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• ECONOMY

Lessons for India from Brazil's ethanol pathway

Brazil's first ethanol blending law goes all the way back to 1931. Its success story was built over decades of policy and offering choices to consumers

ANIL SASI

IN THE mid-1970s, faced with surging oil import bills and an imploding global sugar market, Brazil made a bold bet: it would run its cars on alcohol. Half a century later, this Brazilian push to ramp up ethanol use in its auto fuel mix is now a masterclass in biofuel adoption.

There are perhaps three key enabling factors that have made this a success: a gradual, spaced-out approach to fuel blending with predefined milestones; the vehicular ecosystem being given enough time to adapt to this transition in tandem with clear guidance to motorists; and offering choice and price incentives for consumers to shift to ethanol that is now enshrined in a national law. This is a contrast to India's rushed efforts to incorporate ethanol into its fuel mix.

Context for adoption

Let's consider the timing. In response to the 1973 global oil crisis, the Brazilian government launched the National Alcohol Program (Proálcool) in 1975 to reduce petroleum dependence by promoting ethanol additives. But its first ethanol blending law, Brazil's legislation requiring a 5% blend of anhydrous ethanol into petrol, goes all the way back to 1931. This decades-long arc culminated in the 2024 'Fuel of the Future' and 'Mover Program' legislation to boost low-carbon vehicle tech and biofuel adoption, with E30 petrol blend mandated in 2028.

The timeline of India's ethanol-blended petrol programme technically spans 2003 to 2026. Even in that, much of the action is front-loaded. It was only in 2022 that 10% ethanol blending was achieved, with a rapid increase to 20% in just three years.

The government originally planned to dispense petrol blended with 20% ethanol only by 2030, but E20 is now the nationwide standard. Since then, there has been a move to shift to E25 as the base fuel, with a simultaneous push for E85-100 fuels for specialised flex-fuel vehicles (FFVs).

FFVs are essentially internal combustion engine vehicles engineered to operate on more than one type of fuel — typically petrol blended with ethanol or methanol. These vehicles use a fuel composition sensor to automatically adjust fuel injection and ignition timing based on the blend in the tank, allowing seamless switching between petrol and ethanol and varying degrees of blends.

Getting the infra ready

On the second aspect of readying the vehicular ecosystem, too, big differences emerge. Brazil started early with its policy to promote FFVs. These vehicles, running for over two decades now, are seen as the drivers of the country's transition to a cleaner mobility model.

It was way back in 1979 that Italian auto major Fiat launched the 147, the world's first vehicle powered entirely by ethanol in Brazil. Volkswagen, GM, and Ford quickly followed suit amid a global oil crisis. That tempo was lost as oil prices fell. The Brazilian auto industry subsequently started producing FFVs at scale from early 2003, when ethanol seemed economically viable again.

On March 23 that year, Volkswagen introduced the first flex-fuel vehicle to the Brazilian market, and other companies — including GM and Ford — followed suit, according to data from consultancy Argus. Toyota brought in its Corolla flex. FFVs went from selling just 48,178 units in 2003, or under 4% of total light motor vehicle demand, to 1.68 million vehicles last year, or nearly 90% of the Brazilian car fleet. The domestic car industry also reached a milestone of having delivered 40 million flex-fuel vehicles as of February since 2003, according to Brazilian industry body Anfavea.

In India, as E85 fuel dispensing stations are being established nationwide, only a few vehicle prototypes are in the works.

While the flex fuel setup entails an entirely separate vehicle category and a range of fresh vehicle readiness certifications, as of now, India has only a handful of cars in the category: the newly launched Wagon R flex fuel model and the Toyota Hycross hybrid flex fuel prototype, the Tata Punch and Hyundai Creta flex fuel versions, alongside some two-wheeler makers including Hero and TVS. Most cars and two-wheelers on Indian roads are not geared up for handling higher blends of ethanol in the fuel mix.

Commuter choice

Over the past five decades, Brazil has worked to give the power of choice to its motorists. At nearly every petrol pump in Brazil now, people have an option to choose between blended petrol, which typically includes E27 ethanol, and E100, which is pure hydrous ethanol. Alongside that, since Brazilians got carmakers to switch to FFVs, consumers can fill up with whichever option is cheaper at the pump on a particular day. Often, E100 is cheaper by 25-35% compared to lower blended petrol.

Flex fuel cars were a hit with Brazilian consumers, largely because government price support made the blended fuel cheaper than petrol. Ethanol also improves acceleration and reduces knocking (the sound that occurs when fuel ignites unevenly inside the engine cylinder). By the late 1980s, nine out of every 10 new cars sold in Brazil were capable of running on ethanol alone.

In India, motorists were told that performance would not be affected. But the definition of performance did not include mileage. That has come back to bite the decision-makers, as vehicle owners noticed a sharp dip in fuel efficiency, with the promise of more efficiency less as blending increases. Concerns over vehicle damage appear somewhat overstated, though there are concerns about plastic and rubber parts getting degraded in older vehicles.

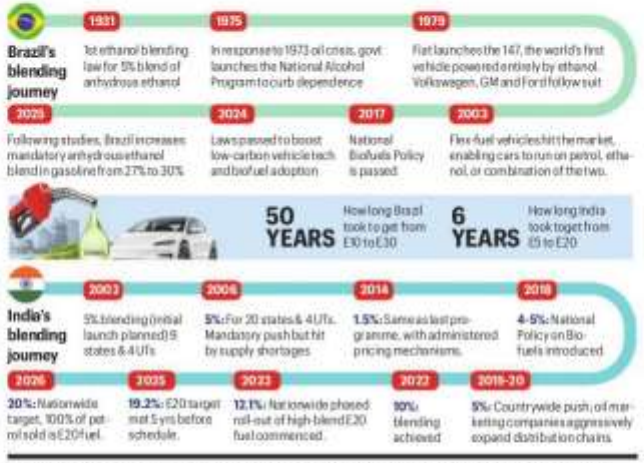
All the while, Brazil was focusing on blended fuel and ethanol, implementing policies in a phased manner to ensure that people who had bought vehicles earlier did not feel at a disadvantage.

Questions for India

In India, the push to progressively raise ethanol blending in petrol from the current E20 level to E25, before transitioning towards flex-fuel vehicles and E85-E100 fuels, is an integral part of the strategy to reduce dependence on imported fossil fuels.

According to an official, "India's future mobility ecosystem will combine EVs, biofuels, hydrogen and renewables in a manner suited to Indian realities". India currently imports nearly 88.5% of its crude oil requirement, making the economy and energy security vulnerable to geopolitical disruptions. But the rushed manner in which it has happened, without adequate disclaimers or preparation, raises serious questions.

• THE DIVERGENT ETHANOL BLENDING ARCS



BRAZILIAN SUGARCANE AND BIOENERGY INDUSTRY ASSOCIATION, MINISTRY OF PETROLEUM AND NATURAL GAS, MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

Brazil's FFV push

Flex fuel vehicles (FFVs) are engineered to operate on more than one fuel.

•

FFVs have been driving cleaner mobility in Brazil for around two decades now.

- **Key Terms and Explanations**
- **Ethanol Blending (E5, E10, E20, E27, E100):** This refers to the practice of mixing ethyl alcohol (ethanol) with conventional petrol. The numeric value represents the percentage of ethanol by volume in the fuel mix. For instance, **E20** contains 20% ethanol and 80% petrol, whereas **E100** represents pure hydrous ethanol.
- **Flex-Fuel Vehicles (FFVs):** These are automobiles equipped with an internal combustion engine capable of running on more than one type of fuel, typically petrol blended with varying concentrations of ethanol or methanol. They utilize a specialized fuel composition sensor that automatically detects the blend ratio and adjusts fuel injection and ignition timing dynamically.
- **Anhydrous vs. Hydrous Ethanol:** Anhydrous ethanol is virtually moisture-free (99.5% pure alcohol) and is primarily used for blending with petrol. Hydrous ethanol contains around 4% to 5% water and can be used directly as a standalone fuel in dedicated ethanol engines or FFVs.
- **Engine Knocking:** An abnormal combustion phenomenon where the fuel-air mixture ignites prematurely in the engine cylinders. High-quality ethanol improves acceleration and reduces knocking due to its higher octane rating, though improper blending ratios in unoptimized engines can lead to structural wear.
- **Proálcool and Mover Programs:** Landmark legislative and policy frameworks executed by Brazil. *Proálcool* (National Alcohol Program), launched in 1975, initiated the structural pivot toward domestic sugarcane-based ethanol. The modern *Mover Program* (and "Fuel of the Future" legislation) establishes long-term mandates for low-carbon vehicle technology and higher biofuel integration.

- **Main Arguments and Substantive Parts**
- The core discourse surrounding the bioenergy transition highlights a fundamental divergence in policy execution between two major global agricultural powers: a calibrated, multi-decadal approach versus an accelerated, front-loaded strategy.
- **The Calibration Matrix: Gradualism vs. Acceleration**
- A comparative analysis of the developmental arcs reveals that Brazil dedicated five decades to scaling its blending ecosystem from E10 to E30. This protracted timeline allowed the automotive manufacturing sector, supply-chain logistics, and consumers adequate time to adapt. Conversely, India compressed its transition from E5 to E20 into a mere six years, achieving its nationwide E20 target ahead of its initial schedule. While this demonstrates political will, it introduces severe friction points across the vehicular ecosystem.
- **The Consumer Choice and Price Parity Imperative**
- In a successful biofuel ecosystem, the transition must be market-driven rather than purely mandate-enforced. In Brazil, motorists are empowered with real-time economic choices at the refueling station, selecting between standard blended petrol (E27) and pure hydrous ethanol (E100). Crucially, policy mechanisms ensure that E100 is consistently priced 25% to 35% cheaper than blended petrol, directly offsetting ethanol's lower energy density and lower volumetric mileage.
- **The Engineering Lag and Volumetric Efficiency Losses**
- An accelerated rollout leaves consumer assets vulnerable. In India, the rapid transition to E20 fuel was accompanied by assurances of sustained vehicular performance. However, standard internal combustion engines suffer a sharp contraction in fuel efficiency (mileage drops) when burning higher ethanol blends due to the lower calorific value of alcohol. Furthermore, older vehicle variants face operational risks, including the chemical degradation of non-blended-fuel-compliant plastic and rubber components within their fuel delivery networks.
- **Supply Chain and Infrastructure Synchronicity**
- A resilient biofuel ecosystem requires the simultaneous evolution of retail infrastructure and manufacturing capabilities. Brazil's auto sector successfully scaled up to the point where nearly 90% of new car sales are Flex-Fuel Vehicles. India, however, faces a structural supply-side mismatch. While E20 fuel distribution has been fast-tracked nationwide, the domestic availability of mass-market FFVs remains limited to a few prototype models and select premium variants, creating an infrastructure that outpaces vehicular readiness.

- **Historical Evolution of the Issue**
- **The Brazilian Organic Expansion (1931–2025)**
- **1931–1973: The Genesis:** Brazil introduced its first ethanol blending mandate in 1931, requiring a 5% blend of anhydrous ethanol, primarily to stabilize the volatile domestic sugar market.
- **1975–1979: The Oil Shock Catalyst:** Triggered by the 1973 global crude oil crisis and an imploding international sugar trade, the military administration launched the *Proálcool Program* in 1975. By 1979, domestic automakers introduced the world's first mass-produced pure ethanol-driven passenger car (Fiat 147).
- **2003–2017: The Flex-Fuel Revolution:** In 2003, commercial Flex-Fuel Vehicles (FFVs) hit the Brazilian consumer market, enabling seamless switching between petrol and pure hydrous ethanol. This culminated in the National Biofuels Policy (*RenovaBio*) in 2017 to institutionalize carbon credits.
- **2024–2025: Advanced Decarbonization:** Passing the *Fuel of the Future* bill, Brazil advanced its mandatory gasoline blending floor from 27% to 30%, firmly embedding bio-mobility into its long-term industrial policy.
- **The Indian Accelerated Model (2003–2026)**
- **2003–2014: Initial Friction and Stagnation:** India launched a pilot 5% Ethanol Blending Programme (EBP) in 2003 across nine states. However, it faltered for over a decade due to acute feedstock shortages, competing liquor industry demands, and unviable pricing structures, leaving blending rates hovering around a meager 1.5% by 2014.
- **2014–2018: Policy Revitalization:** The government introduced administered pricing mechanisms for ethanol procurement in 2014, breaking the pricing deadlock. This was formalised via the *National Policy on Biofuels in 2018*, which expanded the feedstock basket beyond sugarcane molasses to include damaged food grains and maize.
- **2019–2023: The Exponential Leap:** Driven by state-backed oil marketing companies expanding distribution infrastructure, India achieved its 10% blending target in 2022. By 2023, the phased rollout of E20 fuel commenced nationwide, ahead of initial expectations.
- **2025–2026: The Front-Loaded Realization:** By 2025–2026, the country met its E20 mandate early, forcing a 100% saturation of E20 fuel at retail pumps nationwide and prompting policy discussions to shift the baseline toward E25 and specialized FFVs.

- **Way Forward**
- **Calibrated Pacing and Clear Policy Signals**
- India should shift away from compressed, ad-hoc execution timelines toward a more predictable regulatory environment, drawing insights from the long-term planning seen in international models like Brazil's *Mover Program*. The state needs to provide automakers with locked-in, long-term legislative guarantees regarding fuel composition timelines. This approach gives industrial R&D departments the necessary predictability to manufacture highly optimized, material-compliant engines without rushing development cycles.
- **Incentivizing Mass Production of Flex-Fuel Vehicles (FFVs)**
- Instead of treating FFVs as niche prototypes, the Ministry of Heavy Industries could introduce production-linked incentives (PLI) specifically targeted at accelerating the mass manufacturing of flex-fuel powertrains, particularly in the high-volume two-wheeler and economy car segments. This should be accompanied by clear timelines for retrofitting existing delivery fleets, ensuring that vehicle availability matches the expanding retail fuel infrastructure.

INDIA'S ETHANOL PATHWAY — LESSONS FROM BRAZIL

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BRAZIL'S 50-YEAR ORGANIC ARC (1931-2024)

1931
1st ethanol blending law, (5%, 5%)

1975
Proálcool Program launch to stand

1979
world's 1st pure ethanol car – Fiat 147

Flex-Fuel Vehicles (FFVs) hit the market, e.g., Volkswagen, GM, Ford)

2017
National Biofuels Policy

2024
Law to boost blend from 27% to 30%

BRAZIL'S SUCCESS FACTORS

GRADUALISM
(Time for industry and consumers to adapt)

CONSUMER CHOICE
(Option to choose E27 or pure E100 at pumps)

VEHICULAR ECOSYSTEM
(Almost 90% new cars are FFVs)

PRICE INCENTIVES
(E100 25-35% cheaper than blend to offset lower mileage)

INDIA'S 6-YEAR ACCELERATED SPRINT (2018-2026)

2003
5% blending launch

2018
National Policy on Biofuels

2022
10% blending achieved

2023
Nationwide phased roll-out of high-blend E20 fuel commenced

2025
Target of E20 met 5 years before schedule

2026
Nationwide target: 100% of petrol sold as E20

QUESTIONS FOR INDIA

RUSHED PACE
(Concerns over inadequate preparation)

MILEAGE CONCERN
(Sharp efficiency drop, consumer impact)

VEHICLE COMPATIBILITY
(Risk of damage to rubber/plastic parts in older vehicles)

INFRASTRUCTURE
(Mismatched readiness: FFVs lagging behind fuel availability)

STRATEGIC LESSONS FOR INDIA

CALIBRATED PATHWAY:
Adopt a graded, spaced-out approach to blend increases.

