



“ We help you reach for the star ”

**VIDHVATH IAS KAS ACADEMY**  
&  
**STUDY CENTRE**

# DAILY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

**DATE: 17/02/2026 (TUESDAY)**



 **9972258970 & 9740702455**

**#317/A SKB Arcade, D. Subbaiah Road,  
Ramaswamy Circle, Mysuru-570004**



## **Table of Contents**

1. India AI Impact Summit 2026: Positioning the Global South in the AI Race .....	2
2. Revitalizing Highway Infrastructure: The New BOT Model Concession Agreement (MCA) .....	3
3. Holistic Overview: NGT Clearance for the Great Nicobar Holistic Development Project .....	5
4. Conflict of Rights: DPDP Act vs. RTI Act before the Constitution Bench .....	7
5. Mitigating Agrarian Distress: Maharashtra's Integrated Climate-Suicide Task Force .....	9
6. Strengthening Blood Safety: Government Crackdown on Professional Donor Rackets .....	11
7. Combating Summer Pollution: CAQM Directives on Wheat Stubble Burning (2026) .....	13
8. A Case for Structural Reset: Recalibrating Union-State Relations .....	14
9. Rewiring Financial Architecture: Budget 2026 and the Shift to Market-Based Credit .....	17
10. India-EU FTA: Strategic Pivot in the Global Textile Value Chain .....	19
11. Socio-Legal Transition: Enumeration and Classification of Denotified Tribes (DNTs) .....	20
12. District Cooling Systems: A Strategic Pivot for India's Urban Resilience .....	22



# 1. India AI Impact Summit 2026: Positioning the Global South in the AI Race

## Summary of Key Highlights

- **Global Leadership & Hosting:** Organized by the **Ministry of Electronics and IT (MeitY)**, the India AI Impact Summit 2026 (New Delhi) is the **fourth** in a series of global summits, following Bletchley Park (UK), Seoul (South Korea), and Paris (France).
- **The Three Sutras:** The summit is anchored on the foundational pillars of **People, Planet, and Progress**, aiming to move from political statements to tangible impacts in AI cooperation.
- **India's AI Stack as DPI:** A central theme is the promotion of India's **AI Stack**—including sovereign compute and datasets—as a **Digital Public Infrastructure (DPI)** for the world, particularly for the Global South.
- **Strategic Consensus:** The event seeks to build a global doctrine on the use of AI in **public services, defense, and cyber security**, while showcasing domestic startups funded under the **IndiaAI Mission**.
- **Addressing the "Model Gap":** While India ranks **3rd globally** in AI vibrancy (Stanford Index), the summit acknowledges the need to bridge the gap in developing **foundational models** (like GPT or Claude) compared to the US and China.
- **Diplomatic Weight:** Attendance includes heads of state (e.g., Emmanuel Macron) and top tech CEOs (Sundar Pichai, Sam Altman), mirroring the scale of the 2023 G20 Summit.



## Key Definitions

- **Digital Public Infrastructure (DPI):** Foundational digital systems (like Aadhaar or UPI) that are interoperable, open-standard, and designed to provide essential services at a population scale.
- **Foundational Models:** Large-scale AI models (e.g., LLMs) trained on vast datasets that can be adapted to a wide range of downstream tasks.
- **IndiaAI Mission:** A national program with an outlay of over **₹10,300 crore** aimed at building a comprehensive AI ecosystem, including a 10,000+ GPU compute capacity.

## Constitutional & Legal Provisions

- **Article 51 (Directive Principles):** Promotion of international peace and security; India's participation in global AI governance aligns with fostering "just and honorable relations between nations."
- **Information Technology Act, 2000:** The primary legal framework currently governing cyber space and digital data, though specific AI-centric legislation is under deliberation.
- **Digital Personal Data Protection (DPDP) Act, 2023:** Provides the legal basis for data processing, which is critical for training AI models while ensuring the privacy of Indian citizens.

## Important Global Milestones



Summit (Year)	Key Document	Focus Area
UK (2023)	Bletchley Declaration	AI Safety, frontier risks, and misinformation.
South Korea (2024)	Seoul Statement	Safety, innovation, and inclusivity.
France (2025)	Paris AI Action Summit	Sustainable and inclusive AI; India as Co-Chair.
India (2026)	AI Impact Summit	Implementation, Global South representation, and DPI.

### Additional Keypoints for Examination

- **Talent vs. Infrastructure:** India holds the world's **largest AI talent pool** after Singapore but faces challenges in high-end compute costs and hardware (GPU) availability.
- **The Seven Chakras:** The summit deliberations are structured around seven themes: Human Capital, Inclusion, Safe AI, Resilience, Science, Democratizing Resources, and Economic Growth.
- **Global AI Vibrancy Index:** India's jump from **7th to 3rd** (Stanford Report 2025) highlights rapid growth in R&D and startup investments.

### Conclusion

The India AI Impact Summit 2026 represents a shift in the global technology hierarchy, where India is no longer just a consumer of technology but a **norm-setter**. By advocating for "AI for All" and offering its AI Stack as a global public good, India aims to prevent a "digital divide" while securing its own strategic autonomy in the fourth industrial revolution.

### UPSC Relevance

- **GS Paper II:** Bilateral, regional and global groupings and agreements involving India; Effect of policies of developed and developing countries on India's interests.
- **GS Paper III:** Science and Technology- developments and their applications and effects in everyday life; Awareness in the fields of IT, Space, Computers, Robotics, and AI.
- **Essay:** Topics related to "Technology as a tool for social justice" or "India's rise as a global leader in the 21st century."

## 2. Revitalizing Highway Infrastructure: The New BOT Model Concession Agreement (MCA)

### Summary of Key Highlights

- **Policy Shift in Highway Bidding:** The Ministry of Road Transport and Highways (MoRTH) is finalizing a new Model Concession Agreement (MCA) to allow Private Equity (PE) firms, pension funds, and sovereign wealth funds to bid for greenfield highway projects at the initial auction stage.
- **Entry of Financial Investors:** Historically, financial investors could only enter once a project was operational; the new tweak allows cash-rich investors to participate from the start, even if they lack direct construction experience, provided they have technical partnerships.
- **Aggressive BOT Targets:** The government plans a "sharp pivot" toward the Build-Operate-Transfer (BOT) model, targeting 5,000 km of national highway projects worth ₹75,000 crore in FY27, accounting for nearly 50% of all highway projects for that year.



- **Risk Rationalization:** To prevent the stalling of projects seen in the late 2000s, the new MCA will offer greater flexibility in equity structuring and clearer provisions regarding traffic risk-sharing and termination payments.
- **Addressing Balance Sheet Constraints:** By widening the competitive landscape, the government aims to bypass the financial limitations of traditional construction firms whose balance sheets have been stretched by heavy debt.
- **Streamlined Legal Protections:** The framework includes enhanced protections against "change-in-law" scenarios and provides for stricter dispute resolution timelines to ensure investor confidence.



