

The Hindu Important News Articles For UPSC CSE

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Daily News Analysis

Page 04:GS II :Indian Polity / Preliminary Examination

The independence of Constitutional Bodies forms the bedrock of a thriving democracy. Recently, the Supreme Court of India reserved its verdict on whether to refer challenges against the **Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service, and Term of Office) Act, 2023** to a five-judge Constitution Bench. The primary point of contention revolves around the replacement of the Chief Justice of India (CJI) with a Cabinet Minister in the Selection Committee for Election Commissioners. This debate brings to the fore a critical constitutional tug-of-war between Executive discretion, Parliamentary sovereignty, and Judicial oversight in ensuring free and fair elections.

Key Highlights of the Case

- **The 2023 Act:** Passed by Parliament, replacing the Chief Justice of India with a Union Cabinet Minister nominated by the Prime Minister in the Selection Committee.
- **Contrasting Composition:**
 - Anoop Baranwal Case (March 2023): Selection Panel = PM + Leader of Opposition (LoP) + CJI.
 - 2023 Act: Selection Panel = PM + Leader of Opposition (LoP) + Cabinet Minister nominated by PM.
- **Union Government's Argument:**
 - The Prime Minister holds high constitutional trust and sanctity (Manoj Narula case, 2014).
 - Excluding executive primacy assumes bad faith or mala fide intent, which a court should not presume against high constitutional functionaries.
 - Parliamentary sovereignty allows the Legislature to enact laws regulating appointments, as originally envisaged in Article 324(2).
- **Supreme Court's Perspective:**
 - Focuses on the principle: **"Justice must not only be done, but must also be seen to be done."**
 - Expresses concern over a tilted 2-to-1 ratio favoring the Executive (PM + Nominated Cabinet Minister vs. LoP), potentially undermining the public perception of neutrality.



Deep Analysis: Core Issues & Arguments

1. Separation of Powers vs. System of Checks and Balances

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- **Executive Viewpoint:** Executive appointments fall legitimately under the domain of the elected government. Mandating a judicial presence on executive selection panels creates an imbalance in the separation of powers.
- **Judicial Viewpoint:** Free and fair elections are part of the **Basic Structure** of the Constitution (Indira Nehru Gandhi v. Raj Narain, 1975). An authority conducting elections cannot be perceived as an agency of the ruling party.

2. Institutional Independence vs. Executive Primacy

- The Election Commission of India (ECI) acts as an arbiter between political parties.
- If the selection panel inherently carries an institutional majority for the ruling government (2:1 ratio), it risks creating a perception of institutional bias, even if the selected candidate acts with utmost integrity.

3. The Legislative Void and Judicial Precedents

- Article 324(2) states that appointments shall be made by the President, "subject to the provisions of any law made in that behalf by Parliament."
- For over seven decades, Parliament did not enact a specific law, leading to executive monopoly over ECI appointments.
- In the Anoop Baranwal (2023) judgment, the Supreme Court stepped in to fill this "legislative vacuum" by providing an interim mechanism until Parliament made a law. The 2023 Act was Parliament's response to that judgment.

Static Dimensions & Constitutional Framework

1. Constitutional Provisions

- **Article 324:** Superintendence, direction, and control of elections to be vested in an Election Commission.
- **Article 324(2):** Specifies that the CEC and ECs shall be appointed by the President, subject to parliamentary law.
- **Article 324(5):** Protection of tenure for the CEC (removable only in like manner and on like grounds as a Judge of the Supreme Court), though ECs do not enjoy the exact same protection without CEC recommendation.

2. Law Commission & Committee Recommendations

- **254th Law Commission Report (2015):** Recommended a three-member selection committee consisting of the PM, the Leader of the Opposition (or largest opposition party leader), and the CJI to ensure neutrality.
- **Dinesh Goswami Committee (1990):** Recommended consultations with the Leader of the Opposition and the Chief Justice of India for ECI appointments.
- **Tarkunde Committee (1975):** Recommended that appointments to the ECI be made on the advice of a committee consisting of the PM, LoP, and CJI.

3. Comparative Models of Independent Commissions

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- **CVC (Central Vigilance Commission):** Selection Committee includes PM, Union Home Minister, and Leader of Opposition in Lok Sabha.
- **NHRC (National Human Rights Commission):** Multi-member committee including PM, Speaker of Lok Sabha, Home Minister, Leaders of Opposition in both Houses, and Deputy Chairman of Rajya Sabha.
- **CBI Director:** Selected by a panel consisting of PM, CJI (or a nominee judge), and Leader of Opposition.

Major Challenges Ahead

- **Public Trust in Democratic Process:** The legitimacy of election outcomes relies heavily on public faith in the neutrality of the Election Commission.
- **Asymmetry in Safeguards:** While the CEC has constitutional protection against arbitrary removal, Election Commissioners (ECs) do not enjoy identical safeguards under the statute, despite performing similar functions.
- **Precedent of Overturning Judicial Dicta:** The legislative override of the Baranwal judgment highlights ongoing friction between Judicial Review and Parliamentary Supremacy.

Way Forward

- **Consensus-Based Selection:** Introduce a mechanism requiring a broader consensus (e.g., a two-thirds majority or supermajority in the selection panel) so that appointments carry cross-party backing rather than simple executive majority.
- **Equal Protection for ECs:** Extend the same removal protections and tenure security enjoyed by the CEC to all Election Commissioners to insulate the entire bench from political pressure.
- **Dedicated Secretariat & Financial Autonomy:** Granting independent financial and administrative resources to the Election Commission (similar to the Comptroller and Auditor General of India) would further solidify its institutional autonomy.
- **Transparent Shortlisting Procedure:** Establish clear, objective, and published criteria for shortlisting candidates prior to the selection committee meeting to eliminate arbitrariness.

Conclusion

The ongoing debate over the selection panel of the Election Commission highlights the delicate balance between Executive authority and Institutional insulation. While Parliament possesses the constitutional competence under Article 324(2) to frame laws governing appointments, such laws must align with the spirit of democracy and basic structure doctrine. Ensuring that the institution responsible for preserving democratic mandates operates above suspicion is essential for sustaining public confidence in India's electoral democracy.

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UPSC Prelims Practice Questions

Question: Which of the following correctly describes the removal of the Chief Election Commissioner (CEC)?

- (a) The President may remove the CEC at any time.
- (b) The CEC can be removed only in the same manner and on the same grounds as a Judge of the Supreme Court.
- (c) The CEC can be removed by the Prime Minister with parliamentary approval.
- (d) The Election Commission itself decides the removal of the CEC.

Ans: b)

UPSC Mains Practice Questions

Question: Examine the significance of the Supreme Court's judgment in Anoop Baranwal v. Union of India (2023) for electoral governance in India. **(10 Marks, 150 Words)**



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The rapid development of frontier biotechnologies like CRISPR-Cas9 and base-editing offers unprecedented opportunities to cure rare genetic disorders. However, the tragic death of a six-year-old girl in China during an experimental, personalized base-editing trial highlights the significant risks of expedited clinical trials lacking strict regulatory oversight. This case revives global debates regarding **"first-in-human" clinical trials**, the oversight of investigator-initiated research, ethical limits on compassionate use, and the societal pressures that prioritize experimental medical intervention over ethical standards.

Key Highlights of the Incident

- The Rare Condition:** The patient suffered from Snijders Blok-Campeau syndrome, a rare neurodevelopmental disorder caused by a mutation in the CHD3 gene affecting intellectual development, though typically not life-threatening.
- Experimental Mechanism:** Researchers utilized **base-editing** (a precise form of gene editing that converts individual DNA letters without double-strand breaks) delivered via high-dose **adeno-associated viruses (AAVs)** injected directly into the cerebrospinal fluid.
- Regulatory & Ethical Lapses:**
 - Preclinical Red Flags Ignored:** Toxicology studies in non-human primates revealed severe liver and kidney damage prior to human trial administration.
 - Regulatory Bypass:** The trial proceeded as an investigator-initiated trial at a local hospital without prior review or authorization from China's National Medical Products Administration (NMPA).
 - Financial Entanglement:** The patient's family directly funded approximately \$860,000 (around ₹8.3 crore) toward the research, creating potential conflicts of interest and informal funding streams outside standard regulatory purviews.
 - Lack of Transparency:** Neither the hospital nor the researchers disclosed the child's death immediately. Medical journals publishing the preclinical data were not informed of the outcome.