VEHICLE READINESS:
Accelerate mass adoption of Flex-Fuel Vehicles (FFVs) & specialised engines.

CONSUMER-CENTRIC POLICY:
Offer clear price incentives & compensate compensate for mileage losses to build trust.

LONG-TERM GUIDANCE:
Provide clear policy signals for auto industry certainty & planning.

- **Key Terms and Explanations**
- **Core Historical and Architectural Concepts**
- **Prambanan Temple Compounds:** This refers to a vast UNESCO World Heritage Site located on the island of Java, Indonesia. The complex comprises not only the primary Prambanan Temple—locally known as Loro Jonggrang or Candi Prambanan—but also includes the neighboring Sewu, Bubrah, and Lumbung temples. It stands as one of the largest Hindu temple complexes in Southeast Asia, dedicated to the Trimurti (Brahma, Vishnu, and Shiva).
- **Mataram Kingdom:** An ancient, powerful polity centered in Central Java during the 8th and 9th centuries, which later shifted its political center to East Java. The kingdom was characterized by its immense architectural patronage, witnessing the coexistence and socio-political competition between major Hindu and Buddhist royal houses.
- **Sanjaya Dynasty:** A prominent ruling dynasty of the Mataram Kingdom in Central Java during the eighth and ninth centuries. This lineage is historically associated with the revival and institutional patronage of Shaivite Hinduism on the island.
- **Sailendra Dynasty:** A powerful, contemporary rival royal house in Central Java that championed Mahayana Buddhism. For nearly a century, their dominance overshadowed the Sanjaya dynasty, and they are globally renowned for commissioning the construction of the nearby Borobudur Buddhist monument.
- **Cultural Heritage Diplomacy:** The use of shared historical, cultural, and civilizational touchstones by nation-states to build trust, foster bilateral cooperation, and project soft power. An example of this is India's modern institutional collaboration to assist Indonesia in the physical restoration and preservation of historic monuments like Prambanan.

- **Main Arguments and Substantive Parts**
- **Civilizational Synchronization and Geopolitical Shifts**
- **Architectural Projection of Dynastic Restoration:** The grand scale of the Prambanan temple complex was fundamentally designed as a political statement. Its consecration around 856 CE marked the formal return of the Hindu Sanjaya dynasty to absolute power following a century of Buddhist Sailendra dominance. Monumental architecture thus served as the ultimate canvas for asserting sovereign legitimacy.
- **Institutional Pluralism via Royal Matrimony:** The marriage of Rakai Pikatan of the Sanjaya dynasty to the Buddhist princess Pramodhawardhani acted as a catalyst for deep cultural and religious synthesis. This political alignment fostered an environment of religious harmony, which is structurally mirrored in Prambanan's architecture. The main Hindu sanctuary prominently incorporates Buddhist stupa-like elements atop its superstructure and features Buddhist artistic motifs throughout the complex.
- **Ecological Disruptions and Geopolitical Realignment:** The abrupt abandonment of Prambanan around 929–930 CE highlights the vulnerability of ancient empires to environmental catastrophes. The catastrophic eruption of Mount Merapi, along with underlying political and economic calculations, forced the Mataram Kingdom to shift its capital to East Java. Consequently, the abandoned complex fell into complete disuse and was swallowed by dense vegetation and volcanic ash.
- **Decolonization and Heritage Reassertion:** The trajectory of Prambanan’s rediscovery and reconstruction highlights the transformation of cultural relics from colonial curiosities to symbols of national sovereignty. While colonial officials like C.A. Lons and Thomas Stamford Raffles initially documented the ruins, the actual reconstruction process faced lengthy delays due to World War II and the Indonesian war for independence. The ultimate completion of the main temple's restoration in 1953, under the leadership of Indonesia's first president, Soekarno, transformed the site into a pillar of pride for the newly independent republic.

- **Historical Evolution of the Issue**
- **From Ancient Consecration to Contemporary Bilateralism**
- **The Era of Dynastic Contestation (8th–9th Century CE):** Central Java became the center of competing religious architectures, with the Shaivite Sanjaya dynasty and the Mahayana Buddhist Sailendra dynasty vying for geopolitical dominance across the Javanese landscape.
- **The Synthesis and Construction Phase (842–856 CE):** Following the end of King Samaratungga's Buddhist reign, Rakai Pikatan consolidated power by marrying the Buddhist princess Pramodhawardhani. He commissioned the construction of Prambanan as a grand Hindu sanctuary, which was officially consecrated in 856 CE to celebrate the return of Hindu dynastic authority while incorporating distinct Buddhist design elements.
- **The Ecological Eclipse and Abandonment (929–930 CE):** The political and economic center of the Mataram Kingdom abruptly migrated from Central to East Java. This migration, heavily driven by the violent eruption of Mount Merapi, left the Prambanan complex completely isolated. Over the centuries, the structures were buried under deep volcanic debris and tropical growth.
- **Colonial Observations and Rediscovery (1733–1816 CE):** After centuries of local isolation, Dutch East India Company employee C.A. Lons observed and reported on the temple ruins in 1733. Later, during the British interregnum from 1811 to 1816, Lieutenant-Governor Thomas Stamford Raffles ordered a systematic documentation of the complex, bringing its architectural significance to global attention.
- **National Reconstruction and Decolonization (1918–1953 CE):** Formal restoration efforts began under Dutch rule in 1918 but were repeatedly halted by the turmoil of World War II and the subsequent Indonesian national revolution. Following liberation, the project was completed in 1953 and officially inaugurated by President Soekarno, cementing the complex as a monument of Indonesian national unity.
- **Modern Heritage Diplomacy Era (Present Day):** The architectural site has evolved into a key element of modern international relations. The official state visit of the Indian Prime Minister to Yogyakarta highlights a bilateral agreement where India will actively collaborate in restoring the Prambanan Temple Compounds, operationalizing shared historical ties for contemporary diplomacy.

- **Way Forward**
- **Actionable Strategies for Preservation and Diplomatic Collaboration**
- **Institutionalizing Joint Technical Exchange Programs:** India and Indonesia should establish a dedicated, long-term partnership between the Archaeological Survey of India (ASI) and Indonesia's cultural heritage departments. This program would focus on sharing expertise in structural engineering, stone conservation, and seismic retrofitting to better protect ancient stone monuments from earthquake risks.
- **Deploying Advanced Digital Documentation and Mapping:** To safeguard the site against natural hazards like eruptions from Mount Merapi, conservation teams should implement comprehensive 3D LiDAR scanning and digital twin mapping across the entire Prambanan Temple Compounds. This will create a highly accurate, permanent digital blueprint to guide any future reconstruction or maintenance work.
- **Developing Transnational Cultural and Educational Tourism Circuits:** Launching collaborative travel and academic initiatives that connect key historical sites in India (such as Chola and Pallava heritage sites in South India) with Southeast Asian monuments like Prambanan and Borobudur. Promoting these shared cultural pathways can boost sustainable tourism, encourage academic research, and deepen people-to-people connections between the two nations.
- **Fostering Community-Led Heritage Conservation Ecosystems:** Local communities living near the temple compounds should be actively integrated into the site's management and tourism economy. Providing training in hospitality, traditional arts, and site preservation ensures that conservation work creates sustainable local jobs while helping to keep the area's living cultural traditions alive.

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RISE ABOVE THE BEST

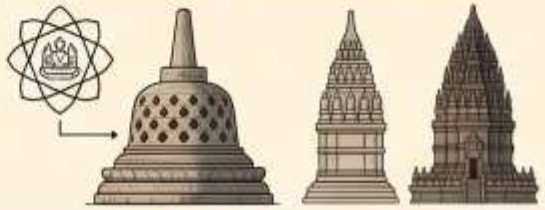
UNDERSTANDING THE PRAMBANAN TEMPLE COMPOUNDS & HERITAGE DIPLOMACY

COMPREHENSIVE ANALYSIS: PRAMBANAN RESTORATION

HISTORICAL EVOLUTION OF PRAMBANAN

1. (8th-9th C CE)
MATARAM KINGDOM & DYNASTIC CONTESTATION

2. (842-856 CE)
SANJAYA RESTORATION & SYNCRETISM
Rakai Pikatan builds Prambanan, incorporating Buddhist elements



3. (929-930 CE)
ECOLOGICAL ECLIPSE & ABANDONMENT

4. (18th-19th C CE)
COLONIAL REDISCOVERY

5. (1918-1953 CE)
RECONSTRUCTION & DECOLONIZATION

1. (8th-9th C CE) MATARAM KINGDOM & DYNASTIC CONTESTATION
2. (842-856 CE) SANJAYA RESTORATION & SYNCRETISM
3. (929-930 CE) ECOLOGICAL ECLIPSE & ABANDONMENT
4. (18th-19th C CE) COLONIAL REDISCOVERY
5. (1918-1953 CE) RECONSTRUCTION & DECOLONIZATION

MULTIDIMENSIONAL ANALYSIS

SOCIAL
- Historic tolerance, and enemies
- Modern identity in rrataransıdentity

POLITICAL
- Ancient legitimacy, and overxesoration
- Post-colonial pride in interrument

LEGAL
- UNESCO colorporative practice
- Bilateral MoUs & diiologinal estimats

ETHICAL
- Heritage protection, historical model
- Historical models, development

INTERNATIONAL
- Act East Policy
- Shared soft power
- Increase soft power

ECONOMIC
- Tourism growth
- Creative economy
- Creative growth

HERITAGE DIPLOMACY IN ACTION

WAY FORWARD: ACTIONS FOR SUSTAINABLE CONSERVATION

1. Joint technical programs to provide mansemational conservation
2. Digital mapping (LiDAR) to menion digital mapping (LiDAR)
3. Transnational tourism to processs and snaboratoso-site
4. Community engagement and community ens and staraities

- **Key Terms and Explanations**
- **Unilateral Resignation under Article 217**
- Under Article 217(1)(a) of the Constitution of India, a High Court judge possesses the constitutional right to resign from office by submitting a written notice to the President of India. A key legal nuance established by judicial precedent in 1978 is that such a resignation is completely unilateral. This means it takes effect instantly from the date chosen by the judge, requiring no formal acceptance or clearance from the executive or the President. For example, if a judge tenders a resignation effective immediately, their judicial office becomes vacant instantly, creating a vacuum regarding any ongoing regulatory actions against them.
- **Impeachment and Removal Motion**
- Impeachment is the constitutional mechanism designed to remove a judge of the Higher Judiciary (Supreme Court or High Court) on the grounds of "proved misbehaviour or incapacity" under Articles 124(4) and 217. It is a rigorous process requiring a motion signed by at least 100 members of the Lok Sabha or 50 members of the Rajya Sabha. The process involves a thorough parliamentary inquiry followed by voting where a special majority—a majority of the total membership of the House and a majority of not less than two-thirds of the members present and voting—is mandatory in both Houses during the same session.
- **The Judges (Inquiry) Act, 1968**
- This is the statutory framework that operationalizes the constitutional mandate of investigating judicial misconduct. Once a removal motion is admitted by the Speaker of the Lok Sabha or the Chairman of the Rajya Sabha, this Act mandates the creation of a three-member judicial committee. The committee typically consists of a Supreme Court judge, a High Court Chief Justice, and a distinguished jurist. They are tasked with conducting a formal investigation, framing charges, and submitting a conclusive report to Parliament to determine if the allegations are factually substantiated.
- **In-House Procedure of the Judiciary**
- An internal, peer-driven accountability mechanism adopted by the Supreme Court of India to handle complaints against judges. Unlike a parliamentary probe, this process is entirely internal to the judiciary. A committee of fellow judges examines allegations of misconduct or corruption to determine institutional culpability. While it lacks the power to directly remove a judge, its findings can lead to a withdrawal of judicial work, a recommendation for transfer, or a referral for formal parliamentary impeachment.
- **Post-Retirement Benefits and Pensionary Protections**
- Judges of the higher judiciary are legally entitled to substantial post-retirement security, including full pensions, healthcare benefits, and official perks, which are charged directly to the Consolidated Fund of India. When a judge completes their tenure normally or resigns voluntarily, these benefits remain secure. However, a formal removal via impeachment can strip away these financial privileges and potentially expose the individual to standard criminal prosecution.

- **Main Arguments and Substantive Parts**
- **Core Thesis**
- The central argument revolves around the concept that a judge's resignation should not act as an automatic legal shield or a veto that prematurely terminates a parliamentary misconduct probe. Establishing institutional accountability and uncovering the truth behind corruption or misbehaviour is an independent constitutional objective. This objective remains vital to public interest regardless of whether the individual continues to hold office.
- **The Fallacy of the Voluntary Escape Route**
- A major point of concern is the historical precedent where judges facing imminent removal used unilateral resignation to escape public scrutiny. By treating resignation as the end of the matter, the system inadvertently allowed individuals facing serious charges to retain their pensionary benefits and evade accountability. When an inquiry is aborted mid-way simply because the subject steps down, it creates a loophole that undermines the integrity of the judicial system.
- **Separation of Inquiry from the Act of Removal**
- An essential distinction must be drawn between the two stages of the parliamentary process: the investigative stage (proving misbehaviour) and the punitive stage (actual removal from office). While the punitive aspect of physically removing a judge becomes moot upon their resignation, the investigative aspect does not. Proving the truth or falsity of the charges is an end in itself because it maintains transparency and serves the public's right to know how state authority was exercised.
- **Public Domain Access and Accountability**
- Inquiries into judicial misconduct are constitutionally mandated, taxpayer-funded processes. The findings of these committees are public property. Suppressing or shelving a report after a judge resigns denies citizens access to critical information regarding institutional rectitude. Tabling such reports in Parliament brings these vital findings into the public domain, upholding the principle that no individual is above accountability.
- **Legal and Financial Consequences**
- The act of publishing a misconduct report post-resignation has concrete financial and legal implications. A normal resignation guarantees full post-retirement perks. However, if a formal parliamentary inquiry reports proven misbehaviour, it provides a solid legal basis for the state to review, reduce, or completely revoke pensionary benefits. Furthermore, it paves the way for standard law enforcement agencies to initiate criminal proceedings based on documented evidence.

