri-I & Uri-II	Jhelum	Commissioned (480 MW + 240 MW)
Lower Jhelum	Jhelum	Commissioned (105 MW)
Kishanganga	Kishanganga (Tributary of Jhelum)	Commissioned (330 MW)
Nimoo Bazgo	Indus	Commissioned (45 MW)

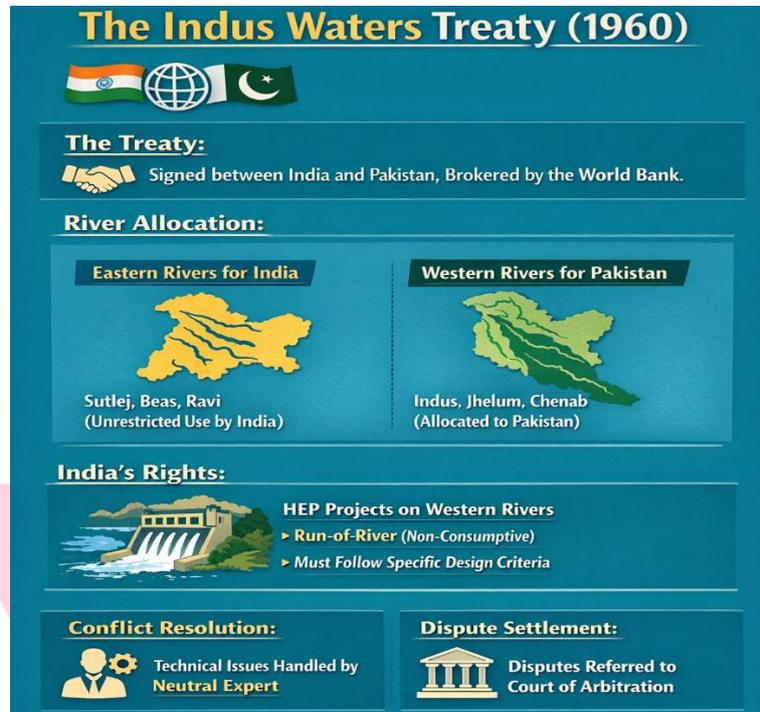
I. Key Highlights:

- **Mission 2026:** The government has directed the commissioning of Pakal Dul (1000 MW) and Kiru (624 MW) projects by December 2026.
- **Ratle Progress:** The 850 MW Ratle Hydroelectric Project, which faced long-standing delays due to geopolitical sensitivities, is now on track for a 2028 completion after receiving fresh investment of ₹5,282 crore.
- **Investment Surge:** A total investment of approximately ₹52,821 crore is being channeled into the Chenab valley alone, promising over 12,000 local jobs.
- **Storage vs. Run-of-River:** While most J&K projects are "Run-of-River" (RoR), Pakal Dul stands out as J&K's first storage-based project, providing better water regulation during lean seasons.

II. Dimensions of Development:

- **Engineering Marvels in Fragile Terrains:**
 - ✓ The construction of the Pakal Dul dam (167 meters high) and the 23.2 km head-race tunnel for Kishanganga involves advanced Tunnel Boring Machines (TBMs) and seismic-resistant designs.
 - ✓ These projects are situated in the "Young Himalayas," requiring constant environmental monitoring to prevent landslides and soil erosion.
- **Socio-Economic Upliftment:**
 - ✓ Under the Local Area Development Fund (LADF), 1% of the free power generated is diverted to local infrastructure.

- ✓ Additionally, J&K receives 12% free power from central projects, which significantly offsets the UT's electricity purchase bills.
- **Grid Stability:**
 - ✓ Hydroelectric power is essential for "peaking" requirements—it can be switched on or off quickly compared to thermal or nuclear power.
 - ✓ This makes J&K's projects vital for the stability of the Northern Grid, especially as India integrates more intermittent solar and wind energy.



The aggressive timeline for J&K's hydroelectric projects represents a dual victory: ensuring energy security for the nation and fulfilling the developmental aspirations of the people of Jammu & Kashmir. By harnessing the "White Coal" of the Chenab and Jhelum, India is reinforcing its commitment to a green energy future while strictly adhering to international treaty obligations.

82. Decoding the Sun: Aditya-L1 Unveils the Impact of Solar Storms on Earth's Magnetic Shield

Context:

Recently, the Indian Space Research Organisation (ISRO) released a breakthrough study detailing how India's first solar observatory, Aditya-L1, decoded the profound impact of a powerful solar storm (specifically the October 2024 event) on the Earth's magnetic field. Published in the *Astrophysical Journal*, the research marks a major milestone in Heliophysics, showcasing India's ability to monitor space weather in real-time and safeguard critical global infrastructure.

I. Key Highlights

- **Compression of the Magnetosphere:** The study revealed that the "turbulent region" of the solar storm intensely compressed Earth's magnetic shield, pushing the magnetopause (the boundary of the magnetic field) unusually close to the planet.

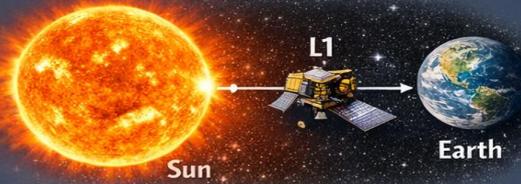
- **Satellite Exposure:** For a brief period, satellites in Geostationary Orbit (GEO) were exposed to the harsh, unfiltered solar environment—a rare phenomenon occurring only during extreme space weather events.
- **Super-intensified Auroral Currents:** The turbulent sheath of the Coronal Mass Ejection (CME) led to a massive surge in electric currents in the polar (auroral) regions.
- **Atmospheric Heating:** These intensified currents likely caused significant heating of the Earth's upper atmosphere, potentially increasing the rate of atmospheric escape (gas molecules escaping into space).
- **Identification of the 'Turbulent Sheath':** While the bulk of a CME is often studied, Aditya-L1 successfully identified that the turbulent region (sheath) preceding the CME is often the primary driver of severe geomagnetic havoc.

II. The Mechanics of Solar Impact:

- **Magnetospheric Distortion and Satellite Risk:**
 - ✓ The Earth's magnetosphere usually acts as a protective bubble.
 - ✓ However, the high-pressure plasma from the October 2024 storm "squeezed" this bubble.
 - ✓ This displacement is critical because geostationary satellites—responsible for television, communication, and weather data—rely on being inside this protective bubble.
 - ✓ Exposure to high-energy particles can lead to "single-event upsets" or permanent hardware damage.
- **Auroral Electrojet and Atmospheric Dynamics:**
 - ✓ The study utilized data from the Plasma Analyser Package for Aditya (PAPA) and ASPEX payloads to map how solar particles interact with Earth's upper atmosphere.
 - ✓ The super-intensification of the auroral electrojet (currents flowing in the ionosphere) results in Joule Heating.
 - ✓ This expansion of the atmosphere increases drag on Low Earth Orbit (LEO) satellites, potentially shortening their orbital lifespan.
- **Multi-Vantage Point Collaboration:**
 - ✓ Aditya-L1's data was compared with international probes (NASA and NOAA). This multi-point observation provided a 3D understanding of how solar storms evolve as they travel the 1.5 million km distance from the Lagrange Point 1 (L1) to Earth.

The Aditya-L1 Mission Architecture

- Launched on September 2, 2023 via PSLV-C57.
- Positioned at Lagrange Point 1 (L1) - 1.5 Million km from Earth.



The 7 Payloads

- VELC** Study Solar Corona & CMEs
- SUIT** UV Imaging of Photosphere & Chromosphere
- ASPEX & PAPA** Solar Wind & Energetic Particles
- SoLEXS & HELIOS** Solar X-ray Flares Monitoring
- MAG** Interplanetary Magnetic Field

Lagrange Points



III. Significance for Space Weather Forecasting:

Understanding these dynamics is no longer just a scientific curiosity; it is a strategic necessity.

- **Protecting the Digital Economy:** Modern life depends on GPS, satellite internet, and power grids—all of which are vulnerable to geomagnetic storms.
- **Planetary Defense:** Real-time assessments provided by Aditya-L1 allow for an early warning system (lead time of ~1 hour), enabling satellite operators to put assets into "safe mode" before the storm hits.

As the Sun enters its "Solar Maximum" phase in the current 11-year cycle, the findings from Aditya-L1 position India as a global leader in space weather research. The mission demonstrates that Atmanirbhar Bharat is not just about self-reliance on Earth, but about securing our presence in the final frontier.

83. Hydrogen Fuel Cells: Driving India's Green Energy Revolution

Context:

Recently, India's hydrogen ambitions reached a significant milestone with the inauguration of a dedicated "Hydrogen Zone" at India Energy Week (IEW) 2026 in Goa. This event, coupled with high-profile demonstrations by Union Ministers taking joint rides in Hydrogen Fuel Cell Electric

Vehicles (FCEVs), underscores the government's shift from pilot-based research to large-scale commercial deployment. As part of the National Green Hydrogen Mission (NGHM), January 2026 saw a renewed focus on "Hard-to-Abate" sectors like steel, shipping, and heavy-duty transport, positioning India as a global leader in the clean energy transition.

I. Key Highlights:

- **India Energy Week 2026:** Union Minister Hardeep Singh Puri inaugurated the Hydrogen Zone, showcasing cutting-edge production, storage, and mobility solutions.
- **Mobility Milestone:** Union Ministers Pralhad Joshi and Nitin Gadkari took a joint ride in the Toyota Mirai (FCEV), highlighting the 650 km range and 5-minute refueling time of hydrogen technology.
- **New Funding for Biomass:** A new ₹100 crore funding program was announced to support pilot-scale green hydrogen production using biomass and alternative feedstocks.
- **Maritime Success:** India's first indigenous Hydrogen Fuel Cell Passenger Vessel commenced commercial operations in Varanasi, signaling the decarbonization of inland waterways.
- **Strategic Interventions (SIGHT):** Under the SIGHT program, incentives for a cumulative production capacity of 8,62,000 tonnes of Green Hydrogen have been awarded to 18 companies as of early 2026.

II. How Hydrogen Fuel Cells Work: The Technical Dimension

A Hydrogen Fuel Cell is an electrochemical cell that converts the chemical energy of a fuel (hydrogen) and an oxidizing agent (oxygen) into electricity through a pair of redox reactions.

- **The Chemical Process: At the Anode:** Hydrogen molecules are stripped of their electrons, becoming positively charged hydrogen ions (protons).
- **At the Cathode:** Oxygen from the air combines with the electrons and protons to form water.
- **Overall Reaction:** The only byproduct is water vapor and heat, making it a zero-emission technology.

III. Applications and Sectoral Impact:

- **Heavy-Duty Transport:** While battery EVs are suitable for passenger cars, Hydrogen Fuel Cells are ideal for trucks and buses due to their high energy density and quick refueling.
- **Industrial Decarbonization:** Hydrogen is being tested as a reducing agent in Green Steel production (replacing coking coal) and as a feedstock in refineries and fertilizer plants.
- **Maritime and Aviation:** Sustainable Aviation Fuel (SAF) and hydrogen-powered vessels are critical for reducing the carbon footprint of global logistics.



IV. Challenges to Overcome:

- **High Cost of Electrolyzers:** Though falling, the initial capital expenditure (CAPEX) for PEM (Proton Exchange Membrane) and Alkaline electrolyzers remains high.
- **Storage and Transport:** Hydrogen has a very low volumetric energy density, requiring high-pressure compression (350-700 bar) or liquefaction (-253 C).
- **Infrastructure Gap:** The scarcity of Hydrogen Refueling Stations (HRS) limits the adoption of FCEVs to specific corridors.

The transition to a Hydrogen economy is no longer a matter of "if" but "when." For India, the focus in 2026 must remain on indigenization. By utilizing the PLI (Production Linked Incentive) scheme for Advanced Chemistry Cells and electrolyzers, India aims to reduce its dependence on imported fossil fuels and become a net exporter of clean energy, ultimately striving for Net Zero by 2070.

84. The Mpemba Effect: Solving a 2,000-Year-Old Physics Paradox

Context:

Recently, the scientific community revisited a long-standing thermodynamic mystery known as the Mpemba Effect—the counterintuitive phenomenon where hot water freezes faster than cold water. While observed since antiquity by figures like Aristotle, recent research published in leading physics journals (and highlighted by scientific bodies in India) has provided new molecular insights into why this happens. For UPSC aspirants, this topic bridges the gap between General Science (Physics) and emerging research in Non-equilibrium Thermodynamics.

I. Key Highlights:

- **The Paradox:** Under certain conditions, a liquid that starts at a higher temperature reaches a freezing point (solidifies) more quickly than the same liquid starting at a cooler temperature.
- **New Scientific Evidence:** Researchers have utilized molecular dynamics simulations to show that the effect is not a fluke but depends on the "history" of the system's cooling process.
- **Hydrogen Bonding:** A leading theory suggests that the unique stretching and shortening of hydrogen bonds in water during heating "pre-conditions" the molecules to release energy more rapidly when cooled.
- **Industrial Application:** Understanding this effect is not just academic; it has massive implications for cryogenics, industrial freezing, and energy storage systems.

II. Why Does Hot Water Freeze Faster?

While there is no single consensus, scientists point to a combination of the following factors:

- **Evaporation:**
 - ✓ As hot water is placed in a freezer, it evaporates more rapidly.
 - ✓ This reduces the total mass of the water that needs to be frozen. Less mass requires less energy removal to reach a solid state.
- **Convection Currents:**
 - ✓ Heating water creates strong temperature gradients.
 - ✓ These gradients cause vigorous convection currents (hot water rising, cold water sinking).
 - ✓ When cooled, these currents persist, accelerating the rate of heat transfer from the water to the environment.
- **Dissolved Gases:**
 - ✓ Hot water holds less dissolved gas (like oxygen and nitrogen) than cold water.
 - ✓ Since dissolved gases can lower the freezing point or interfere with the formation of ice crystals, "degassed" hot water may crystallize more readily.
- **The "Anomalous" Hydrogen Bond:**
 - ✓ Water molecules are held together by hydrogen bonds. When water is heated, these bonds stretch.
 - ✓ Some researchers argue that as the water cools, these bonds release "stored" energy more quickly, akin to a compressed spring being released, allowing the temperature to drop at an accelerated rate compared to water where the bonds were never stretched.

III. The "Inverse" Mpemba Effect:

- Recent studies have also identified an Inverse Mpemba Effect, where a colder system heats up faster than a warmer one.
- This has been observed in granular materials and specialized polymers, suggesting that the effect is a universal property of systems that are far from thermal equilibrium.

IV. Strategic Significance of the Discovery:

For India's technological missions, mastering non-equilibrium states like the Mpemba Effect can lead to:

- **More efficient Cold Chains:** Crucial for the PM Matsya Sampada Yojana (fisheries) and vaccine storage.
- **Advanced Materials:** Creating new alloys or polymers that require specific rapid-cooling profiles.
- **Climate Modeling:** Better understanding of how ice crystals form in the upper atmosphere.

Thermodynamics & Water Properties

Newton's Law of Cooling



Rate of heat loss is proportional to the temperature difference between an object and its surroundings.

Paradox Check: The Mpemba Effect

Hot water can sometimes freeze faster than cold water.

Anomalous Expansion of Water



Water is most dense at 4°C. Below this, it expands.

Lakes freeze from the top down.

Latent Heat of Fusion

Energy to change 1kg of ice to liquid water: 334 kJ/kg



Property	
Specific Heat Capacity	4.18 J/g°C – High heat capacity, slow to change temperature.
Hydrogen Bonding	 <p>Attraction between the hydrogen of one water molecule and the oxygen of another.</p>

The Mpemba Effect serves as a reminder that even the most "basic" substances like water still hold secrets. For the UPSC aspirant, it highlights the importance of looking beyond traditional laws of physics to understand complex, real-world phenomena. It is a classic example of how "observation" (by a student named Erasto Mpemba in 1963) can challenge established scientific dogma.

85. ISRO's Workhorse Stumbles: The PSLV-C62 Failure and the Road to Recovery

Context:

Recently, the Indian Space Research Organisation (ISRO) witnessed a significant setback when its reliable workhorse, the Polar Satellite Launch Vehicle (PSLV-C62), failed to place the EOS-N1 (Anvesha) satellite and 15 other payloads into the intended orbit. This marks the second consecutive failure of the PSLV, following the PSLV-C61 mishap in May 2025, raising serious questions regarding quality assurance and the resilience of India's commercial space ambitions.

I. Key Highlights of the Mission:

- **Mission Objective:** The main aim was to launch EOS-N1 (Anvesha), a hyperspectral imaging satellite created by DRDO for purposes of strategic surveillance and environmental observation.
- **Launch Vehicle:** The mission employed the PSLV-DL (Dual Strap-on) variant, which is distinguished by its two strap-on boosters.

- **Payloads Lost:** In addition to the primary satellite, 15 co-passenger satellites were also lost, which included payloads from Indian startups (such as Dhruva Space) and international clients (from the UK, Brazil, and Nepal).
- **The Incident:**
 - ✓ The launch seemed to proceed normally during the first and second stages.
 - ✓ The Anomaly: During the operation of the third stage (PS3), a "roll-rate disturbance" (unintended spinning) was detected, resulting in a deviation from the intended flight path.
 - ✓ The vehicle was unable to reach the required orbital velocity, resulting in the loss of the payloads.

II. The Third Stage "Jinx":

The failure of PSLV-C62 raises significant concerns as it reflects the anomaly noted during the PSLV-C61 mission in May 2025.

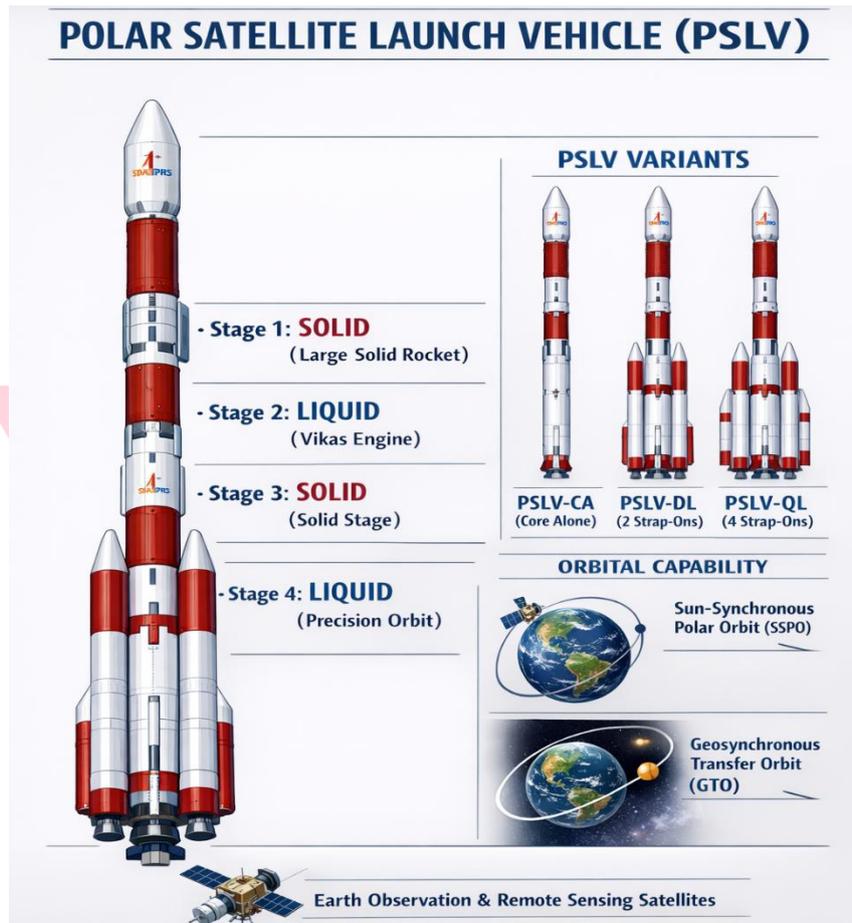
- **The Component:**
 - ✓ The PS3 (Third Stage) functions as a solid rocket motor.
 - ✓ In contrast to liquid engines, which can be throttled or completely shut down, solid motors continue to burn until the fuel is exhausted and are highly susceptible to manufacturing defects, such as cracks in the propellant or issues with bonding.
- **The Failure Pattern:**
 - ✓ In both of the recent failures, the anomaly was identified in this solid propulsion stage.
 - ✓ The issues related to "roll control" imply that asymmetric thrust, resulting from uneven burning, may have overwhelmed the control systems, leading to the rocket's tumbling.
- **Quality Assurance Crisis:**
 - ✓ The recurrence of the same failure mode within an eight-month timeframe suggests a possible systemic problem in the manufacturing or quality control (QC) processes associated with the solid motor, rather than indicating a design flaw in the vehicle itself.

III. Impact on India's Space Ambitions:

- **Strategic:** The loss of EOS-N1 creates a temporary "blind spot" in high-resolution hyperspectral surveillance, delaying critical defense capabilities.
- **Commercial (NSIL):** NewSpace India Limited (NSIL) is aggressively marketing PSLV for global commercial launches. Consecutive failures may erode client confidence and drive customers toward competitors like SpaceX (Transporter missions) or Rocket Lab.
- **Insurance Market:** Reliability determines insurance premiums. Two back-to-back failures will likely cause insurance premiums for future PSLV launches to spike, reducing the vehicle's cost-competitiveness.
- **Private Sector:** The loss of satellites from Indian startups (e.g., Dhruva Space) is a financial and morale blow to the nascent private space ecosystem, though it highlights the high-risk nature of the sector.

IV. The Road Ahead: Rebuilding Trust

- **Failure Analysis Committee (FAC):** ISRO has constituted an FAC to identify the root cause. Unlike the C61 report which was kept internal, there is growing demand for transparency regarding the C62 investigation to restore public and commercial trust.
- **Stringent QC Protocols:** A complete overhaul of the quality assurance protocols for the solid motor supply chain is immediate.
- **Return to Flight:** ISRO must demonstrate a successful launch before attempting high-profile missions like the unmanned Gaganyaan tests, which utilize similar solid-motor technology in the S200 boosters (though different in scale).