Deep Analysis: Key Dimensions & Controversies

1. Bioethical Imperatives vs. "Techno-Optimism"

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- **Societal Perception of Disability:** The insistence on undertaking an unprecedented, high-risk brain intervention for a non-fatal neurodevelopmental condition reflects a broader preference for risky technological interventions over accommodating chronic disabilities.
- **Informed Consent and Emotional Entanglement:** When desperate families self-fund experimental therapies, the boundary between objective medical consent and emotional desperation blurs, leaving families vulnerable to overestimating clinical efficacy while underestimating fatal risks.

2. Regulatory Philosophies in Frontier Science

- **The Speed vs. Safety Trade-off:** Regulatory frameworks across nations handle experimental therapies differently:
 - Permissive/Investigator-Led (e.g., local hospital approval mechanisms): Accelerates innovation and time-to-treatment for rare diseases, but lacks rigorous safety checks.
 - Pre-emptive & Precautionary (e.g., US FDA, India's CDSCO): Prioritizes multi-stage safety verification and preclinical evidence, which ensures safety but can delay life-saving therapies for terminally ill patients.
- **Enforcement Deficits:** Despite regulatory tightening following past controversies (such as He Jiankui's germline editing in 2018), execution loopholes remain wide enough to allow unverified human trials.

3. Science Communication & Publication Integrity

- **Selective Disclosure:** Publishing preclinical successes in high-impact journals while failing to report adverse human outcomes skews scientific literature, misleading the global scientific community about the true safety profile of novel delivery vehicles like high-dose AAVs.

Static & Regulatory Dimensions (Indian Context)

1. Regulatory Framework for Gene Therapy in India

- **National Guidelines for Gene Therapy Product Development and Clinical Trials (2019):** Jointly issued by the Indian Council of Medical Research (ICMR) and the Department of Biotechnology (DBT).
- **Apex Body:** The **Gene Therapy Advisory and Evaluation Committee (GTAEC)** oversees gene therapy research, evaluating protocols before clinical trials commence.
- **Regulatory Authority:** The **Central Drugs Standard Control Organisation (CDSCO)** regulates the manufacture, trial approval, and commercialization of Gene Therapy Products (GTPs) under the New Drugs and Clinical Trials Rules, 2019.

2. International Guidelines & Benchmarks

- **Nuremberg Code & Declaration of Helsinki:** Mandates that human trials must be preceded by sufficient animal experimentation demonstrating clear safety, and that the potential benefits must outweigh the risks.

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- **WHO Expert Advisory Committee on Human Genome Editing:** Advocates for a global registry of gene-editing trials and rigorous governance frameworks to prevent unethical "first-in-human" applications.

Key Challenges Ahead

- **Commercialization and "Out-of-Pocket" Clinical Research:** Informal funding models and direct financial contributions by families create clear conflicts of interest for researchers, bypassing traditional peer-reviewed grant mechanisms.
- **AAV Toxicity Limits:** Delivering genetic payload editors to central nervous system targets currently requires high viral vector loads (AAVs), which carry known risks of severe immune complications, such as **Thrombotic Microangiopathy (TMA)** and multi-organ failure.
- **Global Equity in Gene Therapy:** Developing affordable, localized CRISPR and base-editing solutions requires maintaining strict safety standards without generating burdensome costs that put therapies out of reach for developing nations.

Way Forward

- **Mandatory Registration & Transparent Adverse-Event Reporting:** Enforce strict, centralized registration of all investigator-initiated clinical trials with mandatory, public disclosure of severe adverse events (SAEs) within a fixed timeframe.
- **Strengthening Preclinical Safety Thresholds:** Establish unambiguous global standards requiring clear toxicology profiles in non-human primates before human trials for non-fatal conditions receive ethical clearance.
- **Financial Conflict-of-Interest Insulation:** Prohibit direct financial transactions between patient families and individual primary investigators. Funding for rare disease research should flow through institutional, transparently audited funds.
- **Institutional Capacity Building in Developing Nations:** Build robust domestic manufacturing infrastructure for viral vectors (AAVs) and non-viral delivery systems (e.g., Lipid Nanoparticles) under stringent regulatory oversight, ensuring both safety and affordability.

Conclusion

The tragedy in Shanghai serves as a stark reminder that scientific advancement without rigorous ethical boundaries risks human safety. While gene-editing technologies like base-editing offer immense promise for previously untreatable genetic conditions, regulatory frameworks must ensure that therapeutic ambition does not bypass foundational safety protocols. A balanced, globally coordinated regulatory environment—where justice, safety, and scientific integrity prevail over speed—is essential to maintaining public trust in the future of novel genetic medicine.

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Question: The Gene Therapy Advisory and Evaluation Committee (GTAEC) in India is primarily associated with:

- (a) Approval of genetically modified crops.
- (b) Oversight and evaluation of gene therapy research and clinical trials.
- (c) Regulation of pharmaceutical exports.
- (d) Certification of biotechnology laboratories.

Ans: b)

UPSC Mains Practice Questions

Question: Discuss the ethical issues associated with first-in-human gene-editing clinical trials. **(10 Marks, 150 Words)**



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In July 2026, External Affairs Minister S. Jaishankar launched India's candidature for a non-permanent seat on the United Nations Security Council (UNSC) for the 2028–29 term. As the core doctrine of India's international outreach, he introduced **SHANTI** (Securing Holistic Advancement through Norms, Trust and Integrity).

While SAGAR (Security and Growth for All in the Region) set the vision and MAHASAGAR expanded its geographical scope, **SHANTI provides the normative framework and method** for governing shared maritime spaces. The Bay of Bengal—a disaster-prone yet strategically vital sub-region—serves as the natural laboratory to operationalize SHANTI before scaling it across the broader Indo-Pacific.

The Bay of Bengal as India's SHANTI anchor

The Bay of Bengal region, one of the world's most disaster-prone regions, lacks coordinated mechanisms to respond to natural disasters. Non-traditional threats such as climate-induced disasters, illegal fishing, cyber vulnerabilities, and supply chain disruptions require regional cooperation beyond bilateral aid or maritime power. This gap – growing capacity without shared norms – highlights the need for stronger maritime security.

On July 13, External Affairs Minister S. Jaishankar introduced Securing Holistic Advancement through Norms, Trust and Integrity (SHANTI) while launching India's candidature for the UN Security Council (UNSC) for the 2028-29 term. Building on Security and Growth for All in the Region (SAGAR) and Mutual and Holistic Advancement for Security and Growth Across Regions (MAHASAGAR), SHANTI provides a normative framework for shared maritime spaces, with the Bay of Bengal serving as the ideal region to operationalise it before expanding it across the wider Indo-Pacific.

The Bay's centrality

In recent years, the Bay of Bengal has moved from the margins to the centre of India's strategic thinking. Historically, it connected South and Southeast Asia through trade, culture, religion, and the exchange of ideas long before the Indo-Pacific entered diplomatic vocabulary.

Today, it links India's Act East policy with the Association of Southeast Asian Nations (ASEAN), provides access to the strategically vital Malacca Strait, and connects the eastern Indian Ocean to major global trade and energy routes. China's heavy reliance on the strait – often described as the "Malacca dilemma" – has driven its expanding regional presence through ports and infrastructure projects, intensifying geopolitical competition. As economic connectivity, maritime



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The Bay of Bengal is an ideal testing ground for SHANTI's security vision

governance, and strategic rivalry converge in the Bay, SHANTI offers a framework that places norms, trust, and integrity – not tonnage – as the currency of durable advantage.