- **Historical Evolution of the Issue**
- **Pre-Independence to Constitutional Formulation**
- During the colonial era, the tenure of judges was largely at the pleasure of the Crown or the executive. Recognizing the dangers of an subservient judiciary, the framers of the Indian Constitution deliberately introduced stringent safeguards in 1950. Under Articles 124 and 217, judges were granted secure tenures, ensuring they could only be removed through a rigorous parliamentary process, thereby shielding the judiciary from political interference.
- **The Statutory Framework of 1968**
- As the Constitution did not detail the exact machinery for investigating misbehaviour, Parliament enacted the Judges (Inquiry) Act, 1968. This law laid down a structured, legalistic roadmap involving a three-member committee to balance judicial independence with democratic accountability, preventing arbitrary political targeting while keeping a check on judicial misconduct.
- **The 1978 Judicial Landmark on Resignation**
- In 1978, the Supreme Court delivered a landmark ruling clarifying that a judge's resignation is a completely unilateral act that requires no formal acceptance to become operational. While this judgment protected judges from executive delays or pressure when trying to step down, it did not anticipate the complex legal dilemmas that would arise if a judge resigned specifically to evade an ongoing misconduct probe.
- **The 2011 Precedents of Evasion**
- The systemic vulnerability of this framework became clear in 2011 during the impeachment proceedings of Sikkim High Court Chief Justice P.D. Dinakaran and Calcutta High Court Judge Soumitra Sen. Both judges resigned while their impeachment processes were active. In both instances, the Rajya Sabha secretariat and Parliament dropped the proceedings under the assumption that the primary goal—removal from office—had already been achieved, setting a problematic precedent that allowed judges to avoid institutional accountability by stepping down.
- **The Present-Day Paradigm Shift**
- The current era marks a significant shift in constitutional practice. The decision by parliamentary leadership to table an investigative report even after a judge has resigned challenges the long-held assumption that resignation nullifies an ongoing probe. This establishes a new precedent: parliamentary accountability mechanisms can continue to expose institutional wrongdoing and protect public resources regardless of an individual's tactical resignation.

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COMPREHENSIVE ANALYSIS: JUDICIAL ACCOUNTABILITY AFTER RESIGNATION

1 KEY TERMS & DEFINITIONS

UNILATERAL RESIGNATION (Art. 217): Judge's immediate resignation, no acceptance needed.

JUDGES (INQUIRY) ACT, 1968: Statutory frame for investigating misconduct.

IMPEACHMENT: Constitutional mechanism to remove a judge on 'proved misbehaviour'.

Inquiry — VS → Removal

2 HISTORICAL EVOLLUTION & PRECEDENTS

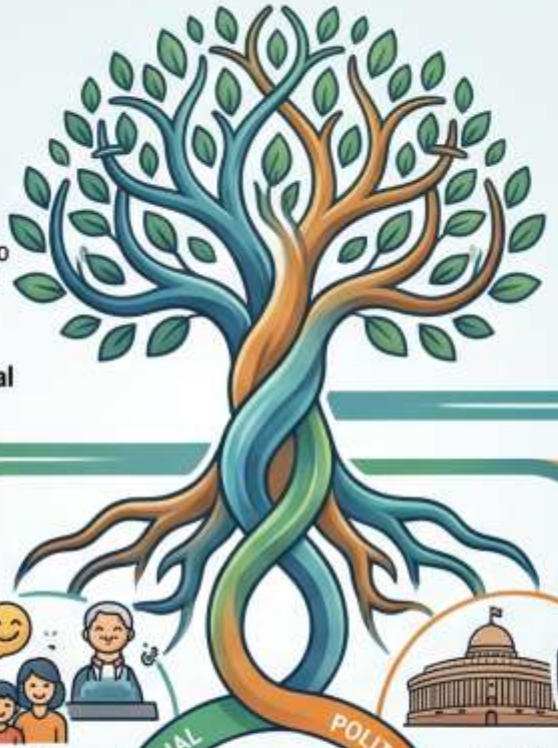
1950 Constitution Enacted (Secure Tenures)

1968 Judges (Inquiry) Act Passed

1978 SC Ruling: Unilateral Resignation

2011 Dinakaran & Sen Cases: Probes dropped after resignation

Present TABLING REPORTS: Asserting public accountability



SOCIAL Restoration of Public Faith

POLITICAL Parliamentary Sovereignty

ETHICAL Combating Moral Hazard

ECONOMIC Protection of Taxpayer Funds, Pensionary Oversight

3 LOGICAL & PHILOSOPHICAL FOUNDATIONS

PUBLIC TRUST & STITCHES ON JUDICIAL LEGITIMACY

CHECKS AND BALANCES vs. JUDICIAL VETO

RULE OF LAW vs. PRIVILEGE

ESTABLISHING TRUTH AS AN INDEPENDENT END

5 UPSC & APSC LINKAGES

GS 2 (Polity, Governance, Judiciary)

GS 4 (Ethics, Integrity, Aptitude)

GS 4 (Ethics, Integrity, Aptitude)

Essay (Key Themes)

NCERT (Chapter 6 Judiciary: Constitutional provisions & functions

6 WAY FORWARD

Statutory Amendments to 1968 Act: Clarify probes continue post-resignation

Codification of Financial Disqualifications: Link misconduct to benefits revocation

Permanent Judicial Performance Commission: Structured review of conduct

Timeline for Inquiry Completion: Swift action

Standardized Criminal Referrals: Forward criminal findings to agencies

- **Key Terms and Explanations**
- **Age-Gating / Age Verification Systems:** The technological architecture deployed by digital platforms to verify a user's absolute age before granting access. Unlike simple self-declaration tick-boxes, advanced age-gating relies on biometric analysis, AI-driven facial age estimation, or third-party identity databases.
- **Graded Restrictions:** A nuanced regulatory framework proposed by the Ministry of Electronics and Information Technology (MeitY). Instead of a blanket ban, it divides minors into developmental age cohorts (e.g., under-13, 13–16, 16–18) and systematically restricts content access, daily screen time, and interactive features based on the group's vulnerability.
- **Digital Intermediaries:** Defined under Section 2(1)(w) of India's *Information Technology Act, 2000*, these are entities that receive, store, or transmit electronic records on behalf of others. Social media platforms fall under this umbrella and are subject to state-mandated due diligence rules to retain their legal immunity (Safe Harbor protection).
- **Attention Economy:** A business model where consumer attention is the primary commodity. Social media networks deploy engagement-maximizing algorithms—such as infinite scroll and push notifications—designed to trigger dopamine loops, which can disproportionately impact the underdeveloped prefrontal cortex of minors.
- **Zero-Knowledge Proofs (ZKP):** A cryptographic method where one party can prove to another that a statement is true (e.g., "I am over 16") without revealing any additional private information (like a date of birth or national ID details). This technology is central to privacy-preserving age verification.

- **Main Arguments and Substantive Parts**
- The global debate surrounding social media curbs for minors balances state paternalism against individual digital autonomy.
- **The Core Thesis**
- The central argument posits that the state must step in as a protective authority in cyberspace because corporate digital spaces are fundamentally mismatched with the cognitive and emotional maturity of children. The traditional model of parental supervision has proven insufficient against highly sophisticated, engagement-driven algorithms.
- **Arguments in Support of Restrictions**
- **Public Health Crisis and Cognitive Harm:** Accumulating neuroscientific evidence links prolonged social media exposure in early adolescents to heightened risks of anxiety, clinical depression, body dysmorphia, and shortened attention spans. The gamification of social validation fundamentally alters youth socialization.
- **Asymmetry of Power:** A single child or parent faces an asymmetric challenge when interacting with multi-billion-dollar algorithms engineered by tech firms to capture and hold user attention. The state's regulatory intervention helps balance this power dynamic.
- **Mitigation of Systemic Online Risks:** Restricting platform access directly reduces exposure to severe digital threats, including algorithmic radicalization, cyber-bullying, online grooming, and commercial data profiling targeted at minors.
- **Counterarguments and Structural Challenges**
- **The Privacy Paradox:** To enforce an absolute ban or graded restriction, platforms must rigorously verify the age of every user. This necessitates widespread collection of biometric data or government-issued identification cards, creating significant data privacy and mass surveillance risks.
- **Technical Circumvention:** Tech-savvy youth often bypass geographic and network restrictions using Virtual Private Networks (VPNs), alternate DNS routing, or decentralized alternative networks, which can push minor activity into unmonitored spaces.
- **Infringement on Digital Rights and Equity:** For many marginalized youth, social media serves as a platform for informal learning, community support, peer-led mental health spaces, and digital skill acquisition. A rigid ban risks compounding digital exclusion.

- **Historical Evolution of the Issue**
- **The Early Unregulated Era (Early 2000s):** The internet operated under a libertarian ethos. Regulations focused on expanding connectivity, while child safety was viewed primarily as a matter of personal and parental responsibility.
- **The Legislative Foundation (IT Act, 2000):** India enacted the *Information Technology Act, 2000*. While it established provisions against cybercrime and child pornography, it lacked explicit frameworks to regulate the operational dynamics of social media platforms or protect the broader digital well-being of minors.
- **Criminalization of Digital Harm (POCSO Act, 2012):** The introduction of the *Protection of Children from Sexual Offences (POCSO) Act* updated India's legal framework by explicitly criminalizing the recording, distribution, and consumption of child sexual abuse material (CSAM) online, establishing a zero-tolerance policy.
- **The Intermediary Accountability Shift (IT Rules, 2021):** The *Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021*, marked a major policy shift. The state introduced strict grievance redressal mechanisms, automated content filtering requirements, and direct accountability for platforms hosting harmful or illegal content.
- **The Privacy and Consent Framework (DPDPA, 2023):** The *Digital Personal Data Protection (DPDPA) Act, 2023*, introduced structural protections for children. It mandates verifiable parental consent for processing data belonging to individuals under 18 and strictly prohibits platforms from tracking children's behavior or serving targeted advertisements.
- **The Contemporary Age-Gating Paradigm (2024–2026):** Influenced by global trends such as Australia's *Online Safety Amendment Act, 2024* (indicated in **image_ff4635.jpg**), India's regulatory strategy is evolving from simply regulating data usage to evaluating direct age restrictions and graded cohort-based platform bans.

- **Way Forward**
- **Implementing a Graded Cohort Access Model**
- India should avoid a single blanket ban, as seen in parts of the global landscape, and instead implement a distinct, multi-tiered age framework:
- *Under 13:* Strict restrictions on public algorithmic feeds and data collection, allowing access only to verified educational and heavily curated platforms.
- *Ages 13 to 16:* Access permitted to mainstream platforms but with default privacy-first settings enabled. This includes disabling infinite scroll, turning off targeted algorithmic recommendations, blocking night-time push notifications, and restricting direct messaging from unverified profiles.
- *Ages 16 to 18:* Full access combined with regular digital well-being prompts and transparent data-tracking opt-outs.
- **Adopting Privacy-Preserving Age Verification (AV)**
- To enforce these age tiers without creating an invasive surveillance system, MeitY should require platforms to use decentralized identity solutions. By leveraging **Zero-Knowledge Proofs (ZKPs)** or secure, tokenized API links with national identity infrastructure, platforms can verify that a user meets the necessary age threshold without directly viewing, collecting, or storing identifying documents or biometric profiles.
- **Cultivating a Co-Regulation Framework and Digital Literacy**
- Statutory laws are most effective when supported by social infrastructure. The government should collaborate with educational institutions to embed comprehensive digital hygiene and cyber-safety training directly into school curricula. Furthermore, tech platforms must design intuitive, localized parental control dashboards. This shares the responsibility for online safety among the state, corporate platforms, educational institutions, and parents.

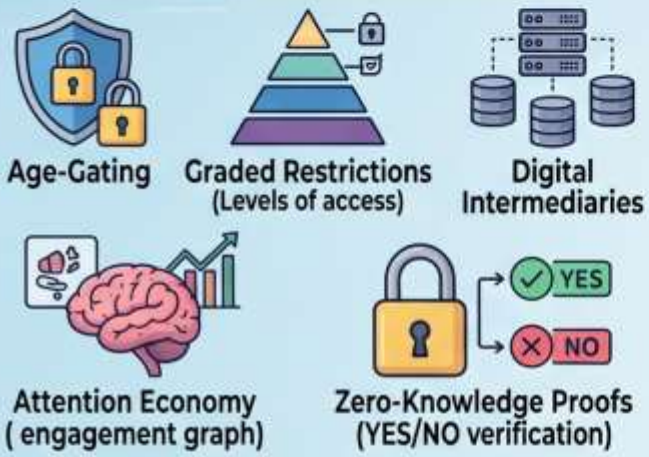
AXIA IAS ACADEMY
RISE ABOVE THE REST

SOCIAL MEDIA RESTRICTIONS FOR MINORS: A UPSC COMPREHENSIVE ANALYSIS

– BASED ON GLOBAL TRENDS (AUSTRALIA) & INDIA'S DIRECTION –

PM Modi Hails Australia's Ban, Signals India Curbs

1 Module 1: KEY TERMS & CONCEPTS



2 Module 2: MAIN ARGUMENTS (Split Panel)

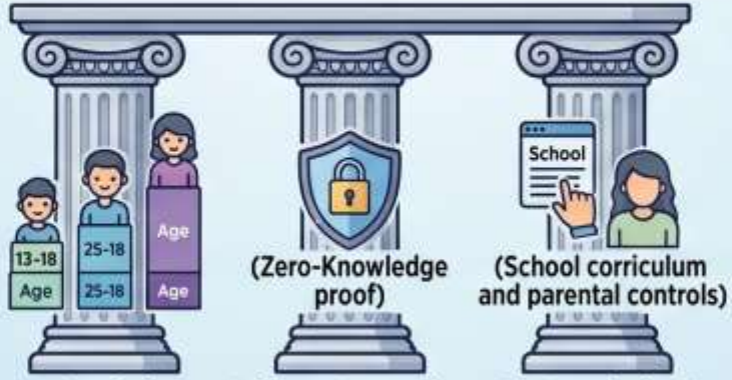
*Illustrations are purely conceptual, no people.

3 Module 3: HISTORICAL EVOLUTION (India & Global Timeline)

4 Module 4: LOGICAL & PHILOSOPHICAL BASE

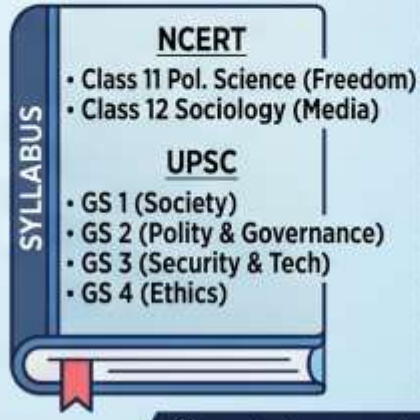
5 Module 5: MULTIDIMENSIONAL ANALYSIS

6 WAY FORWARD (Three Pillars)



7 NCERT & UPSC LINKAGES

(Syllabus Book)



8 Module 8: PYQs

(Prelims & Mains Focus)

- DPDPA 2023 Principles — 2023
- Data Privacy Mitigation — 2018
- Intermediary Rules Challenges — 2021

Practice MCQs (Prelims-style)

Gujarat launches data centre policy, targets ₹6 lakh crore investments, 7.5 GW capacity

Abhinay Deshpande
AHMEDABAD

Seeking to position itself as India's preferred destination for hyperscale data centres, cloud computing and artificial intelligence (AI)-driven digital infrastructure, the Gujarat government on Thursday unveiled its first-ever Data Centre Policy (2026-29), targeting investments of ₹6 lakh crore and the creation of 7.5 gigawatts (GW) of data centre capacity over the policy period.