86. The Next Frontier: Can Orbital Data Centers Solve AI's Energy Crisis?

Context:

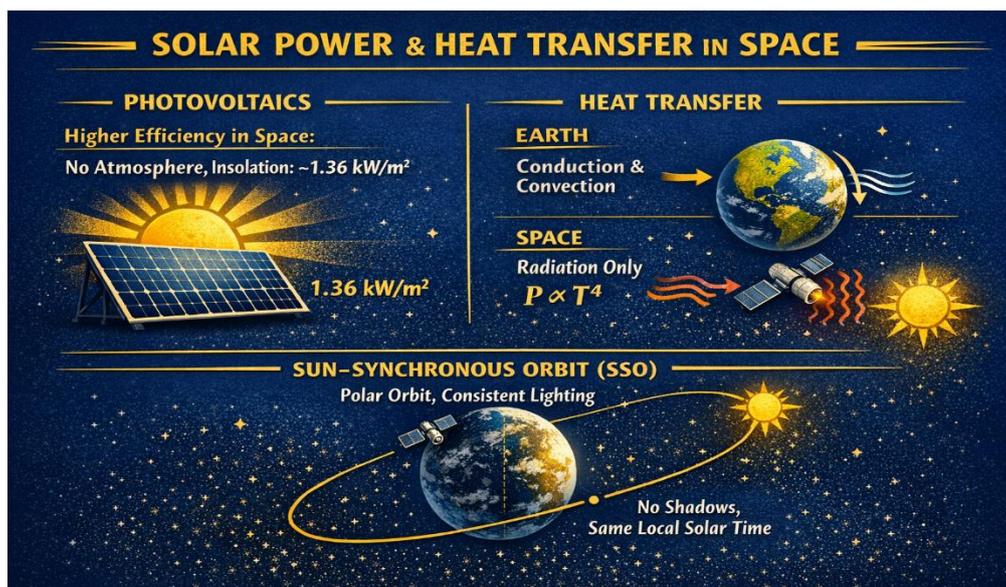
Recently, the debate on "Orbital Computing" shifted from science fiction to a tangible industrial race. With terrestrial data centers projecting to consume over 8% of the US total electricity by 2030, major players like Lumen Orbit (Starcloud) and the SpaceX-xAI combine have accelerated plans to offload energy-intensive AI model training to space. This comes as the European ASCEND (Advanced Space Cloud for European Net zero emissions and Data sovereignty) consortium released updated feasibility roadmaps, positioning space not just for exploration, but as the "backend" of the digital economy.

I. Key Highlights of the Development:

- **The "Starcloud" Breakthrough:**
 - ✓ In late 2025, startup Lumen Orbit (now Starcloud) successfully demonstrated the training of a small Language Model (LLM) aboard a satellite equipped with NVIDIA H100 class GPUs.
 - ✓ This proved that high-performance computing (HPC) is possible despite the harsh radiation environment of Low Earth Orbit (LEO).
- **Musk's Strategic Pivot:**
 - ✓ In January 2026, reports emerged of a strategic alignment between SpaceX and xAI, aiming to utilize the massive payload capacity of Starship to deploy "megawatt-class" orbital server farms.
 - ✓ The goal is to bypass Earth's power grid constraints for training the next generation of "Grok" models.
- **The ASCEND Study Findings:**
 - ✓ The Thales Alenia Space-led study concluded that for orbital data centers to be environmentally viable, launch vehicles must become 10 times less emissive, and the infrastructure must be deployed by 2036 to significantly offset the carbon footprint of Earth-based digital consumption.

II. Why Move Data Centers to Space?

Dimension	Advantage in Space
Energy Security	24/7 Solar Power: Unlike Earth, where solar is intermittent (day/night, clouds), a Sun-Synchronous Orbit (SSO) can provide continuous sunlight. Solar intensity is 36% higher in space than on the ground.
Cooling Efficiency	Passive Radiative Cooling: Space is cold (~3 Kelvin background). While vacuum is an insulator (no air to blow away heat), heat can be dumped directly into deep space using large radiator panels without using water or electricity-heavy compressors.
Sovereignty	Data Havens: Orbital data centers operate outside national borders, potentially offering "data sovereignty" free from terrestrial land-use regulations or property taxes.
Grid Relief	Zero Impact on Local Grids: They do not strain local municipal power grids or compete with residential water supplies for cooling.



III. Major Bottlenecks & Challenges:

- **Thermal Management Paradox:** While space is cold, getting rid of heat is hard because there is no air. Heat transfer relies solely on radiation (Stefan-Boltzmann Law), requiring massive, heavy radiator panels that are expensive to launch.
- **Radiation Hardening:** Cosmic rays can cause "bit flips" (corrupting data) or destroy sensitive GPU transistors. Shielding adds immense weight, or "radiation-hardened" chips must be used, which are often generations behind state-of-the-art terrestrial chips.
- **Latency (The Speed of Light limit):**
 - ✓ **Feasible:** For AI Training (where the model "learns" for months and sends the final weight file down once).
 - ✓ **Infeasible:** For Real-time Inference (e.g., gaming, high-frequency trading) due to the signal travel time to orbit and back.
 - ✓ **Space Debris:** Placing massive server farms in LEO increases the risk of collision (Kessler Syndrome), potentially creating a belt of untrackable space junk.

IV. Way Forward:

- **Transition to Distributed "Swarm" Architectures:**
 - ✓ Rather than launching massive, monolithic server stations—which face extreme thermal bottlenecks—companies should adopt a distributed compute mesh.
 - ✓ By spreading workloads across thousands of smaller, "one-tonne" class satellites (as proposed in SpaceX's 2026 FCC filing), the heat load per unit becomes manageable through standard radiative surfaces, avoiding the need for complex, heavy liquid-cooling loops.
- **Implementation of "Circular Space Economy" for Hardware:**
 - ✓ With GPU hardware becoming obsolete every 2–3 years, ODCs risk creating a "Kessler Syndrome" of electronic waste.
 - ✓ The way forward involves developing modular, robotic servicing.
 - ✓ Instead of de-orbiting entire satellites, autonomous "tugs" should replace only the GPU/memory blades, while the power and radiator shells remain in orbit, significantly lowering the long-term carbon footprint per teraflop.

- **Advancement in "Software-Defined" Radiation Hardening:**
 - ✓ Current radiation-hardened chips are often decades behind terrestrial performance.
 - ✓ To use state-of-the-art AI chips (like NVIDIA H100s or B200s) in space, the industry must pivot toward Redundant Compute Software (RCS).
 - ✓ This uses AI-driven error correction to detect "bit flips" in real-time across multiple non-hardened chips, allowing the use of cutting-edge consumer hardware despite cosmic radiation.
- **Codifying "Data Sovereignty 2.0" Treaties:**
 - ✓ The legal "gray zone" of processing data in international waters/orbit must be addressed.
 - ✓ A new International Space Computing Accord (ISCA) is needed to define jurisdiction over data processed in orbit.
 - ✓ This would prevent ODCs from becoming lawless "data havens" for illicit AI training while protecting the intellectual property of nations using space as a sovereign backend.
- **Synchronization with Space-Based Solar Power (SBSP):**
 - ✓ To truly solve the energy crisis, ODCs should not just be consumers but hubs.
 - ✓ Future orbital server farms should be co-located with SBSP arrays that beam surplus energy to Earth via microwaves during periods of low compute demand.
 - ✓ This "dual-use" infrastructure ensures the high launch costs are amortized by both the digital economy (data) and the green economy (energy).

87. India's "Energy Addition" Strategy: A Model for the Global South

Context:

Recently, the Ministry of Petroleum & Natural Gas released a comprehensive overview of India's energy sector achievements during India Energy Week (IEW) 2026, held in Goa. The release highlights India's unique approach to energy transition—termed "Energy Addition" rather than "Energy Replacement"—emphasizing that a growing economy requires investment in both fossil fuels and renewables to ensure affordability and security while transitioning to a low-carbon future.

I. Key Highlights:

- **Milestone Achievement (Non-Fossil Fuels):**
 - ✓ India achieved 50% of its cumulative installed electricity capacity from non-fossil fuel sources in June 2025.
 - ✓ **Significance:** This target was originally set for 2030 under India's Nationally Determined Contributions (NDCs) at the Paris Agreement. Achieving it five years early demonstrates India's accelerated pace in renewable adoption.
- **The "Energy Addition" Doctrine:**
 - ✓ Unlike developed nations that focus on phasing out fossil fuels immediately, India advocates for "Energy Addition."
 - ✓ This means expanding renewable capacity (Solar, Wind, Biofuels) while simultaneously sustaining traditional hydrocarbon infrastructure to meet the rising energy demand of a developing economy.

- **Biofuel Revolution:**

- ✓ **Ethanol Blending:** The Ethanol Blending Programme (EBP) reached ~19.05% in the Ethanol Supply Year (ESY) 2024-25, putting India on track to achieve the 20% blending target by 2025-26.
- ✓ **Impact:** This has resulted in foreign exchange savings of over ₹1.59 lakh crore since 2014 and reduced CO₂ emissions by 813 lakh metric tonnes.

II. Strategic Pillars of India's Transition:

- **Infrastructure as the Backbone:**

- ✓ **Gas Economy:** To increase the share of natural gas in the energy mix (target: 15% by 2030), the operational natural gas pipeline network has expanded to over 25,400 km.
- ✓ **One Nation, One Gas Grid:** Rapid expansion of City Gas Distribution (CGD) networks now covers nearly 100% of the country's geographical area, ensuring cleaner fuel access for industries and households.

- **Energy Access and Social Justice:**

- ✓ **PM Ujjwala Yojana (PMUY):** Coverage has expanded to 10.41 crore households, replacing polluting solid fuels (wood, coal) with clean LPG. This is cited as a global model for "Just Energy Transition," addressing health and gender equity.
- ✓ **Price Stability:** Despite global geopolitical volatility (e.g., Red Sea crisis, conflicts), India maintained stable domestic fuel prices, insulating consumers from global inflation through strategic oil purchasing and diversification of suppliers.

- **Future Fuels & Global Leadership:**

- ✓ **Green Hydrogen:** Under the National Green Hydrogen Mission, India is positioning itself as a global hub for the production and export of Green Hydrogen and Green Ammonia.
- ✓ **Global Alliances:** India is leveraging platforms like the Global Biofuel Alliance (GBA) (launched during G20 2023) and the International Solar Alliance (ISA) to lead the energy dialogue for the Global South.



III. Challenges & Impediments:

Despite the rapid "Energy Addition," India faces significant structural and financial hurdles in achieving its 2030 and 2070 targets.

- **The "Energy Trilemma":**
 - ✓ **Balancing Act:** India must simultaneously ensure Energy Security (reliable supply), Energy Equity (affordability for the poor), and Environmental Sustainability (decarbonization).
 - ✓ Prioritizing one often compromises the others (e.g., cheap coal power vs. expensive storage-backed renewables).
- **Infrastructural & Technological Constraints:**
 - ✓ **Grid Integration:** The Indian grid is not yet fully equipped to handle the intermittency of solar and wind energy. Sudden drops in generation (e.g., cloud cover or low wind) cause grid instability.
 - ✓ **Storage Deficit:** Battery Energy Storage Systems (BESS) are currently prohibitively expensive (\$130-150/kWh). Without affordable storage, "Round-The-Clock" (RTC) green energy remains a challenge.
 - ✓ **Transmission Bottlenecks:** The pace of RE generation capacity addition (solar parks) often outstrips the pace of transmission network expansion (Green Energy Corridor), leading to curtailment of power.
- **Financial Health of DISCOMs:**
 - ✓ **Legacy Debt:** State Distribution Companies (DISCOMs) are plagued by high Aggregate Technical & Commercial (AT&C) losses and outstanding dues to generators (over ₹1 lakh crore).
 - ✓ Their poor financial health limits their ability to sign new Power Purchase Agreements (PPAs) for green energy.

- **Supply Chain Vulnerability (Critical Minerals):**
 - ✓ **Import Dependence:** The transition relies heavily on Lithium, Cobalt, Nickel, and Rare Earth Elements for batteries and solar panels.
 - ✓ **China Dominance:** The global supply chain for processing these minerals is dominated by China. India's lack of domestic reserves (despite recent Lithium finds in J&K) creates a new strategic dependency, replacing "Oil Security" risks with "Mineral Security" risks.
- **Land Acquisition & Social Conflict:**
 - ✓ **Land Intensive:** Solar and wind projects require vast tracts of land (approx. 5 acres per MW for solar). Acquiring land in a densely populated country like India leads to conflicts, delays, and litigation.
 - ✓ **"Just Transition" Risk:** Phasing down coal threatens the livelihoods of millions in coal-belt states (Jharkhand, Chhattisgarh, Odisha), including miners, transport workers, and the informal economy dependent on the coal ecosystem.

IV. Way forward measures:

In order to maintain the progress of "Energy Addition" and reach the net-zero goal by 2070, India must concentrate on the following strategic pillars:

- **Grid Modernization & Resilience:**
 - ✓ Enhance the national grid to a Smart Grid that can accommodate the fluctuating nature of renewable energy sources such as solar and wind.
 - ✓ Expedite the Green Energy Corridor (GEC) initiatives to transport power from states abundant in renewable resources (such as Rajasthan, Gujarat, and Tamil Nadu) to areas with high energy demand.
- **Scaling Energy Storage Solutions (ESS):**
 - ✓ Given that solar and wind energy are not consistently available, it is essential to invest in Battery Energy Storage Systems (BESS) and Pumped Hydro Storage to guarantee "Round-The-Clock" (RTC) renewable energy supply.
 - ✓ The Production-Linked Incentive (PLI) Schemes for Advanced Chemistry Cells (ACC) should be broadened to lower battery expenses.
- **Mobilizing Green Finance:**
 - ✓ India requires an estimated \$10-15 trillion for the transition to net-zero emissions.
 - ✓ Establish a comprehensive "Green Taxonomy" (a clear definition of what qualifies as 'green') to attract international Environmental, Social, and Governance (ESG) investments and to enhance the issuance of Sovereign Green Bonds.
- **Indigenization of Technology:**
 - ✓ Minimize reliance on imported critical minerals (such as Lithium and Cobalt) and solar components (including wafers and cells) by acquiring overseas assets (as exemplified by KABIL's activities in Argentina and Australia) and enhancing domestic research and development in alternative battery chemistries (for instance, Sodium-ion batteries).
- **Focus on Hard-to-Abate Sectors:** Implement Green Hydrogen mandates vigorously for heavy industries such as Steel, Cement, and Fertilizers, which cannot easily transition to electricity alone.
- **Behavioral Change (Mission LiFE):** Encourage energy efficiency at the consumer level through the STAR labeling initiative and the promotion of electric vehicles (EVs) to effectively manage demand-side growth.

88. Closing the Loop: India's "Zero-Harm" Strategy for Nuclear Waste

Context:

Recently, India has outlined an updated strategy for managing nuclear waste as part of its long-term energy vision. As the country accelerates towards its target of achieving 100 GW nuclear capacity by 2047, the Department of Atomic Energy (DAE) has reaffirmed its "Nearly Closed Fuel Cycle" policy. This approach emphasizes that nuclear waste is not merely refuse, but a valuable resource that can contribute to future energy security.

I. Key Highlights of the Policy Update:

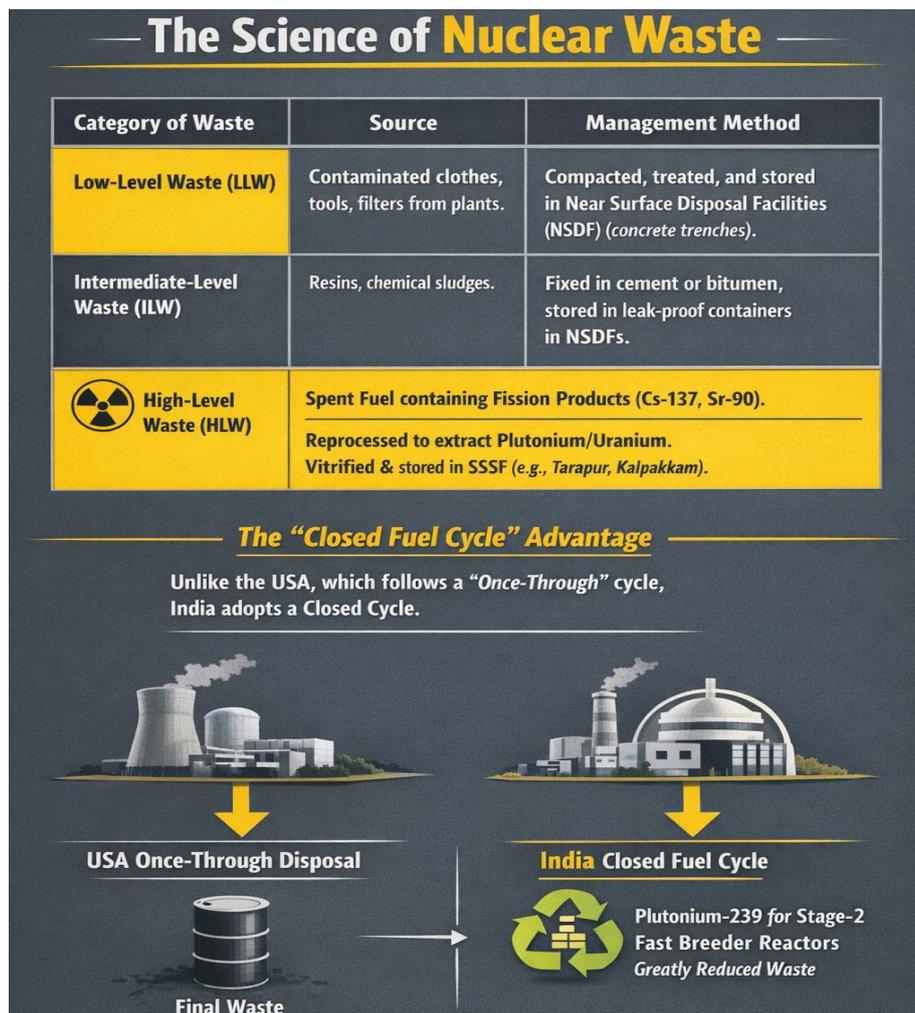
- **The Core Philosophy:** The DAE operates on a strict "Zero-Release" mandate: "No waste in any physical form is released into the environment unless it is cleared, exempted, or excluded from regulation."
- **Management of High-Level Waste (HLW):**
 - ✓ **Vitrification (The Gold Standard):** High-Level Liquid Waste (generated from reprocessing spent fuel) is immobilized into a stable inert glass matrix (Borosilicate glass) through a process called Vitrification.
 - ✓ **Interim Storage:** These vitrified canisters are stored in Solid Storage Surveillance Facilities (SSSF). The air-cooled nature of these vaults ensures passive safety for decades while the radioactivity decays naturally.
- **Technological Breakthroughs (The "Amritkal Targets"):**
 - ✓ **Partitioning Technology:** ISRO and DAE are advancing R&D on "Partitioning"—chemically separating long-lived radioactive elements (Actinides) from the waste. This significantly reduces the volume and toxicity of the waste that needs permanent disposal.
 - ✓ **Transmutation (Incineration):** The separated long-lived actinides are planned to be "incinerated" (transmuted) into short-lived or stable isotopes using High-Energy Accelerators or Fast Reactors. This could potentially eliminate the need for massive Deep Geological Repositories in the future.
 - ✓ **Strategy for SMRs (Small Modular Reactors):** Even for the proposed Small Modular Reactors using Slightly Enriched Uranium (SEU), the waste management philosophy remains unchanged: Reprocess → Recover → Vitrify.

II. Challenges & Concerns:

Despite the existence of a comprehensive "Closed Fuel Cycle," the endeavor to scale up to 100 GW presents significant challenges:

- **The Challenge of the "Deep Geological Repository" (DGR):**
 - ✓ Although India effectively manages waste in Interim Storage (SSSF), it has not yet established a permanent Deep Geological Repository (DGR).
 - ✓ The task of locating a site with stable geological formations (such as granite or basalt) that can remain undisturbed for millennia poses both scientific and political hurdles.
- **Public Sentiment & NIMBY Syndrome:**
 - ✓ The "Not In My Backyard" (NIMBY) syndrome generates substantial opposition to land acquisition for waste management facilities.
 - ✓ Misinformation surrounding radiation leaks frequently hinders project progress, as evidenced by previous protests at Kudankulam.

- **Technological Readiness of "Transmutation":**
 - ✓ Although Partitioning and Transmutation (P&T) is considered the ideal solution for diminishing waste toxicity, it remains predominantly in the research and development phase worldwide.
 - ✓ Advancing this technology to an industrial scale necessitates significant financial investment and technological advancements.
- **Financial Considerations:**
 - ✓ The processes of Reprocessing and Vitrification incur costs that are considerably higher than those associated with the "Once-Through" cycle (direct disposal).
 - ✓ As the nuclear power fleet grows, the financial implications of waste management are likely to increase, which could affect the cost per unit of nuclear energy.



III. Way Forward:

To secure a sustainable nuclear future, India must implement a comprehensive strategy:

- **Finalize the DGR Site:** India should accelerate the geological survey for a Deep Geological Repository (DGR). By taking cues from Finland's "Onkalo" (the first permanent repository globally), India ought to pinpoint locations within stable granite formations (Peninsular Shield) well in advance of the anticipated peak in waste volume.

- **Strengthen Independent Regulation:** Enhancing the Atomic Energy Regulatory Board (AERB) with statutory independence (distinct from the Department of Atomic Energy) will bolster public confidence in safety measures and waste management oversight.
- **Commercialize Fast Breeder Reactors (FBR):** It is essential to hasten the commissioning of Fast Breeder Reactors (FBRs), such as the Prototype Fast Breeder Reactor (PFBR) at Kalpakkam. FBRs serve as "incinerators" for long-lived actinides, significantly shortening the radioactive lifespan of waste from thousands of years to merely a few hundred.
- **Robotics & AI in Waste Handling:** Investing in robotics and remote handling technologies for the management of high-level waste will reduce human exposure and uphold "Zero-Harm" occupational safety standards.
- **Public Outreach:** A clear "Science Communication" strategy is crucial to clarify the complexities of nuclear waste and combat fear-mongering, ensuring that scientific evidence prevails over emotional reactions during land acquisition.

89. Power from Motion: The Rise of the Self-Charging Piezoelectric Supercapacitor

Context:

In a significant breakthrough for portable electronics, scientists from the Institute of Nano Science and Technology (INST), Mohali (an autonomous institute under the Department of Science and Technology), have developed a novel "all-in-one" self-charging energy storage device. This micro-supercapacitor can harvest energy from mechanical movements (like walking or a heartbeat) and store it simultaneously, potentially eliminating the need for external chargers for wearable devices.

I. Key Highlights of the Innovation:

- **The Mechanism:**
 - ✓ The device is a Piezoelectric Supercapacitor. It combines the physics of piezoelectricity (generating current from pressure) with electrochemical energy storage.
 - ✓ Unlike traditional systems where a generator (dynamo) is wired to a separate battery, this device integrates both functions into a single material unit.
- **Material Composition:**
 - ✓ The electrode is made of Carbon Nanotubes (CNTs) mixed with Manganese Dioxide (MnO₂).
 - ✓ These are arranged in a "hierarchical" structure, which provides a massive surface area for storing charge.
- **How it Works:**
 - ✓ When the device is mechanically deformed (bent, pressed, or shaken), the piezoelectric effect generates an electric potential.
 - ✓ This internal voltage drives ions from the electrolyte to adsorb onto the surface of the carbon nanotubes, effectively "charging" the supercapacitor without a wire.
- **Performance:** The device demonstrates high power density (can release energy quickly) and robust mechanical stability, surviving thousands of bending cycles.