A maritime security evolution

As such, SHANTI can be best understood as a logical evolution of its maritime outreach. SAGAR, articulated in 2015, supplied the vision of 'equity in development' and MAHASAGAR, announced in 2025, expanded that vision's scope recognising the interconnectedness of security (both vertically among nations and horizontally in threat perception) in the wider Indo-Pacific and the Global South. SHANTI offers the grammar of maritime security framework, the norms, trust and integrity in cooperation through which vision can be translated into tangible action that is well received and reciprocated. It shifts the emphasis from competition to demand driven cooperation, from influence to non-prescriptive institution-building, and from episodic crisis management to long-term resilience. This shift – from protecting maritime spaces to governing shared maritime commons – reflects India's new security mantra. If SAGAR was a statement of intent and MAHASAGAR a statement of reach, SHANTI is a statement of method to situate India as the "preferred security partner" and "first responder".

Because the Bay of Bengal is a single interconnected system, its cyclones, fish stocks, shipping lanes and pollution cross national boundaries almost by default, and its littoral states face remarkably similar challenges and concerns – disaster risk reduction and response, coastal erosion, fisheries management, port resilience, undersea cable protection and climate adaptation.

Unlike the western Indian Ocean, which is marked by active conflict, fragile economy and

contested spaces, the Bay of Bengal's strategic geography encourages cooperation. Yet, the region suffers less from a lack of institutions than from institutional fragmentation. What is missing is a common framework to align existing mechanisms. SHANTI fills this gap by providing principles to strengthen cooperation in maritime security, disaster response, the blue economy, and environmental resilience. India's geography gives it a natural convening role, but its centrality should rest on regional stewardship – not dominance – through trust-based, rules-based cooperation among states with shared challenges and opportunities.

Principles to practice

Taken together, these conditions make the Bay of Bengal India's most governable maritime sub-region – a natural laboratory where SHANTI can move from principle to practice before shaping wider cooperation across the Indian Ocean. This was reflected at the July 2026 BIMSTEC National Security Advisers' meeting in New Delhi, where member-states adopted common principles for maritime law enforcement and humanitarian assistance and disaster relief. BIMSTEC also agreed to hold its first joint maritime security exercise in the Bay, in November 2026, while a white shipping information-sharing agreement remains under discussion. These initiatives reflect the norm-building and trust-based cooperation that SHANTI seeks to promote. Its lasting contribution, therefore, will not be another acronym in India's maritime lexicon, but a redefinition of security – from deterrence to resilience, from rivalry to shared responsibility, and from crisis management to governance of the shared maritime commons.

The views expressed are personal

Key Highlights of the Article

- **Evolution of Maritime Doctrines:** Tracing India's strategic progression from intent (**SAGAR**, 2015) to reach (**MAHASAGAR**, 2025) and method (**SHANTI**, 2026).
- **Shift in Maritime Security Paradigm:** Moving away from purely hard-power tonnage and military rivalry toward demand-driven cooperation, institutional resilience, and shared stewardship of maritime commons.

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- **Geopolitical Significance:** The Bay of Bengal serves as the bridge between South Asia and ASEAN, linking India's Act East policy to the Malacca Strait while balancing expanding Chinese footprint in littoral ports.
- **Institutional Alignment:** Addressing regional "institutional fragmentation" by supplying a unifying normative framework through platforms like **BIMSTEC** (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation).

Evolution of India's Maritime Vision

1. SAGAR (2015) — Statement of Intent

- Focused on economic growth, disaster relief, and maritime security within India's immediate neighborhood in the Indian Ocean.

2. MAHASAGAR (2025) — Statement of Reach

- Expanded SAGAR's scope vertically (inter-state cooperation) and horizontally (addressing security and development interconnections across the wider Global South).

3. SHANTI (2026) — Statement of Method

- Provides the "grammar" for cooperation by emphasizing non-prescriptive institution-building, long-term climate resilience, and rules-based governance rather than zero-sum power competition.

Strategic Centrality of the Bay of Bengal

1. Strategic Gateway and the Malacca Dilemma

- Connects the Indian Ocean to major East Asian energy supply lines.
- Serves as a vital focal point where China's "Malacca Dilemma" drives its port investments (e.g., Kyaukphyu in Myanmar), intensifying power projection in India's immediate backyard.

2. Bridge to ASEAN and Act East Policy

- Re-engages historical cultural, economic, and maritime trade linkages between South and Southeast Asia.
- Strengthens India's position as a "preferred security partner" and "first responder" during crises in the eastern Indian Ocean.

3. Governable Maritime Sub-Region

- Unlike the Western Indian Ocean (marked by active piracy, state fragility, and armed conflict), the Bay of Bengal features littoral states with aligned security perceptions and shared socio-economic vulnerabilities.

Deep Analysis: Non-Traditional Threats & Normative Governance

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1. Interconnected Ecological Vulnerabilities

- The Bay of Bengal forms a single ecological system where cyclones, marine pollution, migratory fish stocks, and sea-level rise ignore national borders.
- Requires common protocols for climate adaptation, coastal erosion control, and sustainable blue economy management.

2. Safeguarding Critical Infrastructure

- Transnational vulnerabilities such as cyber threats to port logistics, illegal, unreported, and unregulated (IUU) fishing, and damage to undersea telecommunication cables necessitate real-time information sharing.

3. Overcoming Institutional Fragmentation

- The region hosts multiple overlapping forums (BIMSTEC, IORA, SAARC) that often suffer from siloed functioning.
- SHANTI provides common principles to standardize Humanitarian Assistance and Disaster Relief (HADR) protocols and White Shipping information-sharing agreements (such as the BIMSTEC joint maritime security exercise).

Static Dimensions & Constitutional Framework

1. Constitutional Directives (Article 51)

- **Article 51(c) of the Directive Principles of State Policy (DPSP):** Instructs the State to foster respect for international law and treaty obligations, aligning directly with SHANTI's emphasis on rules-based maritime norms.

2. UNCLOS Framework

- **United Nations Convention on the Law of the Sea (UNCLOS):** Protects Freedom of Navigation (FONOPs), Exclusive Economic Zones (EEZ), and sustainable resource management, underpinning India's commitment to rules-based international order.

3. Regional Groupings Comparison

Feature	BIMSTEC	IORA	Indian Ocean Naval Symposium (IONS)
Geographic Focus	Bay of Bengal Littorals	Entire Indian Ocean Rim	Naval Leadership across Indian Ocean
Primary	Technical & Economic	Maritime Safety, Trade & Blue	Naval Interoperability & Maritime

Daily News Analysis

Feature	BIMSTEC	IORA	Indian Ocean Naval Symposium (IONS)
Objective	Integration	Economy	Security
Role under SHANTI	Core anchor for operationalizing norms	Scaling normative frameworks regionally	Operationalizing HADR & tactical coordination

Way Forward

- **Operationalizing BIMSTEC Security Architecture:** Rapidly finalize the White Shipping information-sharing agreement and execute regular joint HADR and maritime law enforcement exercises.
- **Establishing a Regional Blue Economy Secretariat:** Create a standardized regulatory framework for sustainable fisheries management and marine scientific research across the Bay.
- **Strengthening Critical Infrastructure Protection:** Formulate a joint task force among Bay of Bengal littorals dedicated to submarine cable protection and maritime cybersecurity.
- **Promoting Regional Stewardship over Hegemony:** Ensure that India's leadership remains trust-based and demand-driven, reinforcing its credentials for a permanent UNSC seat.

Conclusion

SHANTI represents a mature evolution in India's foreign policy, pivoting from reactive crisis management to proactive governance of shared maritime commons. By anchoring SHANTI in the Bay of Bengal through trust, norms, and collective resilience, India demonstrates how regional stewardship can replace geopolitical rivalry, offering a scalable blueprint for peace and stability across the wider Indo-Pacific.

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UPSC Prelims Exam Study Questions

Question: Which of the following regional organizations primarily focuses on cooperation among the Bay of Bengal littoral countries?