### Key Definitions

- **Build-Operate-Transfer (BOT):** A project delivery model where a private entity receives a concession from the public sector to finance, design, construct, and operate a facility for a specific period (usually 20-30 years) before transferring it back to the government.
- **Greenfield Project:** A project that is built from scratch on unused land, as opposed to "brownfield" projects which involve upgrading existing infrastructure.
- **Model Concession Agreement (MCA):** The core legal document that sets the terms and conditions, risk allocation, and responsibilities between the government authority and the private developer.

### Constitutional & Legal Provisions

- **Article 257 (1):** Empowers the Union to give directions to a State as to the construction and maintenance of means of communication declared to be of national or military importance.
- **National Highways Act, 1956:** The primary legislation providing for the declaration of certain highways to be national highways and for matters connected therewith, including land acquisition and toll collection.
- **National Highways Authority of India (NHAI) Act, 1988:** Established NHAI as an autonomous body to develop, maintain, and manage the national highway network.

### Comparison of Infrastructure Investment Models

Model	Funding Source	Revenue/Traffic Risk	Current Status
EPC (Engineering, Procurement, Construction)	Government funded	Government	High usage (Low private risk)
HAM (Hybrid Annuity Model)	40% Govt / 60% Private	Government	Balanced risk; widely used recently
BOT (Toll)	Private Developer	Private Investor	Being revived with new MCA tweaks



## Important Keypoints for UPSC

- **Infrastructure Pipeline:** Strengthening BOT is crucial for the National Infrastructure Pipeline (NIP) and the PM Gati Shakti National Master Plan.
- **Private Capital Mobilization:** Reducing the government's fiscal burden by shifting from EPC (where the state pays 100% of costs) to BOT (where the private sector brings the capital).
- **Asset Monetization:** The move complements the National Asset Monetization Pipeline (NMP) by creating a pipeline of "ready-to-invest" assets for global funds.
- **Historical Context:** Learning from the "Twin Balance Sheet" crisis of the 2010s, where aggressive bidding in BOT projects led to massive Non-Performing Assets (NPAs) in the banking sector.

## Conclusion

The proposed overhaul of the BOT framework signifies a strategic transition in India's infrastructure financing. By decoupling technical construction expertise from financial capacity, the government is inviting global institutional capital to play a foundational role in nation-building. Success will depend on how effectively the new MCA mitigates "traffic risk"—the primary deterrent for private players—and ensures that the competitive landscape remains sustainable rather than predatory.

## UPSC Relevance

- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development, and employment; Infrastructure: Energy, Ports, Roads, Airports, Railways etc.
- **GS Paper II:** Government policies and interventions for development in various sectors and issues arising out of their design and implementation.
- **Prelims:** Concepts like BOT, HAM, EPC, and the roles of NHAI and MeitY in national development.

## 3. Holistic Overview: NGT Clearance for the Great Nicobar Holistic Development Project

### Summary of Key Highlights

- **Judicial Green Signal:** The National Green Tribunal (NGT) has dismissed a batch of petitions challenging the environmental clearance (EC) for the ₹72,000-crore (revised estimates suggest escalation to ₹92,000-crore) mega-infrastructure project in Great Nicobar, citing "strategic importance."
- **Project Components:** The integrated project envisioned by NITI Aayog includes an International Container Transshipment Terminal (ICTT), a greenfield international airport, a gas and solar-based power plant, and a strategic township.
- **High-Powered Committee (HPC) Role:** Following a 2023 NGT order, an HPC was formed to investigate concerns regarding coral reef colonies, leatherback turtle nesting sites, and the proximity of the project to ecologically protected zones.





- **Balanced Development Doctrine:** The NGT emphasized a "balanced approach," ruling that development at a strategic location should proceed with strict compliance to the Island Coastal Regulation Zone (ICRZ) Notification, 2019, rather than being prohibited based on "apprehensions."
- **Mitigation Safeguards:** The tribunal noted that the EC conditions provide "adequate safeguards," mandating the authorities to ensure full and strict compliance to protect the island's fragile biodiversity.
- **Geopolitical Significance:** The project is positioned to transform the Andaman and Nicobar Islands into a major regional hub, competing with global ports like Singapore and Colombo, while strengthening India's presence in the Malacca Strait.

### Key Definitions

- **Island Coastal Regulation Zone (ICRZ):** A regulatory framework specifically for the Andaman & Nicobar and Lakshadweep islands to manage coastal stretches and protect the marine environment while allowing sustainable development.
- **Transshipment Port:** A hub where cargo or containers are moved from one vessel to another while in transit to their final destination, often used to aggregate cargo from smaller ports for large mother-ships.
- **Environmental Clearance (EC):** A mandatory sanction required from the Ministry of Environment, Forest and Climate Change (MoEFCC) for projects that have significant environmental impacts, as per the EIA Notification.

### Constitutional & Legal Provisions

- **Article 21:** The Right to Life includes the right to a healthy environment; the NGT often balances this with the "Right to Development."
- **Article 48A:** Directive Principle of State Policy (DPSP) mandating the State to protect and improve the environment and safeguard forests and wildlife.
- **Article 51A(g):** Fundamental Duty of citizens to protect and improve the natural environment including forests, lakes, rivers, and wildlife.
- **National Green Tribunal Act, 2010:** Established the NGT for effective and expeditious disposal of cases relating to environmental protection and conservation of forests.
- **Wildlife Protection Act, 1972:** Relevant due to the presence of endemic species like the Great Nicobar Megapode and Leatherback turtles in the project area.

### Important Keypoints for UPSC

- **Geostrategic Importance:** Great Nicobar is located near the "Six Degree Channel," a major global shipping lane. The project enhances India's "Act East Policy" and maritime security.
- **Tribal Rights:** Concerns persist regarding the impact on the Shompen and Nicobarese tribes, who are Particularly Vulnerable Tribal Groups (PVTGs); the project area overlaps with the Great Nicobar Biosphere Reserve.
- **Environmental Trade-offs:** The project involves the diversion of approximately 130 sq. km. of primary forest land and the translocation of coral reefs, sparking debates on "Compensatory Afforestation" in mainland India vs. island biodiversity loss.



- **The "Precautionary Principle":** A core principle of environmental law which the NGT evaluated, concluding that the conditions laid down in the EC sufficiently address the risks.

## Conclusion

The NGT's decision underscores the primacy of national security and strategic economic interests when balanced against environmental objections, provided rigorous mitigation measures are in place. While the clearance paves the way for India to become a maritime heavyweight in the Indo-Pacific, the long-term success of the project will depend on the transparent implementation of environmental safeguards and the protection of the island's indigenous communities.

## UPSC Relevance

- **GS Paper I:** Geographical features and their location-changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna.
- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies (NGT); Government policies and interventions for development in various sectors.
- **GS Paper III:** Conservation, environmental pollution and degradation, environmental impact assessment; Infrastructure: Ports, Airports.