II. Why is this a Game Changer?

- **Healthcare (Bio-Implants):** Could power pacemakers using the heart's own beating motion, eliminating the risky surgeries currently required to replace pacemaker batteries every 5-10 years.
- **Wearable Tech:** Smartwatches or fitness trackers could charge simply through the user's arm movements, achieving true "energy autonomy."
- **Defense & IoT:** Remote sensors in border areas (Smart Dust) can be powered by wind vibration or footfall, removing the logistical nightmare of replacing batteries in conflict zones.
- **E-Waste Reduction:** By replacing disposable chemical batteries (which leak toxic electrolytes) with long-lasting carbon-based supercapacitors, it significantly reduces electronic waste.

PIEZOELECTRIC EFFECT

When Mechanical Stress is Applied:

Generates AC Voltage



Reverse Effect:

Apply Electricity → **Vibrates**



Used in Quartz Watches

SUPERCAPACITOR vs. CONVENTIONAL BATTERY

Lithium-Ion Battery	Supercapacitor
Storage Mechanism: • Chemical: Ions embed inside electrode material	Physical/Electrostatic: • Ions cling to the surface
Energy Density: • High (Stores a lot of energy)	Low (Runs out quickly)
Power Density: • Low (Releases energy slowly)	High (Can release huge bursts of energy instantly)
Lifespan: • ~500-1000 charge cycles	~100,000+ charge cycles

III. Challenges & Limitations:

- **Energy Density Gap:** While excellent for bursts of power, supercapacitors still cannot hold as much total energy as a Li-ion battery of the same size. They are currently suitable for micro-electronics, not EVs.
- **Cost of Materials:** High-quality Carbon Nanotubes (CNTs) are expensive to manufacture at an industrial scale.
- **Intermittency:** The charging depends entirely on movement. If the user is sedentary or the sensor is still, the device loses power (high self-discharge rate).

IV. Way Forward:

- **Hybridization:** The immediate future lies in Hybrid Storage Systems—using this device to trickle-charge a small solid-state battery, combining the longevity of the supercapacitor with the capacity of a battery.
- **Nano-Manufacturing:** Investment in domestic production of Carbon Nanotubes (CNTs) under the National Mission on Nano Science and Technology is essential to reduce costs.
- **Textile Integration:** Research is moving towards weaving these piezoelectric fibers into clothing ("Smart Fabrics") to harvest energy from the friction of clothes moving against the body.

HISTORY & CULTURE

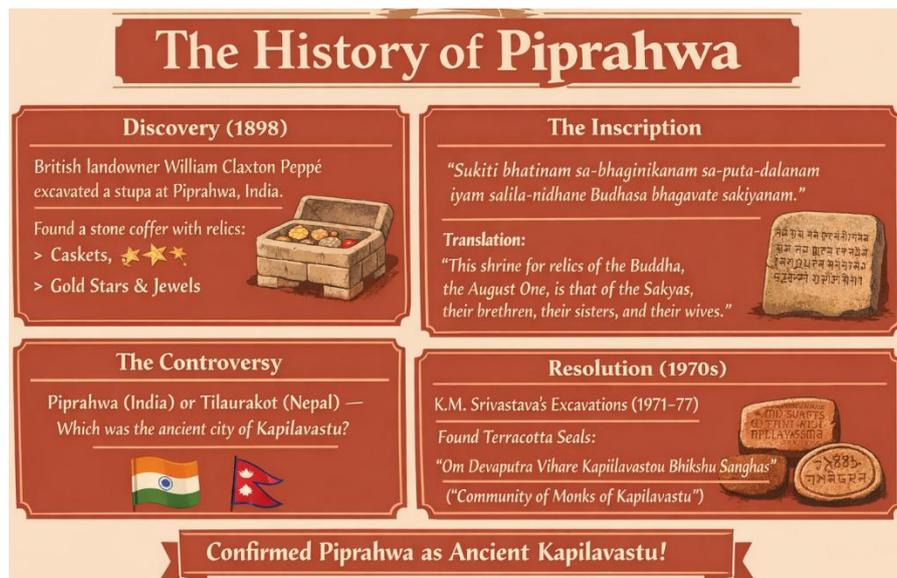
90. The Return of the 'Awakened One': Piprahwa Relics & The Logic of Cultural Repatriation

Context:

Recently, Prime Minister Shri Narendra Modi inaugurated the Grand International Exposition titled "The Light & the Lotus: Relics of the Awakened One" at the Rai Pithora Cultural Complex, New Delhi. This historic event marks the first-ever "reunification" of the sacred Piprahwa relics—bringing together those preserved in Indian museums with the portion recently repatriated from the United Kingdom (July 2025), preventing their auction abroad.

I. Key Highlights of the Exposition:

- **The "Great Reunion":** For over a century, the relics discovered at Piprahwa in 1898 were scattered. This exposition brings together three distinct collections:
 - ✓ **National Museum, New Delhi:** Relics from the 1971-77 excavations.
 - ✓ **Indian Museum, Kolkata:** The original portion of the 1898 discovery.
 - ✓ **The Repatriated Collection:** The portion held privately by the Peppé family in the UK for 127 years, which was successfully brought back to India in 2025.
- **The "Godrej Protocol" (New Model of Repatriation):**
 - ✓ The repatriation of the Peppé family collection was unique. It was not a government-to-government treaty transfer but a Public-Private Partnership (PPP).
 - ✓ The Godrej Industries Group, in collaboration with the Ministry of Culture, intervened to halt an auction at Sotheby's Hong Kong, purchased the relics, and returned them to India. This sets a new precedent for corporate responsibility in heritage preservation.
- **Technological Integration:**
 - ✓ Unlike traditional static displays, this exposition utilizes immersive audio-visuals and a reconstructed model of the Piprahwa Stupa to recreate the spiritual ambience of ancient Kapilavastu.



II. Significance: Why This Matters

- **Validation of Civilizational State:** The exposition reinforces India's identity not just as a geopolitical entity, but as a Civilizational State that is the Janmabhoomi (Land of Birth) and Karmabhoomi (Land of Action) of the Buddha Dhamma.
- **Soft Power Diplomacy:**
 - ✓ Buddhism is India's most potent "Soft Power" asset in East and Southeast Asia.
 - ✓ By successfully acting as the "custodian" of these relics, India strengthens ties with nations like Thailand, Vietnam, and Sri Lanka, countering China's attempts to appropriate Buddhist leadership (e.g., through their World Buddhist Forum).
- **Ethical Repatriation:**
 - ✓ It challenges the colonial narrative that Western private collections are "safe havens."
 - ✓ The successful return signals that sacred religious artefacts cannot be treated as mere commodities in international auction houses.

III. Challenges in Heritage Management:

- **The "Storehouse" Syndrome:** Most Indian museums (like the Indian Museum, Kolkata) function as storage depots rather than interpretive spaces. Relics are often kept in dusty vaults, invisible to the public.
- **Provenance Gaps:** Thousands of Indian antiquities abroad lack clear documentation (provenance), making legal repatriation under the 1970 UNESCO Convention difficult.
- **Security Concerns:** High-value relics require Z-plus level security. The theft of the Buddha's golden casket from the Pratapgarh Museum (2000s) remains a cautionary tale.

IV. Way Forward:

- **Institutionalize the "Godrej Model":** Create a "National Heritage Fund" where Corporate Social Responsibility (CSR) funds can be pooled specifically to bid for and buy back Indian heritage appearing in global auctions.
- **Modernize Curating:** Shift from "Glass Case" displays to "Storytelling" museums. The Piprahwa relics should be the centerpiece of a dedicated Kapilavastu Museum in Siddharthnagar, integrated into the Buddhist Circuit, rather than sitting in Delhi.

- **Digital Heritage Register:** A blockchain-based national register of antiquities to prevent theft and illicit trafficking.

91. Somnath Swabhiman Parv: Celebrating 1,000 Years of Resilience

Context:

Recently, Prime Minister Shri Narendra Modi, who also serves as the Chairman of the Shri Somnath Trust, visited the Somnath Temple in Gujarat. The visit marked the culmination of the 'Somnath Swabhiman Parv', a four-day event commemorating 1,000 years since the first major invasion of the temple by Mahmud of Ghazni in 1026 AD. The Prime Minister's visit underscored the narrative of Somnath not just as a spiritual center, but as a symbol of India's civilizational resilience against repeated destruction.



I. Key Highlights of the Visit:

- **Shaurya Yatra:** The PM led a grand 'Shaurya Yatra' (Procession of Valour), featuring 108 horses, symbolizing the courage of the defenders who protected the temple over centuries.
- **Swabhiman Parv Theme:** The event focused on the theme of "Creation over Destruction" (Nirmaan over Dhwan), highlighting how the temple was rebuilt seven times after being destroyed.
- **Cultural & Digital Showcase:** Inauguration of a Drone Show depicting the temple's history and the launch of digital archives to preserve the stories of the temple's reconstruction by Sardar Patel.
- **Development Projects:** Launch of new pilgrim amenities, including a "Sanskritik Van" (Cultural Forest) and upgrades to the sea-facing promenade (Samudra Darshan Path).

II. Architecture of Somnath Temple:

- **Style:** The present temple is built in the Chalukya Style (also known as Maru-Gurjara architecture) of temple construction.
- **Architect:** The modern structure was designed by Prabhashankar Sompura, hailing from the famous Sompura Salat community of temple architects in Gujarat.

- **Key Architectural Features:**
 - ✓ **Kailash Mahameru Prasad:** The temple is constructed in this specific form of the Maru-Gurjara style, characterized by a "mountain-like" spire.
 - ✓ **Shikhara (Spire):** It rises to a height of 150 feet. Atop the Shikhara is a Kalash weighing 10 tonnes and a flag mast (Dhwaja Dand) that is 27 feet tall.
 - ✓ **Layout:** The temple consists of three main sections:
 - **Garbhagriha:** The Sanctum Sanctorum housing the Jyotirlinga.
 - **Sabha Mandap:** The Assembly Hall with intricate carvings.
 - **Nritya Mandap:** The Dance Hall featuring varying pillars.
- **Baan Stambh (Arrow Pillar):** Located on the sea-protection wall, this unique pillar features an inscription stating that there is no land in a straight line between that point and the South Pole (Antarctica). This indicates ancient Indian knowledge of geography and the earth's curvature.
- **Material:** Built using creamy-yellow sandstone, with no use of iron or steel to prevent corrosion from the sea air.



III. Historical Background: Kingdoms & Reconstruction:

The history of Somnath is a cycle of destruction and reconstruction, involving key dynasties:

- **Original Structure:** Believed to be built by the Moon God (Soma) in gold, Ravana in silver, and Krishna in sandalwood (mythological).
- **Solanki (Chalukya) Dynasty:**
 - ✓ **Mularaja:** The first historical temple was likely built by the Solanki king Mularaja in the 10th century.
 - ✓ **Bhimdev I:** After Mahmud of Ghazni's raid in 1026 AD, King Bhimdev I (Solanki dynasty) famously rebuilt the temple in stone.
 - ✓ **Kumarapala:** In 1169 AD, the Solanki King Kumarapala renovated it further under the advice of the Jain monk Hemachandra.
- **Maratha Period:** In 1783, Queen Ahilyabai Holkar of Indore built a separate shrine near the ruins (Old Somnath Temple) to maintain continuity of worship when the main temple was occupied.

- **Modern Era:** The current structure was commissioned in 1947 by Sardar Vallabhbhai Patel and inaugurated by President Dr. Rajendra Prasad in 1951.

92. Reviving the Roots: Education Ministry Unveils 55 Treasures of Classical Literature

Context:

Recently, Union Minister for Education, Shri Dharmendra Pradhan, released 55 rare and valuable literary works in classical Indian languages at an event in New Delhi. This initiative, spearheaded by the Central Institute of Indian Languages (CIIL) and the Central Institute of Classical Tamil (CICT), marks a significant step towards the "Indianization" of the academic curriculum as envisioned in the National Education Policy (NEP) 2020.

I. Key Highlights of the Release:

- **The Collection:** The 55 volumes span five classical languages—Tamil, Telugu, Malayalam, Kannada, and Odia—and include a groundbreaking interpretation of the Tirukkural in Indian Sign Language.
- **Institutional Backing:**
 - ✓ 41 books were developed by the Centres of Excellence for Classical Languages under CIIL, Mysuru.
 - ✓ 13 books and the Sign Language series were produced by the CICT, Chennai.
- **Inclusivity Milestone:** The release of the Tirukkural in Sign Language (a 45-episode series) is a historic move to make ancient ethical wisdom accessible to the hearing-impaired community, aligning with the vision of Antyodaya (reaching the last person).
- **Strategic Objective:** The Minister emphasized that these works are not just for libraries but are intended to be integrated into mainstream education to counter the "Macaulay mindset" and establish Indian languages as the primary vehicle for research and knowledge.



II. Relevance:

- **NEP 2020 Implementation:** The policy mandates the use of the mother tongue/regional language as a medium of instruction. The availability of high-quality classical texts in simplified or translated formats is a prerequisite for this shift.
- **Cultural Diplomacy:** Promoting texts like Tirukkural and Sangam literature strengthens India's soft power, particularly in South East Asia where these influences are historically deep.
- **Digital Preservation:** Many of these works have been digitized for the "Bharatavani" portal, ensuring they are preserved against physical decay.

III. Challenges & Way Forward:

- **The "Translation Gap":** While 55 volumes are a start, thousands of manuscripts remain untranslated. There is a shortage of polyglot scholars capable of translating classical verses into modern vernaculars.
- **Academic Isolation:** Classical language studies are often isolated in specific departments. The challenge is to make these texts relevant to students of History, Political Science, and Ethics.
- **Way Forward:** The government must incentivize "Comparative Literature" studies and offer fellowships for young scholars to bridge the gap between ancient scripts (like Brahmi/Grantha) and modern digital formats.

93. Stone Chronicles of Faith: The Bhadrakali Inscription & The Legacy of Somnath

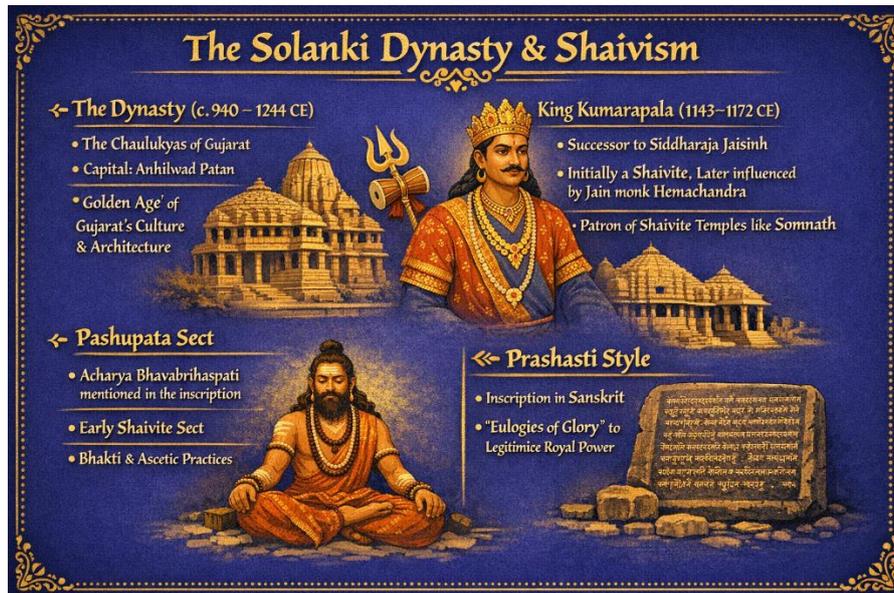
Context:

During the 'Somnath Swabhiman Parv' in January 2026, experts and the Ministry of Culture highlighted the significance of the Bhadrakali Temple Inscription located in Prabhas Patan, Gujarat. This 12th-century epigraphic record has gained renewed attention as a primary source validating the historical resilience and repeated reconstruction of the Somnath Temple, particularly serving as a testament to the "Golden Age" of the Solanki dynasty.

I. Key Highlights of the Inscription:

- **Location:** The inscription is embedded in the wall of the Bhadrakali Temple (not to be confused with the Warangal temple) in Prabhas Patan, near the Somnath temple complex.
- **Timeline:** It is dated to 1169 CE (Vikram Samvat 1255 / Valabhi Samvat 850).
- **The "Four Yuga" Narrative:** The inscription is unique because it provides a mythological-historical chronology of the Somnath Temple's construction across the four cosmic ages:
 - ✓ **Satya Yuga:** Built of Gold by the Moon God (Soma).
 - ✓ **Treta Yuga:** Built of Silver by Ravana.
 - ✓ **Dvapara Yuga:** Built of Sandalwood by Shri Krishna.
 - ✓ **Kali Yuga:** Built of Stone by King Bhimdev I (Solanki Ruler).
- **Historical Validation:**
 - ✓ It specifically records the fifth reconstruction (or major renovation) of the temple by the Solanki King Kumarapala in 1169 CE.

- ✓ It eulogizes Bhavabrihaspati, the Ganda (Chief Priest) and Pashupata Acharya (spiritual preceptor) of King Kumarapala, who played a key role in persuading the king to restore the dilapidated shrine.



II. Significance: Decoding the "Stone Record"

- **Corroboration of Texts:** It corroborates literary accounts found in Hemachandra's Dvyashraya-Kavya, proving that the reconstruction of Somnath was a state-sponsored project involving massive resources.
- **Continuity of Faith:** It serves as evidence that despite the invasion of Mahmud of Ghazni (1026 CE), the site did not remain in ruins. Within a century, it was rebuilt on a grander scale, showcasing the resilience of the local population and rulers.
- **Administrative Insight:** The inscription gives insights into the role of Temple Priests (Acharyas) in state administration. Bhavabrihaspati was not just a priest but a powerful figure who could influence royal treasury allocation for temple repairs.

94. NIRANTAR: A Unified Command for India's Ecological Resilience

Context:

Recently, the Union Minister for Environment, Forest and Climate Change (MoEFCC), Shri Bhupender Yadav, chaired the inaugural meeting of the NIRANTAR platform. This new initiative is designed to break the "silos" between various research institutions under the Ministry and create a cohesive "Whole of Government" approach to managing India's natural resources.

I. Key Highlights of the Initiative:

- **The Acronym:** NIRANTAR stands for "National Institute for Research & Application of Natural Resources to Transform, Adapt and Build Resilience."
- **Core Objective:**
 - ✓ To serve as a common platform for coordination among the diverse autonomous institutions under MoEFCC (such as the Botanical Survey of India, Zoological Survey of India, Indian Council of Forestry Research and Education, etc.).

- ✓ To ensure that scientific research does not remain in labs but directly feeds into policymaking for balancing industrial development with environmental protection.
- **The "Bio-Resource" Focus:**
 - ✓ The Minister emphasized that while India excels in software and manufacturing, the "four essentials of life"—Food, Medicine, Energy, and Oil—ultimately originate from nature.
 - ✓ NIRANTAR will focus on the sustainable utilization of these bio-resources to drive the economy without crossing planetary boundaries.
- **The Four Verticals:** The platform will operate on four strategic pillars:
 - ✓ Research: Cutting-edge scientific inquiry into biodiversity and climate adaptation.
 - ✓ Assessment of Outcomes: Measuring the real-world impact of environmental interventions.
 - ✓ Utilization: Translating research into commercial or conservation-ready applications.
 - ✓ Policy Integration: Using data to frame "Balanced Policies" that support the economy and ecology simultaneously.

II. Significance:

Dimension	Current Challenge	NIRANTAR's Solution
Institutional Fragmentation	MoEFCC has multiple bodies (ZSI, BSI, WII, FSI) often working in isolation.	Creates a "Shared Brain" network where data from a forest surveyor (FSI) can instantly inform a wildlife conservationist (WII).
Policy-Science Gap	Environmental clearances are often delayed or litigated due to lack of real-time scientific data.	Provides a "Science-Backed Decision Support System" to speed up clearances while ensuring rigorous environmental safeguards.
Resource Economy	India's "Bio-Economy" potential is underutilized compared to nations like Brazil.	Focuses on "Application"—turning bio-resources (like medicinal plants or algae) into sustainable economic products.

MoEFCC Institutions

Aspirants should know the key bodies that NIRANTAR aims to coordinate:

<p>Botanical Survey of India (BSI)</p> <p>HQ: Kolkata</p> <p>Survey, Research & Conservation of Plant Resources</p> 	<p>Zoological Survey of India (ZSI)</p> <p>HQ: Kolkata</p> <p>Survey & Exploration of Faunal Diversity</p> 
<p>Forest Survey of India (FSI)</p> <p>HQ: Dehradun</p> <p>India State of Forest Report (ISFR)</p> 	<p>Wildlife Institute of India (WII)</p> <p>HQ: Dehradun</p> <p>Training & Research in Wildlife Management</p> 

III. Challenges & Way Forward:

- **Challenge (Data Standardization):** merging decades of archival data from BSI/ZSI with modern satellite data from FSI will require massive digital infrastructure (Big Data/AI).
- **Challenge (Autonomy vs. Control):** Ensuring that "coordination" does not turn into "bureaucratic centralization," stifling the academic freedom of individual institutes.
- **Way Forward:** NIRANTAR should function as a "Think Tank" rather than a regulator, fostering a culture of cross-disciplinary research (e.g., a botanist and a climate modeler working together on Himalayan resilience).

95. India as the Dhamma Setu: The 2nd Global Buddhist Summit 2026

Context:

On January 24-25, 2026, the Ministry of Culture, in collaboration with the International Buddhist Confederation (IBC), organized the 2nd Global Buddhist Summit at Bharat Mandapam, New Delhi. The summit was inaugurated by Prime Minister Shri Narendra Modi, reaffirming India's role as the "Land of the Buddha" and a civilizational leader in Buddhist diplomacy.