- (a) IORA
- (b) BIMSTEC
- (c) ASEAN
- (d) SCO

Ans:b)

PSC Mains Exam Study Questions

Question: Trace the evolution of India's maritime vision from SAGAR to SHANTI. How does it reflect India's changing foreign policy priorities? **(10 Marks, 150 Words)**



Daily News Analysis

Page 09 :GS II :Indian Polity/ Preliminary Examination

The recent announcement establishing dedicated fast-track courts (FTCs) for high-profile matters—such as paper leak cases under the **Public Examinations (Prevention of Unfair Means) Act, 2024**—has reignited the debate over whether specialized courts offer a silver bullet for India's chronic judicial backlog. While FTCs are designed to accelerate trials for sensitive or high-priority offences, mounting backlogs—exceeding **2.45 lakh pending cases** in Fast Track Special Courts (FTSCs) alone—expose deep-seated structural constraints. The ongoing debate highlights a tension between short-term political/administrative priority and the constitutional mandate for institutional capacity building under **Article 21** (Right to Speedy Trial) and **Article 14** (Equal Protection of Laws).

Have fast-track courts delivered on the promise of speedy justice?



Bharat Chugh
Delhi-based advocate and former civil judge



Shruthi Naik
Senior resident fellow at Vidhi Centre for Legal Policy, Delhi

PARLEY

Prime Minister Narendra Modi's announcement to set up fast-track courts to hear paper leak cases has once again revived the debate over whether these specialised courts are the silver bullet to India's chronic judicial delays. Following the announcement, the Delhi High Court has constituted a fast-track court at the Rouse Avenue Courts Complex to exclusively hear cases under the Public Examinations (Prevention of Unfair Means) Act, 2024. However, stakeholders have cautioned that fast-track courts also struggle with mounting pendency and resource constraints. So, have fast-track courts delivered on the promise of speedy justice? Bharat Chugh and Shruthi Naik discuss the question in a conversation moderated by Aaratrika Bhaumik.

How effective have fast-track courts been?

Bharat Chugh: Fast-track courts have succeeded in delivering speed, but only for the limited category of cases assigned to them. That is because, in most instances, a fast-track court does not entail the creation of additional judges or judicial capacity. For example, take the proposed fast-track courts for exam leak cases. The judges presiding over these courts are typically drawn from the existing judicial system and reassigned from the cases they were already handling to hear these priority matters instead. Rather than expand the judiciary's capacity, fast-track courts redeploy existing judicial resources. As a result, while the designated cases move through the system more quickly, the matters those judges were previously handling are pushed further down the queue.

Shruthi Naik: The larger problem is that we rarely consider, at a structural level, what establishing a fast-track court actually requires. While funds may be allocated for judicial officers, support staff, and operational expenses, the real constraint is judicial capacity. If all we are doing is reallocating existing judges rather than expanding the system, we are simply shifting the backlog elsewhere. Equally important is whether the procedural reforms needed to support these courts are in place. Are witness depositions taking place in a timely and predictable manner? Are all stakeholders coordinating to ensure cases progress without unnecessary adjournments? Without these systemic changes, it is difficult to assess whether fast-track courts are truly delivering on their promise of speedy justice.

The Union Law Ministry recently said that



Prayer for justice: A child lights a candle after a march on the NEET paper leak issue in Shimla on July 25, 2021

Fast-Track Special Courts (FTSCs) are burdened with a backlog of nearly 2.45 lakh cases. What explains this pendency?

SN: The Law Ministry's data includes the number of cases instituted, disposed of, and pending over the past three years. A closer look at those figures shows that the case clearance rate (the number of cases disposed of compared with the number of cases instituted) has remained below 100% each year. In other words, the system has consistently failed to keep pace with the volume of new cases being filed. In 2025, around 1.4 lakh cases were instituted, but only about 66,000 were disposed of. The remainder inevitably added to the backlog.

More importantly, if we want to assess whether fast-track courts are truly delivering speedy justice, we need robust data on the time taken to dispose of cases. While the National Judicial Data Grid provides pendency and disposal timelines for courts generally, it does not offer comparable data for FTSCs. Without that degree of transparency, it is difficult to evaluate whether these courts are fulfilling the objective for which they were established.

BC: The pendency in fast-track courts cannot be viewed in isolation. It has to be seen in the context of the overall burden on the justice system. Trial courts across the country are currently grappling with nearly 4.8 crore pending cases, of which roughly 74% are criminal matters. That is an enormous caseload, particularly when viewed alongside the limited judicial strength available to handle it. Every year, cores of fresh cases are instituted, spanning offences from acid attacks and chain-snatching to cybercrime and murder. That is the scale of the challenge confronting the justice system. Without addressing these systemic constraints, it is difficult to expect fast-track courts alone to bring about lasting improvements in the delivery of speedy justice.



Ideally, we should be striving for a justice system that does not require fast-track courts at all. The very demand for specialised courts suggests that people have lost confidence in the ability of the regular justice system to deliver timely justice

SHRUTHI NAIK

The Public Examinations (Prevention of Unfair Means) Amendment Bill, 2026, requires investigations into paper leak cases to be completed within two months and sets a three-month timeline for trials. Should laws prescribe such rigid timelines?

BC: The Supreme Court has repeatedly cautioned against prescribing rigid timelines for criminal proceedings because every case presents its own complexities. Criminal trials often involve chargesheets and evidence running into thousands of pages. Forcing proceedings into a rigid timeline may deprive the defence of a meaningful opportunity to prepare its case, thereby compromising the right to a fair trial. It can also leave courts with less flexibility to effectively manage witnesses, whose testimony is often crucial to the outcome of a case. Therefore, the objective should be to strike a careful balance between expeditious justice and procedural fairness, without sacrificing one in pursuit of the other.

SN: Before prescribing strict timelines, we need to ask whether the necessary institutional capacity actually exists. Do we have enough investigators, forensic laboratories, and judicial resources to complete investigations within the prescribed time? Can forensic reports be generated quickly enough? Can witnesses always be traced and examined without delay? While everyone wants cases to be concluded expeditiously, that objective cannot come at the cost of the quality of justice being delivered. Setting aspirational timelines to encourage the expeditious disposal of cases is one thing, but making them mandatory is quite another.

The Supreme Court has cautioned that arbitrarily designating cases for fast-track courts may violate the right to equality under Article 14 of the Constitution. What considerations should guide the selection of cases for fast-track courts?

SN: Ideally, we should be striving for a justice system that does not require fast-track courts at all. The very demand for specialised courts

suggests that people have lost confidence in the ability of the regular justice system to deliver timely justice. More often than not, the decision to assign certain categories of cases to fast-track courts is driven by public sentiment. If individuals are entitled to equal protection of the law, they should also have an equal opportunity to access justice. These are difficult policy choices, and any decision to assign cases to fast-track courts must rest on a rational basis consistent with the guarantee of equality.

In 2019, FTSCs were constituted to ensure the time-bound trial of rape cases and offences under the Protection of Children from Sexual Offences Act. Have these courts lived up to the purpose?

BC: A major challenge facing FTSCs is the acute shortage of resources. Strengthening the prosecution has never received the attention it deserves. Even in Delhi, it is not uncommon for a single public prosecutor to appear before multiple courts in a day, simply because there are not enough prosecutors. This is particularly concerning in complex criminal cases, where prosecutors often face teams of defence lawyers with far greater legal and research support. The same resource deficit is evident in forensic infrastructure. Paper leak cases, for instance, often hinge on digital evidence recovered from electronic devices, making cyber forensics critical. Yet forensic laboratories are severely understaffed and overburdened. Unless we strengthen the prosecution, expand forensic capacity, and fill judicial vacancies, FTSCs alone cannot deliver speedy justice.

What institutional reforms are required?

BC: A fast-track court is only as effective as the investigation that precedes it. If the objective is to deliver timely and well-reasoned judgments, the process must begin with a credible investigation. That requires adequately trained investigators, timely forensic assistance and the support necessary to gather reliable evidence.