The policy, launched by Chief Minister Bhupendra Patel in Gandhinagar, offers a wide range of fiscal and non-fiscal incentives, including capital subsidy, interest subsidy, power tariff support, reimbursement of State GST (SGST), exemption from stamp duty and registration charges, and financial assistance for captive desalination plants to meet the sector's high water requirements.

New beginning: Chief Minister Bhupendra Patel during the launch of Gujarat Data Centre Policy in Gandhinagar. X/@CMOGUJ

'Preferred destination'

The new policy aims to make Gujarat a preferred destination for data centre investments and help it compete with established hubs such as Telangana, Maharashtra and Tamil Nadu. "Gujarat is the first State to bring this policy. We are confident it will attract investments of ₹6 lakh crore, create 7.5 GW of data centre capacity and generate significant employment," Chief Secretary M.K. Das said.

The government said the policy has been designed to capitalise on the rapid growth of AI, cloud computing, digital payments, e-commerce, electronics manufacturing and other data-intensive sectors, while strengthening Gujarat's position in India's digital economy.

- **Key Terms and Explanations**
- **Hyperscale Data Centres:** These are massive, business-critical facilities engineered to support robust, scalable applications. Unlike traditional data centres, they house tens of thousands of physical servers operating under a unified architecture.
- **Data Centre Capacity (Measured in Gigawatts - GW):** In the digital economy, a data centre's capacity is measured by its power consumption rather than its physical square footage. Computing infrastructure requires immense, continuous electrical energy to run processors and complex cooling mechanisms. The target of **7.5 GW** represents an enormous scaling of power grid allocation dedicated entirely to processing data.
- **Cloud Computing:** The on-demand delivery of computing services—including servers, storage, databases, networking, software, and analytics—over the internet. It eliminates the need for individual businesses to own and maintain physical hardware.
- **Captive Desalination Plants:** Industrial facilities built by private entities to remove salt and minerals from seawater for their own exclusive industrial use. Data centres generate extreme heat; utilizing desalinated water for industrial cooling ensures that precious domestic and agricultural freshwater resources are not depleted.
- **Fiscal Incentives (SGST Reimbursement & Stamp Duty Exemptions):** Financial tools utilized by governments to reduce the Capital Expenditure (CapEx) and Operational Expenditure (OpEx) burden on investors. Subsidizing the State Goods and Services Tax (SGST) and waiving land registration fees significantly lowers the entry barriers for capital-intensive industries.

- **Main Arguments and Substantive Parts**
- The policy shift captured in **image_ff495e.jpg** underscores a profound structural transition in how regional economies visualize growth in the 21st century.
- **Core Thesis**
- Digital infrastructure policies at the sub-national level are no longer mere extensions of IT departments; they are critical economic engines. By deploying aggressive fiscal incentives and proactively solving ecological hurdles, states aim to convert geographic and power surpluses into absolute leadership in the Artificial Intelligence (AI) and cloud computing eras.
- **Substantive Key Points**
- **The Transition from General IT to Hyper-Specialization:** There is an active realization that generic IT policies are insufficient for the AI age. The focus has aggressively shifted toward creating dedicated ecosystems for data storage, e-commerce backend processing, and semiconductor/electronics manufacturing linkages.
- **Aggressive State Capital Incentives:** Capital subsidies, interest subventions, and power tariff concessions are systematically deployed to offset the astronomical initial setup costs of hyperscale facilities. This creates an immediate cost advantage over established technology zones.
- **Proactive Ecological Engineering:** Recognizing that massive computing clusters put a severe strain on local resources, the policy strategy incorporates financial assistance for private desalination units. This directly resolves the historic "development vs. environment" paradox by decoupling server cooling from public freshwater supplies.
- **Counterarguments and Structural Challenges**
- **The Energy Grid Paradox:** Introducing a demand of **7.5 GW** introduces immense stress on regional electricity grids. If this power requirement is met through conventional thermal energy, the carbon footprint created will heavily contradict India’s climate commitments.
- **The Job Creation Illusion:** Hyperscale data centres are highly automated, capital-intensive structures. While they generate massive employment during the construction phase, their long-term operational phase requires minimal, highly specialized staff. This raises critical questions about their ability to absorb mass local labor.

- **Historical Evolution of the Issue**
- **Pre-Independence to Early Post-Independence (The Analogue Era):** Governance and commerce relied entirely on physical paper filing. Early computing was confined to premier public sector research units (like ISRO, DRDO, or ECIL) handling localized, highly restricted computational tasks.
- **The 1980s and 1990s (The Software Boom):** The rollout of the National Policy on Computer Software (1986) combined with the historic 1991 Economic Liberalization triggered the Indian IT revolution. Software Technology Parks of India (STPI) emerged, though the data generated by Indian companies was primarily stored on offshore servers located in the West.
- **The 2000s and 2010s (National E-Governance and Cloud Genesis):** The launch of the National e-Governance Plan (NeGP) in 2006 mandated the creation of State Data Centres (SDCs) to secure citizen data. The subsequent launch of the **Digital India (2015)** campaign triggered an exponential rise in data generation via UPI, e-commerce, and cheap mobile internet.
- **The Present Era (Hyper-Localization and AI Sovereignty):** The enforcement of the Digital Personal Data Protection (DPDP) Act institutionalized strict data localization norms. Consequently, states have transitioned from generic IT frameworks to aggressive, hyper-focused policies competing directly to build the backbone of India's sovereign AI cloud.

- **Way Forward**
- To build sustainable, world-class digital hubs, future policy frameworks must look toward implementing balanced, actionable solutions.
- **Mandating Green Data Centres:** Future policy updates should legally bind operators to transition to 100% renewable energy inputs (solar, wind, and green hydrogen) within a fixed timeline. This will ensure that the targeted **7.5 GW** capacity does not compromise India’s net-zero climate goals.
- **Closed-Loop Circular Water Management:** While desalination plants are a solid starting point, the state should incentivize closed-loop liquid cooling systems. These systems recycle the exact same water indefinitely within a sealed infrastructure, driving net freshwater consumption down to near zero.
- **Human Capital Upskilling Ecosystems:** To solve the low operational employment problem, state governments must co-create specialized cloud architecture and data science curricula with local universities. This bridges the gap between capital investments and local employment generation.
- **Unified Cyber-Physical Security Frameworks:** As states scale up their physical data infrastructure, they must concurrently establish dedicated state-level cybersecurity task forces to protect these highly centralized repositories from cross-border state-sponsored cyberattacks.

COMPREHENSIVE POLICY OVERVIEW

GUJARAT DATA CENTRE POLICY (2026-29)

7.5 GW
Power Capacity

₹6 Lakh Crore
Investment

Incentives:

- Capital Subsidy
- Interest Subsidy
- Power Tariff Support
- Power Tariff
- SGST Reimbursement
- Stamp Duty Exemption

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RISE ABOVE THE REST

KEY TERMS & DEFINITIONS

UNDERSTANDING MODERN TECH

Hyperscale Data Centres
Larger-scale data centers for very large compute and for hyperscale workloads.

Cloud Computing
Cloud multiple devices and cloud computing.

Captive Desalination Plants
Uses an industrial water supply in its water supply. Desalination plants are to meet the sector's high water requirements.

GW Capacity
(Measured in gigawatts of power demand)

HISTORICAL EVOLUITION OF DATA IN INDIA

Pre-90s:
Paper & Public Monopolies

1980s-90s:
IT Boom & Software Technology Parks (STPI)

Pre-1980s:
Paper & Public Monopolies

2000s-10s:
e-Governance, Digital India, State Data Centres

Present (2026):
Hyperscale, DPDP Act, State Policies

MULTIDIMENSIONAL ANALYSIS

IMPACT ACROSS MULTIPLE DIMENSIONS

Social:
Lower latency, but potentially wide internal stratification.

Political:
Competitive vs. Cooperative Federalism dynamics.

Legal:
DPDP Act compliance, Data Sovereignty.

Ethical:
Green grid vs. Thermal dependency, Ethical data usage.

International:
Digital Diplomacy, Positioning in Global South.

Economic:
Multiplier effect on ancillary sectors (construction, manufacturing).

FUTURE-READY SOLUTIONS

THE WAY FORWARD

Mandating Green Data Centres
(Renewable energy integration)

Closed-Loop Circular Water Management
(Recycled water)

Human Capital Upskilling Ecosystems

Unified Cyber-Physical Security Frameworks

Australia announces repatriation of three antiquities taken from Tamil Nadu temples

R. Sivaraman
CHENNAI

Australia will repatriate three ancient artefacts stolen from temples in Tamil Nadu, including a Chola-era bronze trident, a granite Nandi idol and a Karthikeya sculpture, in a move announced during Prime Minister Narendra Modi's visit to the country.

The Union Ministry of Culture said in a press statement, "In a profound testament to the civilisational resonance anchoring modern diplomacy, Australia is set to repatriate three culturally significant ancient antiquities to India. These artefacts include a ceremonial bronze trident of Goddess Bhadrakali, a majestic granite idol of Nandi, and a basalt sculpture depicting the six-headed Karthikeya." All these items date back to the 11th and 12th Centuries and were originally sourced from temples in Tamil Nadu. The official announcement of the repatriation coincides with Prime Minister Narendra Modi's visit to Australia, further emphasising the strong cultural alignment between the two nations, the Ministry said.

Precious legacy: A Nandi sculpture, a Karthikeya (Shanmukha) idol and a Bhadrakali trident are among the antiquities that are to be returned. SPECIAL ARRANGEMENT

The three antiquities, currently housed in the National Gallery of Australia, are being repatriated under the Mutual Legal Assistance Treaty (MLAT) after investigations by the Tamil Nadu Idol Wing CID established that they had been removed from temples in Tamil Nadu and trafficked overseas.

Commenting on the repatriation of the idols, S. Vijaya Kumar, cultural enthusiast and co-founder of India Pride, said the return of these three artefacts marks the conclusion of a process that should have happened many years ago.

More than a decade has passed since the National Gallery of Australia's independent provenance review by former High Court Justice Susan Crennan AC identified significant shortcomings in the provenance of these objects. The review concluded that the ownership histories of two idols did not establish lawful export from India.

The Bhadrakali Trident was acquired from Temple Gallery, New York, with a provenance tracing ownership only to Dr. P.S. Rao, Chennai, before entering the gallery in 1993. Justice Crennan concluded that this ownership history did not establish that the object had been legally exported. It has now been identified as originating from Sri Kasi Viswanatha Swamy Temple, Kollumangudi, Tiruvarur district.

The Stone Nandi was purchased from Carlton Rochell Asian Art based on an elaborate provenance claiming that Mexican diplomat Mario Calderon had assembled the sculpture in Goa before it passed through inheritance to Pedro Silva Villasenor in Mexico. The Crennan Review found that this ownership chain was not convincingly corroborated, and subsequent investigation identified the sculpture as originating from the temple in Tamil Nadu.

The Karthikeya (Shanmukha) followed a provenance similar to the Bhadrakali Trident, again relying upon ownership through Dr. P.S. Rao and Temple Gallery. Justice Crennan's review concluded that there was insufficient evidence to establish a lawful export from India. It has now been identified as originating from Naganathaswamy Temple, Manambadi, Thanjavur.

- **Key Terms and Explanations**
- **Repatriation:** The formal process of returning cultural property, artworks, or historical artifacts to their country of origin. *Example:* The physical return of the Chola-era artifacts from Canberra to New Delhi.
- **Antiquity:** Legally defined under India's *Antiquities and Art Treasures Act, 1972*, as any coin, sculpture, manuscript, epigraph, or work of art that has existed for **not less than one hundred years**. If it is a manuscript or historical document, the timeline is at least seventy-five years.
- **Provenance:** The documented history of the ownership, custody, and location of an artifact from its creation to the present day. Robust provenance is essential to prove that an item was not looted, smuggled, or forged. *Example:* The fraudulent ownership chains fabricated by international art dealers (attributing items to fictitious inheritances or unverified private collections) to mask illegal excavations.
- **Mutual Legal Assistance Treaty (MLAT):** A bilateral or multilateral agreement that allows countries to cooperate in legal matters, exchange information, and assist in criminal investigations or asset recovery. In this instance, the MLAT provided the legal bridge between Indian investigators and Australian authorities.
- **Idol Wing CID:** A specialized wing of the Tamil Nadu Police department dedicated exclusively to investigating the theft, smuggling, and illicit trade of ancient idols and temple treasures.

- **Main Arguments and Substantive Parts**
- The return of these Chola-era treasures highlights several structural arguments regarding the global art market and modern international relations:
- **The Anatomy of Illicit Supply Chains:** The core challenge lies in the sophisticated methods used by international smuggling cartels. Artifacts are stolen from remote or poorly guarded temples, moved across domestic states, and fitted with counterfeit provenance documents. These documents fake legitimate acquisition prior to international protective deadlines (such as the 1970 UNESCO threshold), deceiving premium global galleries.
- **The Efficacy of Domestic Enforcement:** The successful recovery of the Bhadrakali Trident and the Kartikeya sculpture proves that thorough domestic criminal investigation is the prerequisite for international recovery. The meticulous forensic and historical tracing by the Tamil Nadu Idol Wing CID provided the undeniable evidence needed to invalidate foreign ownership claims.
- **Independent Institutional Reviews:** A major turning point in global museum ethics is the shift toward proactive, independent scrutiny. The utilization of judicial reviews (such as the investigation led by former High Court Justice Susan Crennan in Australia) demonstrates that western institutions are increasingly unwilling to shield questionable acquisitions under the guise of "good faith purchases."
- **Soft Power and Civilizational Alignment:** The timing of such returns often intersects with high-level state visits, demonstrating that cultural repatriation is no longer just a legal issue. It serves as a potent diplomatic tool that builds trust, symbolizes mutual respect for civilizational sovereignty, and strengthens strategic partnerships (such as the Indo-Pacific alignment between India and Australia).

- **Historical Evolution of the Issue**
- **Pre-Independence Colonial Drain:** For centuries, India's art treasures were systematically drained under the doctrine of "victor's justice" or unregulated colonial excavations. Artifacts were treated as commodities to fill European museums or private curiosity cabinets, leaving domestic heritage sites hollowed out.
- **The 1970 UNESCO Convention:** The global turning point came with the *UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property*. This created the foundational international framework making the illicit cross-border movement of heritage items illegal.
- **Post-Independence Domestic Legislation (1972):** India enacted the *Antiquities and Art Treasures Act, 1972*. This nationalized the export of antiquities, making it illegal for private individuals to export any antiquity without central government authorization, and mandated the compulsory registration of historical items.
- **The Modern Era of Active Restitution (2010s–Present):** In recent decades, the approach has evolved from passive diplomatic requests to aggressive, evidence-backed recovery. Utilizing digital archiving, crowdsourced public heritage projects, and robust bilateral diplomacy, India has secured the return of hundreds of sacred artifacts from the US, UK, Europe, and Australia.