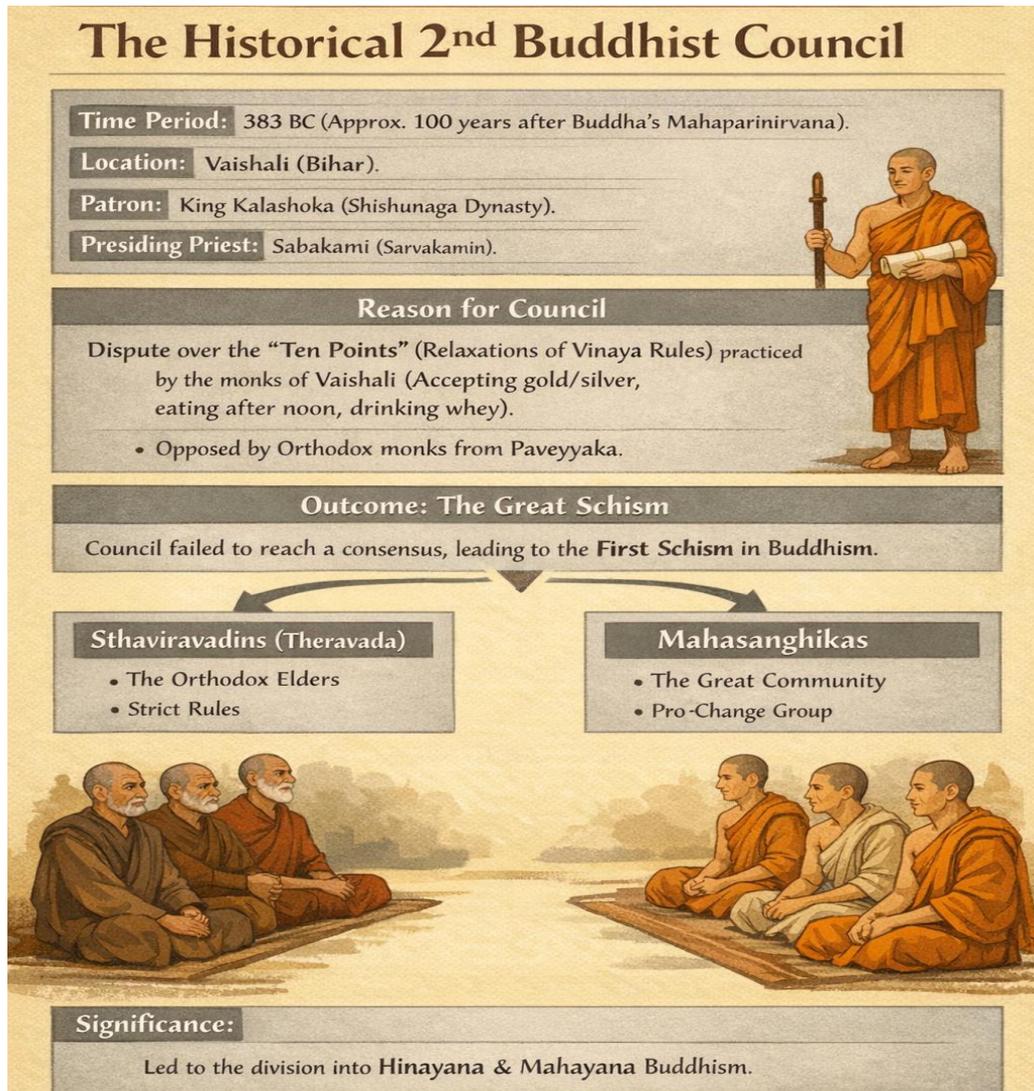
I. Key Highlights of the Summit:

- **Theme:** "Collective Wisdom, United Voice, and Mutual Coexistence".
 - ✓ The theme focuses on addressing contemporary global challenges—such as climate change, conflict, and consumerism—through the lens of Buddha Dhamma.
- **Global Participation:**
 - ✓ The event witnessed the participation of Supreme Patriarchs, spiritual leaders, and scholars from 30+ countries, including Japan, South Korea, Thailand, Vietnam, and Sri Lanka.
- **Technological Integration (NORBU):**
 - ✓ A major highlight was the launch of "NORBU" (Neural Operator for Responsible Buddhist Understanding).
 - ✓ **What is it?** An AI-powered platform trained on ancient Buddhist texts (Tripitaka) to answer queries on Dhamma, making ancient wisdom accessible to the digital generation.
- **Exhibitions:**
 - ✓ **"Virasat se Vishwa":** Showcased India's soft power outreach through Buddhism.
 - ✓ **"Buddha Cārikā":** An exhibition mapping the "Walking Path of the Buddha" across the Gangetic plains.
- **Outcomes:** The summit adopted the "New Delhi Declaration 2026," emphasizing the need for a "Buddhist engagement with the crisis of ecology" and promoting Mindfulness as a tool for mental health.

II. Relevance: Why is this important?

- **Soft Power Diplomacy:**
 - ✓ Hosting the Global Buddhist Summit allows India to counter China's attempts to dominate the Buddhist narrative (via their World Buddhist Forum).

- ✓ It strengthens the "Act East Policy" by leveraging shared cultural heritage with ASEAN nations.
- **Cultural Economy:** Initiatives like the "Buddhist Circuit" (connecting Lumbini, Bodh Gaya, Sarnath, Kushinagar) are vital for tourism revenue. The summit acts as a marketing platform for these sites.
- **Modern Relevance:** The summit highlights that Buddhism is not just a religion of the past but a philosophy relevant to Climate Action (Interdependence/Pratītyasamutpāda) and Conflict Resolution (Ahimsa).



MISCELLANEOUS

96. Light at the End of the Tunnel: First Mountain Breakthrough in Maharashtra Leg

Context:

Recently, the Mumbai-Ahmedabad High-Speed Rail (MAHSR) project achieved a critical milestone with the successful breakthrough of Mountain Tunnel-5 (MT-5) in the Palghar district of Maharashtra. This event, announced by Railway Minister Shri Ashwini Vaishnaw, signifies the

acceleration of the project in the Maharashtra section, which had previously faced significant delays due to land acquisition and legal hurdles.

I. Key Highlights of the Breakthrough:

- **The Tunnel (MT-5):**
 - ✓ **Location:** Situated between the Virar and Boisar bullet train stations in Palghar district.
 - ✓ **Dimensions:** It is approximately 1.5 km long, making it one of the significant surface tunnels in the corridor.
 - ✓ **Execution Time:** The excavation was completed in about 10 months using the NATM (New Austrian Tunnelling Method).
- **Significance:**
 - ✓ While the project has seen rapid progress in Gujarat (where the Zaroli tunnel was completed earlier), this is the first mountain tunnel breakthrough in Maharashtra.
 - ✓ It signals that the engineering challenges in the ecologically sensitive and rocky terrain of the Western Ghats foothills are being successfully overcome.
- **Safety & Tech:**
 - ✓ The tunnel accommodates two tracks (Up and Down lines).
 - ✓ It utilizes noise barriers and specialized ventilation systems to mitigate the "piston effect" caused by trains entering at 320 km/h.

TUNNELLING METHOD: NATM

- New Austrian Tunnelling Method (Drill & Blast) —
- ▶ Utilizes "Drill and Blast" Technique
- ▶ Shotcrete & Rock Bolt Support
- ▶ Relies on Surrounding Rock Stability

MAHSR PROJECT OVERVIEW

- ▶ **Length: 508 km** (156 km in Maharashtra, 352 km in Gujarat)
- ▶ **Speed: 320 km/h Operating Speed** (Max 350 km/h)
- ▶ **Funding: 81% JICA Loan** (0.1% Interest for 50 Years)

TECHNOLOGY TRANSFER

Shinkansen E5 Series "Bullet Train"

Early Earthquake Detection System

The infographic features a central image of a worker operating a tunneling machine in a dark tunnel. Below this, a map of India highlights the project route. At the bottom, a high-speed train is shown on tracks, and a circular graphic displays a seismic wave pattern.

97. The Last Mile: Can India Achieve a Malaria-Free Future by 2030?

Context:

Recently, India stands at a critical juncture in its public health history. Having officially exited the World Health Organization's (WHO) "High Burden to High Impact" (HBHI) country list in 2024, India has demonstrated a massive reduction in malaria cases (over 80% decline since 2015). However, the Ministry of Health and Family Welfare (MoHFW) has flagged urban malaria and cross-border transmission as the final hurdles to meeting the ambitious target of Zero Indigenous Cases by 2027 and full Malaria-Free Certification by 2030.

I. Key Highlights & Current Status (2026):

- **The 2027 vs. 2030 Timeline:**
 - ✓ 2027 Target: Interruption of indigenous transmission (Zero native cases).
 - ✓ 2030 Target: WHO Certification (Requires 3 consecutive years of zero local transmission).
- **Progress Report:**
 - ✓ 160 Districts across 23 States/UTs have reported zero indigenous cases consistently between 2022 and 2025.
 - ✓ 34 States/UTs have achieved an Annual Parasite Incidence (API) of less than 1 case per 1,000 population (Pre-elimination phase).
 - ✓ Laggards: The fight is now concentrated in Tripura and Mizoram, which continue to report API > 1, primarily due to difficult forest terrain and cross-border movement from Myanmar.
- **Strategic Shift:**
 - ✓ The government has shifted focus from "Control" to "Elimination," adopting the "Test, Treat, Track" strategy nationwide.
 - ✓ Notifiable Disease: Malaria has been made a notifiable disease in 33 States/UTs, mandating private practitioners to report cases to the government database.

II. Major Impediments to the 2030 Goal:

- **Urban Malaria (*Anopheles stephensi*):** Unlike rural malaria, urban malaria is driven by *Anopheles stephensi*, a mosquito that thrives in man-made containers (construction sites, overhead tanks). It is highly adaptive and resistant to many insecticides.
- **The "Vivax" Puzzle:** While *P. falciparum* (deadly) cases have dropped, *Plasmodium vivax* cases are harder to eliminate because this parasite stays dormant in the liver (hypnozoites) and causes relapses months later.
- **Asymptomatic Carriers:** "Hidden" carriers (people with low parasites but no fever) act as reservoirs. Current Rapid Diagnostic Tests (RDTs) often fail to detect them.
- **Border Porosity:** Unregulated movement across the Indo-Myanmar border constantly reintroduces fresh parasite strains into the North East, undermining local elimination efforts.

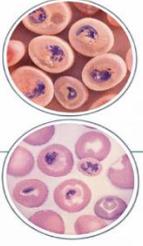
III. Way Forward: The "T-T-T" Strategy

- **Technological Integration:**
 - ✓ Full utilization of the Integrated Health Information Platform (IHIP) for real-time case tracking.
 - ✓ Use of Genome Sequencing to differentiate between indigenous cases and imported cases (from Africa/SE Asia).

- **Focus on "Radical Cure":** Strict adherence to the 14-day Primaquine regimen for *P. vivax* patients to kill dormant liver stages and prevent relapse.
- **One Health Approach:** Collaboration between municipal corporations (urban planning) and health departments to design "mosquito-proof" infrastructure in growing cities.

MALARIA

Caused by *Plasmodium* Protozoa

TRANSMISSION	KEY SPECIES IN INDIA
<p>Spread by Infected Female <i>Anopheles</i> Mosquito</p> <p>Bites at Dusk & Dawn</p> 	<ul style="list-style-type: none"> • <i>Plasmodium falciparum</i> Most Dangerous – Cerebral Malaria • <i>Plasmodium vivax</i> Most Widespread – Relapsing Malaria 
<p>WHO CERTIFICATION CRITERIA</p> <ul style="list-style-type: none"> • Zero Local Transmission for 3 Years • Strong Surveillance & Rapid Response 	
<p>RECENT CERTIFICATIONS</p> <ul style="list-style-type: none">  Cabo Verde (2024)  Egypt (2024) 	

98. The People's Padma 2026: Honouring the Unsung and the Exceptional

Context:

On the eve of the 77th Republic Day (January 25, 2026), the President of India approved the conferment of 131 Padma Awards. Continuing the government's trend of recognizing "Unsung Heroes" alongside established personalities, this year's list strikes a balance between grassroots achievers and national icons.

I. Key Highlights of 2026 Awards

- **The Numbers:**
 - ✓ Total Awards: 131
 - ✓ Padma Vibhushan: 5
 - ✓ Padma Bhushan: 13
 - ✓ Padma Shri: 113
 - ✓ Duo Cases: 2 (In a duo case, the award is counted as one).
- **Diversity & Representation:**
 - ✓ Women Awardees: 19 (Highlighting the push for gender parity in national honours).
 - ✓ Foreigners/NRI/PIO/OCI: 6 (Showcasing India's global cultural footprint).
 - ✓ Posthumous Awards: 16.
- **Notable Assignees (Brief Mention):**
 - ✓ Padma Vibhushan: Conferred posthumously to veteran actor Dharmendra (Art) and former Kerala CM V.S. Achuthanandan (Public Affairs). Justice K.T. Thomas also received the honour.
 - ✓ Padma Bhushan: Includes playback singer Alka Yagnik, actor Mammooty, and banker Uday Kotak.
 - ✓ Padma Shri: Indian cricket captains Rohit Sharma and Harmanpreet Kaur were honoured for their leadership in sports.

- **Focus on "Unsung Heroes":**
 - ✓ A significant portion of the Padma Shri awards went to tribal artists, organic farmers, and traditional healers who have served society silently for decades, reinforcing the "People's Padma" narrative.

Padma Awards

Instituted in 1954 (Along with Bharat Ratna)

The Hierarchy:

- Padma Vibhushan: For “Exceptional and Distinguished Service”.
- Padma Bhushan: For “Distinguished Service of a High Order.”.
- Padma Shri: For “Distinguished Service.”.

The Committee:

- Constituted by the Prime Minister every year.
- Headed by: The Cabinet Secretary.
- Members: Home Secretary, Secretary to the President, and 4-6 Eminent Persons.





Constitutional Validity:

- Article 18: Abolishes titles (e.g., Rai Bahadur, Sir).
- Supreme Court Ruling (1996): In *Balaji Raghavan vs. Union of India*, SC upheld the awards but ruled they cannot be used as suffixes or prefixes to names. If misused, the award can be forfeited.



Limitations:

- Total awards in a year should not exceed 120 (excluding Posthumous and Foreigners).
- Suspension: The awards were suspended during 1978-79 (Morarji Desai Govt) and 1993-97 (Litigation years).

99. Equity or Exclusion? The Uproar Over UGC’s 2026 Anti-Discrimination Regulations

Context:

Recently, campuses across India witnessed a massive showdown following the notification of the UGC (Promotion of Equity in Higher Education Institutions) Regulations, 2026 on January 13. While the regulations were intended to replace the 2012 guidelines and curb caste-based discrimination (a long-standing demand post the Rohith Vemula and Payal Tadvi tragedies), they have triggered a pincer movement of protests from both General Category students and

Dalit/Bahujan groups. Consequently, on January 29, 2026, the Supreme Court stayed the implementation of these regulations, citing "ambiguities" and the potential for misuse.

I. Key Highlights of the 2026 Regulations:

- **Mandate:** The regulations make it legally binding for all Higher Education Institutions (HEIs) to establish an Equal Opportunity Centre (EOC) and an Equity Committee.
- **The "Equity Committee" Structure:**
 - ✓ Headed by the Vice-Chancellor/Principal (Chairperson).
 - ✓ Includes faculty members and two student representatives (nominated based on academic merit, not elected).
- **Complaint Mechanism:**
 - ✓ Complaints must be acknowledged within 24 hours and resolved within 15 days.
 - ✓ It introduces an "Equity Officer" (Joint Secretary level) to oversee implementation.
- **The Controversial Definition (Clause 3):**
 - ✓ It defines "Caste-based Discrimination" as discrimination specifically against members of SC, ST, and OBC communities.
 - ✓ Change from Draft: The final notification removed the clause penalizing "false complaints," which was present in the 2025 draft.

<p>Article 15(4) & 15(5)</p> <p>Empowers the State to make "special provisions" for the advancement of SCs, STs, and SEBCs (Socially and Educationally Backward Classes). The UGC regulations derive their validity from here.</p>	<p>Article 14</p> <p>Equality before Law. The Supreme Court's stay is partly based on whether excluding General Category students from the definition of discrimination violates the "Equal Protection of Laws" doctrine.</p>
<p>UGC Act, 1956</p> <p>Section 26(1)(g): Empowers the UGC to make regulations defining the powers and duties of officers. The 2026 regulations were framed under this statutory power.</p>	<p>Thorat Committee (2007)</p> <p>The first major committee to document caste discrimination in AIIMS/IITs. It recommended independent grievance redressal bodies, which the 2026 regulations attempted (but arguably failed) to institutionalize.</p>

II. Why the Uproar? (The Double-Edged Sword)

The regulations have managed to alienate two opposing interest groups for different reasons:

- **The "Reverse Discrimination" Argument (General Category):**
 - ✓ **Exclusionary Protection:** Critics argue that by defining discrimination only as acts against SC/ST/OBCs, the regulations leave General Category students vulnerable with no legal recourse if they face harassment.
 - ✓ **Fear of Misuse:** The removal of the "False Complaint" penalty has created panic about the weaponization of these rules to settle personal scores, with no safeguards for the accused.

- **The "Toothless Tiger" Argument (SC/ST/OBC Groups):**
 - ✓ **Conflict of Interest:** The Equity Committee is headed by the VC/Principal. Since most discrimination complaints in Indian universities are often against the administration or senior faculty, activists argue that having the VC as the judge violates the principle of Nemo iudex in causa sua (No one should be a judge in their own cause).
 - ✓ **Nomination vs. Election:** Student representatives are to be nominated by the administration based on "merit," which critics claim will fill the committee with "compliant" students rather than genuine voices of the marginalized.

III. Way Forward: Beyond the Stay

- **Independent Adjudication:** The Equity Committee must have external members (retired judges or civil society activists) to ensure impartiality, similar to the Internal Complaints Committee (ICC) under the POSH Act.
- **Inclusive Definition:** Discrimination should be defined universally (covering all students), with specific aggravated penalties for caste-based crimes, balancing universal protection with social justice.
- **Restoring the "False Complaint" Clause:** To build trust across the student body, a balanced provision penalizing proven malicious complaints (with a high burden of proof) should be reintroduced.

100. Small Giants, Big Strides: NITI Aayog's Blueprint for MSME 2.0

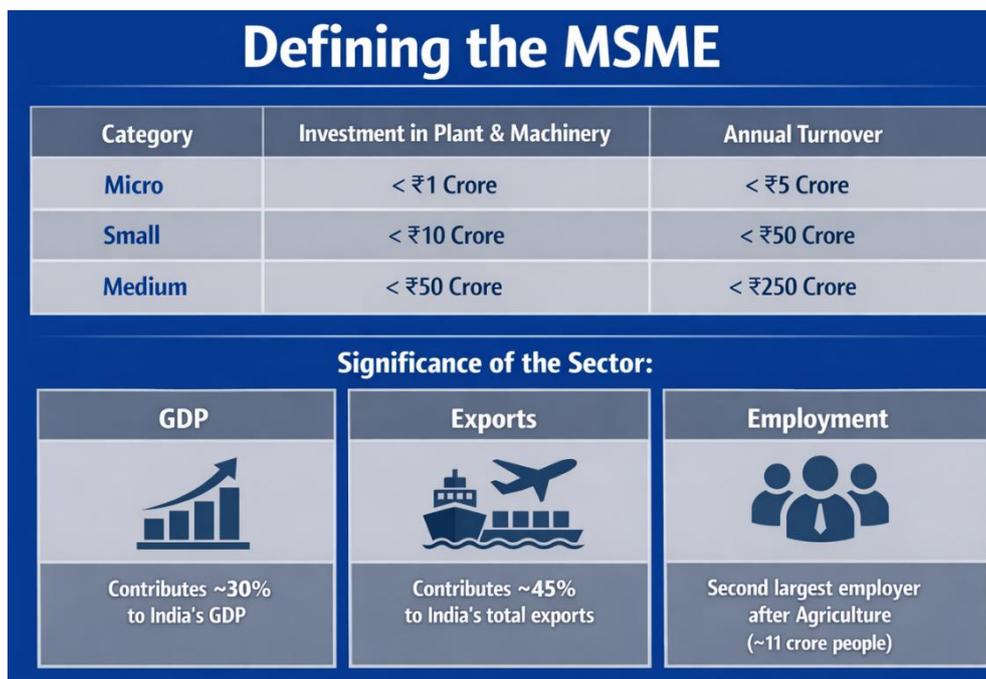
Context:

Recently, NITI Aayog released a transformative report titled "Unlocking the Growth Engine: A Roadmap for MSME Transformation in Viksit Bharat." The report serves as a policy guidebook to address the structural bottlenecks—specifically focusing on finance, formalization, and exports—that prevent Indian Micro, Small, and Medium Enterprises (MSMEs) from scaling up. This comes at a crucial time as India aims to increase the MSME sector's contribution to GDP from 30% to 50% by 2030.

I. Key Highlights of the Report: The report identifies six pillars for revitalizing the sector:

- **Shift to "Cash-Flow Based" Lending:**
 - ✓ **The Issue:** Currently, banks rely on Asset-Based Lending (collateral), which 85% of micro-enterprises lack.
 - ✓ **Recommendation:** A complete shift to Cash-Flow Based Lending using data from the Account Aggregator (AA) framework and GSTN. The report suggests creating a "Universal Enterprise Credit Rating" for MSMEs based on their digital footprint (payments, electricity bills, GST) rather than just balance sheets.
- **The "One-Stop" Compliance Portal:**
 - ✓ To reduce the regulatory cholesterol, NITI Aayog proposes integrating all state and central compliances into a Single National MSME Window, essentially linking the Udyam Portal with the National Single Window System (NSWS). This aims to reduce the compliance time by 50%.
- **Export Competitiveness (The "E-Commerce" Push):**
 - ✓ The report recommends the creation of "Green Channel" Export Zones for MSMEs engaging in e-commerce exports.

- ✓ It suggests that Foreign Trade Policy (FTP) benefits should be extended to "Courier Exports" to help small artisans sell directly to global consumers via platforms like ONDC (Open Network for Digital Commerce).
- **Integration with PLI (Production Linked Incentive):** A major recommendation is to mandate "Anchor-Linkage". Large industries receiving PLI benefits must source a fixed percentage of components from domestic MSMEs, creating a guaranteed supply chain.
- **Tackling Delayed Payments:** Despite the MSMED Act, delayed payments remain a crisis (estimated at ₹10.7 lakh crore trapped). The report suggests automatic mandatory filing of default reports by GSTN if payments are not cleared within 45 days, directly impacting the credit score of the large buyer.
- **Digital Public Infrastructure (DPI) for Skill:** Launch of a "Digital Udyam Academy" to train micro-entrepreneurs in digital book-keeping and financial literacy.



II. Major Challenges Identified:

- **The "Missing Middle" Phenomenon:**
 - ✓ India has a "bimodal" distribution: a vast number of micro-enterprises and a few large firms, with very few small/medium companies.
 - ✓ "Dwarfism": Firms intentionally stay small to avoid regulatory compliance and tax nets, rather than growing into medium or large enterprises.
- **Credit Gap:** The total addressable credit demand is ₹37 trillion, but the formal credit supply is significantly lower. Most micro-units still rely on informal moneylenders.
- **Technological Obsolescence:** Lack of access to modern technology and R&D prevents MSMEs from meeting global quality standards (e.g., EU's CBAM or Carbon Border Adjustment Mechanism).