SN: Lawyers, witnesses, investigators and prosecutors should know well in advance when they are required to appear so that hearings can proceed without disruption. Equally important is reducing avoidable delays. That means minimising adjournments and ensuring court directions are complied with promptly.



To listen to the full interview
Scan the code or go to the link
www.thehindu.com

Key Highlights of the Discussion

- **Redeployment vs. Expansion:** Fast-track courts rarely create new judicial positions; instead, they redeploy existing judges and staff. Prioritizing designated dockets pushes non-designated cases further down the queue, shifting the burden across the judicial pipeline.
- **Case Clearance Deficits:** Despite localized disposal improvements, FTSCs dealing with rape and POCSO cases face persistent backlogs because annual case institution rates consistently outpace disposal rates.

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- **The Problem of Rigid Timelines:** Statutory mandates that prescribe fixed windows for investigations and trials (e.g., 2–3 months) risk compromising procedural due process, witness management, and the defence's ability to present its case.
- **Upstream Bottlenecks:** Delays are rarely confined to courtrooms. Severe shortages of public prosecutors, understaffed forensic science laboratories (FSLs), and delayed witness examinations directly undermine trial speed.

Deep Analysis: Core Structural Issues Facing Fast-Track Courts

1. Resource Reallocation vs. Capacity Creation

- **Zero-Sum Capacity:** Establishing FTCs by executive notification often fails to create additional courts, courtrooms, or judicial posts. Judges are reassigned from existing dockets to handle specialized matters.
- **Displacement Effect:** While specialized cases (e.g., POCSO, paper leaks, sexual offences) move faster, ordinary civil and criminal litigation suffers longer adjournments, creating a zero-sum outcome for overall pendency.

2. Upstream and Forensic Bottlenecks

- **Overburdened Prosecution:** Public prosecutors frequently represent the state across multiple courtrooms daily due to acute staffing deficits, placing them at an evidentiary disadvantage against multi-member defence teams.
- **Forensic & Digital Delays:** Modern trials—particularly white-collar, cybercrime, and examination paper leak cases—rely heavily on digital forensics and DNA profiling. Severe backlogs at State and Central Forensic Science Laboratories stall trials regardless of judge availability.

3. The Paradox of Statutory Timelines vs. Due Process

- Legislation imposing strict, non-negotiable trial deadlines can lead to procedural shortcuts.
- Over-emphasizing speed over thoroughness risks compromising trial fairness, limiting cross-examination, and leading to higher reversal rates upon appeal in High Courts.

Static & Constitutional Framework

1. Constitutional Provisions & Jurisprudence

- **Article 21 (Right to a Speedy Trial):** Recognized as a fundamental right implicit in the right to life and personal liberty (*Hussainara Khatoon v. Home Secretary, State of Bihar*, 1979).
- **Article 14 (Reasonable Classification):** In *State of West Bengal v. Anwar Ali Sarkar* (1952), the Supreme Court ruled that establishing special courts must meet the test of reasonable classification based on an intelligible differentia with a rational nexus to the statutory objective. Arbitrarily prioritizing cases purely due to public outcry or executive discretion without a statutory framework risks violating Article 14.
- **P. Ramachandra Rao v. State of Karnataka (2002):** A Constitution Bench held that the judiciary cannot prescribe universal, rigid time limits for trial completion, as it encroaches upon legislative/executive domains and fails to account for case complexity.

2. Legislative and Institutional Frameworks

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- **11th Finance Commission (2000):** Recommended the initial creation of 1,734 Fast Track Courts to dispose of long-pending cases.
- **Criminal Law (Amendment) Act, 2018 & FTSC Scheme (2019):** Launched as a Centrally Sponsored Scheme under the Nirbhaya Fund to establish Fast Track Special Courts dedicated exclusively to rape and POCSO Act cases.
- **Bharatiya Nagrik Suraksha Sanhita (BNSS), 2023:** Prescribes statutory timelines for trial stages, including completing investigations in sexual offences within two months and framing charges within 60 days of the first hearing.

Way Forward

- **Expand Net Judicial Capacity:** Instead of shifting sitting judges, states must fill the existing ~20% vacancy rate in the subordinate judiciary and increase judge-to-population ratios toward the Law Commission's recommended target (50 judges per million).
- **Institutionalize Modern Case Management:** Implement automated cause lists, enforce strict adjournment rules, and utilize pre-trial conferences under BNSS to streamline trial schedules before hearings commence.
- **Strengthen Independent Prosecution and Forensics:** Establish dedicated cadre structures for public prosecutors with higher pay scales and expand regional forensic laboratories with certified digital-evidence capacity.
- **Data Transparency via NJDG:** Integrate dedicated performance tracking for Fast Track Special Courts on the National Judicial Data Grid (NJDG) to monitor real disposal times rather than relying solely on aggregate institution rates.

Ad hoc fast-track courts offer immediate political reassurance, but they cannot replace comprehensive judicial reform. True reform requires addressing systemic bottlenecks—filling judicial vacancies, expanding forensic infrastructure, and modernizing court management—so that timely justice becomes the norm across all courts rather than an exception reserved for select dockets.

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UPSC Prelims Practice Questions

Question: With reference to Fast Track Courts (FTCs) in India, consider the following statements:

1. Fast Track Courts were first recommended by the 11th Finance Commission.
2. Fast Track Special Courts (FTSCs) dealing with rape and POCSO cases are funded under the Nirbhaya Fund.
3. Fast Track Courts are constitutional courts established under Article 247 of the Constitution.

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

Ans: a)

UPSC Mains Practice Questions

Question: Explain how Article 21 of the Constitution has been interpreted to include the Right to Speedy Trial. (10 Marks, 150 Words)



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When sudden, catastrophic flash floods strike hilly regions across the Himalayas, public discourse and administrative statements frequently attribute the destruction to a **cloudburst**. While cloudbursts are extreme, localized meteorological events, mislabeling heavy rainfall events as cloudbursts often serves to deflect scrutiny from human-induced factors—such as unregulated urbanization, illegal riverbed construction, and poor infrastructure planning. Understanding the scientific mechanics, forecasting constraints, and administrative dimensions of cloudbursts is crucial for developing robust disaster management strategies in India's ecologically fragile sub-regions.

Technical Definition & Classification

1. IMD Standard Definition

According to the **India Meteorological Department (IMD)**, a cloudburst is defined as an extraordinary rainfall event where an area of approximately **20 to 30 square kilometers** receives **10 centimeters (100 mm) or more of rainfall within one hour**.

- **Contextual Scale:** To understand the sheer volume, a cloudburst can dump nearly 10% of a city's annual rainfall in just 60 minutes, overwhelmingly exceeding the natural absorption capacity of soil and drainage basins.

2. The Concept of "Mini-Cloudbursts"

- Meteorologists and hydrologists advocate for classifying **5 cm (50 mm) of rain in one hour** over a 20–30 sq. km area as a **"mini-cloudburst."**
- Depending on local slope angles and soil saturation levels, even a "mini-cloudburst" can trigger catastrophic debris flows, landslides, and flash floods in high-altitude topography.

Formation Mechanism over Mountainous Terrain

Cloudbursts are driven by intense atmospheric convection combined with terrain features—a process known as **orographic lifting**.

1. **Orographic Lifting:** Warm, moisture-laden monsoon winds moving across plains hit steep Himalayan slopes and are forcibly pushed upward.
2. **Cumulonimbus Cloud Growth:** As the rising air mass rapidly cools, condensation produces deep, vertical cumulonimbus clouds extending up to 15 kilometers into the atmosphere.

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How common are cloudbursts in India?

What counts as a cloudburst under the IMD's definition? How do they form over mountainous regions? Why are they so difficult to forecast? Can the term obscure the role of poor planning, inadequate infrastructure? What is India doing to improve forecasting and early warnings?