- **Way Forward**
- **Building a Comprehensive Digital Registry:** India must create a highly detailed, blockchain-secured national digital database of all antiquities, especially those kept in temple vaults and rural shrines. Digitally cataloging these items with high-resolution 3D imaging makes it nearly impossible for stolen items to be sold on the open international market.
- **Strengthening Domestic Legal Frameworks:** The *Antiquities and Art Treasures Act, 1972* needs updates to streamline the domestic trade of legally owned artifacts while dramatically increasing penalties for illegal excavation, theft, and smuggling.
- **Expanding Specialized Task Forces:** Following the successful model of the Tamil Nadu Idol Wing CID, other states should establish dedicated heritage crime units. These units must be trained in art history, forensic science, and international cyber-investigation techniques.
- **Fostering International Alliances:** India should sign more bilateral cultural property protection agreements, similar to its partnerships with the US and Australia. These pacts place the burden of proof on importers, allowing for quicker interventions before artifacts disappear into private collections.
- **Empowering Local Communities:** Temples and local heritage sites should form community-led vigilance committees (*Gram Heritage Samitis*). Engaging local youth and citizens ensures that these historical sites are actively protected by the people who cherish them most.

CULTURAL HERITAGE RESTITUTION: AN AXIA IAS ACADEMY ANALYSIS

OVERVIEW: CHOLA TREASURES RETURN

11th-12th century Bronze ceremonial **Trident of Goddess Bhadrakali**, Tamil Nadu

Granite Nandi Sculpture in Tiruvarur, Tamil Nadu

National Gallery of Australia in Extan-ona temples in Chola-era temples in Thanjavur, Tiruvarur, Tamil Nadu.

RETURNG
INDIA
RETURNING

Basalt Kartikeya (Shanmukha) in Chola-era temples retturn in Tiruvarur, Tamil Nadu

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1. KEY TERMS & EXPLANATIONS

- **Repatriation** - Repatriation to continues cultural hesitage.
- **Antiquity** - Defined as i legal age of antiquum:m 30 ptari Antiquats: somennt (hercomboation of t* yeas)
- **Provenance** - Provenance is wore directed to frievtlanrests
- **Mutual Legal Assistance Treaty (MLAT)** - Museum Assistance & mutual legal teates of the commosty
- **Idol Wing CID** - Museum conertent in trade of Idol Wing

5. MULTIDIMENSIONAL ANALYSIS

2. MAIN ARGUMENTS & SUBSTANTIVE PARTS

- **Anatomy of Illicit Supply Chains**
- **Efficacy of Domestic Enforcement**
- **Independent Institutional Reviews**
- **Soft Power & Civilizational Alignment**

3. HISTORICAL EVOLUTION OF THE ISSUE

[Pre-1947: Colonial Drain → **1970: UNESCO Convention** → **1972: Indian Legal Framework** → **2010s-Present: Era of Active Restitution**

4. LOGICAL AND PHILOSOPHICAL BASE

- **Cultural Property Nationalism** vs. **Cosmopolitanism**
- **Restorative Justice and Decoloniality**
- **Living Heritage** (Juristic Deity Person)

6. LINKAGES WITH NCERT TEXTBOOKS

- **Class XI** Temple Art Chapter 6
- **Class XII** Themes in History Part I Theme 4
- **Class XI** Political Theory - Secularism/ Justice

7. LINKAGES WITH UPSC CSE SYLLABUS

- GS Paper 1
- GS Paper 2
- GS Paper 3
- GS Paper 4
- Essay
- History Optional

8. WAY FORWARD

- National Digital Registry
- Strengthen Legal Frameworks
- Expand Task Forces
- International Alliances
- Empower Local Communities (Samitis)

9. PREVIOUS YEARS' QUESTIONS (PYQs) SAMPLES

Prelims (briefly stated)
- **Chola Bronzes** (Lost-wax, deities)

Mains (briefly stated)
- **Soft Power** (Cultural Repatriation)

NDA-ruled States, universities object to centralisation provisions in VBSA

Andhra Pradesh, Madhya Pradesh, Meghalaya among States to raise concerns over the Centre's powers; universities seek safeguards, parliamentary monitoring; BHU warns that Bill could turn an independent regulator into arm of the Union govt.

Sobhana K. Nair
Abhinay Lakshman
NEW DELHI

NDA-ruled States, including Andhra Pradesh, Madhya Pradesh, and Meghalaya, have raised concerns over provisions in the Viksit Bharat Shiksha Adhishthan Bill, 2025, warning a parliamentary panel that the proposed legislation would centralise powers over higher education regulation.

The Bill proposes a structural overhaul of higher education in the country, by repealing the statutory Acts governing the University Grants Commission (UGC), the All India Council for Technical Education (AICTE), and the National Council for Teacher Education (NCTE) and replacing them with a single apex body called the Viksit Bharat Shiksha Adhishthan (VBSA).

The Bill is currently under review by a joint parliamentary committee headed by BJP MP D. Purandeswari. *The Hindu* accessed submissions made to the parliamentary panel, which is in the final stages of preparing its report.

Apart from State governments, Central and State universities and institutes have also criticised the Bill, raising concerns over the Centre's expanded powers, the absence of State representation in the proposed regulatory structure, ambiguities in its scope, and the transition process following the winding up of the UGC, AICTE, and NCTE.

The Bill proposes an overhaul of higher education by repealing the statutory Acts governing the UGC, the AICTE, and the NCTE and replacing them with a single apex body. SUSHIL KUMAR VERMA

Bypassing States

Some of the strongest objections came from Andhra Pradesh, which is ruled by the Telugu Desam Party, a BJP ally. The State argued that several provisions of the Bill could render its legislative authority over higher education "a dead letter" and sought mandatory consultation before decisions affecting State universities are taken. The State also cautioned against Clause 11 that allows the Regulatory Council to bypass State universities in granting degrees, saying it could lead to "constitutional friction".

The State government further suggested a clause explicitly preventing the Centre from taking action prejudicial to the autonomy, functioning, and governance of State institutes and universities.

BJP-ruled Madhya Pradesh has also raised concerns over what it described as limited State representation in the proposed regulatory council.

The Meghalaya government – led by the National People's Party, which is a BJP ally – recommended an explicit provision defining the respective powers of the Centre and the States. It proposed that the Centre be responsible for coordination, standards, accreditation, and quality assurance, while States retain authority over the establishment, governance, administration, staffing, financing, and overall functioning of State universities.

Key vulnerability

Central universities and institutes such as the Banaras Hindu University (BHU), the Central University of Rajasthan and the Indian Institute of Information Technology (IIIT), Chittoor, as well as State universities in Assam, Maharashtra, and Jammu and Kashmir, have objected to provisions that they say could increase centralisation.

Several institutions told the panel that clauses requiring the new regulatory structure to follow directions from the Centre represented the Bill's "most critical vulnerability".

While some universities cautioned that dismantling the UGC, AICTE, and NCTE simultaneously could cause "significant institutional disruption", others argued that the Bill concentrated regulatory powers and created the possibility of "arbitrary interventions". Institutions called for phased implementation, parliamentary oversight of powers exercised by the Centre under the Bill, and mandatory notice and consultation with States before such powers are invoked.

BHU noted that Clause 45 gives finality to the Centre's policy directions and binds the VBSA to them, "effectively subordinating the regulator to the executive", while Clause 47 empowers the Centre to supersede the VBSA and dissolve it. The university told the panel that these provisions risked turning an independent regulator into "an arm of the government of the day".

Clause 45 empowers the Centre to issue binding policy directions to the Commission, gives it the final say on what constitutes a policy matter, and allows it to assign additional functions. Clause 47 allows the Centre to suspend or supersede the Commission or its councils for up to a year. IIIT Chittoor said a possible implication of Clause 45 was the expansion of Centre's influence across the three councils proposed under the structure, which could end up shaping institutional academic operations. SNDT Women's University, Pune, said that without checks and balances, consultation and parliamentary oversight, the provisions could lead to "excessive centralisation".

Fee escalation

Congress-ruled Telangana said the Bill's structure does not adequately recognise the role of State governments. It sought the deletion of Clause 11, which empowers the Union government-backed Regulatory Council to authorise independent accredited colleges to grant degrees directly, bypassing the State governments. It also argued that the Bill neither empowers the Regulatory Council to regulate fees nor preserves the existing framework, potentially allowing fee escalation.

Telangana's Higher Education Department described Clause 45 as the "single most centralising clause" in the Bill, calling it a "self-judging clause" that gives the Centre the final authority in disputes with councils under the VBSA framework.

The department argued that the provision expanded Central authority over the structure without granting States corresponding powers over matters relating to their own universities.

- **Key Terms and Explanations**
- **Viksit Bharat Shiksha Adhishthan Bill, 2025 (VBSA)**
- This is a landmark legislative proposal designed to fundamentally restructure India's higher education regulatory landscape. The framework aims to dissolve traditional, fragmented regulatory bodies and consolidate their powers into a single, unified apex authority. The overarching goal is to streamline administration, reduce bureaucratic red tape, and enforce uniform academic standards across the nation.
- **Single Apex Regulatory Body**
- An overarching administrative framework that centralizes the governance of various educational streams. Under the proposed model, the functions historically distributed among distinct statutory entities—such as the University Grants Commission (**UGC**) for general education, the All India Council for Technical Education (**AICTE**) for engineering and management, and the National Council for Teacher Education (**NCTE**) for teacher training—are integrated into one central organization.
- **Constitutional Friction**
- A state of legal and political tension that arises when a legislative action taken by the Union government overlaps with, diminishes, or overrides the legislative and executive competence of state governments. In a federal setup, this occurs when central statutes inadvertently render the operational powers of state assemblies ineffective, particularly on subjects shared under the Seventh Schedule of the Constitution.
- **Clause 45 and the "Self-Judging" Mechanism**
- A specific legislative provision within the new framework that grants the Central government the ultimate authority to issue binding policy directions to the regulatory council. It is termed "self-judging" because it empowers the executive to unilaterally decide what constitutes a "policy matter" during a dispute, effectively removing the possibility of independent institutional arbitration or balanced state intervention.
- **Clause 47 and Supersession Powers**
- A regulatory clause that empowers the Central government to completely suspend or supersede the apex educational commission or its subsidiary councils for a specified period (up to one year). This provision allows the central executive to take direct control of the regulatory apparatus if it deems the commission is failing to perform its duties, raising significant questions regarding the structural independence of the regulator.

- **Main Arguments and Substantive Parts**
- The legislative dispute surrounding the Viksit Bharat Shiksha Adhishthan Bill, 2025 (VBSA), brings to the fore the structural tension between centralization and state autonomy. The core thesis centers on whether a massive, multi-tiered nation like India benefits more from a highly centralized, single-window educational regulator or from a decentralized, pluralistic governance framework that respects regional variations.
- **The Push for Centralization and Structural Overhaul**
- **Dissolution of Legacy Regulators:** The core objective of the framework is to completely repeal the individual statutory acts governing the UGC, AICTE, and NCTE. The argument in favor is that the current multi-headed regulatory system creates overlapping jurisdictions, slow approval processes, and systemic inefficiencies that hinder institutional growth.
- **Bypassing State University Machinery:** Under specific provisions like **Clause 11**, the proposed central regulatory council is granted the power to allow independent, accredited colleges to grant degrees directly. Proponents argue this fosters academic freedom and speeds up institutional autonomy, bypassing slow-moving state university affiliations.
- **The Counterargument: Erosion of Federalism and Institutional Autonomy**
- **Reduction of State Legislative Space:** Several state governments—ranging from opposition-led states like Telangana to NDA-governed states like Andhra Pradesh, Madhya Pradesh, and Meghalaya—argue that the framework reduces state control over higher education to a "dead letter." They emphasize that limited state representation in the apex council undermines the principles of cooperative federalism.
- **Subordination to the Executive of the Day:** Institutional bodies, including major central entities like the Banaras Hindu University (**BHU**), have raised alarms over **Clause 45** and **Clause 47**. The core argument is that by giving the Centre the final, binding word on policy matters and the power to dissolve the commission temporarily, the regulator risks losing its status as an objective, independent body, turning into a direct instrument of the ruling central government.
- **The Threat of Commercialization and Fee Escalation:** A critical gap highlighted by state education departments is the lack of explicit provisions to regulate institutional fees. Critics argue that by dismantling the older framework without preserving robust fee-capping mechanisms, the new structure could trigger uncontrolled fee escalation, making higher education economically non-viable for underprivileged students.

- **Historical Evolution of the Issue**
- **The Pre-Independence and Early Post-Independence Era**
- **The Foundation of Diversity:** Historically, higher education in India developed with a strong emphasis on regional autonomy. The Radhakrishnan Commission (1948-49) laid the groundwork for university independence, emphasizing that while academic standards must be high, universities must remain free from state control to foster true intellectual inquiry.
- **The Birth of Statutory Regulators:** The University Grants Commission (UGC) was established via a parliamentary act in 1956 to coordinate, determine, and maintain standards of university education. This was followed by the formal statutory institutionalization of the AICTE and NCTE in the late 1980s and 1990s to handle the explosion of professional and vocational institutions.
- **The 1976 Constitutional Shift**
- **Moving to the Concurrent List:** A watershed moment occurred during the Emergency via the **42nd Constitutional Amendment Act of 1976**, which shifted 'Education' from the State List (List II) to the Concurrent List (List III). This structural change granted both parliament and state legislatures the power to make laws on education, but gave central legislation overriding supremacy in case of a conflict.
- **The Modern Reform Movement**
- **The Single-Regulator Paradigm:** Over the past two decades, multiple high-level committees highlighted that the proliferation of separate regulators had created a siloed approach. The **Yash Pal Committee (2009)** and the National Knowledge Commission strongly recommended the creation of an all-encompassing higher education commission to replace the fragmented functions of the UGC, AICTE, and others.
- **The National Education Policy (NEP) 2020:** The vision for a single, comprehensive umbrella body for higher education was formally articulated in the NEP 2020. The current legislative push via the VBSA Bill represents the concrete statutory implementation of this policy vision, bringing the historical debate over central regulation versus state-level execution to a critical turning point.