III. Way Forward:

- **Revamping CGTMSE:** The Credit Guarantee Fund Trust for Micro and Small Enterprises needs to increase its guarantee coverage to encourage banks to lend to "New-to-Credit" borrowers.

- **ODOP Integration:** The One District One Product scheme should be strictly linked with GI Tagging and marketing support to create global brands from rural India.
- **Dispute Resolution:** Strengthening the MSME Samadhaan portal with legal teeth to enforce payment orders against defaulting large buyers.

101. Redefining Global Power: India Launches 'Responsible Nations Index'

Context:

In a significant move to reshape global governance narratives, India launched the Responsible Nations Index (RNI) on January 19, 2026, at the Dr. Ambedkar International Centre, New Delhi. Developed by the World Intellectual Foundation (WIF) in collaboration with Jawaharlal Nehru University (JNU) and methodologically validated by IIM Mumbai, the index seeks to challenge Western-centric metrics of national success (like GDP or military strength) by prioritizing "Ethical Responsibility" over "Power."



I. Key Highlights of RNI 2026:

- **India's Performance:**
 - ✓ **Rank:** 16th out of 154 countries.
 - ✓ **Significance:** India is the top-ranked Asian nation, performing better than major global powers like the USA (66th), China (68th), and Japan (38th). This underscores the report's central thesis: Economic and military might does not automatically translate into responsible conduct.
- **Global Leaders:**
 - ✓ **Top 5:** Singapore (1st), Switzerland, Denmark, Cyprus, and Sweden.
 - ✓ **Bottom Rank:** Central African Republic (154th).
- **The Paradigm Shift:**
 - ✓ Unlike traditional indices (e.g., Human Development Index or GDP rankings) that focus on capability or wealth, the RNI measures conduct.

- ✓ It asks not "How powerful is a nation?" but "How responsibly does it use its power?" towards its people, the planet, and the international community.

II. Relevance: Why is this Index Important?

- **Voice of the Global South:** India has long criticized global indices (like the World Press Freedom Index) for being biased against developing democracies. The RNI provides an alternative, indigenous framework that values "civilizational ethos" and "collective well-being" (aligned with Vasudhaiva Kutumbakam).
- **Decoupling Wealth from Value:** By ranking high-income nations like the US lower (due to aggressive foreign policy or high per-capita emissions), the index highlights that material wealth often comes at an ethical cost.
- **Soft Power Projection:** Launching a global index positions India as a "Norm Builder" rather than just a "Norm Taker" in the international arena, reinforcing its aspiration to be a Vishwa Mitra (Friend of the World).

III. Challenges & Way Forward:

- **Global Acceptance:** As a new Indian-led initiative, gaining acceptance from Western multilateral institutions (like the UN or World Bank) will be a challenge.
- **Data Standardization:** Ensuring that "ethical" parameters (often subjective) are measured uniformly across diverse political systems (e.g., comparing a democracy with a monarchy) requires robust econometric validation.
- **Way Forward:** India must use this index to drive "Responsibility Diplomacy," encouraging nations to compete not just for higher GDP, but for higher "Responsibility Scores" to attract ethical investment and soft power influence.

102. Jammu's "Mozzarella" Goes Global: Centre Pushes Scientific Upscaling of GI-Tagged Kaladi

Context:

Recently, Union Minister Dr. Jitendra Singh directed the Council of Scientific and Industrial Research (CSIR) labs to undertake "Scientific Upscaling" of Kaladi—the recently GI-tagged dairy product of Udhampur District (J&K). The initiative, under the One District One Product (ODOP) framework, aims to extend the shelf-life of this traditional cheese to make it export-ready for global markets.

I. Key Highlights of the Product (Kaladi)

- **What is it?**
 - ✓ Kaladi is a traditional dense, fermented cheese native to the Jammu region.
 - ✓ It is popularly known as the "Mozzarella of Jammu" (or Maish Krej in Kashmiri) due to its unique stretchy and gooey texture when cooked.
- **The Making Process:**
 - ✓ **Raw Material:** Made primarily from full-fat Cow or Buffalo milk (sometimes Goat).
 - ✓ **Coagulation:** Unlike Paneer (which uses lemon/vinegar), Kaladi is coagulated using "Matthar" (sour whey water) stored from the previous batch.
 - ✓ **Drying:** The coagulated cakes are dried in the sun, creating a dry, yellowish crust on the outside while retaining moisture inside.

- **Geographical Specificity:**
 - ✓ It is indigenous to the Ramnagar area of Udhampur district.
 - ✓ Traditionally prepared by the Gujjar and Bakerwal nomadic tribes.
- **The "Shelf-Life" Challenge:**
 - ✓ Currently, Kaladi spoils within 2-3 days.
 - ✓ **New Initiative:** CSIR-CFTRI (Mysuru) and CSIR-IIIM (Jammu) have been tasked to develop packaging and processing technology to extend its shelf life without altering its natural taste, enabling it to travel from "Local to Global."

Geographical Indications (GI) in India

Definition: A GI is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.

Legal Framework:

- Domestic:** Governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999.
- International:** Covered under the WTO TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights).

Nodal Agency: Geographical Indications Registry (Chennai) Under DPIIT, Ministry of Commerce.

Validity: GI Tag is valid for **10 Years**, Renewable after expiry.

Key Fact: The first product in India to get a GI tag was Darjeeling Tea (2004).

II. Significance: Why is this GI Tag Important?

- **Economic (Tribal Income):** The GI tag prevents the sale of adulterated "factory-made cheese" as Kaladi. This ensures that the premium price flows directly to the nomadic pastoralists who make the authentic product.
- **Cultural Identity:** It formalizes Dogra Cuisine on the world map. The popular street snack "Kaladi Kulcha" is now a certified cultural commodity.
- **ODOP Integration:** As Udhampur's One District One Product (ODOP), the product will now receive federal support for branding, marketing, and technological intervention (like vacuum packaging).

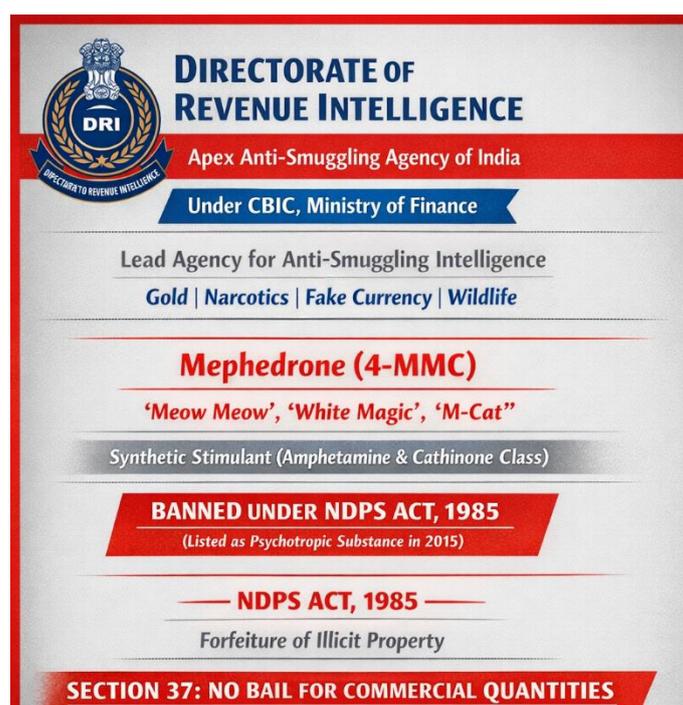
103. Operation Sahyadri Checkmate: DRI Dismantles Mobile Drug Lab in Western Ghats

Context:

Recently, the Directorate of Revenue Intelligence (DRI) executed a precision strike codenamed "Operation Sahyadri Checkmate" in the remote hinterlands of the Sahyadri ranges (Satara district, Maharashtra). The operation successfully dismantled a clandestine, mobile Mephedrone (Meow Meow) manufacturing laboratory that was operating under the guise of a poultry farm, highlighting the evolving tactics of drug syndicates in India.

I. Key Highlights of the Operation:

- **The Modus Operandi:**
 - ✓ **Mobile Infrastructure:** Unlike traditional static labs, this syndicate used a "mobile lab" setup. The equipment and chemicals were designed to be quickly dismantled and moved to different locations within the dense forests of the Western Ghats to evade satellite and human surveillance.
 - ✓ **Camouflage:** The manufacturing unit was hidden inside a functional poultry farm, using the strong odour of poultry to mask the pungent chemical fumes released during the synthesis of Mephedrone.
- **The Seizure:**
 - ✓ The DRI seized approximately 22 kg of Mephedrone (in liquid, semi-liquid, and crystalline forms) along with 71.5 kg of raw materials.
 - ✓ The estimated illicit market value of the seized contraband is ₹55 Crore.
- **Strategic Execution:**
 - ✓ The operation involved deep-forest surveillance and a coordinated raid on January 24-25, 2026.
 - ✓ Five individuals were arrested, including the "chemist/cook" responsible for the synthesis and the financier. Notably, four of them were repeat offenders with prior records under the NDPS Act and MCOCA (Maharashtra Control of Organised Crime Act).



II. Significance: Why this matters?

- **Shift in Narco-Trends:** The move from urban factories to "Hinterland Manufacturing" (remote forests/farms) indicates that law enforcement pressure in cities is forcing cartels to decentralize.
- **Synthetic Drug Rise:** The operation targets Mephedrone, a synthetic stimulant. Unlike plant-based drugs (heroin/ganja) which need cultivation, synthetic drugs can be "cooked" anywhere, posing a harder challenge for intelligence agencies.
- **Agency Role:** It underscores the DRI's expanding mandate. Traditionally seen as a customs/duty evasion watchdog, the DRI is increasingly acting as the frontline agency against Narco-Terrorism and national security threats.

104. BRO's "Operation Snow-Buster": Lifeline Restored at Strategic Chatergala Pass

Context:

Recently, the Border Roads Organisation (BRO) successfully concluded a high-stakes rescue and road restoration operation at the Chatergala Pass in Jammu & Kashmir. The pass, a critical link between the Doda and Kathua districts, was severed due to heavy snowfall, leaving civilians and military personnel stranded in sub-zero conditions.

I. Key Highlights of the Operation:

- **The Crisis:** Heavy snowfall on January 23 disrupted the Baderwah–Chatergala axis, trapping commuters and army convoys under 5 to 6 feet of snow.
- **The Operation:**
 - ✓ Executed by Project Sampark of the BRO.
 - ✓ The 118 Road Construction Company (RCC) worked for 40 continuous hours to clear 38 km of snow-buried road.
- **The Outcome:**
 - ✓ Safe evacuation of 20 stranded civilians and 40 troops of the Rashtriya Rifles.
 - ✓ Zero casualties reported, showcasing the high-altitude proficiency of the BRO.
- **Significance:** The operation ensured that the strategic communication link to the militancy-sensitive Doda region remained open during the harsh winter.

PROJECT SAMPARK

BORDER ROADS ORGANISATION (BRO)

10,500 FT

Pir Panjal Range,
Doda-Kathua Border, J&K

Raised in 1975 by the BRO

Headquartered in Jammu

Maintaining Critical Border Roads
in Jammu, Rajouri & Poonch Sectors



● **Motto: Shramena Sarvam Sadhyam**
"Everything is Achievable through Hard Work"

● **Parent Ministry:** 
Ministry of Defence
(Since 2015)

● **Mandate:** 
Develops infrastructure
in Border Areas of North & North-East India

EVERYTHING IS ACHIEVABLE THROUGH HARD WORK

II. Strategic Importance: The Alternative Lifeline

- **Connectivity:** The Chatergala Pass connects Bhardwah (Doda district) with Basohli (Kathua district). It serves as an alternate all-weather route to the Kashmir Valley and the Chenab region, bypassing the often-congested Jammu-Srinagar National Highway (NH-44).
- **Defense Logistics:** The route is vital for the rapid mobilization of troops and artillery to the hinterlands of Doda and Kishtwar, which are crucial for counter-insurgency grids.

III. Future Outlook: The Chattergala Tunnel

- **The Proposal:** To make this route truly "all-weather," a 6.8 km long tunnel is planned under the Chatergala Pass.
- **Status:**
 - ✓ Estimated cost: ₹4,000 Crore.
 - ✓ The project is being spearheaded by the National Highways Authority of India (NHAI) and BRO.
 - ✓ Once completed, it will reduce travel time between Lakhampur and Doda to just 4 hours.

TELANGANA REGIONAL CURRENT AFFAIRS

105. Interstate Water Governance: AP-Telangana Jal Shakti Panel Meet

Context:

Recently, the first meeting of the 13-member committee constituted by the Ministry of Jal Shakti was held in New Delhi. The committee's primary mandate is to resolve the lingering interstate water disputes between Andhra Pradesh and Telangana. However, the inaugural session

remained inconclusive as both states failed to submit formal agenda items, leading to a stalemate on critical river-sharing issues.

I. Key Highlights of the Meeting:

- **Procedural Delay:** The meeting, chaired by Central Water Commission (CWC) Chairman Anupam Prasad, concluded without a decision because neither state provided a prior list of discussion points.
- **The "Nallamalasagar" Contention:** Telangana officials formally opposed the inclusion of Andhra Pradesh's proposed Polavaram–Nallamalasagar project in future discussions, citing potential impacts on their water security.
- **Telangana's Demands:** Proposed a 50:50 sharing ratio of the 811 TMCFT of Krishna water (erstwhile combined AP allocation) until the Brijesh Kumar Tribunal (KWDT-II) gives its final award.
 - ✓ Sought immediate clearance for Detailed Project Reports (DPRs) of the Palamuru-Rangareddy and Dindi Lift Irrigation schemes.
 - ✓ Called for the installation of telemetry systems in the Krishna basin to ensure transparent water measurement.
- **Next Steps:** Both states have been given a one-week deadline to submit their agenda items. The next meeting is tentatively scheduled for February 2026.



1. Constitutional Provisions

- **Article 262:** Empowering Parliament to adjudicate disputes relating to waters of interstate rivers or river valleys.
- **Seventh Schedule:** Entry 17 (State List): Water, including water supplies, irrigation, and canals.
- **Entry 56 (Union List):** Regulation and development of interstate rivers and river valleys to the extent declared by Parliament.

2. Legal Framework: AP Reorganisation Act, 2014

- **Section 84 & 85:** Dealt with the management of the Krishna River Management Board (KRMB) and Godavari River Management Board (GRMB).
- **The Dispute:** Post-bifurcation, the temporary water sharing ratio was 512 TMC (AP) and 299 TMC (TS).

Telangana has consistently challenged this, seeking a higher share based on catchment area and basin requirements.

3. The Role of Tribunals (KWDT-III)

- The Krishna Water Disputes Tribunal-II (Justice Brijesh Kumar) is currently adjudicating the redistribution of water between the four riparian states (Maharashtra, Karnataka, Telangana, and AP).
- **Current Status:** Telangana is advocating for a *de novo* (fresh) look at the water allocation, whereas AP seeks to protect its existing rights under the KWDT-I award.

Disputed Projects & Schemes

Project Name	State	Nature of Dispute / Requirement
Polavaram-Nallamalasagar	Andhra Pradesh	Opposed by Telangana; involves water diversion from the Polavaram project.
Palamuru-Rangareddy	Telangana	Awaiting DPR clearance; designed to provide irrigation and drinking water to upland areas.
Dindi Lift Irrigation	Telangana	Awaiting technical clearances; aims to provide water to fluoride-affected Nalgonda.
Telemetry Systems	Both	Critical for tracking actual water draws at various intake points like Srisailem and Nagarjuna Sagar.

106. State of Education: The Crisis of Foundational Literacy & Numeracy (FLN) in Telangana

Context:

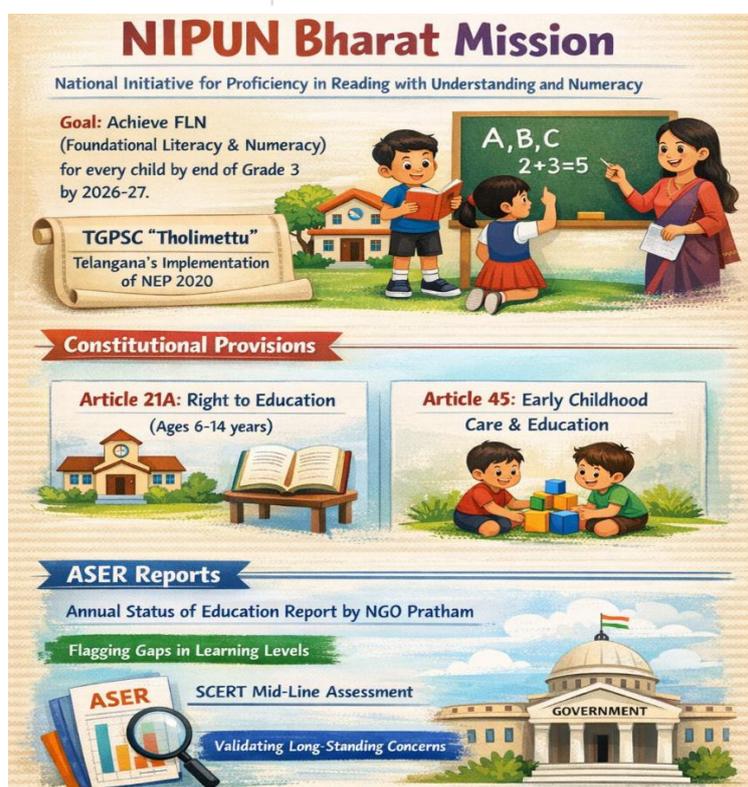
The SCERT Telangana recently released the FLN Mid-line Assessment Report (2025–26), revealing that over 82% of primary students (Classes 1–5) lack basic competencies in Maths and English, highlighting a critical learning gap despite marginal improvements.

I. Key Highlights of the Assessment:

- **Widespread Deficiency:** 82% of students failed in basic Math/English competencies; 79% struggled with mother tongue (Telugu/Urdu) literacy.
- **The "Division" Deadlock:** 88% of Class 3 and 80% of Class 4 students are unable to perform simple division.
- **English Language Barrier:** 75% of Class 4 students are deficient in English writing; many cannot identify basic phonetic sounds (e.g., 'k' in "cut").
- **Marginal Progress:** On a positive note, math competency rose from 6.5% (baseline) to 16.9%, showing that while interventions are working, the pace is insufficient.

II. Grade-Wise Competency Gaps:

Class	Mathematics Struggles	Language (English/Regional) Struggles
Class 3	88% cannot perform division; 51.5% struggle with subtraction.	Weakness in word recognition and phonetic sounds.
Class 4	80% fail at division; 64% lack multiplication skills.	75% deficient in English writing.
Class 5	70% cannot perform division; 60% struggle with multiplication.	70% lack basic English writing skills.



III. Root Causes Behind the Learning Crisis:

- **The "COVID-19 Pandemic Hangover":** Prolonged school closures led to a "learning loss" that primary students are still struggling to recover from.
- **The "Mechanical" Teaching Method:** Emphasis on rote memorization rather than conceptual understanding of "Number Sense" and "Phonetics."
- **Language Transition Issues:** The shift toward English-medium instruction in government schools without adequate bridge courses has left students struggling with both the new language and the core subject matter.
- **Socio-Economic Barriers:** Lack of parental literacy and resources at home (the "Digital Divide") limits support outside the classroom.

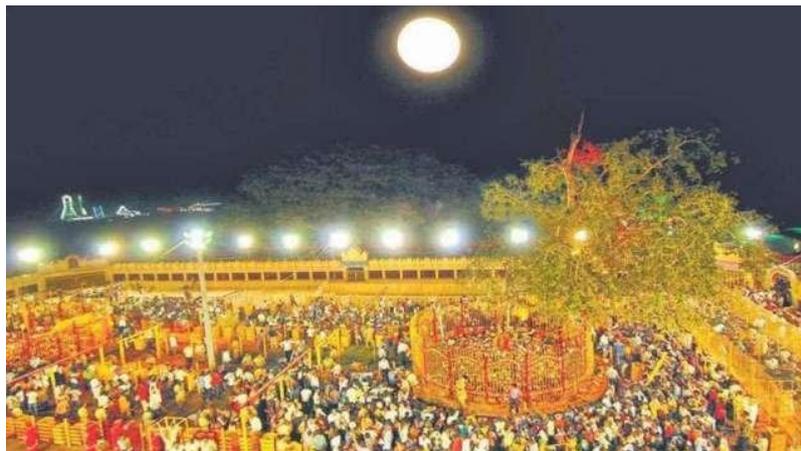
IV. Way Forward: Recommendations

- **Targeted Remedial Teaching:** Implementing "Teaching at the Right Level" (TaRL) where students are grouped by ability rather than age/grade.
- **Strengthening "Tholimettu":** Enhancing the state's foundational learning program with more robust teacher training and localized TLM (Teaching Learning Material).
- **Focus on Multilingualism:** Using the mother tongue (Telugu/Urdu) as a bridge to learn English, as suggested by NEP 2020.
- **Community Engagement:** Activating School Management Committees (SMCs) to track student progress at the village level.

107. Global Tribal Convergence: Maori Haka Echoes at Medaram

Context:

In a historic Indo-Pacific Tribal Exchange, a Maori Kapa Haka delegation from New Zealand visited Medaram in Mulugu district in January 2026. The warriors performed the sacred "Haka" to pay homage to the tribal deities Sammakka and Saralamma, marking a unique cultural synthesis between Indigenous peoples of the Pacific and Telangana.



I. Key Highlights:

- **First-of-its-kind Exchange:** This was the first time a traditional Maori group performed at the sacred site of Medaram, symbolizing a bridge between two ancient tribal cultures.

- The Delegation: The performers belonged to the renowned Te Pīkikotuku o Ngāti Rongomai group, representing the Ngāti Rongomai iwi (tribe) of the Te Arawa confederation.
- Ministerial Presence: Tribal Welfare Minister Adhuri Laxman Kumar and Panchayat Raj Minister Danasari Anasuya (Seethakka) participated, with Seethakka joining the rhythmic movements, highlighting the state's support for indigenous arts.
- Spiritual Significance: The Haka was performed not just as a display, but as a prayer to Sammakka-Saralamma, reinforcing the universal tribal ethos of ancestor worship and connection to the land.