EXPLAINER
Yasudevan Mukundan

The story so far:
When a wall of water suddenly crashes from the sky and sweeps away homes and roads within minutes, one of the first words officials and the media in India reach for is 'cloudburst'. However, the term is often misused in a way that can distract from poor planning and crumbling infrastructure.

What counts as a cloudburst?
According to the India Meteorological Department (IMD), a cloudburst occurs when a small area, around 20-30 sq. km, receives 10 cm or more of rain in an hour. To put this in perspective, Indore receives 1,062 mm of rain every year on average. A cloudburst could dump nearly 10% of this in 60 minutes. Heavy rains are a common feature of the southwest monsoon, but a cloudburst is still an extraordinary amount of rainfall and much rarer. Because the water falls so quickly over a relatively small area, the ground cannot absorb all of it, leading to rapid and voluminous flooding.

How common are cloudbursts in India?
Although cloudbursts are relatively rare, global warming, in particular at the atmosphere warms and can hold more moisture, is making them more frequent. In response to a question, former Union Earth Sciences Minister Harsh Vardhan told Parliament in 2019 that between 1970 and 2016, the IMD had recorded only around 30 such incidents. However, many experts believe this number is an underestimate.

Counting them is not straightforward



Debris lies scattered after a cloudburst triggered flash floods, at Pahalgam in Anantnag, on July 12, 2019.

because most cloudbursts occur in remote, high-altitude regions, where rain gauges and weather stations are sparse. In fact, if a cloudburst occurs a few kilometres from a monitoring station, it may not be officially recorded as a cloudburst even if it causes large-scale destruction downstream. Uttarakhand, Himachal Pradesh, and Jammu and Kashmir have, of late, reported a surge in events that locals have described as cloudbursts, especially in July and August.

How does a cloudburst form?
A cloudburst typically begins with convection, when warm, moist air rises rapidly into the atmosphere. In mountainous areas, this is called orographic lifting, where monsoon winds are forced upwards by steep slopes. As the air rises, it cools and condenses into towering cumulonimbus clouds, which can be up to 15 km tall.

Water droplets begin to form inside these clouds and, as they get heavier, they would normally fall as rain. However, if the currents of warm air moving upwards are very strong, they can keep raindrops suspended in the air for longer.

Eventually, the weight of the water droplets becomes too great for gravity and the updrafts to hold, or the updrafts

weaken, sending the water plummeting down like an ocean descending on the ground.

Can the label obscure accountability?
By calling a heavy downpour a 'cloudburst', authorities can turn it into a singular and unforeseeable act of nature, obscuring the role of human negligence. That is, if the cause of a tragedy is said to be a 'cloudburst', the blame can be written off, which is harder to do when the real cause is 'heavy rain combined with poor drainage'.

In 2025, during the Dharali floods in Uttarakhand, initial reports blamed a cloudburst. However, meteorological data later showed that the actual rate of rainfall was much lower than the threshold for a cloudburst.

The underlying causes were illegal construction on riverbeds, deforestation that had left soil vulnerable to erosion, and the absence of drainage infrastructure along new 'all-weather' roads.

Had the downpour indeed been a cloudburst, officials may have been able to avoid questions about why the State had allowed buildings to be constructed in high-risk zones and why early warning systems failed.

Last week, the IMD rejected reports

that Assam and Nagaland had experienced cloudbursts over the preceding few days and that they were responsible for the Upper Assam floods.

Are cloudbursts hard to forecast?
Cloudbursts are very difficult to forecast. Meteorologists can usually say whether a region is at risk of heavy rain but cannot say precisely which patch of land will experience a cloudburst.

First, most weather models study the atmosphere in grids and estimate the average weather for each cell. A cloudburst, on the other hand, occurs over an area smaller than the size of each grid cell. To detect one, scientists need very high-resolution models, which in turn require immense computing power that is not always readily available.

Because of the mechanism through which cloudbursts form, they also develop and occur quickly. Cyclones and monsoon systems, on the other hand, can be tracked for weeks or even months, giving scientists more data to work with.

Finally, mountains are challenging environments for weather monitoring, and cloudbursts have a greater propensity to occur there. For instance, Doppler weather radars work by emitting and receiving radar beams, which mountains can block, creating blind spots over many areas where cloudbursts are also more common.

Because the terrain is so rugged, there are also fewer automatic weather stations. If there are no sensors on the ground to tell a computer what is happening at a given moment, it cannot reliably predict what could happen in the next hour.

That said, the IMD is currently working on 'nowcasting', a technology that issues short-term alerts every few hours.

Under the government's new 'Mission Mausam', India also plans to more than double its radar network, from the current 40 to 80, and use AI to better predict hyperlocal events.

That said, even with the best technology, a cloudburst is likely to remain more difficult to predict than a typical rainstorm.

THE GIST

A cloudburst is a highly localized weather event in which at least 10 cm of rain falls over 10-30 sq. km in an hour, making it difficult to forecast despite advances in nowcasting and radar coverage.

The term is often incorrectly used for heavy rainfall events, even though many disasters are exacerbated by poor drainage, deforestation, construction in high-risk zones and other human factors.

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3. **Updraft Suspension:** Intense upward currents of warm air (updrafts) prevent newly condensed water droplets from falling. Raindrops accumulate in high concentrations at upper levels.
4. **Sudden Burst:** When the updrafts suddenly weaken or the weight of the suspended water column exceeds the upward force, the entire body of water cascades downward within minutes.

Frequency and Distribution in India

- Spatial Distribution:** Cloudbursts are overwhelmingly concentrated in high-altitude Himalayan regions, predominantly affecting **Uttarakhand, Himachal Pradesh, Jammu & Kashmir, and Ladakh** during the Southwest Monsoon months (July and August).
- Official Statistics vs. Field Reality:**
 - IMD recorded roughly **30 official cloudburst incidents between 1970 and 2016**.
 - However, experts consider this a substantial **underestimation**.
- The Tracking Gap:** Most cloudbursts occur in unpopulated or remote valleys where automated weather stations (AWS) and rain gauges are absent. If an event occurs just a few kilometers away from a weather sensor, it goes officially unrecorded as a "cloudburst" despite causing devastating downstream flash floods.
- Climate Change Amplification:** Global warming has increased the atmospheric moisture-holding capacity (governed by the Clausius-Clapeyron relation, increasing ~7% per 1°C temperature rise), leading to higher atmospheric instability and a greater frequency of short-duration, high-intensity precipitation events.

Why Cloudbursts Are Unusually Difficult to Forecast

Constraint Factor	Nature of Challenge	Impact on Early Warnings
Spatial Resolution	Numerical Weather Prediction (NWP) models operate on grid resolutions (typically 12 km or wider) larger than the cloudburst footprint (20–30 sq. km).	Sub-grid events pass undetected through standard numerical simulation models.
Temporal Dynamics	Unlike monsoonal depressions or cyclones that evolve over days, cloudbursts develop within 1 to 2 hours.	Radically shrinks lead time for civil defense mobilization.
Radar Blind Spots	High mountain ridges physically block Doppler Weather Radar (DWR) signals, creating radar shadows over deep valleys.	Prevents real-time detection of high-reflectivity cloud cores in interior

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Constraint Factor	Nature of Challenge	Impact on Early Warnings
		valleys.
Data Sparsity	Rugged mountain geography limits the density of ground-based Automatic Weather Stations (AWS).	Lack of real-time observational data hampers model initialization and calibration.

Misuse of the "Cloudburst" Label: Obscuring Governance Failures

Administrative agencies sometimes label extreme localized rainfall as a "cloudburst" to frame disasters as unforeseeable acts of God (vis major), thereby deflecting accountability.