## 4. Conflict of Rights: DPDP Act vs. RTI Act before the Constitution Bench

### Summary of Key Highlights

- **Constitutional Reference:** The Supreme Court has referred petitions challenging the Digital Personal Data Protection (DPDP) Act, 2023 to a Constitution Bench to determine if it undermines the Right to Information (RTI) framework.
- **The Section 44(3) Controversy:** Petitioners argue that Section 44(3) of the DPDP Act amends Section 8(1)(j) of the RTI Act, creating a "blanket ban" on the disclosure of any personal information, regardless of public interest.
- **The "Hammer vs. Chisel" Argument:** Legal experts contend the government has used a "hammer" to prioritize privacy over transparency, removing the discretionary power of Public Information Officers (PIOs) to weigh disclosure against privacy.
- **Redefining Personal Information:** The Chief Justice of India (CJI) noted that the court must now legally define "personal information" to resolve the overlap between the fundamental Right to Privacy and the statutory Right to Information.
- **Amendment of Section 8(1)(j):** Previously, RTI allowed the disclosure of personal information if it related to public activity or interest; the new law is alleged to have deleted these crucial "public interest" exceptions.
- **State Discretion:** Concerns have been raised that the government is extending the fundamental right to privacy—originally meant for citizens—to the State itself to shield official data from public scrutiny.





## Key Definitions

- **Section 8(1)(j) of RTI Act:** A provision that originally exempted personal information from disclosure unless the Public Information Officer was satisfied that the larger public interest justified the disclosure.
- **Section 44(3) of DPDP Act:** The specific amendment that modifies the RTI Act by prohibiting the disclosure of personal information of any individual without the nuanced "public interest" balancing test previously used.
- **Constitution Bench:** A bench of the Supreme Court consisting of five or more judges, formed to decide "substantial questions of law" regarding the interpretation of the Constitution.

## Constitutional & Legal Provisions

- **Article 19(1)(a):** The Right to Freedom of Speech and Expression, which the Supreme Court has interpreted to include the "Right to Information" (State of UP v. Raj Narain).
- **Article 21:** The Right to Life and Personal Liberty, which encompasses the "Right to Privacy" as a fundamental right (Justice K.S. Puttaswamy v. Union of India).
- **RTI Act, 2005:** A landmark legislation designed to provide a practical regime for citizens to secure access to information under the control of public authorities.
- **DPDP Act, 2023:** India's first comprehensive data protection law aimed at regulating the processing of digital personal data while recognizing the right of individuals to protect their data.

## The Legal Evolution of Information vs. Privacy

Feature	Original Section 8(1)(j) of RTI Act	Amended via DPDP Act, 2023
<b>Disclosure Criteria</b>	Allowed if related to public activity or interest.	Generally prohibited if it is "personal information".
<b>PIO Discretion</b>	Could weigh "Public Interest" vs "Privacy".	Discretion severely limited/removed.
<b>Provision for Parliament</b>	Info that cannot be denied to Parliament cannot be denied to a citizen.	This protective proviso is reportedly weakened.

## Important Keypoints for UPSC

- **Balance of Rights:** The case tests the doctrine of "Harmonious Construction," where the court must balance two competing fundamental rights: the Right to Know and the Right to Privacy.
- **Accountability:** RTI activists argue that without access to personal details of officials (e.g., assets, educational qualifications, or attendance), administrative accountability will collapse.
- **Democratic Transparency:** The outcome will define whether the "Right to Privacy" can be used as a shield by public servants to avoid transparency in their official capacities.
- **Judicial Review:** This case exemplifies the Supreme Court's role as the final arbiter of legislative validity when two central laws come into direct conflict.



## Conclusion

The referral to a Constitution Bench marks a pivotal moment in India's digital jurisprudence. While the DPDP Act is essential for a modern digital economy, it cannot exist in a vacuum that stifles the transparency gains made over the last two decades. The Supreme Court's task is to ensure that the "shield" of privacy for the individual does not become a "shroud" of secrecy for the State.

## UPSC Relevance

- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies; Important aspects of governance, transparency and accountability; Right to Information; Judicial Review.
- **GS Paper IV:** Ethics in Public Administration; Transparency and Information sharing in government.
- **Essay:** "Privacy vs. Transparency in the Digital Age" or "The evolving nature of Citizen-State relationship."

## 5. Mitigating Agrarian Distress: Maharashtra's Integrated Climate-Suicide Task Force

### Summary of Key Highlights

- **Strategic Formation:** The Maharashtra government has established a 10-member special task force, led by the Commissioner of Agriculture, to tackle the dual challenges of climate-induced agricultural distress and the rising trend of farmer suicides.
- **Scope of Study:** The committee is mandated to investigate a multi-dimensional matrix of causes, including social, economic, psychological, and technical agricultural factors that contribute to rural mental health crises.
- **Proactive Prevention Model:** Moving away from a "post-facto compensation" approach, the task force focuses on early intervention, income enhancement, and stabilizing farm livelihoods before distress reaches a critical stage.
- **Nashik Model Scalability:** The initiative draws inspiration from a 2019 pilot project in Nashik district, which successfully reduced suicide rates through localized support systems and is now being adapted at the state level.
- **Integrated Support Systems:** The framework aims to converge existing welfare schemes with new mental health support protocols, involving NGOs and semi-governmental bodies for ground-level implementation.
- **Data-Driven Intervention:** With Maharashtra recording 781 suicides in the first nine months of 2025, the task force emphasizes improving the credit distribution mechanism, irrigation management, and crop insurance efficacy.



### Key Definitions

- **Agrarian Distress:** A pervasive socio-economic condition characterized by low productivity, high debt, and lack of remunerative prices, leading to a decline in the standard of living for the farming community.



- **Climate Resilience in Agriculture:** The capacity of agricultural systems to absorb and recover from climatic shocks (like unseasonal rain or drought) while maintaining productivity.
- **Tele MANAS:** The "Tele Mental Health Assistance and Networking Across States" initiative, a 24/7 toll-free helpline (14416) providing mental health support, now being integrated into farm distress protocols.

### Constitutional & Legal Provisions

- **Article 47 (DPSP):** Directs the State to raise the level of nutrition and the standard of living of its people and the improvement of public health, which includes the mental well-being of the agrarian workforce.
- **Article 38:** The State shall strive to promote the welfare of the people by securing a social order in which justice—social, economic, and political—shall inform all institutions of national life.
- **Article 21:** The Right to Life includes the right to livelihood and a dignified existence; the Supreme Court has often linked farmer welfare to this fundamental right.
- **The Mental Healthcare Act, 2017:** Provides the legal framework for the right to access mental healthcare services, essential for the "psychological support" pillar of the task force.

### Four-Point Integrated Approach

Pillar	Focus Area
Technical	Guidance on climate-resilient seeds, crop rotation, and irrigation.
Financial	Loan distribution, MSP stabilization, and mediator-free markets.
Social	Community support systems and social security measures.
Psychological	Counseling via helplines and rural mental health camps.