AXIA IAS ACADEMY
RISE ABOVE THE REST

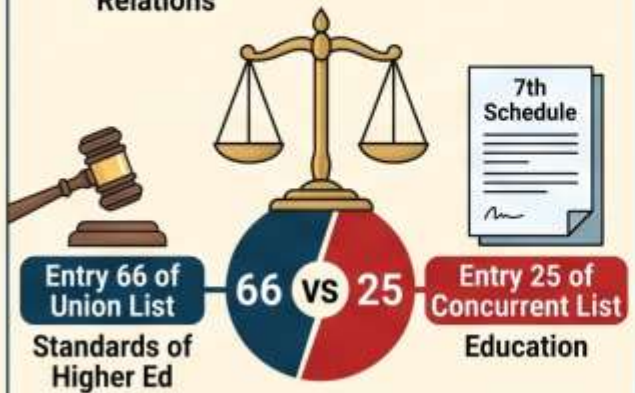
COMPREHENSIVE UPSC & APSC CCE ANALYSIS: THE VBSA BILL 2025 & CENTRALIZATION DEBATE

KEY CONCERNS FOR STATE AUTONOMY & ACADEMIC FREEDOM

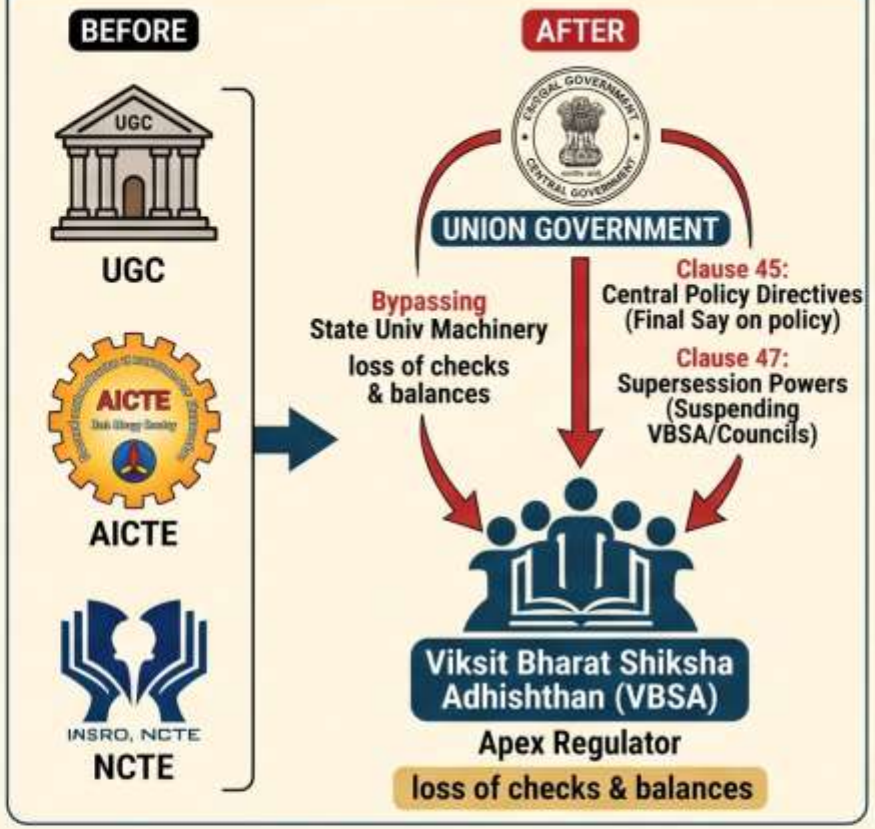
SYLLABUS & CONSTITUTIONAL LINKAGES

GS PAPER II
- Federalism
- Statutory Bodies
- Inter-governmental Relations

GS PAPER IV
- Ethics
- Public Good
- Accountability



KEY PROVISIONS: THE CENTRALIZING MECHANISMS



STAKEHOLDER OBJECTIONS & KEY CONCERNS

NDA-RULED STATES
Andhra Pradesh, Meghalaya

LIMITED STATE REPRESENTATION | EROSION OF LEGISLATIVE AUTHORITY | MANDATORY CONSULTATION SOUGHT

Note: NDA states nrorties raises raising concerns is clear.

CENTRAL UNIVERSITIES & INSTITUTES

REGULATOR RISKS BECOMING ARM OF GOVT | LACK OF PARLIAMENTARY OVERSIGHT | EFFECTIVE SUBORDINATION TO EXECUTIVE

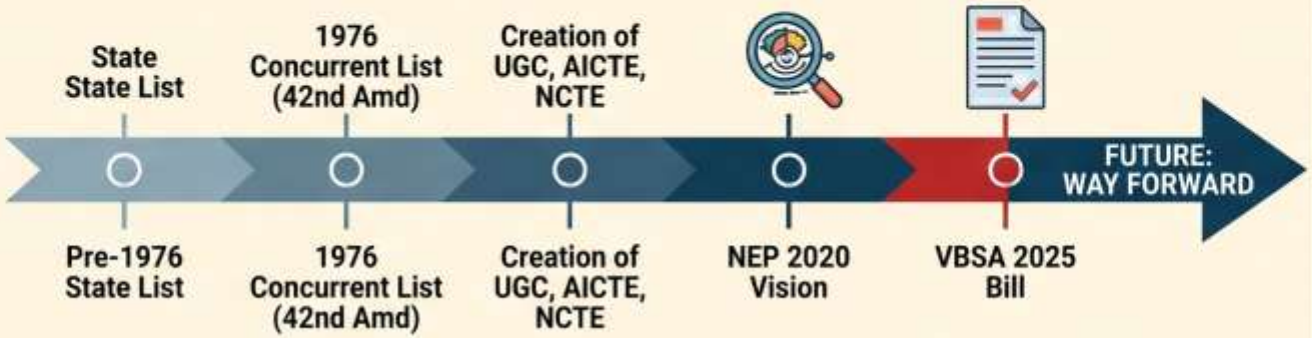
BHU Central Univ.. Chittoor on: Centre's expanded influence.

STATE UNIVERSITIES

Assam	Maharashtra	J&K
AUTONOMOUS OPERATIONS SHAPED BY CENTRE	LOSS OF BALANCING CHECKS	EXCESSIVE CENTRAL-ISATION

OTHER CONCERNS

SNDT	Women's Univ	Telangana Ed Dept
FEE ESCALATION RISKS	NO FEE REGULATION ARCHITECTURE	SELF-JUDGING CLAUSE ON DISPUTES



WAY FORWARD

- FORMAL INTERSTATE CONSENSUS COUNCIL (GST Council model)
- PHASED integration preserving legacy expertise
- ROBUST statutory checks on Clauses 45 & 47
- COMPREHENSIVE fee regulation architecture

- **Key Terms and Explanations**
- **National Food Security Act (NFSA), 2013:** A landmark legislation that transformed food security from a welfare scheme into a legal right. It legally covers up to 75% of the rural population and 50% of the urban population, dividing beneficiaries into two operational categories: Antyodaya Anna Yojana (AAY) households and Priority Households (PHH).
- **Antyodaya Anna Yojana (AAY):** Launched in 2000, this scheme targets the "poorest of the poor" within the subsidized population. Historically, it provides a fixed safety net of 35 kg of foodgrains per household per month, regardless of family size, ensuring a baseline survival quota for destitute families.
- **Priority Households (PHH):** Households that do not fall under AAY but are identified by states as vulnerable. Unlike AAY, their entitlement is structurally per-capita, fixed at 5 kg of foodgrains per person per month.
- **Household-Based vs. Per-Capita Allocation:**
    - *Household-based allocation* treats the family as a single economic unit, providing a uniform block of food (e.g., 35 kg) whether the family has two members or six.
    - *Per-capita allocation* links the volume of aid directly to individual headcounts (e.g., 7 kg per person), scaling the total quantity up or down based on family size.
- **Intra-Category Inequity:** A situation where individuals within the same socio-economic classification receive vastly different levels of support. For example, under a flat 35 kg household system, an individual in a 2-member family effectively gets 17.5 kg, while an individual in a 7-member family gets only 5 kg.
- **Demographic Transition Penalty:** A structural paradox where regions or states that successfully implement population control and experience a shrinking average family size face a net reduction in central resource allocations when distribution models shift from household-based to per-capita metrics.

- **Main Arguments and Substantive Parts**
- The structural tension in food administration revolves around balancing mathematical equity against regional demographic realities.
- **The Core Thesis**
- The central debate highlights a fundamental policy conflict: the Union government's push to standardize welfare delivery and eliminate per-capita anomalies versus the states' resistance against a move that inadvertently reduces aggregate food allocations for smaller, nuclear families in demographically advanced regions.
- **The Union Government’s Perspective: Rationalization and Equity**
- **Correcting Per-Capita Anomalies:** The Union's primary argument is that a flat household allocation creates an unintentional bias. Smaller AAY families enjoy a disproportionately high per-capita allotment (up to 17.5 kg per person for a duplex family), whereas larger vulnerable families see their per-capita share drop below the 5 kg baseline afforded to standard Priority Households.
- **Alignment with Nutritional Science:** The proposed shift to a 7 kg per-person model (capped at 35 kg per household) seeks to synchronize grain delivery with actual individual dietary consumption realities rather than arbitrary domestic boundaries.
- **Eliminating Intra-Category Gaps:** By establishing a predictable individual benchmark, the policy intends to make resource utilization uniform across the national landscape, smoothing out systemic variations between states with differing domestic compositions.
- **The State Governments' Perspective: The Vulnerability Shift**
- **The Nuclear Family Disadvantage:** Southern states like Tamil Nadu and Kerala point out that due to decades of successful social development, their target populations are characterized by small, nuclear families. A shift to a per-capita model with a 7 kg allocation means a family of three sees its statutory supply plunge from 35 kg to 21 kg.
- **Macro Quantum Reductions:** Data points from the ground highlight the scale of this change. In Tamil Nadu, nearly 15.75 lakh out of 18.64 lakh AAY households consist of fewer than five members. Shifting to this model would cause the state's monthly AAY foodgrain allocation to drop from 65,261 tonnes to 42,040 tonnes.
- **Out-of-Pocket Expenditure Inflation:** State leaders emphasize that for the destitute, subsidized rice is an irreplaceable staple. Any reduction forces these vulnerable groups into the open commercial market, driving up out-of-pocket living expenses and risking localized nutritional regression.

- **Historical Evolution of the Issue**
- **Pre-Independence and Wartime Genesis (1940s):** Organized food distribution in India emerged from regional crises and wartime disruptions. The princely states of Travancore and Cochin introduced early informal food grain rationing to mitigate acute shortages, laying the groundwork for state-led food administration.
- **Universal Institutionalization (1960s):** Driven by the severe food crises of the mid-1960s and the subsequent Green Revolution, the Union government institutionalized a universal Public Distribution System (PDS). The Food Corporation of India (FCI) was established to manage centralized procurement, storage, and interstate distribution.
- **The Shift to Targeted Welfare (1997):** Recognizing that universal distribution was stretching fiscal resources and failing to adequately reach the most marginalized, the government introduced the Targeted Public Distribution System (TPDS). This structurally divided the populace into Above Poverty Line (APL) and Below Poverty Line (BPL) cadres, introducing targeted pricing.
- **The Creation of the Ultimate Safety Net (2000):** To address the deepest pockets of rural destitution, the Antyodaya Anna Yojana (AAY) was carved out of the BPL category. It bypassed individual headcount issues by guaranteeing a flat, reliable allocation of 35 kg of foodgrains per family to ensure basic survival.
- **The Statutory Legal Era (2013):** The passage of the National Food Security Act (NFSA) in 2013 unified these historical experiments, converting welfare provisions into actionable, legally enforceable entitlements. It protected the AAY household quota of 35 kg while transitioning the rest of the beneficiary base into the per-capita Priority Household framework.
- **The Contemporary Rationalization Challenge (2026):** Today, the governance landscape faces structural tensions over the proposed amendment to Section 3 of the NFSA. This proposal aims to transition the remaining household-based AAY quotas into a per-capita matrix, bringing long-standing regional demographic variations to the forefront of national policy debate.

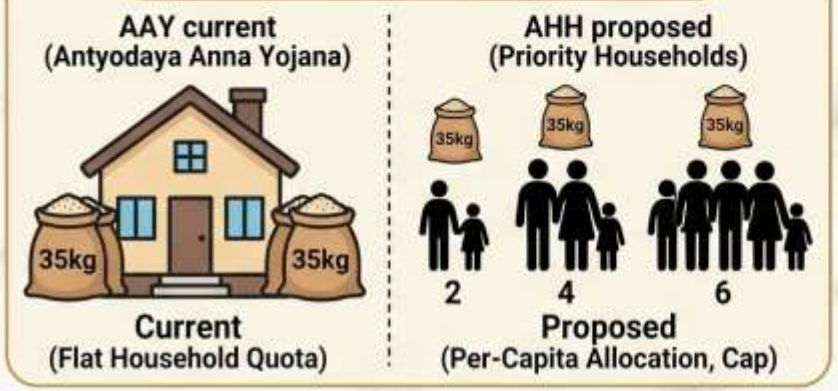
Way Forward

- **Implementing a "Floor-Protective" Hybrid Allocation:** Instead of a strict per-capita model that sharply cuts allocations for small families, the Union could introduce a hybrid approach. This would set a minimum guaranteed allocation—such as 25 or 30 kg—for households with fewer than four members, while scaling upward by 7 kg per person for larger families up to a set maximum. This maintains a reliable baseline safety net while addressing per-capita inequities.
- **Establishing a Federal Food Consensus Council:** To prevent unilateral statutory changes from causing friction between the Centre and states, major revisions to the NFSA should be channeled through a dedicated inter-state collaborative body. This ensures that unique regional demographic realities, like lower average household sizes, are accounted for before national policy amendments are finalized.
- **Broadening Nutritional Quality:** Food security policy should look beyond just distributing grain volume. The PDS framework could be expanded to include subsidized pulses, edible oils, and bio-fortified millets. This helps offset potential volume reductions by improving the overall nutritional density of the rations provided.
- **Cleaning Up Lists via Technology:** Rather than adjusting per-capita quotas to control fiscal costs, the focus should remain on reducing inclusion and exclusion errors. Utilizing advanced data analytics, cross-matching Aadhaar records, and updating state-level socio-economic surveys can help ensure that limited resources are directed exclusively to genuinely vulnerable households.

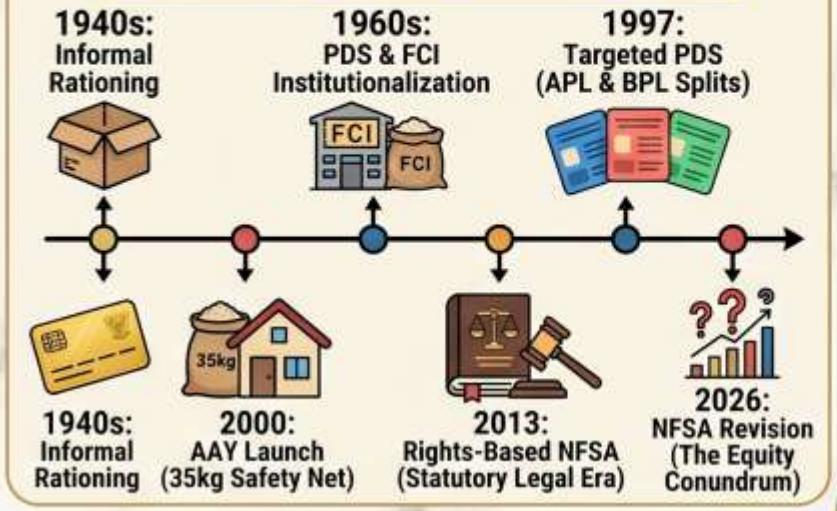
COMPREHENSIVE ANALYSIS: REVISING THE NATIONAL FOOD SECURITY ACT (NFSA) FOR UPSC & APSC

ON BEHALF OF AXIA IAS ACADEMY

KEY CONCEPTS & THE SHIFT



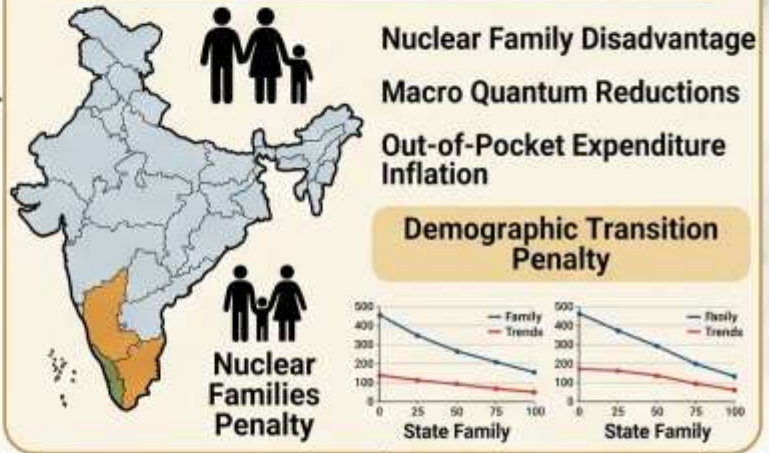
HISTORICAL EVOLUTION OF PDS



UNION GOVERNMENT'S RATIOANLE

MULTIDIMENSIONAL IMPACT ANALYSIS

SOUTHERN STATES' OPPOSITION (Tamil Nadu, Kerala)



WAY FORWARD & UPSC CSE PYQ CHECKPOINT

Way Forward:

- Hybrid Model
- Federal Food Consensus Council
- Broadening Nutrition
- Tech-driven List Cleaning

PYQ Checkpoint:

UPSC & APSC questions:

- NFSA (2018)
- CPI (2015)
- PDS Challenges (Mains 2022)
- etc.