II. Cultural & Historical Dimensions:

- **The Maori Haka (New Zealand):**
 - ✓ **Definition:** Haka is a ceremonial dance or challenge in Māori culture. It involves vigorous movements, rhythmic foot-stamping, and loud chanting.
 - ✓ **Significance:** While often misunderstood solely as a "war dance," it is performed for various reasons: welcoming distinguished guests, acknowledging great achievements, funerals, and asserting identity (Mana).
 - ✓ **Global Recognition:** It is famously performed by the "All Blacks" (New Zealand Rugby Team) before matches.
 - ✓ **Cultural Parallel:** Like the Koya tribes of Telangana, the Maoris have a deep spiritual connection to nature (Whenua - land) and ancestors (Tupuna).

III. Medaram & Sammakka-Saralamma:

- **The Festival:**
 - ✓ Medaram Jatara is the largest tribal congregation in Asia, drawing millions of devotees.
 - ✓ It is held biennially (once every two years) at Medaram village, Tadvai Mandal, Mulugu district, Telangana.
 - ✓ The Jatara is deeply rooted in Adivasi (Koya) traditions and is unique because it is conducted without idols.
 - ✓ Instead of idols, sacred symbols (such as vermilion caskets and wooden poles) are worshipped, reflecting indigenous belief systems.
- **Historical Context (Kakatiya Era):**
 - ✓ The festival commemorates the valor and sacrifice of Sammakka and Saralamma, a tribal mother-daughter duo revered as folk goddesses.
 - ✓ The events are set during the Kakatiya dynasty, particularly under Prataparudra II (12th-13th century CE).
 - ✓ It reflects the interaction and conflict between a centralised medieval state and forest-dwelling tribal communities.
- **The Conflict:**
 - ✓ During a period of severe drought, the Kakatiya administration imposed taxes on forest produce collected by tribal communities.
 - ✓ This was perceived as unjust exploitation of Adivasi livelihoods.
 - ✓ Sammakka and Saralamma led a resistance against the Kakatiya officials.
 - ✓ Their struggle symbolises tribal assertion, resistance to state oppression, and the quest for social justice.

- **The Legend:**
 - ✓ According to oral tradition, Sammakka did not die; she is believed to have disappeared into the forest, transforming into a vermilion casket (Kumkum Bharina).
 - ✓ This event is associated with Chilakalagutta, a sacred hillock that plays a central role in Jatara rituals.
 - ✓ The legend underscores nature worship and the belief in the divinisation of heroic ancestors.
- **Key Deities Honoured:**
 - ✓ Sammakka – The mother goddess, symbol of courage and protection.
 - ✓ Saralamma – The daughter, representing sacrifice and filial devotion.
 - ✓ Pagididda Raju – Husband of Sammakka, ritually brought from Punugondla.
 - ✓ Govinda Raju – Husband of Saralamma, ritually brought from Kondayi.

IV. Significance for Telangana:

- **Cultural Diplomacy:** This event places Medaram on the map of international indigenous tourism, potentially attracting scholars and tourists from the Pacific region.
- **Preservation of Intangible Heritage:** Exchanges like these encourage the preservation of oral traditions, dance forms, and tribal dialects which are often threatened by modernization.
- **Tribal Solidarity:** It underscores the shared challenges and resilience of indigenous communities worldwide, fitting into the broader narrative of "Tribal Rights and Identity."

108. Boosting Food Processing: Telangana Targets 1,000 SHGs for PMFME Subsidy

Context:

The Telangana Food Processing Society (TGFPS) has intensified efforts to mobilize over 1,000 Urban Self Help Groups (SHGs) and micro food processors for government subsidies. This drive is part of the Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME) scheme, aimed at upgrading the unorganized food processing sector.

I. Key Highlights:

- **Mobilization Target:** Municipal commissioners across the state have been assigned specific targets to identify eligible applicants.
 - ✓ **Top Allocations:** GHMC leads with 354 beneficiaries, followed by Hanamkonda (62), Karimnagar (23), and Mahbubnagar (22).
- **Nodal Agency:** The Telangana Food Processing Society (TGFPS) is the state nodal agency responsible for implementing the PMFME scheme.
- **Support System:** District Resource Persons (DRPs) have been appointed to assist beneficiaries in preparing Detailed Project Reports (DPRs), processing loans, and executing projects.
- **Focus Area:** The initiative specifically targets women entrepreneurs within SHGs to boost income and employment in the urban sector.

II. PMFME (Credit Linked Capital Subsidy):

- **Objective:** To assist unorganized micro-food processing units in technical upgradation and formalization.

- **Financial Assistance:**
 - ✓ Subsidy: 35% of the eligible project cost.
 - ✓ Maximum Cap: Ceiling of ₹10 Lakh per unit.
 - ✓ Beneficiary Contribution: Minimum 10% of the project cost.
 - ✓ Balance: Remaining amount financed through bank loans.
- **Eligibility:**
 - ✓ Individual micro food processing units.
 - ✓ SHGs (Self Help Groups) and their members.
 - ✓ Note: SHGs that have already availed "Seed Capital" under PMFME are also eligible to apply for this capital subsidy for expansion.
- **Scope:** Funds can be used for expansion, technology upgradation, branding, and marketing.

PMFME Scheme Overview

About PMFME Scheme

- ◆ **Launch:** Launched in June 2020 under the *Atmanirbhar Bharat Abhiyan*.
- ◆ **Type:** Centrally Sponsored Scheme with ₹ 10,000 crore outlay (2020-21 to 2024-25).
- ◆ **Funding Ratio:** 60:40 between Centre & State (Telangana).
- ◆ **Core Philosophy:** "Vocal for Local" & "One District One Product (ODOP)".

Example ODOPs in Telangana:

 Turmeric (Nizamabad)	 Mango (Jagtial)	 Chilli (Khammam)	 Milk Products (Ranga Reddy)
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Institutional Framework in Telangana

<p>TGFPS Telangana State Food Processing Society</p>  <p>Bridge between MoFPI & Local Entrepreneurs</p>  <p>MoFPI</p>	<p>MEPMA Mission for Elimination of Poverty in Municipal Areas</p>  <p>Supporting Urban SHGs "From Welfare to Enterprise"</p> 
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III. Economic Significance:

- **Formalization:** The unorganized food sector faces challenges like lack of credit and modern technology. This scheme brings them into the formal banking fold.
- **Value Addition:** Telangana is a major producer of paddy, maize, and chillies. Processing these locally reduces wastage and increases the income of farmers and SHGs.
- **Women Empowerment:** By targeting SHGs, the state is leveraging the existing social capital of women to drive industrial growth at the micro-level.

109. Telangana's Global Leap: WEF Partnership & Rising 2047 Vision

Context:

During the World Economic Forum (WEF) 2026 in Davos, the Telangana government secured a strategic partnership with the WEF to realize the 'Telangana Rising 2047' vision. This collaboration aims to transform Hyderabad into a permanent hub for global business follow-ups, bridging the gap between annual Davos summits.

Key Highlights of the 'Telangana Rising' Strategy

- **The 'Davos of the Summer' in Hyderabad:**
 - ✓ **Strategic Meet:** Chief Minister A. Revanth Reddy proposed an annual follow-up WEF meeting in Hyderabad (tentatively July/August).
 - ✓ **Objective:** To provide a platform for modern business lifecycles to track decisions made during the January WEF summit.
 - ✓ **Significance:** This positions Hyderabad alongside major global hubs like China's "Summer Davos."
- **The CURE-PURE-RARE Framework:**

The state has introduced a unique three-tier economic development strategy to drive growth toward a \$3 Trillion economy by 2047:

 - ✓ **CURE (Core Urban Region Economy):** Focused on the area within the Outer Ring Road (ORR) as a Net-Zero services metropolis.
 - ✓ **PURE (Peri-Urban Region Economy):** Located between the ORR and Regional Ring Road (RRR) to host manufacturing and logistics hubs.
 - ✓ **RARE (Rural Agri Region Economy):** Beyond the RRR, focusing on sustainable agriculture and rural industrialization.
- **Bharat Future City: India's First Net-Zero Smart City**
 - ✓ **Location:** Spanning 30,000 acres near Mucherla.
 - ✓ **Features:** Designed as a greenfield smart city with 10 specialized zones, including AI City, Health City, and Sports City.
 - ✓ **Green Commitment:** 50% of the land (15,000 acres) is reserved for urban forests and eco-tourism.
- **Global AI & Skilling Initiatives:**
 - ✓ **Pearson MoU:** Telangana signed a deal with Pearson to support the Global AI Academy under the Telangana AI Innovation Hub (TAIH).
 - ✓ **Aikam™:** The state's new autonomous AI entity will lead these initiatives to build a future-ready talent pipeline.
 - ✓ **C4IR Telangana:** The state's Centre for the Fourth Industrial Revolution (based in Hyderabad) serves as a global role model for healthcare and life sciences technology.
- **Major Industrial & Energy Investments:**
 - ✓ **INOX Group:** Committed to generating solar and wind power in the state, eventually diversifying into advanced manufacturing.
 - ✓ **Rashmi Group:** Announced a massive ₹12,500 crore investment for a sustainable steel production unit.
 - ✓ **NUKler (Slovakia):** Expressed interest in setting up a Small Modular Reactor (SMR) based clean energy project (300 MW).

110. The Telangana Paradox – High Growth, High Intoxicant Spending

Context:

The Ministry of Statistics and Programme Implementation (MoSPI) recently released the HCES 2023–24, revealing that rural Telangana households spend an average of ₹396.06 per person monthly on tobacco and alcohol—the highest among large Indian states and more than double the national rural average of ₹158.

Key Highlights:

- **Consumption Patterns and State Ranking:**
 - ✓ National Position: Telangana ranks second only to a few northeastern states in the percentage of household budget allocated to pan, tobacco, and intoxicants.
 - ✓ The Urban-Rural Contrast: Interestingly, rural households in Telangana allocate a larger share (7.3%) of their income to these products compared to urban households (3.57%), despite urban areas having higher absolute incomes.
- **Impact on Essential Services (The Displacement Effect):**
 - ✓ The survey highlights a "displacement effect" where spending on intoxicants is prioritized over long-term investments.
 - ✓ Education vs. Addiction: In many low-income rural families, the monthly expenditure on products like gutkha and khaini has surpassed the total expenditure on education.
 - ✓ Health Budget: While the state spends heavily on health, rural households are already spending ₹282 per month on medical expenses, often to treat alcohol and tobacco-related ailments like oral cancer and cardiovascular diseases.
- **Economic Drivers vs. Social Choices:**
 - ✓ Economists point out that the rise in rural incomes—driven by agriculture, government welfare schemes (like Rythu Bandhu/Rythu Bharosa), and non-farm employment—has not yet translated into healthier consumption choices.
 - ✓ Instead, increased disposable income is being diverted toward premium intoxicants like Indian-made foreign liquor (IMFL) and beer.
- **Public Health & Policy Challenges:** Public health specialists warn that this trend is creating a "dual burden":
 - ✓ **Financial Ruin:** Productive capital is lost to substances.
 - ✓ **Healthcare Load:** Government hospitals in rural districts report a significant patient load from chronic conditions directly linked to these habits.
 - ✓ **Policy Need:** Experts suggest that rather than just taxation, the state needs a "Grassroots Awareness" model and more accessible de-addiction services in rural pockets.

111. Investment in Judicial Infrastructure is Investment in Rule of Law: Telangana CJ

Context:

On the occasion of the 77th Republic Day (January 26, 2026), the Chief Justice of the Telangana High Court, Justice Aparesh Kumar Singh, unfurled the national flag at the High Court premises. In his address, he emphasized that upgrading judicial infrastructure is not merely about construction but is a direct investment in sustaining the "Rule of Law".

I. Key Highlights of the Address:

- **Infrastructure as the Bedrock of Justice:**
 - ✓ **The Rajendranagar Project:** The Chief Justice highlighted the steady progress of the new High Court complex at Rajendranagar. This move is critical to decongest the existing heritage structure and provide modern amenities for litigants and advocates.
 - ✓ **Rule of Law:** He termed sustained investment in judicial infrastructure as an "Investment in the Rule of Law," arguing that physical access and efficient facilities are prerequisites for delivering timely justice.
- **Judiciary: The "Custodian of Constitutional Conscience"**
 - ✓ **Role Defined:** Justice Singh described the judiciary as the "Custodian of Constitutional Conscience." This role requires constant vigilance and efficiency to protect the rights of citizens against arbitrary state action.
 - ✓ **Everyday Pursuit:** He remarked that Republic Day is a reminder that justice is an "everyday pursuit" and not just a theoretical concept found in textbooks. Constitutional values (Liberty, Equality, Fraternity) must reach every household.
- **Bar and Bench Coordination:**
 - ✓ The efficiency of the judicial system relies heavily on the coordination between the Bar (Advocates) and the Bench (Judges).
 - ✓ He praised the judicial officers and court staff across Telangana for their efforts in improving Case Disposal Rates in the last fiscal year.

II. Note: The Shift to Rajendranagar

- The current High Court building, located on the banks of the Musi River, is a heritage structure built by the Nizam VII (Mir Osman Ali Khan) in 1919.
- While architecturally significant (Saracenic style), it faces space constraints.
- The state government allotted 100 acres in Rajendranagar (Rangareddy District) for the new complex to create a "Judicial City."



112. GST Dispute Resolution Streamlined: Telangana Gets dedicated GSTAT Bench

Context:

In a significant development for tax administration in the state, the Union government has constituted the Hyderabad Bench of the Goods and Services Tax Appellate Tribunal (GSTAT). This move addresses a long-standing demand from trade and industry circles, establishing a specialized forum to adjudicate appeals against orders passed by GST authorities within Telangana

Key Highlights of the Development:

- Constitution and Composition:**
 - ✓ The Union government has formally appointed the members for the Telangana bench.
 - ✓ Judicial Members: Justice Sushil Kumar Sharma and Justice A.P. Ravi.
 - ✓ Technical Member: Dr. D.K. Srinivas.
 - ✓ One more technical member is yet to be appointed to complete the quorum.
 - ✓ Tenure: The members will hold office for a term of four years.
- Operational Details:**
 - ✓ **Location:** The bench will initially function from a temporary office at GST Bhavan, Hyderabad. A permanent building is under construction and is expected to be ready within three months.
 - ✓ **Mode of Hearing:** To ensure accessibility and efficiency, proceedings will be conducted in a hybrid mode (both physical and virtual hearings).
 - ✓ **Paperless Courts:** The tribunal aims to function entirely in a paperless manner, aligning with the Digital India initiative.

- **Impact on Dispute Resolution:**

- ✓ **Pre-Tribunal Era:** Until now, appeals against orders by GST appellate authorities had to be taken directly to the Telangana High Court via Writ Petitions, burdening the judiciary and increasing litigation costs for traders.
- ✓ **Post-Tribunal Era:** The GSTAT will now serve as the second appellate authority, providing a dedicated, faster, and specialized forum for resolving factual and legal disputes under the GST law before they reach the High Court.

Goods and Services Tax Appellate Tribunal (GSTAT)

Statutory Basis

- ◆ Constituted under CGST Act, 2017
- ◆ Forum of second appeal in GST laws

Structure

- ◆ **Principal Bench** (New Delhi)
- ◆ President,
- ◆ Judicial Member,
- ◆ Technical Members (Centre & State)

Centre & State Dispute Resolution

Constitutional Provision (Polity)

- ◆ **Article 323B** (42nd Amendment Act, 1976)
- ◆ Tribunals for Taxation & Other Disputes

Significance

- ◆ Ensures **Uniformity** in GST Dispute Resolution Across the Country

113. Nagoba Jatara: The Grand Congregation of the Mesram Clan

Context:

The annual Nagoba Jatara, the second-largest tribal festival in Telangana after Medaram, commenced on the midnight of January 18, 2026, at Keslapur village in Indervelly Mandal, Adilabad district. The festival began with the traditional Maha Puja performed by the Mesram clan of the Gond tribe, marking a significant cultural event in the Adivasi calendar.

Administration of Scheduled Areas (Article 244)

- Adilabad, being a tribal-dominated district, largely falls under the **Fifth Schedule** of the Constitution.
- **Governor's Power:** The Governor can declare that Acts of Parliament or State Legislature do not apply to a Scheduled Area or apply with modifications.
- **Tribes Advisory Council (TAC):** A Tribes Advisory Council is established to advise on the welfare and advancement of Scheduled Tribes.



PESA Act, 1996 (Panchayats Extension to Scheduled Areas)

- Aims to safeguard and preserve the traditions and customs of tribal communities.
- Empowers the Gram Sabha to manage local resources and resolve disputes as per traditional customs.



(Like the Mesram clan's distinct rituals)



I. Key Highlights of the Festival:

- **The Rituals and Traditions:**
 - ✓ **Maha Puja:** The festival formally starts on Pushya Amavasya (New Moon Day) with the Maha Puja to the presiding deity, Nagoba (the Serpent God/Shesh Nag).
 - ✓ **Ganga Jal (Holy Water):** A unique aspect is the 140-km barefoot journey (Ganga Jal Yatra) undertaken by Mesram clan members to fetch holy water from Hasthamadugu in the Godavari river (Mancherial district). This water is preserved in a pot (Jhari) on a sacred Banyan tree and used for the Abhishekam of the deity.
 - ✓ **Bheting (Introduction):** A critical social ritual where new daughters-in-law of the Mesram clan are formally introduced to the clan deity. Only after this Bheting can they worship Nagoba or enter the temple sanctum.
- **The Participants:**
 - ✓ The Jatar is exclusive to the Mesram clan of the Gond tribe (one of the largest tribal groups in India).
 - ✓ Unlike other jatara where general public participation is high from day one, Nagoba Jatar is strictly clan-based for the initial rituals, opening up for general devotees later.
- **The Praja Darbar:**
 - ✓ Scheduled for January 22, 2026, the Praja Darbar is a unique feature of this jatara.

- ✓ It serves as a platform where the District Collector, ITDA (Integrated Tribal Development Agency) officials, and public representatives directly hear and redress the grievances of the Adivasis.

114. Counting Stripes: Telangana Launches All India Tiger Estimation 2026

Context:

The Telangana Forest Department has commenced the All India Tiger Estimation (AITE) 2026, a massive quadrennial exercise to assess the tiger population and forest biodiversity. The field data collection phase is scheduled from January 19 to 25, 2026, covering 3,053 forest beats across the state.

THE INSTITUTIONAL FRAMEWORK

- **All India Tiger Estimation (AITE):** Conducted once every four years (Cycles: 2006, 2010, 2014, 2018, 2022, 2026).
- **Nodal Authority:** National Tiger Conservation Authority (NTCA) & Wildlife Institute of India (WII), Dehradun.
- **NTCA:** Statutory body under MoEFCC, established under the Wildlife (Protection) Act, 1972 (amended in 2006).



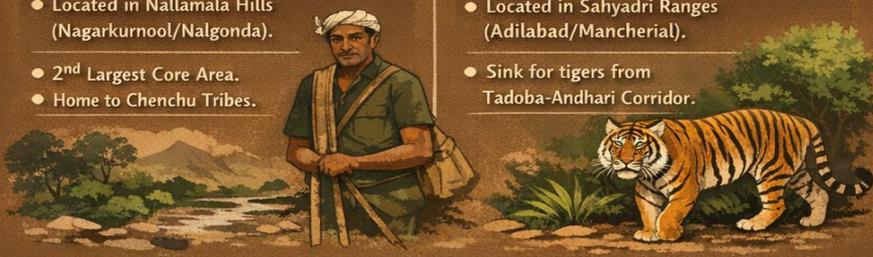
TIGER RESERVES IN TELANGANA

Amrabad Tiger Reserve (ATR):

- Located in Nallamala Hills (Nagarkurnool/Nalgonda).
- 2nd Largest Core Area.
- Home to Chenchu Tribes.

Kawal Tiger Reserve (KTR):

- Located in Sahyadri Ranges (Adilabad/Mancherial).
- Sink for tigers from Tadoba-Andhari Corridor.



CONSTITUTIONAL PROVISIONS (POLITY)

- **Article 48A (DPSP):** Protect forests and wildlife.
- **Article 51A(g):** Duty to safeguard the environment.

- **42nd Amendment Act, 1976:** "Forests" & "Protection of Wild Animals and Birds" moved to the Concurrent List.



I. Key Highlights of the 2026 Survey

- **Scientific Methodology & Digital Transition:**
 - ✓ **Transect Lines:** The survey involves laying "transect lines" in forest beats to record indirect signs of carnivores (pugmarks, scat, scratch marks) and direct sightings.

- ✓ **M-STriPES App:** Moving away from paper-based records, the 2026 census relies heavily on the M-STriPES (Monitoring System for Tigers-Intensive Protection and Ecological Status) mobile application. This ensures real-time, geo-tagged data collection on:
 - **Carnivore Signs:** (Tiger, Leopard, etc.)
 - **Prey Density:** (Spotted Deer, Sambar, Wild Boar)
 - **Habitat Status:** (Vegetation quality and human disturbance).
- **Collaborative "Citizen Science" Model:**
 - ✓ **Volunteers:** For the first time on this scale, 1,129 registered volunteers are assisting forest officials.
 - ✓ **NGO Participation:** Specialized NGOs like WWF-India, HyTICOS, Animal Warriors, Deccan Birders, and the Friends of Snakes Society have deployed around 430 trained members. This ensures that the data is robust and verified by independent observers.
- **Comprehensive Coverage:**
 - ✓ The survey is not limited to the core areas of Tiger Reserves but covers Wildlife Sanctuaries (WLS), Reserve Forests, and territorial forest divisions.
 - ✓ **Why?** Tigers are increasingly moving outside protected areas. For instance, recent sightings in Yadadri-Bhuvanagiri (near Hyderabad) and Jangaon indicate that tigers are dispersing through non-traditional corridors, making this statewide survey critical.

115. Hyderabad's Leap in Biotech: SAMARTH Centre for Forensic & Genetic Skilling

Context:

Recently, Union Minister of State for Science & Technology, Dr. Jitendra Singh, laid the foundation stone for the National Skill Development Centre — SAMARTH at the Centre for DNA Fingerprinting and Diagnostics (CDFD) in Hyderabad. He also inaugurated the iDeaNA Technology Incubator, marking a major push towards indigenous molecular diagnostics and forensic capabilities.

Key Highlights of the Initiative

- **SAMARTH: Bridging the Skill Gap**
 - ✓ **Acronym:** Skilling & Accessing Molecular Advancements in Research & Technology for Health.
 - ✓ **Objective:** Established by the Department of Biotechnology (DBT), this centre aims to address critical skill shortages in:
 - ✓ Forensic DNA Profiling (Crucial for criminal justice).
 - ✓ Molecular Diagnostics (Essential for identifying genetic disorders).
 - ✓ **Function:** It will provide structured training, certification, and outreach programs to create an "industry-ready" workforce for India's growing biotech sector.
- **iDeaNA Incubator: Fueling Startups**
 - ✓ The iDeaNA-BRIC-CDFD Technology Incubator was also inaugurated alongside SAMARTH.
 - ✓ **Focus:** It targets Deep-Tech Startups in Life Sciences.
 - ✓ **Goal:** To accelerate early-stage innovations, moving research from "Lab to Market," particularly in indigenous diagnostic technologies.