### Important Keypoints for UPSC

- **Vidarbha & Marathwada Crisis:** These regions remain the epicenters of distress; the task force's regional action plans are critical for these specific agro-climatic zones.
- **The Debt Trap:** Indebtedness remains a primary trigger; the task force's focus on "mediator-free markets" aims to increase the farmer's share in the consumer rupee.
- **Institutional Credit vs. Moneylenders:** A significant percentage of suicides are linked to informal debt; improving formal credit reach is a core task force objective.
- **Climate Adaptation:** The shift toward heat-tolerant and short-duration varieties of pulses and millets is being promoted as a long-term mitigation strategy.

### Conclusion

The formation of this task force represents a paradigm shift from reactive governance to proactive resilience-building. By treating farmer suicides as a complex socio-psychological and environmental issue rather than just a financial one, Maharashtra seeks to build a sustainable model that balances economic viability with human well-being in an era of climate uncertainty.



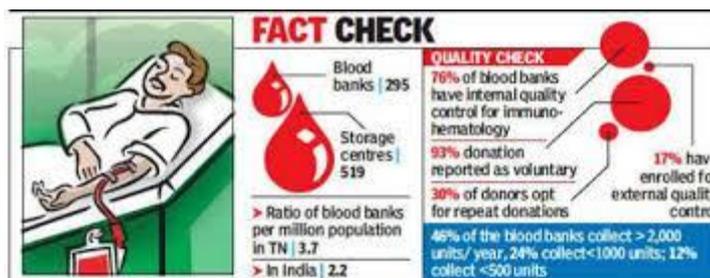
## UPSC Relevance

- **GS Paper II:** Welfare schemes for vulnerable sections of the population; Issues relating to the development and management of Social Sector/Services relating to Health and Agriculture.
- **GS Paper III:** Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System; Land Reforms; Disaster Management (Climate Change).
- **Ethics (GS Paper IV):** Empathy and compassion towards the weaker sections; Public service values and Ethics in Public administration.

## 6. Strengthening Blood Safety: Government Crackdown on Professional Donor Rackets

### Summary of Key Highlights

- **Regulatory Overhaul:** The Union government has introduced stringent regulations and raised entry barriers for establishing blood centres to eliminate "professional" and "replacement" donation cultures.
- **Eligibility Restructuring:** Only registered voluntary and charitable organizations are now eligible to set up blood banks; family-run societies and private trusts are barred to prevent commercialization.
- **Infrastructure Mandates:** New and existing centres must establish independent component separation and storage facilities within two years of receiving a permit, shifting away from simple storage to complex processing.
- **Audit and Compliance:** Following incidents where children tested HIV positive post-transfusion, a nationwide audit of 4,153 licensed blood banks has been ordered by the Central Drugs Standard Control Organisation (CDSCO).
- **Focus on 100% Voluntary Donation:** The National Blood Transfusion Council (NBTC) aims to transition to a fully voluntary, non-remunerated system, which is statistically proven to have the lowest risk of Transfusion-Transmitted Infections (TTIs).
- **Operational Benchmarks:** Organizations must now achieve an annual collection of over 2,000 units, with nearly 100% sourced from voluntary donors, to maintain their license.



## Key Definitions

- **Professional Donor:** An individual who donates blood in exchange for money or other commercial benefits, a practice legally banned in India since 1998 due to high infection risks.
- **Replacement Donation:** A system where the family or friends of a patient are required to provide a donor to "replace" the units used by the patient, often leading to coercion or hidden "paid" donors.
- **Component Separation:** The process of splitting whole blood into various parts—Red Blood Cells (RBCs), Plasma, and Platelets—to treat multiple patients from a single donation.

## Constitutional & Legal Provisions

- **Article 21:** The Supreme Court has linked the right to safe blood transfusion to the "Right to Life," noting that medical negligence leading to infection is a violation of fundamental rights.



- **Drugs and Cosmetics Act, 1940:** Human blood is legally categorized as a "drug" under Section 3(b). Operations of blood banks are governed under the **Drugs and Cosmetics Rules, 1945**.
- **Supreme Court Directive (1996):** In *Common Cause vs. Union of India*, the Court ordered the abolition of professional blood donation and the establishment of the National and State Blood Transfusion Councils.
- **National Blood Transfusion Bill, 2025 (Proposed):** A new legislative framework aiming to centralize oversight and set uniform national standards for blood safety and patient recourse.

### India's Blood Transfusion Landscape

Parameter	Current Status / New Requirement
Annual Demand	~14.6 million units
Primary Demand Areas	Medicine (41.2%), Surgery (27.9%), Obstetrics (22.4%)
Mandatory Testing	HIV I & II, Hepatitis B & C, Malaria, and Syphilis
Minimum Collection	>2,000 units per year per centre
Entry Barrier	Limited to Govt/Charitable NGOs (Family trusts barred)

### Important Keypoints for UPSC

- **Public Health Priority:** The shift from "replacement" to "voluntary" donation is a critical pillar of Universal Health Coverage (UHC), reducing the out-of-pocket burden and infection risks for marginalized patients.
- **Clustering vs. Accessibility:** New norms mandate at least one blood bank per district while discouraging over-clustering in urban areas to ensure equitable rural access.
- **Quality Assurance:** The CDSCO and the Drug Controller General of India (DCGI) are strengthening the No-Objection Certificate (NOC) process through State Blood Transfusion Councils.
- **Technical Gap:** India still faces a shortage of O-negative blood and AB-positive plasma; the new infrastructure mandates for component separation aim to optimize these rare resources.

### Conclusion

The government's crackdown on unethical donor practices represents a transition from a supply-driven to a safety-driven blood transfusion ecosystem. By professionalizing the management of blood centres and enforcing strict social accountability, the state seeks to rebuild public trust in the healthcare system, ensuring that the "gift of life" does not inadvertently become a source of life-threatening infection.

### UPSC Relevance

- **GS Paper II:** Issues relating to development and management of Social Sector/Services relating to Health; Role of regulatory bodies (CDSCO, NBTC).
- **GS Paper III:** Science and Technology- developments and their applications in everyday life (Transfusion medicine); Challenges to internal security (Safe medical infrastructure).



- **Prelims:** Mandatory tests for blood, legal status of blood as a "drug," and functions of the NBTC/CDSO.