- **Key Terms and Explanations**
- **Copernicus Climate Change Service (C3S):** This is a component of the European Union's Earth observation program. Implemented by the European Centre for Medium-Range Weather Forecasts (ECMWF), it monitors and analyzes global climate variables using satellite and in-situ data.
- **El Niño-Southern Oscillation (ENSO) / El Niño:** A naturally occurring climate pattern characterized by the anomalous warming of sea surface temperatures in the central and eastern tropical Pacific Ocean. It drastically alters global atmospheric circulation cells.
- **Sea Surface Temperature (SST) Anomalies:** The deviation of the ocean's surface water temperature from a long-term historical average.
- **Pre-Industrial Baseline (1850–1900):** The historical reference period used by the Intergovernmental Panel on Climate Change (IPCC) and global scientists to measure the extent of modern global warming. This period represents the state of the Earth's climate before human industrial activities began emitting massive amounts of greenhouse gases.
- **Extra-Polar Oceans:** The vast expanse of global oceans located between the latitudes of 60°S and 60°N. This excludes the immediate Arctic and Antarctic polar zones. Tracking this region provides a clear picture of the heat being retained by the world's open oceans.

- **Main Arguments and Substantive Parts**
- The core thesis surrounding modern climate observations centers on a troubling reality: the global climate system is no longer just gradually warming; it is experiencing rapid, compounded spikes where extreme anomalies are becoming the new baseline.
- **The Core Arguments and Supporting Evidence**
- **Systemic Accumulation of Planetary Heat:** Data trends, show that June 2026 registered as the second warmest June globally on record. The global average surface air temperature reached 16.54°C, a staggering 1.39°C warmer than the pre-industrial average. This indicates that the planet is consistently hovering near the critical 1.5°C threshold established under the Paris Agreement.
- **Oceans as Thermal Sinks:** A primary driver behind these record air temperatures is ocean warming. The extra-polar sea surface temperature reached an all-time high of 20.86°C in June 2026. Because oceans absorb over 90% of the excess heat trapped by greenhouse gases, their sustained high temperatures act as a climate engine, preventing the atmosphere from cooling down.
- **The Amplification Effect of El Niño:** Natural climate cycles are supercharging human-caused global warming. The intensification of El Niño conditions in the equatorial Pacific has added a layer of natural variability on top of an already elevated baseline of global warming, pushing regional ecosystems past their breaking points.
- **Regional Compounding and Feedback Loops:** The impacts are highly concentrated and self-reinforcing. Western Europe, for instance, experienced its warmest June on record, with temperatures 3.05°C above the 1991–2020 average. This extreme heat creates a dangerous feedback loop: early heatwaves dry out the soil, and dry soil loses its ability to cool the air through evaporation, which in turn intensifies subsequent heatwaves, droughts, and catastrophic wildfires in regions like the Iberian Peninsula and Southern France.

- **Historical Evolution of the Issue**
- **The Pre-Industrial Foundation (Pre-1900):** For centuries, the global climate fluctuated within relatively stable parameters. Greenhouse gas concentrations remained around 280 parts per million (ppm). Natural drivers like solar cycles and volcanic eruptions were the primary forces shaping climate variability.
- **The Rise of Industrialization (1900–1970s):** The rapid expansion of fossil-fuel-driven economies led to a steady increase in carbon dioxide emissions. Early scientific warnings, such as those by Svante Arrhenius in the late 19th century and Guy Callendar in the 1930s, confirmed that human activities were beginning to alter the Earth's heat balance. However, these concerns were largely ignored by mainstream policy.
- **Institutional Awakening (1980s–1990s):** As global temperature charts began to trend upward, the international community responded by establishing the Intergovernmental Panel on Climate Change (IPCC) in 1988. This was followed by the landmark Rio Earth Summit in 1992, which birthed the United Nations Framework Convention on Climate Change (UNFCCC). The 1997 Kyoto Protocol introduced the first legally binding emission reduction targets, though it suffered from structural weaknesses and lacked universal participation.
- **The Shift to Universal Targets (2000s–2015):** The signing of the Paris Agreement in 2015 marked a major shift. The global community agreed to limit warming to well below 2°C, while pursuing efforts to cap it at 1.5°C. Despite this consensus, global emissions continued to rise, and the gap between political promises and real-world action grew wider.
- **The Era of Extreme Anomaly (Present Day):** The mid-2020s, represent a transition from projected climate change to active climate disruption. Extreme events like marine heatwaves, prolonged droughts, and out-of-season wildfires are no longer rare anomalies—they are defining characteristics of the modern climate regime.

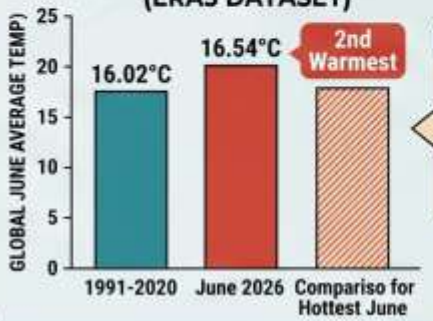
- **Way Forward**
- **Accelerating Decarbonization and Transforming Energy Systems:** Nations must commit to phasing out fossil fuel dependencies while scaling up investments in renewable energy infrastructure, such as solar, wind, and green hydrogen. This transition must be supported by modernized smart grids and energy storage systems to effectively manage the variable nature of renewable power.
- **Building Climate-Resilient Infrastructure and Rethinking Urban Design:** Urban areas must be redesigned to counter the "Urban Heat Island" effect. Cities can integrate nature-based solutions like urban forests, green roofs, and permeable pavements, while enforcing building codes that prioritize passive cooling and energy efficiency.
- **Strengthening Disaster Governance and Early Warning Systems:** Implementing localized Heat Action Plans (HAPs) that include early warning alerts, dedicated cooling centers, and modified working hours for outdoor laborers can significantly reduce heat-related illnesses and deaths. Similarly, deploying advanced satellite monitoring systems can help predict, detect, and contain wildfires before they spread out of control.
- **Fulfilling Financial Commitments and Sharing Green Technology:** Wealthy nations need to fulfill their financial promises by fully funding mechanisms like the Green Climate Fund and the Loss and Damage Fund. Removing intellectual property barriers on clean technologies will also allow developing nations to adopt green solutions quickly without compromising their economic growth.

GLOBAL CLIMATE CRISIS: THE JUNE 2026 HEATWAVE & ITS MULTIDIMENSIONAL UPSC CSE ANALYSIS

AXIA IAS ACADEMY

Section 1: KEY DATA: GLOBAL JUNE 2026 IS 2nd HOTTEST

GLOBAL JUNE AVERAGE TEMP (ERA5 DATASET)

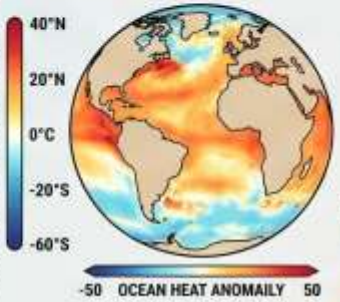


KEY TAKEAWAY

1.39°C

WARMR THAN PRE-INDUSTRIAL (1850-1900)

GLOBAL EXTRA-POLAR OCEAN SST (60°S-60°N): ALL-TIME HIGH



RECORD 20.86°C (0.01°C ABOVE 2024 RECORD)

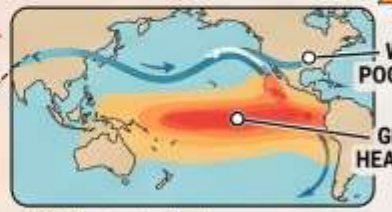
OCEAN HEAT WAVE

Section 2: MAJOR CLIMATE DRIVERS

EL NIÑO'S INTENSIFYING ROLE

Strong trade winds, cool water off Peru

EL NIÑO CONDITIONS



Weak trade winds, warm water moves across Pacific, shifting jet streams

NORMAL CONDITIONS
Strong trade winds, cool water off Peru

NATURAL VARIABILITY AMPLIFYING GLOBAL WARMING

OCEANS AS THERMAL SINKS
Absorbing over 90% excess hstan 90% excess heat

Section 3: EUROPE BAKED: SPECIFIC REGIONAL IMPACT

SOIL DRYNESS FEEDBACK
May Drought + High June Heat = DESICCATED SOIL.
Dry soil can't cool the air, intensifying heatwaves.

WILDFIRE RISK
SST + Drought + Heat = INCREASED WILDFIRE ACTIVITY

RISK TO ECOSYSTEMS & INFRASTRUCTURE
Straining power grids, damaging infrastructure, biodiversity loss.

Section 4: MULTIDIMENSIONAL UPSC ANALYSIS (GS PAPERS)

SOCIAL IMPACTS (GS1 & GS3)
Health Emergencies, Heat-related Deaths, Vulnerable Populations (Elderly, Outdoor Workers), Agricultural Livelihood Loss, Migration
UPSC RELEVANCE: SOCIAL ISSUES

POLITICAL & GEOPOLITICAL (GS2)
Competition for Resources (Water, Land), Resource Scarcity, Geopolitical Instability, Climate Funds Prioritization
UPSC RELEVANCE: INTERNATIONAL RELATIONS

LEGAL DIMENSION (GS2)
Rising Climate Litigation (States vs. Governments/Corps), Fundamental Rights (e.g., Art 21 India)
UPSC RELEVANCE: POLITY & LEGAL

ETHICAL & EQUITY (GS4)
Common But Differentiated Responsibilities (CBDR), Historical Emissions Gap, Climate Justice
UPSC RELEVANCE: ETHICS & INTERGENERATIONAL EQUITY

Section 5: UPSC & APSC SYLLABUS LINKAGES

GENERAL STUDIES PAPER 1: Important Geophysical Phenomena (e.g., El Niño)
GENERAL STUDIES PAPER 2: Bilateral, regional & global groupings & agreements (UNFCCC)
GENERAL STUDIES PAPER 3: Environmental pollution & degradation, disaster management (Heatwaves, Wildfires)
GENERAL STUDIES PAPER 4: Environmental Ethics, Corporate Responsibility

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Fossil fuel share in India's energy mix at record low in 2025: Energy Institute

SOFTENING GROWTH. Weather, renewable energy growth led to fossil fuel demand stagnating

Rishi Ranjan Kala
New Delhi

Even as fossil fuels dominate India's total energy supply, with coal leading the pack, the last calendar year marked the lowest share of hydrocarbons in the consumption mix, according to the Statistical Review of World Energy.

The Energy Institute's review said coal was the main source of energy (59 per cent) in India in 2025, followed by oil (28 per cent). In contrast to historical trends, there was no overall growth in fossil fuel consumption, with gas consumption falling by 5.9 per cent, coal consumption growing by just 0.6 per cent, and oil by 0.3 per cent.

Fossil fuel consumption still dominates in India, making up 93 per cent of total energy supply, although 2025 marked its lowest market share since the dataset came online in 1965, it added.

ENERGY EQUATION. According to the Energy Institute's Statistical Review of World Energy dataset, coal was the main source of energy (59 %) in India in 2025, followed by oil (28%) REUTERS

MILD WEATHER

The cause of this was a mixture of weather-driven and structural effects. The largest factor was milder temperatures during the monsoon season, which substantially reduced cooling demand, and therefore electricity demand growth, the review said.

"Alongside this, India set new records for wind and solar generation growth, while good hydro conditions further boosted renewables' output. India's behind-the-meter solar capacity increased by 40 per cent y-o-y to reach 43.6 GW, which was the largest increase seen anywhere outside China in 2025," it noted.

These factors combined led to a 3 per cent fall in coal generation and a 15 per cent fall in gas generation. Lack of transmission infrastructure prevented further integration of renewables, following rapid increases in capacity in the last five years, the review said.

IMPORT RELIANCE

In 2025, gas production fell by 1.1 billion m^3 (3.5 per cent), and gas imports fell by 3 billion m^3 (7.9 per cent), reflecting lower gas demand.

"India remained a major importer of gas, with 53 per cent of gas requirement met by imports in 2025, 60 per cent of which came from Qatar and the United Arab Emirates (UAE)," the review highlighted.

In the absence of significant domestic oil reserves, India imported 90 per cent of its crude oil. Russia was India's largest supplier of crude oil, making up a third of its imports, while a further 48 per cent came from West Asia. In contrast, India's significant refining capacity made it a net exporter of refined oil products, with Europe and other Asia-Pacific countries the largest destinations. Domestic oil production fell by more than 1 per cent in 2025, it added.

- **Key Terms and Explanations**
- **Hydrocarbons and Fossil Fuels**
- **Explanation:** These are energy sources formed from the decomposed remains of ancient organic matter buried deep within the Earth over millions of years. They primarily consist of carbon and hydrogen bonds and include coal, crude oil, and natural gas.
- **Energy Mix**
- **Explanation:** This refers to the proportional distribution of various primary energy sources—ranging from fossil fuels like coal and oil to non-fossil alternatives like solar, wind, and hydro—that a nation utilizes to meet its total electricity, industrial, and transportation demands.
- **Behind-the-Meter (BTM) Solar Capacity**
- **Explanation:** This refers to renewable energy electricity generation systems—most commonly residential, commercial, or industrial rooftop solar panels—that are connected directly to the user's side of the electricity meter. The power generated is consumed on-site, and only the surplus or deficit interacts with the commercial grid.
- **Transmission Infrastructure**
- **Explanation:** The physical network of high-voltage transmission lines, transformers, switching stations, and sub-stations required to safely evacuate and transport bulk electricity over long distances from generation plants to regional distribution companies (DISCOMs).
- **Net Exporter of Refined Products**
- **Explanation:** A macroeconomic position where a country imports vast amounts of raw crude oil but possesses a highly sophisticated, large-scale domestic refining industry that allows it to export high-value processed petroleum products (like diesel, petrol, and aviation turbine fuel) to international markets.