Shift to "Personalised Medicine":

- The Minister highlighted a paradigm shift in Indian healthcare: moving from battling infectious diseases to addressing Genetic and Rare Diseases.
- **Future Ready:** The centre prepares India for Personalised Treatment, where medical care is tailored to an individual's genetic makeup rather than a generic approach.
- **Key Areas:** Large-scale genome sequencing, paediatric genetic disease programs, and haemophilia research.

The infographic is titled "Centre for DNA Fingerprinting and Diagnostics (CDFD)" and is located in Hyderabad, Telangana. It is under the Department of Biotechnology, Ministry of Science & Technology. The infographic is divided into two main sections: "Mandate" and "DNA Technology (Use and Application) Regulation".

Mandate:

- ◆ **DNA Fingerprinting Services:**
 - ◆ Paternity Disputes
 - ◆ Crime Investigations
 - ◆ Disaster Victim ID
- ◆ **Genetic Disorder Diagnostics**

DNA Technology (Use and Application) Regulation

Regulation of DNA Profiles in Civil & Criminal Proceedings

Concerns:

- ◆ Privacy & Data Security
- ◆ Potential Misuse of DNA
- ◆ Right to Privacy (Article 21 - Puttaswamy Judgment)

Established by **Dr. Lalji Singh**
"Father of DNA Fingerprinting in India"

Ensuring Responsible & Ethical Use of DNA Data

- **Hyderabad as the 'Genome Valley':** The establishment of SAMARTH reinforces Hyderabad's status as the Biotech Capital of India.
- **Employment:** This skilling centre will directly benefit Life Science graduates from Telangana universities (Osmania, JNTU), making them employable in high-end forensic and diagnostic labs.

116. Hyderabad Startup to Build India's First "Orbital Data Centre"

Context:

Hyderabad-based space-tech startup, TakeMe2Space (TM2Space), has raised \$5 million in seed funding to develop India's first Orbital Data Centre. The initiative aims to enable the processing of AI models directly on satellites in Low Earth Orbit (LEO), significantly reducing the time and cost of data transmission to Earth.

Key Highlights of the Initiative:

- **The Innovation: "AI Lab in Space"**
 - ✓ **Concept:** Instead of sending raw data (images/sensors) from satellites down to Earth for processing, TM2Space proposes processing the data in space using on-board AI.

- ✓ **OrbitLab Platform:** They have developed "OrbitLab," which functions as an AI lab in space. It allows clients to upload their AI models to satellites, run them, and pay only for the usage (fractional ownership model).
- ✓ **Benefit:** This cuts computing costs by 5 to 8 times for sectors like agriculture, mining, and disaster management by reducing the volume of data that needs to be downloaded.
- **Strategic Expansion:**
 - ✓ **Funding:** The \$5 million round was led by Chiratae Ventures, with participation from Unicorn India Ventures and others.
 - ✓ **Goals:**
 - Expand the satellite constellation to six spacecraft.
 - Deliver 5 kW of in-orbit compute power.
 - Establish Optical Satellite Links (lasers) for high-speed inter-satellite communication.
 - ✓ **Workforce:** The company plans to triple its team size in Hyderabad, boosting local high-tech employment.
- **Proven Capability (ISRO Connection):**
- The startup has already validated its technology on ISRO's PSLV Orbital Experiment Module (POEM).
- During the MOI-TD mission, they successfully:
 - ✓ Uplinked large AI models.
 - ✓ Executed code on a satellite.
 - ✓ Tested proprietary Radiation-Shielding Technology (crucial for protecting electronics in space).

Space Sector Governance

1. Regulatory Bodies (The "Space" Architecture)

IN-SPACE (Indian National Space Promotion and Authorization Centre)

- Established in 2020 as part of space sector reforms.
- Single-window agency for private sector participation.
- Regulates & authorizes private satellite launches.

ISRO's POEM Platform

- PSLV Orbital Experiment Module (POEM)
- Utilizes "spent" 4th stage of PSLV for experiments

2. Constitutional Provisions (Polity Reference)

Union List (List I)

- "Space" & "Satellite Communication" under Union List
(Entry 66: Co-ordination & standards in higher education & research)

Article 51A(h):

- Fundamental Duty to develop Scientific Temper, Humanism & Spirit of Inquiry & Reform.

TM2Space Private Launch Participation

AP REGIONAL CURRENT ISSUES

117. Amaravati at the Crossroads: Seeking Statutory Shield for Andhra's Capital Dream

Context:

Recently, the Andhra Pradesh government formally requested the Union Government to enact a Central Law or amend the Andhra Pradesh Reorganisation Act (APRA), 2014. The objective is to grant "statutory protection" to Amaravati as the sole capital of Andhra Pradesh, thereby preventing future state governments from altering the capital city status arbitrarily (as seen in the "Three Capitals" proposal of the previous regime).

PARLIAMENT'S POWER TO REORGANISE STATES (ARTICLE 3 & 4)

Article 3: Parliament can form new states and alter areas, boundaries, or names of existing states. The AP Reorganisation Act, 2014 was enacted under this Article.

Article 4: Laws made under Article 3 are not considered Constitutional Amendments under Article 368. They can be passed by a Simple Majority.



Significance: If the Centre decides to amend the APRA 2014 to name Amaravati as the capital, it only needs a simple majority in Parliament.

THE "CAPITAL CITY" JURISDICTION DEBATE

State's Prerogative: In the *J.R. Kapoor & Others vs State of Himachal Pradesh* case, the Supreme Court observed that establishing a seat of governance (Capital) is an executive power of the State Government.



The Exception: However, in AP's case, the origin of the new capital lies in a Central Act (APRA 2014).

Section 6 of the Act mandated the Centre to constitute an expert committee (Sivaramakrishnan Committee) to study the capital.

The current demand leverages this statutory origin to seek central protection.

Key Highlights:

- **The Demand for "Sovereign Guarantee":**
 - ✓ **Why now?** With the 10-year period of Hyderabad as the common capital ending in June 2024, Amaravati is the de-facto capital. However, to ensure investor confidence and protecting the interests of farmers who surrendered land, the State wants the Centre to legally lock Amaravati as the permanent capital.
 - ✓ **Mechanism:** The State has requested an amendment to Section 5 or 6 of the APRA, 2014, to explicitly mention Amaravati as the capital, rather than leaving it to the discretion of the State Assembly.
- **Protecting the Land Pooling Scheme (LPS):**
 - ✓ Over 33,000 acres of land were given by farmers under the Land Pooling Scheme.
 - ✓ A Central Law would act as a safety net, ensuring that the "Master Plan" of Amaravati cannot be scrapped by a change in political leadership, treating the agreement between farmers and the government as a binding statutory contract protected by Parliament.
- **Federalism vs. Stability:**
 - ✓ While deciding a capital is typically a State Subject, the AP government argues that since the capital's foundation was laid by the Prime Minister and funded partly by the Centre under the Reorganisation Act, the Centre has a stake and responsibility in its stability.

118. Kakinada to be the 'Green Hydrogen Valley of India': CM

Context:

Recently, Andhra Pradesh Chief Minister N. Chandrababu Naidu officially declared Kakinada as the "Green Hydrogen Valley of India". This announcement was made during the foundation stone laying ceremony of a massive Green Hydrogen and Green Ammonia Production Complex by AM Green (a Greenko Group venture) in Kakinada, marking a significant milestone in India's clean energy transition.

Key Highlights of the Project:

- **The Mega Project:**
 - ✓ **Developer:** AM Green (Greenko Group).
 - ✓ **Location:** Kakinada, Andhra Pradesh (495-acre campus).
 - ✓ **Investment:** ₹15,600 Crore for the production complex + ₹2,000 Crore for 2 GW of Alkaline Electrolyzers.
 - ✓ **Capacity:**
 - Initial production of 0.5 Million Metric Tonnes (MMT) of Green Ammonia by mid-2027.
 - Target to scale up to 1.5 MMT per annum.
 - **Global Export Hub:** The Green Ammonia produced here is primarily earmarked for export to Europe, with Germany being the major importer (Uniper Global Commodities).

- **Strategic Importance for Andhra Pradesh:**
 - ✓ **"Speed of Doing Business":** The CM highlighted that AP has transitioned from "Ease of Doing Business" to "Speed of Doing Business," ensuring rapid clearances for such mega projects.
 - ✓ **Cost Reduction:** The project aligns with the state's goal to reduce power procurement costs from ₹4.80/unit to ₹1.19/unit within three years by leveraging renewable energy.
 - ✓ **Soil Health:** Green Ammonia is vital for AP's agriculture, given that the state's soil ranks high in nitrogen and salinity levels.
- **Other Announcements at the Event:**
 - ✓ **Drone Ambulance:** The state's first drone ambulance will be deployed in 2026.
 - ✓ **Quantum Computing:** The first quantum computer will arrive in Amaravati within nine months.



Constitutional Provisions for Environment & Energy

- **Article 48A (DPSP):** The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife. (Green Hydrogen promotes clean environment)

- **Article 51A(g) (Fundamental Duties):** It is the duty of every citizen to protect and improve the natural environment.

- **Legislative Power (7th Schedule):**

“Electricity” is in the Concurrent List (Entry 38), allowing both Centre and State to make laws.

AP Integrated Clean Energy Policy 2024 aligning with the National Green Hydrogen Mission.



National Green Hydrogen Mission

- Launched by the Union Government with an outlay of ₹19,744 crore.
- **Target:** Production of 5 MMT of Green Hydrogen by 2030.



- **SIGHT Programme:**

Strategic Interventions for Green Hydrogen Transition,

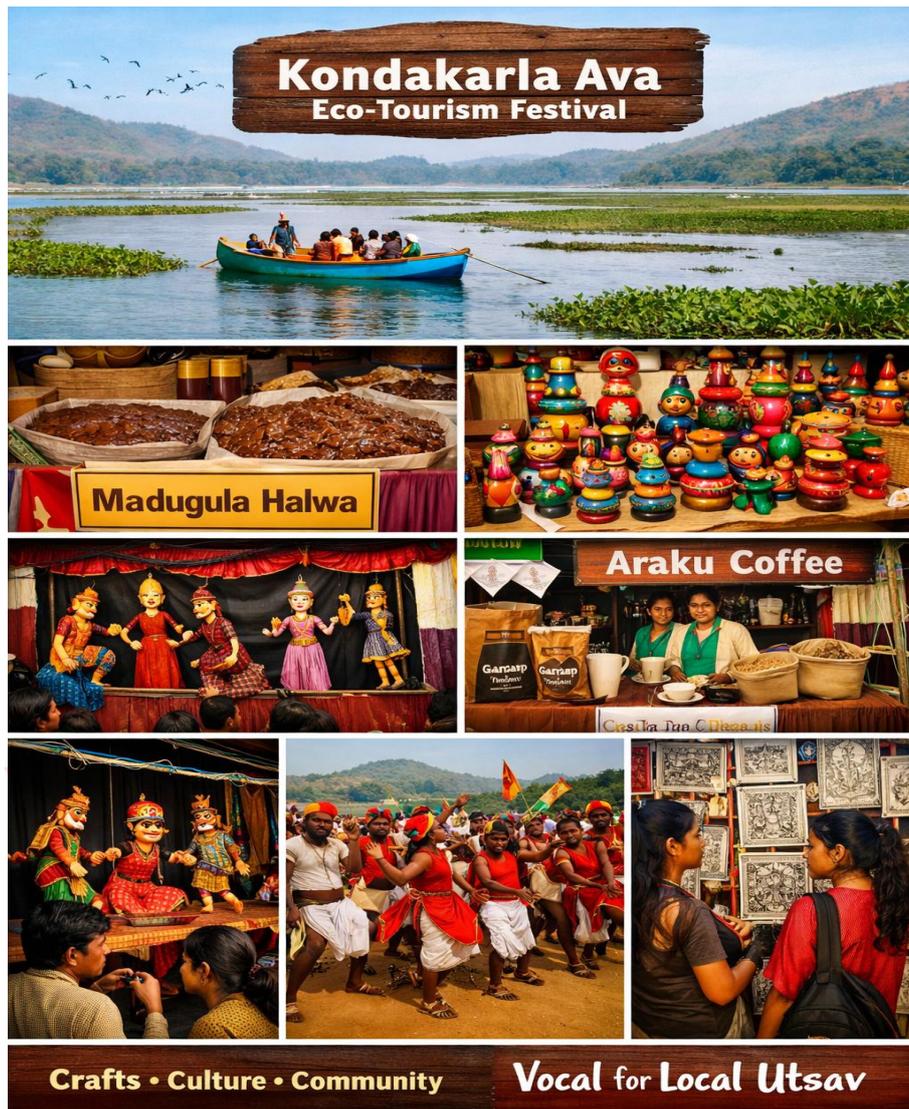
Incentives for Electrolyzer Manufacturing (AM Green in Kakinada).



119. Anakapalli Utsav 2026: A Grand Showcase of Uttarandhra's Culture & Tourism

Context:

Recently, the Anakapalli Utsav was celebrated on a grand scale for the first time since the district's formation. Inaugurated by AP Legislative Assembly Speaker Chintakayala Ayyanna Patrudu, the two-day festival aimed to spotlight the unique cultural heritage, indigenous crafts, and eco-tourism potential of the Anakapalli region.



Key Highlights of the Utsav

- **Focus on Eco-Tourism: Kondakarla Ava**
 - ✓ **The Venue:** A major attraction of the festival was Kondakarla Ava, a famous freshwater wetland and bird sanctuary.
 - ✓ **Tourism Potential:** Officials highlighted Kondakarla Ava as the "Second Largest Natural Freshwater Lake" in the state (after Kolleru).
 - ✓ **Development Plans:** The government announced plans to develop the lake and district reservoirs into international eco-tourism destinations, introducing boating facilities to boost local employment.
- **"Vocal for Local":**
 - ✓ Promoting Indigenous Crafts The Utsav served as a platform for "Creative Tourism," showcasing products central to the region's economy:
 - ✓ **Etikoppaka Toys:** Displaying the famous GI-tagged lacquer toys made from soft 'Ankudu' wood.
 - ✓ **Madugula Halwa:** Promoting the district's signature sweet, known for its distinct wheat-milk preparation.

- ✓ **Araku Coffee:** Highlighting the tribal organic coffee brands from the neighboring agency areas.
- **Cultural Vibrancy:**
 - ✓ **Folk Arts:** The event revived traditional art forms including Puppet Shows and Folk Dances (like Tappeta Gullu).
 - ✓ **Tribal Art:** Special stalls displayed Savara paintings, a tribal art form indigenous to the North Coastal Andhra region.
 - ✓ **Participation:** It saw active participation from students and the general public, fostering a sense of ownership over local heritage.

120. Unearthing History: 14th-Century Inscription of Naga Chief Annadeva Found in Palnadu

Context:

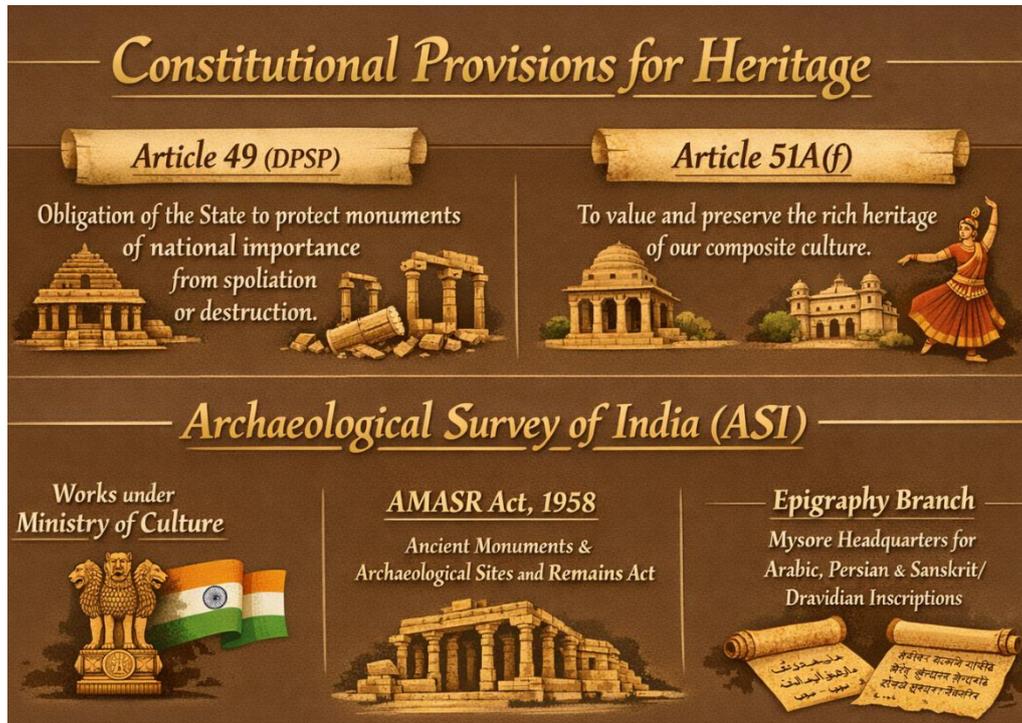
Recently, a significant historical discovery was made in Ravvaram village, Nujendla Mandal of Palnadu district. A 14th-century inscription written in Telugu was found on a hillock, offering new evidence regarding the local rulers of that era.



Key Highlights of the Discovery

- **The Inscription Details:**
 - ✓ **Location:** The inscription was found engraved on a slab on Gurunathesvaruni Konda (hillock).
 - ✓ **Date:** It dates back to Saka 1314, specifically the cyclic year Prajapati, Asvija Suddha 3 (Tritiya). This corresponds to October 1, 1391 CE.
 - ✓ **Language:** The script and language are Telugu, which was the court language and widely used for inscriptions during the post-Kakatiya period.
- **Historical Significance: Chief Annadeva**
 - ✓ **The Ruler:** The inscription mentions Annadeva, described as a chief of the Naga Vamsa (Naga Lineage).
 - ✓ **Verification:** The inscription was initially identified by local historian Thurimella Srinivasa Prasad and later deciphered and authenticated by K. Munirathnam Reddy, Director (Epigraphy), Archaeological Survey of India (ASI), Mysore.

- ✓ **Importance:** This find helps reconstruct the local history of the Palnadu region, filling gaps about the feudatory chiefs who ruled semi-independently during the turbulent post-Kakatiya era.



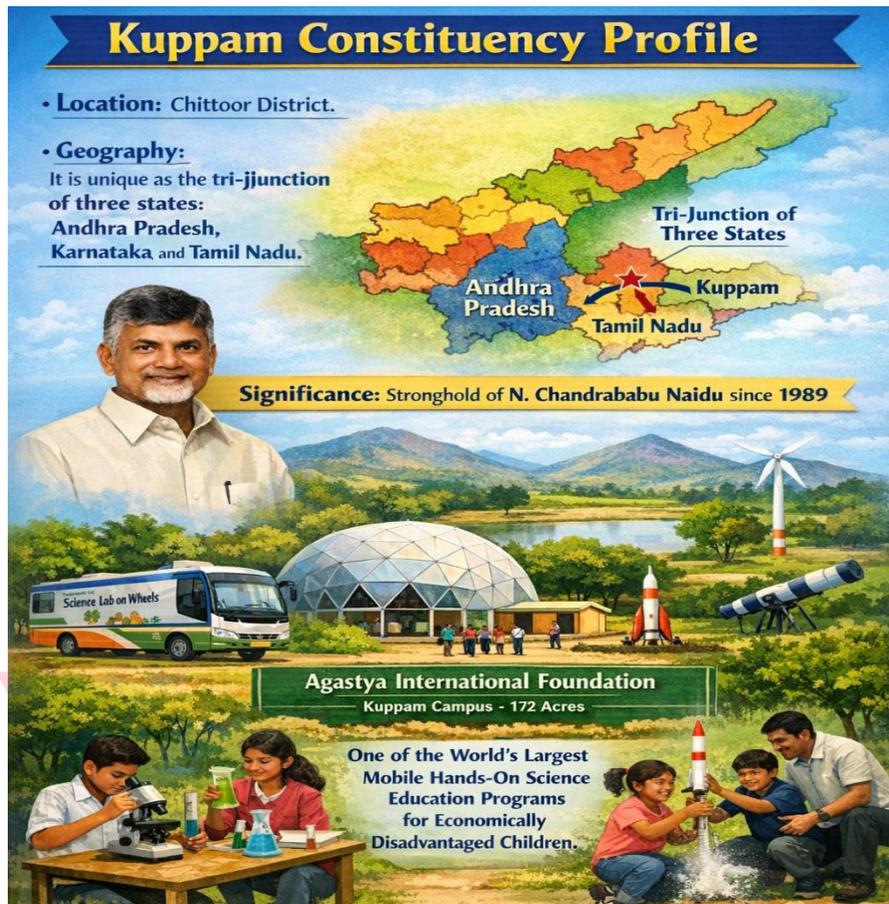
- **The Era: Post-Kakatiya Period (14th Century)**
 - ✓ **Timeline:** The year 1391 CE falls in the period after the fall of the Kakatiya Empire (1323 CE) and during the dominance of the Reddi Kingdom of Kondavidu (1325–1424 CE) and the rising Vijayanagara Empire.
 - ✓ **Political Landscape:** The Palnadu region was a strategic buffer zone. It was often controlled by powerful local chieftains (like the Naga Vamsis) who acted as feudatories (Samantas) to the Reddi Kings or ruled independently during power vacuums.
- **The Naga Vamsa (Naga Lineage):**
 - ✓ **Origin:** The Naga Vamsis were local ruling families in the Andhra region (primarily Guntur, Palnadu, and Kurnool) who claimed descent from the mythical Naga race.
 - ✓ **Role:** They were often warrior clans. In AP History, we see references to Naga chiefs serving as generals or local administrators under the Kakatiyas and later the Reddis.
 - ✓ **Significance in Palnadu:** Palnadu has a rich history of local heroism (Battle of Palnadu – 12th Century). Discoveries like this inscription suggest that even two centuries after the famous battle, local Naga chiefs maintained authority in the region.

121. Kuppam: The "Laboratory" of Andhra's Developmental Model

Context:

During his three-day visit to the Kuppam constituency in January 2026, Chief Minister N. Chandrababu Naidu inaugurated several developmental projects. He declared Kuppam as a

"Model Laboratory" for the state, where innovative technologies and pilot projects in education and tourism will be tested before statewide implementation.