## 7. Combating Summer Pollution: CAQM Directives on Wheat Stubble Burning (2026)

### Summary of Key Highlights

- **Statutory Mandate:** The Commission for Air Quality Management (CAQM) has issued a statutory direction to the governments of Punjab, Haryana, and Uttar Pradesh to eliminate wheat stubble burning during the 2026 harvesting season (April-May).
- **Granular Monitoring:** The directives include "mapping each farm" across all villages to determine specific management modes and tagging nodal officers to groups of no more than 100 farmers for real-time oversight.
- **Parali Protection Force (PPF):** States are instructed to constitute a dedicated PPF at the district/block level, comprising police, agriculture, and administrative officers to monitor and guard against fire incidents, especially during late evening hours.
- **Support for Smallholders:** A critical mandate includes the rent-free availability of Crop Residue Management (CRM) machines for small and marginal farmers through Custom Hiring Centres (CHCs).
- **Technology Integration:** Governments must ensure the optimum utilization of machinery through a dedicated mobile app and use satellite-based monitoring (ISRO/IARI protocol) to record and respond to fire events.
- **Ex-situ Supply Chain:** The framework emphasizes creating a robust supply chain for wheat straw to be used as fodder or industrial raw material, aiming for a 100% productive use of residue.

### Key Definitions

- **In-situ Management:** The practice of managing crop residue within the field itself using specialized machinery like Happy Seeders or Mulchers, which incorporate the stubble back into the soil.
- **Ex-situ Management:** The removal of crop residue from the field for external utilization, such as fodder, biomass pellets for power plants, or bio-ethanol production.
- **Environmental Compensation:** A "polluter pays" penalty imposed on farmers found burning stubble, recently doubled by the Centre to deter non-compliance.

### Constitutional & Legal Provisions

- **Article 21:** The Right to Life includes the right to breathe clean air; the Supreme Court has consistently invoked this to pull up authorities for failing to curb stubble burning.
- **Article 48A:** A Directive Principle mandating the State to protect and improve the environment and safeguard forests and wildlife.
- **CAQM Act, 2021:** This Act established the Commission for Air Quality Management in NCR and Adjoining Areas as a powerful statutory body with the authority to issue binding directions to states.
- **Environment Protection Act, 1986:** Provides the overarching legal umbrella under which new rules for penalties and inquiries regarding environmental pollution are notified.

### Stubble Burning Penalty Structure (Revised 2024-25)



Land Holding Size	Environmental Compensation (per incident)
Less than 2 acres	₹5,000
2 to 5 acres	₹10,000
More than 5 acres	₹30,000

### Important Keypoints for UPSC

- **The "Summer Pollution" Shift:** Traditionally, the focus was on post-paddy burning (Oct-Nov); however, satellite data from 2025 showed over 10,000 fire incidents in Punjab during the wheat season, necessitating this "April-May" intervention.
- **Airshed Approach:** The CAQM treats the entire NCR and adjoining areas as a single "airshed," recognizing that smoke from one state directly impacts the air quality of neighboring regions like Delhi and Rajasthan.
- **Health Impact:** Stubble burning releases high concentrations of PM2.5, PM10, CO, and NOx, contributing to chronic respiratory diseases and deteriorating the Air Quality Index (AQI) to "Hazardous" levels.
- **Custom Hiring Centres (CHCs):** These are pivotal for democratization of technology; the shift to "rent-free" models for marginal farmers aims to remove the economic incentive for burning.

### Conclusion

The transition of stubble management from a seasonal reactive measure to a year-round statutory requirement marks a significant evolution in India's environmental governance. While the "Parali Protection Force" and doubled fines provide the necessary "stick," the success of this directive will ultimately hinge on the "carrot"—the seamless, rent-free availability of machines and the creation of a profitable market for crop residue.

### UPSC Relevance

- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies; Government policies and interventions for development in various sectors.
- **GS Paper III:** Conservation, environmental pollution and degradation; Disaster and disaster management; Issues related to direct and indirect farm subsidies.
- **Prelims:** Powers of CAQM, differences between in-situ and ex-situ management, and the ISRO/IARI fire monitoring protocols.

## 8. A Case for Structural Reset: Recalibrating Union-State Relations

### Summary of Key Highlights

- **The "Structural Reset" Thesis:** Modern Indian federalism operates under a "centralizing bias" originally designed in 1950 to address post-Partition anxieties. Arguments now favor "right-sizing" the Union to allow it to focus on national security and foreign policy while restoring autonomy to politically mature states.
- **The Justice Kurian Joseph Committee (2026):** Constituted by the Tamil Nadu government in April 2025, this High-Level Committee submitted Part I of its report on February 16, 2026. It marks the



fourth major review of Union-State relations after the Rajamannar (1971), Sarkaria (1988), and Punchhi (2010) commissions.

- **Subsidiarity as a Governance Pillar:** The report emphasizes the principle of **subsidiarity**—that authority is most effective when exercised closest to the people. It warns that central micromanagement of state subjects (like health and education) breeds administrative fragility and duplication.
- **States as Laboratories of Democracy:** History shows successful national policies often originate as state experiments. Examples include Tamil Nadu's Noon Meal Scheme, Kerala's literacy models, and Maharashtra's employment guarantee, proving that decentralized innovation precedes national adoption.
- **Legislative Overreach & Concurrent List:** A significant point of friction is the Union's use of "subordinate legislation" to override plenary state laws in Concurrent List subjects, effectively turning states into mere administrative extensions of New Delhi.
- **Capacity through Accountability:** The report rejects the "lack of state capacity" argument, asserting that true capacity arises from responsibility and the freedom to manage regional diversity, rather than intrusive central oversight.



### Key Definitions

- **Centralizing Bias:** A constitutional design that favors the Union government, justified during India's formative years to ensure national integration and prevent secessionist tendencies.
- **Right-Sizing the Union:** A reformative concept where the Union government sheds non-core responsibilities (like rural sanitation or primary health) to focus exclusively on national-level strategic priorities.
- **High-Level Committee on Union-State Relations (2025-26):** A 3-member panel chaired by Justice Kurian Joseph (Retd.), with members K. Ashok Vardhan Shetty (Retd. IAS) and Dr. M. Naganathan, tasked with reviewing federal challenges.

### Constitutional & Legal Provisions

- **Article 1:** Defines India as a "Union of States," implying an indissoluble Union but composed of essential, autonomous constituent units.
- **Article 246 (Seventh Schedule):** Distributes legislative powers between the Union List, State List, and Concurrent List. The current debate focuses on the "creeping" expansion of the Union into State List subjects.
- **Article 263 (Inter-State Council):** A constitutional body intended for coordination; the Kurian Joseph report advocates transforming it from a "talk-shop" into a mandatory consultative forum for Concurrent List laws.
- **S.R. Bommai vs. Union of India (1994):** The Supreme Court landmark judgment declaring Federalism as part of the **Basic Structure** of the Constitution.
- **Subordinate Legislation (Article 13/73):** Used by the Union Executive to issue rules and templates for Centrally Sponsored Schemes (CSS) that often override regional policy contexts.



## Comparative Evolution of Federal Reviews

Commission (Year)	Key Context	Primary Focus/Recommendation
Rajamannar (1971)	Rise of Regionalism	Advocated abolition of Article 356 and Inter-State Council setup.
Sarkaria (1988)	National Integration	"Cooperative Federalism"; Article 356 as a measure of last resort.
Punchhi (2010)	Multi-party Coalitions	Fixed tenure for Governors; consulting States on international treaties.
Kurian Joseph (2026)	Post-GST & New Tech	Structural Reset; GST reforms, Governor timelines, and right-sizing.