- Exoneration of Negligence:** Attributing damage to an unpredictable "cloudburst" insulates authorities from questions regarding structural corruption, unscientific mountain cutting, and missing early-warning infrastructure.
- Case Example (Dharali / Upper Assam Floods):** In several historical instances (such as the Dharali flood in Uttarakhand or flood events in Upper Assam), local authorities initially cited cloudbursts. Subsequent IMD rain-gauge data revealed actual precipitation levels fell far below the 10 cm/hour threshold.
- Root Anthropogenic Drivers:**
 - Encroachment on Riparian Zones:** Illegal residential and commercial construction directly on floodplains and natural river drainage paths.
 - Deforestation & Unstable Slope Cutting:**Unscientific road expansion cutting through fragile mountain slopes without adequate retaining walls or hill-side drainage channels.
 - Erosion of Natural Runoff Basins:** Siltation of riverbeds caused by unchecked dumping of muck from infrastructure projects.

Government Initiatives to Strengthen Forecasting and Early Warnings

To address the limitations in monitoring localized severe weather events, India is expanding its observational and technological capabilities:

- Mission Mausam (Approved 2024–2025):** A multi-faceted flagship initiative by the Ministry of Earth Sciences (MoES) aimed at making India "Weather-ready and Climate-smart."

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2. **Doppler Weather Radar (DWR) Expansion:** Under Mission Mausam, the government is augmenting the radar network by deploying additional C-Band, X-Band (suited for mountainous terrain), and S-Band DWRs to eliminate valley blind spots.
3. **High-Resolution "Nowcasting":** Transitioning from standard daily alerts to station/district-specific **Nowcasts** issued every 1 to 3 hours, utilizing real-time satellite imagery and radar reflectivity profiles.
4. **Integration of AI/ML & High-Performance Computing (HPC):** Implementing data-driven, machine-learning models to improve sub-grid precipitation forecasts down to the Panchayat level (5–6 km grid resolution).
5. **Expansion of Micro-Observational Networks:** Installing AWS units, disdrometers, wind profilers, and microwave radiometers across vulnerable Himalayan river basins.

Way Forward

- **Regulate High-Risk Development:** Enforce strict zoning regulations that prohibit civil construction on active floodplains, riverbeds, and ecologically fragile hillslopes.
- **Shift Focus to Vulnerability Reduction:** Transition from over-relying on perfect meteorological forecasts to building climate-resilient civil infrastructure—such as high-capacity drainage systems, bio-engineered slope stabilization, and flood bypass channels.
- **Community-Based Early Warning Systems (CBEWS):** Deploy low-cost, river-level sensors linked to local siren systems, empowering mountain communities to evacuate independently when water levels rise rapidly upstream.
- **Independent Forensic Audits:** Establish mandatory post-disaster audits by multi-disciplinary technical teams to verify actual rainfall rates and evaluate structural failures, ensuring administrative transparency.

Conclusion

While cloudbursts remain among the most intense and unpredictable meteorological events in mountain ecosystems, relying on the term as a default explanation obscures the human role in compounding natural disasters. Improving forecasting capabilities through initiatives like **Mission Mausam** must be complemented by strict land-use planning, slope regulation, and climate-resilient infrastructure. Only by pairing advanced atmospheric science with accountable urban and regional planning can India mitigate the catastrophic impact of extreme weather events in its mountain regions.

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UPSC Prelims Exam Questions

Ques: The Clausius–Clapeyron relationship, often discussed in climate science, implies that:

- (a) Wind speed increases uniformly with altitude.
- (b) Atmospheric moisture-holding capacity increases by about 7% for every 1°C rise in temperature.
- (c) Sea level rises by 7 cm for every 1°C warming.
- (d) Atmospheric pressure decreases by 7% annually.

Ans: b)

UPSC Mains Exam Study Questions

Ques: What is a cloudburst? Explain the meteorological conditions responsible for its occurrence, particularly in the Himalayan region. (10 Marks, 150 Words)



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The next DPI — how India can commoditise AI

India made identity, payments, and data free. Intelligence is next. No other country has deliberately built all three as a digital public infrastructure (DPI) stack at India's scale. Others have developed only pieces of this. Estonia has a world-class digital identity system, but nothing comparable to UPI. Brazil's Pix is an excellent free payments rail, but it stands alone. Singapore has Singpass and SGFinDex, while Europe has open banking and data portability. India's genuine claim to global leadership in public digital infrastructure lies in this unique combination. Its distinctiveness is not any single component, but the integration of Aadhaar, the Unified Payments Interface (UPI), and DEPA/Account Aggregator as interoperable public digital rails.

Between September 2016 and 2019, the cost of a gigabyte in India fell from about \$4 to under 30 cents, making it among the cheapest in the world. The result was not a telecom story. It was a civilisational one: 500 million people came online in half a decade, powering India's digital economy such as payment volumes, the startup ecosystem, the direct-benefit transfers reaching the last village. Aadhaar enrolled 1.4 billion people and turned identity verification from an expensive paper process to a low-cost API call. UPI made digital payments effectively free, processing around 20 billion transactions a month at near-zero cost. India made data free not by subsidising it, but by letting one player absorb the fixed costs of a nationwide 4G network, price at marginal cost, and force every incumbent to match or die.

India should not be in the capital race to the bottom which we would lose to hyperscalers, and it is the intelligence equivalent of nationalising the telecoms. India crashed the price of data by engineering conditions and competition. So, the target is inference, not training; relentlessly drive down the cost of using a model. It released spectrum, created a demand shock, and let ferocious competition do the rest. The state built the road and set the rules; the market crashed the price. A billion people came online not because data was gifted, but because its cost fell below the threshold of thought. And the case for making it free — or as close to free as a gigabyte of data — is not utopian. It is the same case, run on the same playbook that worked three times before.

This is the model India should now apply to its fourth foundational utility: intelligence itself. Intelligence is no longer a luxury software product; it is foundational infrastructure.

The trade running against India

The global artificial intelligence (AI) race is currently operating under an extractive economic model, and India — despite its immense demographic dividend — is on the losing side of the trade. India serves as the world's digital quarry. India supplies an outsized share of the world's raw intelligence. Its engineers build and fine-tune the frontier models of Silicon Valley. Its



Srivatsa Krishna
IAS officer

digitised public life — languages, documents, transactions, behaviour — becomes training data.

Its universities and diaspora furnish a disproportionate slice of the research talent behind every major laboratory. Each day, Indians generate vast data; Indian engineers build Silicon Valley's frontier models; and Indian workers label datasets to make them safer. Yet, Indian startups must rent that intelligence back as dollar-priced API tokens, subject to export controls and hosted on distant servers. India exports talent, data, and usage, then imports the finished intelligence at high-margin, per-token prices on terms set in San Francisco. The pattern is familiar. Ship out the cotton, buy back the cloth. India recognised that trap in textiles centuries ago. It should recognise it in intelligence now.

India's AI token economy

India's national AI token economy should be built on the following pillars. First, making intelligence free is raw compute power. Through the IndiaAI Mission, backed by an outlay of about \$10,372 crore, the government is building a public-private partnership model — not a state-run data centre monopoly. By empanelling private cloud providers and aggregating demand, it has onboarded over 38,000 GPUs, with plans to scale to 1,00,000. Eligible startups and researchers can access compute for about ₹65 per GPU hour, a fraction of global market rates.

India's grid planning does not yet treat AI load as a category. The single highest-leverage intervention available to the government is boring: fold compute into the National Electricity Plan, fast-track transmission to data-centre clusters, and dedicate renewables generation, including nuclear, to inference the way it once dedicated coal linkages to steel. Cheap electrons are the new cheap spectrum.

Second, cheap compute is useless without models to run on it. Currently, the most capable foundation models are closed source and owned by western tech giants. If Indian startups build their businesses on top of these proprietary APIs, they remain economically subservient. A single pricing change or policy shift in San Francisco can wipe out an entire sector in Bengaluru. India must mandate that foundational AI models become public goods.

The government must leverage its most valuable asset: linguistic and demographic data. The state should aggregate anonymised public data (legal rulings, agricultural data, educational curricula in all 22 official/scheduled languages) and make them available exclusively to researchers building open-source models. Further, any AI model developed using state-subsidised compute or public datasets must be released under an open-weights license. This mirrors the UPI philosophy: the government builds the rails, makes the protocol free, and lets private companies (Google Pay) compete on the user experience. By flooding the market with highly capable, open-source Indic LLMs (Large

Language Models), India commoditises the "intelligence" layer. When foundational models are free and open, the economic value shifts from the model creators to the application builders — exactly where India's strength lies.