Key Highlights of the Visit

- **The "Kuppam Model" of Governance:**
 - ✓ **Pilot Hub:** The CM emphasized that Kuppam will serve as a testing ground for new government initiatives. Successful pilot projects here will be scaled up across Andhra Pradesh.
 - ✓ **Focus Areas:** The primary focus is on raising Educational Standards and promoting Tourism through modern infrastructure.
- **Educational Infrastructure (Agastya Vidyachal Academy):**
 - ✓ **Inauguration:** The CM inaugurated the Agastya Vidyachal Academy in Gudipalli, built at a cost of ₹3 Crore.
 - ✓ **Teachers' Training Centre:** A state-of-the-art facility (11,000 sq. ft.) was launched to train 5,000 teachers and school leaders annually. The focus is on "Experiential Learning" (learning by doing) and scientific teaching methods rather than rote learning.
 - ✓ **Learners' Accommodation:** Foundation stone laid for a ₹10 Crore facility to host national-level training programs, increasing capacity from 240 to higher numbers.
- **Tourism & Skill Development:**
 - ✓ **Oberoi Visitors Centre:** The CM laid the foundation for the Oberoi Visitors Centre (Investment: ₹2 Crore).

- ✓ **Objective:** Designed to offer a multimedia-based learning and visitor experience, boosting the tourism potential of the constituency.
- ✓ **Future Readiness:** The CM urged students to embrace innovation and technology, positioning them as the drivers of the state's future economy.

122. Unearthing Roots: 8th-Century Telugu Inscription Found in Prakasam

Context:

Recently, the Archaeological Survey of India (ASI) identified a significant 8th-century CE Telugu inscription at the Pithikesvara Swamy temple in Pitikayagulla village, Besthavari Peta mandal of the erstwhile Prakasam district. This discovery offers valuable insights into the engineering and linguistic history of the Renadu region.



I. Key Highlights of the Discovery:

- **The Inscription Details:**
 - ✓ **Location:** Engraved on a slab pillar erected in front of the Pithikesvara Swamy temple.
 - ✓ **Time Period:** Dated to the 8th Century CE.
 - ✓ **Script:** Written in early Telugu script consisting of four lines.
 - ✓ **Decoded Text:** The text reads: "Svasti Sri Nandelu vari., Chensinavanthu prani., milli achari., Paasina nava katta."
- **Historical Significance:**
 - ✓ **Purpose:** The inscription records the construction of a "Nava Katta" (New Embankment or Bund).
 - ✓ **Key Figure:** The work is attributed to Pranamilli Achari, a sculptor of that era.
 - ✓ **Engineering Insight:** The mention of an embankment highlights the focus on water management and irrigation infrastructure during the medieval period in the dry Rayalaseema/Prakasam belt.
- **Preservation Appeal:**
 - ✓ Dr. K. Munirathnam Reddy (Director, Epigraphy, ASI Mysore), who decoded the text, emphasized the urgent need to protect such loose stone inscriptions which are often neglected but serve as primary sources for reconstructing regional history.

II. About The Dynasty: Renati Cholas

- **Region:** They ruled the Renadu region (modern-day Cuddapah, Annamayya, and parts of Kurnool/Prakasam districts).
- **Significance:** The Renati Cholas are celebrated in Andhra history as the first dynasty to use the Telugu language in their inscriptions instead of Sanskrit or Prakrit.
- **Key Fact:** This shift marked the beginning of Telugu as a language of administration and record-keeping.
- **Famous Inscription:** The Kalamalla Inscription (Kadapa district), issued by Erikal Mutthuraju (Dhanunjaya) around 575 CE, is considered the first Telugu inscription.

III. Evolution of Telugu Script:

- The script found in Pitikayagulla (8th Century) represents the transitional phase of the Telugu-Kannada script, evolving from the Brahmi script.
- By the 8th century, Telugu had developed distinct characteristics, separating itself from the common South Indian scripts.

123. Economic Survey 2025-26: AP's Strategic Reforms and Urban Vision

Context:

The Economic Survey 2025-26, tabled in Parliament, highlighted Andhra Pradesh's significant strides in investment reforms, inflation control, and the strategic development of its capital, Amaravati. The survey praised the state's Business Reform Action Plan (BRAP) implementation and its successful digital land resurvey initiative.

Key Highlights of the Survey:

- **Investment Reforms & Ease of Doing Business:**
 - ✓ **Digital Clearances:** The survey noted that Andhra Pradesh has successfully implemented Single-Window Industrial Clearances and e-Environmental Approvals under BRAP 2024.
 - ✓ **Pollution Control:** The state has expanded its Online Consent Management & Monitoring System. This allows industries to apply for consent and track approvals digitally, reducing human interface and enhancing transparency with the Pollution Control Board.
 - ✓ **Sustainability:** Along with Tamil Nadu and Kerala, AP was lauded for integrating sustainability measures into its business environment, reducing the time taken for green clearances.
- **Urban Development: Amaravati & Ease of Living:**
 - ✓ **Amaravati as a Greenfield Opportunity:** The survey termed the construction of Amaravati as a "rare window of opportunity." Unlike older cities that retrofit infrastructure after congestion sets in, Amaravati offers the chance to shape growth deliberately from scratch, avoiding the pitfalls of informality and service deficits.
 - ✓ **Top Cities:** Tirupati and Vijayawada featured among the Top 10 Ease of Living Cities in India.
 - ✓ **Reason:** These Tier-2 cities possess foundational infrastructure but have not yet faced the intense population pressure of metros like Bengaluru or Delhi, allowing them to remain "ahead of the curve."

- **Macroeconomic Stability: Decline in Inflation**
 - ✓ **Sharp Decline:** The survey highlighted a drastic reduction in the state's inflation rate.
 - ✓ 2022-23: 7.57%
 - ✓ 2025-26 (April-Dec): 1.39%
 - ✓ **Significance:** A low inflation rate below the national average indicates better supply chain management and effective price monitoring mechanisms in the state.
- **Land Governance: The Drone Resurvey**
 - ✓ **Technology Use:** The survey commended the Andhra Pradesh Resurvey Project for using Drones, CORS (Continuously Operating Reference Station), and GIS mapping.
 - ✓ **Impact:** As of 2025:
 - 6,901 villages covered.
 - 81 lakh land parcels resurveyed.
 - 86,000 boundary disputes resolved.
 - ✓ **Outcome:** Issuance of tamper-proof digital land titles.



124. Return of the Bison: Nallamala to get 120 Indian Gaurs

Context:

In a historic move for wildlife conservation, the Andhra Pradesh Forest Department has finalized a proposal to reintroduce 120 Indian Gaurs (Indian Bison) into the Nallamala Forests (Nagarjunasagar-Srisailem Tiger Reserve). This initiative aims to revive the species in the region after a gap of nearly 160 years, pending approval from the Central Government.



Key Highlights of the Initiative:

- **The "Homecoming" Plan:**
 - ✓ **Source:** The Gaurs will be translocated from Madhya Pradesh.
 - ✓ **Numbers:** A total of 120 individuals (males and females) will be introduced.
 - ✓ **Timeline:** The translocation is planned for the next winter season, subject to habitat suitability assessments.
 - ✓ **Scientific Basis:** The male-female ratio for introduction will strictly follow the guidelines prescribed by the Wildlife Institute of India (WII) and the National Tiger Conservation Authority (NTCA).
- **Trigger for the Decision:**
 - ✓ The decision was catalyzed by the rare sighting of a solitary male Indian Gaur in the Atmakur forest division (Nandyal district) in July 2024.
 - ✓ Forest officials believe this 10-year-old male migrated from the Karnataka ghats, crossing the Krishna River, proving that the Nallamala corridor is still viable for the species.
- **Ecological Significance:**
 - ✓ **Historical Range:** Gaurs were once native to Nallamala but went locally extinct over a century ago due to habitat loss and hunting.
 - ✓ **Ecosystem Balance:** Reintroducing a large herbivore like the Gaur helps in vegetation control and serves as a prey base for apex predators (Tigers/Leopards), thereby strengthening the food web in the Nagarjunasagar-Srisailem Tiger Reserve (NSTR).

125. Study Flags Declining Fish Biodiversity in Sompeta Wetlands

Context:

A recent study titled "Ichthyofaunal Diversity of Srikakulam District, Andhra Pradesh, India" conducted by Andhra University researchers has documented 37 fish species in the Sompeta wetlands (Srikakulam district). However, the study flags a critical decline in biodiversity due to rapid ecological deterioration, categorizing the water quality as "poor."

Key Highlights of the Study:

- **Biodiversity Documentation:**
 - ✓ **Species Count:** The study recorded 37 fish species belonging to 34 genera and 24 families.
 - ✓ **Habitat Distribution:**
 - **Freshwater:** 22 species (e.g., Catla, Reba, Mrigala).
 - **Brackish Water:** 8 species.
 - **Mixed Environments:** 7 species.
 - **Key Species:** Catla, Labeo rohita (Rohu), Cyprinus carpio, Channa striata (Murrel), and Oreochromis mossambicus (Tilapia).
- **Major Threats Identified:**
 - ✓ **Physico-Chemical Changes:** The study noted drastic alterations in water depth and characteristics due to sediment inflow.
 - ✓ **Pollution Sources:** Industrial ash, domestic sewage, and agricultural runoff are the primary culprits.
 - ✓ **Water Quality Index (WQI):** The wetland's water was categorized as "Poor" and unsuitable for human consumption.
- **Proposed Conservation Measures:**
 - ✓ **Infrastructure:** Construction of sluice gates and embankments to control monsoon flooding and sedimentation.
 - ✓ **Bio-Control:** Removal of invasive Water Hyacinth using biological agents like Chinese Grass Carp or plant-eating snails.
 - ✓ **Zoning:** Establishing a Buffer Zone using GIS and Remote Sensing tools to protect the core wetland area.
 - ✓ **Regulation:** Restricting annual leasing of wetlands near bird sanctuaries and banning mass capture during breeding seasons.



126. Rising Tides: Visakhapatnam Faces Sea Level Rise up to 98 cm by 2100

Context:

A new scientific study titled "Recent Past and Future Projection of Sea Level: A Case Study of Puri, Chennai, and Visakhapatnam" projects that sea levels in Visakhapatnam could rise between 41 cm to 98 cm by the end of the century (2091-2100), depending on global emission scenarios.

I. Key Highlights of the Study:

- **Future Projections (2091-2100):** The study used CMIP6 (Climate Model Intercomparison Project Phase 6) models to predict sea-level rise under three specific emission scenarios:
 - ✓ Low-Emissions Scenario (SSP1-2.6): Projected rise of 41 cm.
 - ✓ Middle-Emissions Scenario (SSP2-4.5): Projected rise of 70 cm.
 - ✓ High-Emissions Scenario (SSP5-8.5): Projected rise of up to 98 cm.
- **Historical Trends (1995-2020):**
 - ✓ **Rate of Rise:** Visakhapatnam recorded a historical sea-level rise of approximately 4.96 mm per year.
 - ✓ **Comparative Analysis:**
 - Chennai: Highest trend (~5.2 mm/year).
 - Visakhapatnam: Moderate trend (~4.96 mm/year).
 - Puri: Lowest trend among the three (~4.6 mm/year).
 - The rise became significantly more noticeable after 2010, with peaks close to 0.1 meters.
- **Factors Driving the Rise:** The authors identified a mix of global, regional, and local factors:
 - ✓ **Global/Regional:** Ocean warming (causing thermal expansion of water), melting glaciers/ice sheets, and shifts in Bay of Bengal currents and salinity.
 - ✓ **Local:** Land subsidence caused by excessive groundwater extraction and heavy port-related infrastructure development contributing to relative sea-level rise.

II. Vulnerability and Impact:

- **Dynamic Vulnerability Index:**
 - ✓ The study warns that Visakhapatnam's vulnerability will increase across all scenarios from 2021-2030 through to 2100.
 - ✓ **High Risk Zones:** Expanding urban footprints, low-lying coastal zones, and the strategic Port and Industrial facilities are most exposed.
- **Consequences:**
 - ✓ More frequent flooding during high tides and cyclones.
 - ✓ Shoreline erosion, threatening beaches (like RK Beach/Rushikonda).
 - ✓ Stress on industrial infrastructure located near the coast (e.g., Steel Plant, HPCL refinery zones).
- **Recommendations:**
 - ✓ Strengthening Early-Warning Systems.
 - ✓ Improving urban drainage systems to handle higher tide levels.
 - ✓ Strict implementation of Coastal Regulation Zone (CRZ) norms to guide new development away from exposed areas.



127. Winter Retreat: Pulicat and Nelapattu Teem with Migratory Birds

Context:

With the onset of winter in January 2026, the twin sanctuaries of Pulicat and Nelapattu in Nellore district have transformed into bustling avian habitats. Favorable water levels and early

monsoons have attracted thousands of migratory birds, including rare species from as far as Siberia, turning the region into a vibrant eco-tourism hub.

PULICAT LAKE (PAZHAVERKADU)



Sriharikota
Barrier Island

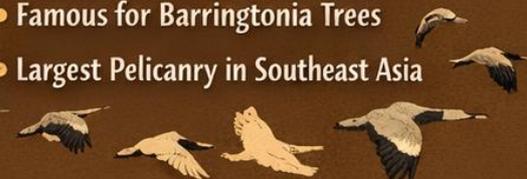
- Second-largest brackish water lagoon in India
- Straddles Andhra Pradesh (96%) & Tamil Nadu (4%)
- Sriharikota Barrier Island with Satish Dhawan Space Centre (SHAR)
- Designated as a Bird Sanctuary



NELAPATTU BIRD SANCTUARY



- Doravarisatram, Nellore District
- Famous for Barringtonia Trees
- Largest Pelicanry in Southeast Asia





CENTRAL ASIAN FLYWAY

- Key Migration Route for Waterbirds
- Siberia & Europe to South Asia

Key Highlights of the Season:

- **Avian Diversity & Numbers:**
 - ✓ **Pulicat Lake:** Hosting nearly 52,000 birds this season. The star attraction is the Greater Flamingo (16,500 spotted), locally revered as 'Samudrapu Ramachilakulu' (Parrots of the Sea).
 - ✓ **Nelapattu Sanctuary:** Currently hosting over 7,500 nesting birds.
 - ✓ **Species:** The wetlands are teeming with Grey Pelicans, Painted Storks, Glossy Ibises, and Eurasian Coots.
 - ✓ **Migration Pattern:** Birds typically arrive by October for feeding and breeding and begin their return journey (often with young ones) by March.
- **Unique Nesting Behaviour at Nelapattu:**
 - ✓ The sanctuary is famous for its *Barringtonia acutangula* (Kadapa) trees, which serve as nesting sites.

- ✓ **Tiered Nesting:** A distinct hierarchy is observed:
 - **Top Branches:** Occupied by Pelicans.
 - **Mid-Levels:** Taken by Open-billed Storks.
 - **Lower Branches:** Used by Cormorants.
- **Ecological Impact of 'Cyclone Montha':**
 - ✓ The report highlights that recent rains brought by Cyclone Montha have shifted feeding zones.
 - ✓ Usually found near the ISRO road (Sriharikota), large flocks of flamingos have now moved to shallower parts of the lake due to increased water levels, altering tourist sighting patterns.
- **Community Conservation:**
 - ✓ Local communities treat these birds as "Celestial Guests," playing a vital role in protecting the ecosystem.
 - ✓ The presence of rich aquatic life (prawns, plankton) in Pulicat makes it a nutrient-rich wintering ground, supporting 163 species.

128. Innovation in Governance: 6 District Models Ready for Statewide Scale-Up in AP

Context:

As Andhra Pradesh enters 2026, the state government has identified six pilot projects spearheaded by District Collectors in 2025 as successful templates for statewide implementation. These initiatives range from tribal education and digital land records to social rehabilitation, marking a shift towards decentralized, innovation-driven governance.

Role of District Collector

The Collector is the pivot of district administration. These initiatives highlight the **"Developmental Role"** of the Collector (unlike the traditional regulatory revenue role)

Established by Warren Hastings in 1772



Constitutional Provisions (DPSP)



Article 47: Duty of the State to raise the level of nutrition and the standard of living and to improve public health (Relates to Mustabu & Smart Kitchens)



Article 46: Promotion of educational and economic interests of SCs, STs, and other weaker sections (Relates to Nirman in ASR District)

E-Governance (Smart Governance)



The Anantapur Initiative:
A Classic Example of **SMART** Governance
(Simple, Moral, Accountable, Responsive, Transparent)

Aligns with Digital India Mission's Pillar of **"e-Kranti"**



'Electronic Delivery
Digital India
Power To Empower

Key Highlights: The 6 District Models

1. ASR District: 'Super 50 Inspiration Engine' (Education)

- **Initiative:** Under the 'Nirman' programme, Collector Dinesh Kumar introduced a mentoring platform for Class X students in tribal Ashram schools.
- **Methodology:** Combines app-based assessments with the "Teaching at the Right Level" (TaRL) methodology.
- **Impact:** Strengthened academic foundations in Telugu, English, and Mathematics for nearly 90,000 tribal students.

2. Parvathipuram Manyam: 'Mustabu' (Health & Hygiene)

- **Initiative:** A behavioral change program where students must wash hands and groom themselves before entering classrooms.
- **Outcome:** Improved school hygiene, student confidence, and reduced illness-related absenteeism.
- **Scale-up:** The CM announced plans to extend this to 7.9 million students across the state, potentially influencing 2 crore family members.

3. Eluru: Project 'Marpu' (Social Rehabilitation)

- **Target:** Families engaged in illicit liquor brewing (ID liquor).
- **Approach:** Instead of punitive arrests, the project focuses on rehabilitation and livelihood support.
- **Success:** Implemented in 140 villages, helping families transition to micro-entrepreneurship. The CM cited this as a model to tackle drug abuse as well.

4. Nellore: 'Champion Farmers' (Agriculture)

- **Challenge:** Monoculture (80% farmers dependent on Paddy).
- **Solution:** Identified one "Champion Farmer" in each of the 727 Gram Panchayats to act as a role model for Crop Diversification.
- **Tech Integration:** Use of Drones for spraying and promotion of alternative crops to reduce paddy acreage.

5. Kadapa: 'Smart Kitchens' (Nutrition)

- **Model:** Establishing Smart Kitchens equipped with 3 MW Solar Power Plants and Biogas facilities to provide hot, nutritious meals.
- **Sustainability:** Integrates produce from Natural Farming with robust certification.
- **Status:** 5 kitchens operational; plans for 33 total. Union Ministry of Education has noted it for national relevance.

6. Anantapur: AI-Driven Revenue Records (E-Governance)

- **Innovation:** Use of Artificial Intelligence (AI) to digitize land records and resolve disputes related to 22A lands (prohibited list).
- **Features:** Creation of a Survey Number Library and cloud-based storage to prevent data manipulation.
- **Benefit:** Ensures transparency and solves long-pending land litigation.

PRACTICE MCQs

1. Consider the following statements regarding the 'Haka' tradition:

1. It is a traditional ceremonial dance of the Aboriginal tribes of Australia.
2. It was recently performed at Medaram to honor Sammakka-Saralamma.
3. It involves rhythmic chanting and expressive movements to convey tribal unity.

Which of the statements given above is/are correct?

- A) 1 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2, and 3

Answer: B

2. Consider the following pairs of Hydroelectric Projects and their respective rivers:

1. Ratle: Chenab
2. Kishanganga: Jhelum Tributary
3. Uri-II: Jhelum
4. Pakal Dul: Marusudar

How many of the pairs given above are correctly matched?

- A) Only one pair
- B) Only two pairs
- C) Only three pairs
- D) All four pairs

Answer: D

3. The 'Mpemba Effect', recently explained by molecular simulations, refers to:

- A) The phenomenon where hot water freezes faster than cold water.
- B) The expansion of water when it turns into ice.
- C) The increase in the salinity of oceans due to melting glaciers.
- D) The impact of solar wind on the Earth's ionosphere.

Answer: A

4. Consider the following statements regarding Hydrogen Fuel Cells:

1. The only byproducts of the electrochemical reaction are water and heat.
2. They convert chemical energy directly into electrical energy.
3. India's first hydrogen-powered passenger vessel was launched in the backwaters of Kerala.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2, and 3

Answer: A

5. The 'Suryastra' system, recently inducted by the Indian Army, is primarily a:

- A) Multi-layered Air Defence Shield.
- B) Nuclear-powered attack submarine.
- C) Universal multi-calibre rocket launcher system.
- D) Satellite-based early warning system for solar storms.

Answer: C

6. With reference to the 'Pralay' missile, consider the following statements:

1. It is a long-range Intercontinental Ballistic Missile (ICBM).
2. It is a quasi-ballistic missile capable of maneuvering mid-air to defeat interceptors.
3. It is designed to carry both nuclear and conventional warheads.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 and 3 only
- C) 2 only
- D) 3 only

Answer: B

7. With reference to the 'Linguistic Gap' in India's climate policy, consider the following statements:

1. Over 90% of primary climate research in India is published in English.

2. The Bhashini platform is an AI-led initiative that can be leveraged to bridge the linguistic divide in climate communication.

3. Article 350A of the Constitution directs states to provide instruction in the mother tongue at the primary stage of education.

Which of the statements given above is/are correct?

A) 1 and 2 only

B) 2 and 3 only

C) 1 and 3 only

D) 1, 2, and 3

Answer: D

8. With reference to the 'NPS Vatsalya' scheme recently notified in 2025-26, consider the following statements:

1. It is a market-linked pension scheme specifically for minors, including NRIs and OCIs.

2. The minimum annual contribution required to keep the account active is ₹1,000.

3. Upon the beneficiary reaching 18 years of age, the account automatically converts into a standard NPS Tier-I account.

Which of the statements given above are correct?

A) 1 and 2 only

B) 2 and 3 only

C) 1 and 3 only

D) 1, 2, and 3

Answer: C

9. A recent study using 13th-century Marathi literature (Lila Charitra) to analyze the Deccan Savannas concluded that:

A) The region was a dense tropical forest that was deforested during the British era.

B) The savannas are "Open Natural Ecosystems" (ONEs) that have existed for centuries.

C) Climate change in the 20th century converted the grasslands into thorny scrubs.

D) Mass afforestation is the only way to restore the ecological balance of the Deccan.

Answer: B

10. Consider the following statements regarding 'Article 6' of the Paris Agreement:

1. It allows countries to voluntarily cooperate to meet their Nationally Determined Contributions (NDCs).
2. 'Corresponding Adjustments' are mandatory to prevent the "double counting" of carbon credits.
3. India has notified Green Hydrogen and Offshore Wind as eligible activities for this mechanism.

Which of the statements given above is/are correct?

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2, and 3

Answer: D

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