### Important Keypoints for UPSC

- **Fiscal Federalism Challenges:** Concerns over the increasing use of **Cesses and Surcharges** (non-divisible pool) by the Union, which rose to over 18% of gross tax revenue by 2025, depriving states of their fair share under Article 270.
- **Governor's Role:** Recurring friction in Tamil Nadu and Kerala over the indefinite withholding of Bills; the report echoes the demand for constitutional timelines for gubernatorial assent.
- **Delimitation 2026:** Southern states fear a loss of political representation in Parliament if seat reallocation is based purely on current population trends, potentially penalizing states that effectively implemented family planning.
- **Institutional Dependency:** The transition from MGNREGA to the **Viksit Bharat (Gramin) Act (2025)** is cited as an example of rigid central templates hampering state-specific rural planning.

### Conclusion

The call for a structural reset is not a demand for a weaker Union, but for a more focused one. By moving away from "High Command Federalism" toward a partnership-based enterprise, India can leverage its regional diversity as a competitive advantage. As Justice Kurian Joseph's report suggests, a Union is strong not when it controls everything, but when it is focused on national goals and trusts its states to lead local progress.

### UPSC Relevance

- **GS Paper II:** Federal structure and its challenges; Devolution of powers and finances up to local levels and challenges therein; Functions and responsibilities of the Union and the States.
- **GS Paper III:** Issues relating to planning, mobilization of resources, and economic growth; Fiscal federalism and GST.
- **Essay:** "Federalism as a tool for National Unity" or "The paradox of a strong Centre and weak States."



## 9. Rewiring Financial Architecture: Budget 2026 and the Shift to Market-Based Credit

### Summary of Key Highlights

- **Structural Rebalancing:** Budget 2026 initiates a decisive shift to move long-term credit risk away from bank balance sheets and into capital markets through a "market-making framework" for corporate bonds.
- **New Financial Instruments:** The introduction of **Total Return Swaps (TRS)** and **Bond-Index Derivatives** aims to provide synthetic exposure and hedging tools, enhancing liquidity in the otherwise shallow secondary corporate debt market.
- **Risk Mitigation Mechanisms:** The establishment of an **Infrastructure Risk Guarantee Fund** seeks to provide partial credit guarantees, reducing the burden on banks for high-risk, long-duration projects like power plants and highways.
- **Asset Recycling via REITs:** Central Public Sector Enterprises (CPSEs) will now use dedicated Real Estate Investment Trusts (REITs) to recycle real estate assets, unlocking capital and creating market-ready investment grade assets.
- **Correcting Maturity Mismatch:** By fostering a deeper bond market, the government aims to address the "Asset-Liability Mismatch" where banks use short-term deposits to fund 20-year infrastructure projects.
- **Enhancing Policy Transmission:** A deeper bond market is expected to improve monetary policy transmission, as market yields respond more efficiently to RBI rate changes compared to the sticky lending rates of burdened banks.



### Key Definitions

- **Total Return Swaps (TRS):** A derivative contract where one party receives the total economic performance (interest plus capital gains/losses) of a reference asset in exchange for a floating rate payment, allowing for risk transfer without shifting ownership.
- **Market-Making Framework:** A system where designated entities (market makers) provide continuous buy and sell quotes for securities, ensuring that investors can enter or exit positions with minimal price impact.
- **Maturity Transformation:** The process by which banks take short-term liabilities (deposits) and turn them into long-term assets (loans), a process that creates systemic fragility when done excessively for infrastructure.

### Constitutional & Legal Provisions

- **Article 246 (Seventh Schedule):** Banking (Entry 45) and Stock Exchanges/Futures Markets (Entry 48) fall under the **Union List**, giving the Centre exclusive power to legislate on these financial reforms.
- **Article 292:** Governs the executive power of the Union to borrow upon the security of the Consolidated Fund of India, relevant for the issuance of sovereign guarantees for the new Risk Guarantee Fund.
- **SEBI Act, 1992 & RBI Act, 1934:** The primary legal pillars for the regulation of the proposed bond derivatives and market-making frameworks respectively.



- **FRBM Act, 2003:** The long-term fiscal cost of bank recapitalizations (~₹3.2 lakh crore since 2017) underscores the need for these reforms to adhere to the fiscal deficit targets (target of 4.4% for FY26).

### Comparative Landscape: Credit Market Architecture (2026)

Indicator	India (Estimated)	USA / Developed Markets
Corporate Bond Market (% of GDP)	~15%-16%	~80% (USA)
Bank Share of Corporate Debt	60%-65%	~30%
Market Liquidity	Skewed to AAA-rated firms	Diverse rating spectrum
Primary Funding Mode	Private Placements	Public Issuances

### Important Keypoints for UPSC

- **The "Hidden Tax":** Chronic bank recapitalizations act as a hidden tax on the public, as taxpayer money is used to absorb private credit losses landing on public sector bank balance sheets.
- **Crowding Out Effect:** Capital locked in long-term infrastructure loans restricts credit availability for MSMEs and exporters, stifling broader economic growth.
- **Monetary Policy Lag:** The RBI's transition to a neutral stance (5.25% repo rate) is often poorly transmitted to the real economy because banks with impaired balance sheets are slow to adjust lending rates.
- **The Infrastructure Gap:** As India targets a \$5 trillion+ economy, the annual infrastructure requirement exceeds current banking capacity, making the transition to "Bond-led Financing" inevitable.

### Conclusion

Budget 2026 recognizes that for India to achieve global competitiveness, its financial system must evolve from a "shock absorber of last resort" (banks) to a "distributor of risk" (markets). While the technical tools like TRS and REITs are vital, the ultimate success depends on broadening the investor base beyond a narrow set of institutions to include households and foreign participants, truly "democratizing" Indian debt.

### UPSC Relevance

- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment; Effects of liberalization on the economy; Infrastructure: Energy, Ports, Roads, Airports, Railways etc.
- **GS Paper II:** Government policies and interventions for development in various sectors.
- **Prelims:** Concepts like REITs, Total Return Swaps, Bond yields, and the role of CDSO/SEBI/RBI in financial regulation.