Third, the unified intelligence interface (UII) or distribution. How does a rural farmer or a Tier-3 developer access this free intelligence? An API gateway built on the principles of DPI, a UPI for AI. UPI's genius was not free payments as such; it was interoperability. A common protocol let any app talk to any bank, and switching costs fell to zero. Intelligence needs the same: an open, standardised interface through which any application can call any model — sovereign or private, open or proprietary — with shared standards for identity, consent, billing and safety.

Just as UPI abstracts away the complexity of inter-bank transfers, a national API gateway would abstract away the complexity of AI inference. Startups, government agencies, and educational institutions could plug into this gateway to access a suite of open-source models (translation, vision, text generation) for fractions of a penny.

To kickstart the ecosystem, the government could offer a national "freemium" model. Verified Indian startups or students through Aadhaar-linked digital identity could get monthly free API tokens, subsidised by the state. When startups scale and become profitable, they move to a commercial tier, paying slightly more for compute, which subsidises the free tier.

Additionally, a tenth of the fertilizer subsidy could be diverted to tokens for research and development institutions and schools. When intelligence becomes nearly free, sectors constrained by scarce human capital transform. A rural doctor, aided by AI trained on Indian data, can treat more patients with fewer errors; India's 300 million students get 24x7 personalised AI tutors in local dialects; a Karnataka farmer can settle a crop-insurance claim by voice in Kannada, with AI accessing land records.

The next great equaliser

In sum, free identity and cheap data did not make Indians rich; they made mass participation frictionless. Free intelligence can do the same. Nobody foresaw that near-free data would create the world's largest payments system, short-video platforms, and QR-code vegetable vendors.

Near-free intelligence could be just as generative if the state primes it with token entitlements for students and teachers, citizen services in local languages, and affordable tools for 60 million small businesses. India's leadership in the AI economy is contingent on developing an open-source ecosystem with open weights no-kill switch models that expand competition, choice, opportunities and innovation. The goal is not better chatbots; it is making cognition no longer a class privilege.

The views expressed are personal

GS Paper III: Science and Tech

UPSC Mains Exam Practice Questions: Discuss the significance of the IndiaAI Mission in promoting technological self-reliance and inclusive digital growth. (10 Marks, 150 Words)

Context : India's emergence as a global pioneer in Digital Public Infrastructure (DPI) is defined by its integrated stack—combining digital identity (Aadhaar), real-time payments (UPI), and consent-based data sharing (DEPA/Account Aggregator). As

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the global artificial intelligence economy grows increasingly extractive—positioning developing nations as suppliers of raw data and talent while forcing them to import dollar-priced API tokens—India faces a strategic imperative to treat intelligence as a public utility. By applying the same playbook that crashed the cost of mobile data and digital payments, India can commoditise AI inference, shifting value creation from model creators to application builders.

Key Highlights of the Article

- **The Unique Tri-Rail DPI Stack:** Unlike single-component systems in other nations (such as Estonia's e-identity or Brazil's Pix), India's global leadership stems from integrating identity, payments, and data governance into an interoperable public infrastructure.
- **Breaking the Extractive AI Trade:** India currently functions as a "digital quarry"—exporting data, research talent, and human annotation, only to import finished AI capabilities at high, token-based pricing set by foreign hyperscalers.
- **Focus on Inference over Capital-Intensive Training:** Rather than competing in an unsustainable capital race to train trillion-parameter frontier models, India should focus on relentlessly driving down the cost of **AI inference** (the operational deployment of models).
- **Three Pillars of the AI DPI Strategy:**
 1. **Cheap Compute & Power Infrastructure:** Aggregating GPUs under the IndiaAI Mission and integrating data-center energy needs directly into the National Electricity Plan.
 2. **Public Good Open-Source Models:** Mandating open-weights licenses for models built on state-subsidised compute or public datasets to commoditise the base intelligence layer.
 3. **Unified Intelligence Interface (UII):** Creating a UPI-like open API gateway that enables seamless, interoperable access to open and proprietary models across local languages.

The Three Pillars of India's AI Token Economy

Pillar 1: Cheap Compute and Power Infrastructure

- **GPU Capacity Aggregation:** Through the **IndiaAI Mission** (backed by an outlay of over ₹10,370 crore), India is building a public-private compute pool—onboarding tens of thousands of GPUs to offer subsidized rates (approx. ₹65 per GPU hour) to domestic startups and researchers.
- **Energy Integration:** Treating AI compute loads as critical national infrastructure by folding data-center cluster power needs directly into the **National Electricity Plan**, leveraging dedicated renewable energy and nuclear power.

Pillar 2: Open-Source Models as Public Goods

- **Democratizing Datasets:** The state aggregates anonymized public data (legal judgments, agricultural records, educational curricula across 22 official languages) to train open-source Indic Large Language Models (LLMs).

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- **Mandatory Open-Weights Licensing:** Any model developed using state-subsidized compute or public datasets must be released under open-weights licenses. This shifts economic value from model ownership to localized application development.

Pillar 3: Unified Intelligence Interface (UII)

- **Interoperable API Gateway:** Functioning as a "UPI for AI," the UII provides a standardized interface allowing any app to query any model with unified protocols for identity, consent, safety, and token billing.
- **Freemium Model & Targeted Subsidies:** Offering monthly token allocations for students, researchers, and early-stage startups verified via digital identity, funded by redirecting a fraction of existing inefficient subsidies (e.g., fertilizer subsidies) toward national R&D.

Static & Policy Dimensions (GS Paper II & III)

1. The IndiaAI Mission

- Approved in March 2024 with a budget of ₹10,371.92 crore, the mission operates under the Digital India Corporation to build a comprehensive AI ecosystem through seven pillars:
 - IndiaAI Compute Capacity
 - IndiaAI Innovation Centre
 - IndiaAI Datasets Platform
 - IndiaAI Application Development Initiative
 - IndiaAIFutureSkills
 - IndiaAI Startup Financing
 - Safe & Trusted AI

2. Digital Public Infrastructure (DPI) Framework

- **Identity Layer:** Provides a verified digital identity platform for seamless authentication.
- **Payments Layer:** Facilitates instant, zero-cost, inter-bank transfers through standardized API rails.
- **Data Governance Layer (DEPA):** The Data Empowerment and Protection Architecture allows individuals to securely share personal data with service providers using consent managers.

3. National Strategy for Artificial Intelligence (NITI Aayog)

- Framed around the ethos of **#AIforAll**, focusing on social inclusion in core areas: Agriculture, Healthcare, Education, Smart Cities, and Smart Mobility.

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Way Forward

- **Fast-Track Grid Allocation for Data Centers:** Align state electricity distribution companies (DISCOMs) to provide uninterrupted, green power tariffs specifically for data centers and AI training clusters.
- **Build Robust Safety & Guardrail Frameworks:** Ensure the Unified Intelligence Interface (UII) incorporates automated safety filters, watermarking, and anti-hallucination protocols tailored to Indian linguistic nuances.
- **Incentivize Application-Layer Innovation:** Encourage Tier-2 and Tier-3 town developers to build domain-specific applications—such as voice-based vernacular agricultural advisors and AI tutors—leveraging the open API gateway.
- **Promote Sovereign AI without Protectionism:** Maintain access to global frontier models through commercial tiers while building open-source Indic models to ensure strategic autonomy and avoid vendor lock-in.

Conclusion

By treating cognition as a foundational infrastructure rather than a high-cost software luxury, India can replicate its success with telecom data and digital payments. Commoditising artificial intelligence through open models, public compute pools, and a Unified Intelligence Interface will bridge the digital divide, democratize access to intelligence, and reinforce India's position as a global leader in human-centric digital public infrastructure.