## 10. India-EU FTA: Strategic Pivot in the Global Textile Value Chain

### Summary of Key Highlights

- **The Opportunity Gap:** India's textile exports to the EU are currently concentrated in intermediate products (yarn/fabric), while Bangladesh dominates the high-volume Readymade Garment (RMG) sector, holding a **26% market share** in knitted garments compared to India's **4.4%**.
- **Bangladesh's LDC Transition:** As Bangladesh graduates from Least Developed Country (LDC) status by 2029, it will lose "Everything But Arms" (EBA) benefits, subjecting its exports to standard **12% MFN tariffs** unless it qualifies for the more stringent GSP+ scheme.
- **The Rule of Origin (RoO) Advantage:** India possesses a vertically integrated supply chain, allowing it to easily meet the EU's "double transformation" requirement (yarn-to-fabric-to-garment). Conversely, Bangladesh relies heavily on imported fabrics, making it difficult for them to meet GSP+ rules.
- **Tariff Leveling:** The recently signed India-EU Free Trade Agreement (FTA) grants India duty-free access, effectively removing the **12% tariff disadvantage** that previously rendered Indian garments less price-competitive than Bangladeshi products.
- **Premium vs. Mass Market:** Analysis shows Indian garments have higher per-unit values, suggesting either premium positioning or structural inefficiencies. The FTA allows India to compete in the high-volume mass market by offsetting higher production costs.
- **Employment Potential:** Since textiles are among India's largest employers, capturing the EU market share—similar to Vietnam's post-FTA surge in 2020—could serve as a critical solution to the domestic manufacturing employment crisis.

### Key Definitions

- **Double Transformation:** A Rule of Origin (RoO) criterion requiring two stages of processing (e.g., weaving and stitching) to take place within the exporting country to qualify for duty-free access.
- **Everything But Arms (EBA):** An EU initiative providing LDCs with duty-free and quota-free access for all products except arms and ammunition.
- **GSP+ (Generalised Scheme of Preferences Plus):** A special incentive for sustainable development and good governance that slashes tariffs to zero for vulnerable countries that implement 27 international conventions.



### Constitutional & Legal Provisions

- **Article 253:** Empowers Parliament to make laws for implementing international treaties/agreements (like the India-EU FTA).
- **Article 301:** Guarantees freedom of trade, commerce, and intercourse throughout the territory of India, providing the internal basis for export-led growth.
- **Foreign Trade (Development and Regulation) Act, 1992:** The primary legal framework governing India's export-import policy (Exim Policy) and the regulation of textile trade.



## Comparative Analysis: Textile Export Dynamics

Feature	India	Bangladesh
Current EU Status	MFN (facing ~12% duty)	EBA (0% duty)
Future Status (2026-29)	FTA (0% duty)	GSP+ (Conditional 0% duty)
Supply Chain	Vertically Integrated	Dependent on fabric imports
RoO Compliance	High (Domestic yarn/fabric)	Low (Needs "Double Transformation")
Export Focus	High-value / Intermediate	Mass-market RMG

### Important Keypoints for UPSC

- **Sectoral Fragmentation:** Unlike Bangladesh's unilateral focus on garments, India's textile policy has historically been fragmented across handlooms, powerlooms, and organized mills.
- **Logistical Costs:** India's logistics cost (approx. **13-14% of GDP**) remains a hurdle compared to competitors; initiatives like **PM MITRA Parks** aim to reduce this through integrated ecosystems.
- **Vietnam Precedent:** The EU-Vietnam FTA (EVFTA) 2020 led to a significant jump in Vietnam's market share, serving as a blueprint for India's potential trajectory.
- **Technical Textiles:** Beyond garments, the National Technical Textiles Mission is crucial for diversifying into high-value functional fabrics (meditech, geotech).

### Conclusion

The convergence of the India-EU FTA and Bangladesh's graduation from LDC status creates a "structural break" in global trade. For India to reclaim its dominance, the focus must shift from exporting raw materials to high-volume garment manufacturing. Success hinges on leveraging vertical integration to meet strict Rules of Origin while improving factory-floor efficiency to match global price points.

### UPSC Relevance

- **GS Paper II:** Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.
- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment; Effects of liberalization on the economy, changes in industrial policy.
- **Prelims:** Terms like MFN, GSP+, Rules of Origin, and the role of the Ministry of Textiles.

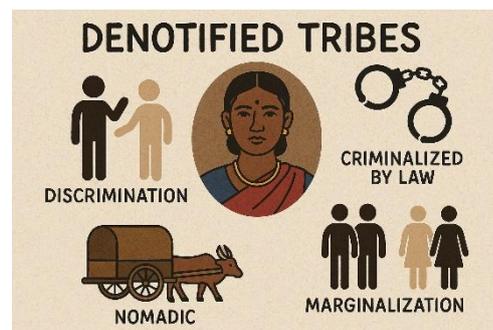
## 11. Socio-Legal Transition: Enumeration and Classification of Denotified Tribes (DNTs)

### Summary of Key Highlights

- **Census 2027 Commitment:** The Union government has assured that Denotified, Nomadic, and Semi-Nomadic Tribes (DNTs) will be enumerated in the second phase of the upcoming Census in 2027, addressing a long-standing demand for data-backed identification.
- **The Demand for a "Separate Column":** Community leaders and scholars are advocating for a distinct column in the Census form, arguing that the current practice of assimilating DNTs into SC, ST, or OBC categories obscures their unique social stigma and specific developmental needs.



- **Colonial Legacy of Criminalization:** These tribes were historically victimized under the **Criminal Tribes Act (CTA), 1871**, which labeled entire communities as "born criminals." Although repealed in 1952, the subsequent **Habitual Offenders Acts** in various states have allegedly perpetuated this "criminal" stigma.
- **Commission Recommendations:** Both the **Renke Commission (2008)** and the **Idate Commission (2017)** emphasized that accurate policy intervention is impossible without a comprehensive Census count. The Idate Commission identified nearly 1,200 DNT communities, with about 268 currently not classified under any existing category.
- **Implementation Gaps in SEED Scheme:** The **Scheme for Economic Empowerment of DNTs (SEED)** has faced low fund utilization (spending only a fraction of its ₹200 crore budget) primarily due to the difficulty beneficiaries face in obtaining DNT certificates from state authorities.
- **Movement for Constitutional Status:** There is a growing push for a separate Constitutional classification for DNTs, distinct from the SC/ST/OBC triad, to ensure uniform issuance of certificates and targeted sub-classification to address varying levels of backwardness.



### Key Definitions

- **Denotified Tribes (Vimukt Jatis):** Communities that were originally listed under the Criminal Tribes Act of 1871 and were "denotified" when the act was repealed in 1952.
- **Nomadic and Semi-Nomadic Tribes:** Communities that do not have a fixed place of residence and move from one place to another for their livelihood.
- **SEED Scheme:** A multi-sectoral intervention by the Ministry of Social Justice and Empowerment covering educational coaching, health insurance, livelihood initiatives, and housing for DNTs.

### Constitutional & Legal Provisions

- **Article 15(4) and 16(4):** Provide the basis for the State to make special provisions for the advancement of any socially and educationally backward classes.
- **Article 340:** Empowers the President to appoint a commission to investigate the conditions of backward classes (the basis for DNT commissions).
- **Article 46 (DPSP):** Mandates the State to promote with special care the educational and economic interests of the weaker sections of the people, specifically protecting them from social injustice.
- **Habitual Offenders Act:** State-level laws that replaced the CTA; often criticized by activists for allowing police to target DNTs based on past records rather than fresh evidence.

### Evolution of DNT Commissions and Status



Entity/Commission	Year	Key Outcome/Recommendation
Ayyangar Committee	1949	Recommended the repeal of the Criminal Tribes Act, 1871.
Repeal of CTA	1952	Communities officially became "Denotified."
Renke Commission	2008	Recommended 10% reservation for DNTs and a separate Census.
Idate Commission	2017	Identified 268 unclassified communities; recommended a Permanent Commission.
DWBDNC	2019	Development and Welfare Board for DNTs, Nomadic and Semi-Nomadic Communities established.

### Important Keypoints for UPSC

- **The Stigma Paradox:** Even after "denotification," these tribes face "invisible criminalization" by local law enforcement, hindering their integration into the mainstream economy.
- **Identity Overlap:** Since most DNTs are already in SC/ST/OBC lists, the government has preferred a "Welfare Board" over a Permanent Commission, leading to administrative hurdles in providing DNT-specific benefits.
- **Resistance History:** Community leaders are reframing their history, stating that colonial "criminal" labeling was actually a punishment for their resistance against British and earlier foreign rule.
- **NITI Aayog Study:** A study by the Anthropological Survey of India remains a critical but under-utilized document for the classification of the 268 "orphaned" DNT communities.

### Conclusion

The inclusion of DNTs in the 2027 Census is a vital step toward reparative justice for communities once termed "criminal" by birth. However, mere counting is insufficient; the transition from being "objects of surveillance" to "subjects of development" requires a robust legal framework for DNT certification and a constitutional recognition that acknowledges their unique historical suffering.

### UPSC Relevance

- **GS Paper I:** Salient features of Indian Society, Diversity of India; Welfare schemes for vulnerable sections.
- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies; Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.
- **Prelims:** Renke and Idate Commissions, SEED scheme details, and the history of the Criminal Tribes Act.

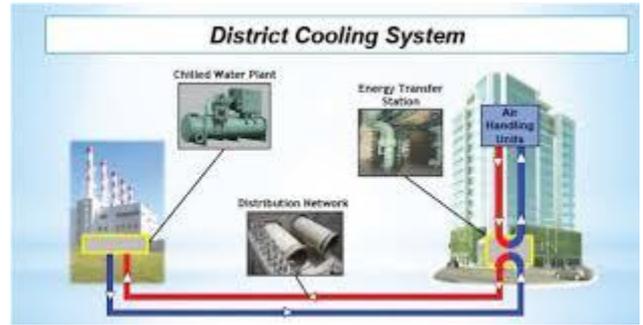
## 12. District Cooling Systems: A Strategic Pivot for India's Urban Resilience

### Summary of Key Highlights

- **Centralized Efficiency:** District Cooling System (DCS) acts as a "shared utility" where a central plant produces chilled water and distributes it to a cluster of buildings via underground pipes, replacing inefficient individual air-conditioning units.



- **Energy and Peak Load Management:** DCS can be 30-50% more energy-efficient than standalone systems. By using thermal storage to produce ice or chilled water at night, it reduces peak afternoon electricity demand by 20-30%, easing the burden on DISCOMs.
- **Climate Change Mitigation:** Implementation can reduce greenhouse gas emissions by 15-40%. It also mitigates the "Urban Heat Island" effect by eliminating thousands of small outdoor AC units that vent heat into city streets.
- **Resource Optimization:** DCS centralizes refrigerant management, reducing potential leakage volumes by up to 80%. Furthermore, these plants can utilize treated sewage water for cooling, preserving fresh water in stressed urban centers.
- **Economic Incentives:** Real estate developers can save 5-10% on capital costs and unlock 1-2% more saleable area by removing rooftop chillers. For consumers, it offers "cooling as a service" with 99.9% utility-grade reliability.
- **Strategic Candidate Areas:** High-density zones like Ahmedabad's GIFT City (already operational), Navi Mumbai, and Hyderabad's Financial District are prime candidates due to predictable, dense cooling loads.



### Key Definitions

- **District Cooling System (DCS):** A centralized cooling network that provides air conditioning to multiple buildings within a district from a single energy plant.
- **Thermal Energy Storage (TES):** A technology that allows a cooling plant to produce and store chilled water or ice during off-peak hours (night) for use during peak demand periods (day).
- **Urban Heat Island (UHI) Effect:** A phenomenon where urban areas experience much higher temperatures than surrounding rural areas due to human activities, concrete surfaces, and heat rejected by AC units.

### Constitutional & Legal Provisions

- **Article 243W (12th Schedule):** Empowers Municipalities to perform functions related to urban planning and "Public Amenities," which can include district-level utility infrastructure like DCS.
- **Energy Conservation Act, 2001:** Provides the legal framework for the Bureau of Energy Efficiency (BEE) to mandate energy-efficient cooling standards.
- **Kigali Amendment to the Montreal Protocol:** India is committed to phasing down Hydrofluorocarbons (HFCs) by 85% by 2047; DCS supports this by concentrating and reducing refrigerant use.
- **India Cooling Action Plan (ICAP), 2019:** A flagship policy targeting a 20-25% reduction in cooling demand and a 25-40% reduction in cooling energy requirements by 2037-38.

### Comparative Advantage of District Cooling



Feature	Standalone AC/Chillers	District Cooling System (DCS)
Efficiency	Low (Varies per unit)	High (Industrial grade chillers)
Refrigerant Risk	High (Distributed leak points)	Low (Centralized/Controlled)
Grid Impact	High peak afternoon demand	Shiftable load via Thermal Storage
Space Use	Occupies rooftops/indoor area	Frees up space for solar/amenities
Maintenance	Individual responsibility	Professional utility management

### Important Keypoints for UPSC

- **National Cooling Action Plan (ICAP):** DCS is a core technological intervention suggested to achieve ICAP's goal of reducing energy consumption while providing "Thermal Comfort for All."
- **Urban Planning Integration:** Experts suggest that Master Plans must demarcate "District Cooling Zones" similar to water or sewage zones to ensure the feasibility of underground pipe corridors.
- **Financial Model:** Works on a tripartite tariff—one-time connection fee, fixed demand charge (for reserved capacity), and variable consumption charge.
- **Synergy with Smart Cities:** DCS aligns with the Smart Cities Mission by providing sustainable, technology-driven public infrastructure that enhances city livability and energy security.

### Conclusion

District cooling transforms cooling from a private luxury into a public utility. As India faces intensifying heatwaves, shifting to a centralized cooling architecture is no longer just an environmental choice but a necessity for urban survival. By integrating DCS into the fabric of New India's cities, planners can simultaneously tackle energy poverty, peak-load crises, and climate commitments, turning a vulnerability into a resilient infrastructure asset.

### UPSC Relevance

- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies; Government policies and interventions for development in various sectors.
- **GS Paper III:** Infrastructure: Energy; Conservation, environmental pollution and degradation; Disaster and disaster management (Heatwaves).
- **Mains Focus:** "Discuss the role of District Cooling in achieving India's targets under the India Cooling Action Plan and the Kigali Amendment."