- **Main Arguments and Substantive Parts**
- **The Paradox of Absolute Growth vs. Relative Decline**
- **The Core Thesis:** Data from global energy reviews, such as the Energy Institute's Statistical Review of World Energy, points to a fascinating structural inflection point: India's fossil fuel market share has dropped to its lowest point since systematic tracking began in 1965, yet it still structurally dominates 93% of the total energy supply.
- **Supporting Evidence:** While coal continues to lead the national energy equation at 59% followed by oil at 28%, the actual growth rate of fossil fuel consumption has essentially stagnated. Natural gas consumption dropped by 5.9%, while coal and oil consumption grew by minor fractions of 0.6% and 0.3% respectively.
- **Exogenous Weather Triggers vs. Structural Green Growth**
- **Milder Weather Mitigation:** A major short-term driver behind the cooling of fossil fuel demand was an uncharacteristically mild monsoon season. The lower temperatures substantially suppressed the country’s peak cooling and air-conditioning demands, slowing down the overall growth of electricity consumption.
- **The Structural Solar Surge:** In tandem with favorable weather, structural changes played an equally heavy role. India recorded unprecedented wind and solar generation growth, complemented by strong hydro performance. The 40% year-on-year expansion of behind-the-meter solar stands out as a definitive structural shift toward decentralized clean power.
- **The Grid Integration Bottleneck**
- **Capacity-Grid Mismatch:** The core operational challenge identified is that India’s physical grid capacity is failing to keep pace with its generation capacity. Over the last five years, generation installations have scaled rapidly, but the lack of adequate transmission infrastructure has prevented the full evacuation and integration of these new renewable assets, resulting in a 3% drop in coal generation and a 15% drop in gas generation due to localized dynamics rather than systemic grid replacement.
- **Persisting Import Vulnerabilities and Geopolitical Realignment**
- **Critical Supply Dependencies:** The structural data confirms that India remains highly exposed to external geopolitical shocks due to its lack of domestic hydrocarbon reserves. The nation relies on imports for 53% of its natural gas (sourced primarily from Qatar and the UAE) and an astonishing 90% of its crude oil.
- **The Russian Pivot:** Over the last few years, a massive realignment in supply chains occurred, with Russia emerging as India’s largest single crude oil supplier, accounting for a third of all imports, while West Asia continues to supply a collective 48%.

- **Historical Evolution of the Issue**
- **Pre-Independence to Early Post-Independence (1940s–1960s)**
- **Agrarian Energy Base:** During the early decades of the republic, India’s energy profile was overwhelmingly decentralized and non-commercial, relying heavily on traditional biomass, firewood, and agricultural waste.
- **The Industrial Push:** As the Five-Year Plans emphasized heavy industrialization, the state turned to domestic coal resources, laying down the groundwork for a coal-dominated electricity grid. By 1965, systematic global tracking began capturing India's growing commercial dependency on hydrocarbons.
- **The Oil Shocks and Domestic Exploration (1970s–1990s)**
- **The Vulnerability Realization:** The global oil crises of 1973 and 1979 hit the Indian economy severely, draining foreign exchange reserves. This catalyzed the establishment of national entities like ONGC and accelerated domestic exploration, leading to major discoveries like the Bombay High field.
- **Thermal Consolidation:** Concurrently, NTPC was established to construct mega coal-fired thermal power stations near coal pitheads, solidifying coal as the structural backbone of India’s economic growth engine.
- **Liberalization and Regulatory Reforms (1990s–2000s)**
- **The Electricity Act of 2003:** This landmark legislation unbundled the monolithic State Electricity Boards (SEBs) into separate generation, transmission, and distribution entities. It introduced open access, promoted competition, and for the first time, legally mandated the promotion of renewable energy sources, opening the door for private sector investments in wind and early solar projects.
- **The Renewable Revolution and Global Commitments (2010s–2020s)**
- **The Solar Pivot:** The launch of the Jawaharlal Nehru National Solar Mission in 2010 transformed India’s climate policy from reactive mitigation to aggressive capacity building.
- **Global Climate Leadership:** At COP21 in Paris and subsequently at COP26 in Glasgow, India declared ambitious non-fossil energy targets (reaching 500 GW by 2030). Tariffs for solar energy plummeted due to competitive reverse bidding, making renewables cheaper than new coal-based generation.
- **The Modern Frontier: Decarbonization and Grid Lock (2025–Present)**
- **The Structural Paradox:** As captured by recent energy institute reviews, the energy transition has evolved from a simple "capacity addition" challenge into a complex "grid integration" challenge. The problem is no longer about setting records in solar installation—which India is doing via behind-the-meter growth—but building the transmission lines and storage systems needed to sustain this transition without grid collapse.

INDIA'S ENERGY MIX: THE 2025 INFLECTION POINT & BEYOND | KEY UPSC CSE PERSPECTIVES

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1. KEY TERMS DEFINED

- **Hydrocarbons & Fossil Fuels**
- **Energy Mix**
- **Behind-the-Meter (BTM) Solar**
- **Transmission Infrastructure**
- **Net Refined Exporter**

3. HISTORICAL EVOLUTION

- **Pre-1960s** Agrarian Energy
- **1970s-90s** State Coal & Oil Shocks
- **2003** Electricity Act Reforms
- **2010s** National Solar Mission
- **2025+** Grid Integration Decarbonization

TRANSITION FLOW

Record Low Hydrocarbon Share (since 1965) with Absolute Fossil Fuel Consumption Stagnating.

PRESENT DOMINANCE
93% Hydrocarbons, 59% Coal

DRIVERS
- MILD WEATHER (Cooling Demand ↓)
- RENEWABLE SURGE (Solar/Wind/Hydro ↑)
- 40% BTM Solar Growth outside China

CHALLENGES
- GRID BOTTLEBECKS (Weak Transmission Lines)
- GRID NEEDS
- STORAGE NEEDS
- IMPORT RELIANCE (Oil/Gas)

FUTURE LOW-CARBON GOAL

6. NCERT LINKAGES & 7. UPSC CSE SYLLABUS

GS Papers	NCERT	NCERT texts
GS Paper 1	Geography X/XII	GS3: Infra/Environ
GS Paper 2	Economics XI	GS2: IR/Polices
GS Paper 3		GS1/Essay

4. LOGICAL FOUNDATIONS

- **Energy Trilemma Balance** (Security, Equity, Sustainability)
- **CBDR** (Common but Differentiated Responsibilities) | **Climate Justice**
- **Techno-Economic Realism** Balancing capital and technology

5. MULTIDIMENSIONAL ANALYSIS (GS PERSPECTIVES)

Social
- **Just Transitions** (job in coil areas in coal areas)
- **Retraining symbolsi**
- **Rural Empowerment**

Political
- **DISCOM Tensions** (state vs. center grid)
- **Resource Sovereignty**

Legal
- **Contract Sanctity**
- **RPO Compliance**
- **Land Disputes**

Ethical
- **Poverty Alleviation vs. Climate Justice**

International
- **Strategic oil Autonomy**
- **Diversification of Sources**

Economic
- **CAPEX Demands** huge investment into transmission lines and BESS storage systems
- **Current Account Deficit Management**

WAY FORWARD

ACCELETRATED GRID MODERNIZATION & GREEN CORRIDORS
HVDC

MANDATING & SUBSIDIZING ENERGY STORAGE (BESS/PHS)
grid-scale battery PHs

FINANCIAL RE-ENGINEERING OF DISCOMs
PHS

SOURCING DIVERSIFICATION & ENHANCING REFINING LEAD

India, Australia move to deepen cooperation in the Indo-Pacific

Amid geostrategic uncertainties, Prime Minister Modi, his Australian counterpart, Albanese, adopt declaration to expand maritime security ties and defence collaboration; the countries also seal pacts on civil nuclear energy and critical minerals

Saurabh Trivedi
NEW DELHI

India and Australia on Thursday adopted a Joint Declaration on Defence and Security Cooperation, committing to significantly deepen military engagement, strengthen defence industrial collaboration, and expand maritime security cooperation amid growing geostrategic uncertainty in the Indo-Pacific region. The two countries also sealed pacts on civil nuclear energy and critical minerals sectors.

The declaration, adopted by Prime Minister Narendra Modi and his Australian counterpart, Anthony Albanese, outlines an ambitious road map to elevate defence ties through strategic consultations, enhanced interoperability between the armed forces, expanded military exercises, and greater collaboration in defence science, technology, and industrial supply chains.

A statement released by the office of the Australian Prime Minister mentioned that, under the declaration, the two sides agreed to hold regular consultations on defence-related developments in the Indo-Pacific affecting their shared interests, increase the complexity of bilateral and multilateral military exercises, accelerate efforts to improve interoperability and information sharing between their armed forces, and expand aircraft deployments from each other's territories.

Tactical ties: Prime Minister Narendra Modi being greeted by his Australian counterpart, Anthony Albanese, in Melbourne on Thursday. AP

The deal also envisages deeper personnel exchanges through education, training, and liaison appointments, while exploring opportunities to cooperate in recruiting skilled personnel for their respective defence workforces.

Mr. Modi emphasised the importance of a free and stable Indo-Pacific and highlighted the growing engagement between the two nations in the defence domain. "The Indo-Pacific is not just the confluence of two oceans. It also symbolises the shared aspirations of like-minded democracies like India and Australia," he said.

The agreement on civil nuclear energy to facilitate the commercial supply of uranium from Australia to India to fuel nuclear power projects came nearly 12 years after the two countries inked a historic civil nuclear cooperation pact.

"Today, we have signed an important agreement in the field of nuclear energy. This will open the way for uranium supplies from Australia to India and give new impetus to our clean energy objectives," he said.

He also announced the launch of the Australia-India Partnership on Cyber, Critical Technologies, and Supply Chains and said both sides will also work together on a critical minerals corridor.

Under the provisions of the energy security framework, India and Australia vowed to strengthen energy security by maintaining a stable, secure and reliable supply of coal, diesel, other liquid fuels and natural gas. The two countries will implement an India-Australia Maritime Security Collaboration Road Map to strengthen coordination across the Indian Ocean and the wider Indo-Pacific.

Both sides committed to encouraging greater integration between their defence industries, building resilient supply chains and expanding collaboration in defence innovation, science and technology.

The leaders noted that the new declaration builds upon the India-Australia Joint Declaration on Security Cooperation signed in 2009 and complements existing institutional mechanisms, including the Foreign Ministers' Framework Dialogue, 2+2 Foreign and Defence Ministerial Dialogue, and Defence Ministers' Dialogue. They also reiterated support for regional institutions, including the Indian Ocean Rim Association, ASEAN-led regional architecture and the Pacific Islands Forum, describing them as key platforms for addressing regional challenges.

(With inputs from PTI)

RELATED REPORT ON
» PAGE 4

- **Key Terms and Explanations**
- **The Indo-Pacific Geostrategic Landscape:** This term defines a unified maritime space stretching from the western shores of the Americas to the eastern coast of Africa. It integrates the Indian and Pacific Oceans into a singular strategic construct.
- **Critical Minerals and Strategic Corridors:** These are mineral elements—such as lithium, cobalt, nickel, and rare earths—that are absolutely indispensable for modern high-tech manufacturing, defense hardware, and green energy technology. A "critical minerals corridor" refers to a secure, institutionalized supply chain pathway between nations.
- **2+2 Ministerial Dialogue Architecture:** An advanced diplomatic mechanism where the Defense and Foreign Ministers of two nations meet simultaneously to align their diplomatic posture with their military capabilities.
- **Civil Nuclear Cooperation Framework:** A bilateral legal treaty that permits the commercial transfer of nuclear technology, equipment, and fuel (like uranium) between nations for peaceful, civilian energy generation under international safeguards.
- **Military Interoperability:** The operational capability of different national armed forces to act together seamlessly, utilizing compatible communication networks, shared logistics, and synchronized tactical doctrines.

- **Main Arguments and Substantive Parts**
- The evolving dynamics highlighted in the interactions between New Delhi and Canberra reveal a profound transformation in regional alignments. The core thesis rests on a simple premise: in an era marked by deep geostrategic uncertainties in the Indo-Pacific, traditional economic interactions are no longer sufficient. Middle powers must fundamentally upgrade their bilateral architectures into comprehensive defense and technology alliances.
- **The Strategic and Operational Defense Pillars**
- The security architecture has moved from theoretical declarations to concrete operational roadmaps. The adoption of the Joint Declaration on Defence and Security Cooperation serves as the new baseline. The substantive parts of this defense alignment include:
- **The Maritime Security Collaboration Road Map:** A dedicated framework designed to synchronize naval operations, oceanographic mapping, and domain awareness across the Indian Ocean and the wider Indo-Pacific.
- **Cross-Territory Aircraft Deployments:** Moving beyond simple port visits, the authorization for military aircraft to deploy from each other's territories vastly extends the operational reach of both air forces.
- **Defense Industrial Integration:** A concerted push to link defense science, technology innovations, and industrial supply chains, reducing vulnerabilities to external supply shocks.
- **The Resource and Technology Nexus**
- A major argument woven into this partnership is that true security is multidimensional, requiring robust energy and technological resilience alongside military hardware.
- **The Civil Nuclear Pivot:** The formalization of commercial uranium supply agreements—coming approximately twelve years after the foundational civil nuclear pact—acts as a massive catalyst for India’s clean energy goals.
- **The Critical Minerals Corridor:** By launching the Partnership on Cyber, Critical Technologies, and Supply Chains, both nations are actively building an alternative supply loop to safeguard critical tech sectors from monopolistic vulnerabilities.
- **Hydrocarbon Stabilization:** Even while transitioning to green tech, the partnership explicitly secures the continuity of traditional energy flows, including coal, diesel, and natural gas, to maintain immediate economic stability.

- **Historical Evolution of the Issue**
- **The Cold War Distance and Post-Independence Divergence**
- Despite sharing the institutional legacies of the Commonwealth, a common legal heritage, and a mutual passion for cricket, the post-1947 era saw the two nations drift into opposite geopolitical camps. India championed the Non-Aligned Movement (NAM) and cultivated deep strategic dependencies on the Soviet Union. Conversely, Australia anchored its security firmly within Western alliances, notably through the ANZUS (Australia, New Zealand, United States) treaty. This structural mismatch meant that for nearly four decades, bilateral engagement remained superficial.
- **The 1998 Pokhran Shockwave and Strategic Freeze**
- The lowest point in modern bilateral relations occurred in 1998 following India's Pokhran-II nuclear tests. Australia adopted a highly critical stance, suspending defense ties and imposing rigid restrictions on high-level political dialogues. Canberra's steadfast refusal to sell uranium to a non-signatory of the Nuclear Non-Proliferation Treaty (NPT) created a significant diplomatic barrier that stalled meaningful collaboration for years.
- **The 2009 Turning Point and the Rise of the Indo-Pacific**
- The turning point arrived in 2009 with the signing of the initial Joint Declaration on Security Cooperation. As the geopolitical center of gravity shifted toward Asia and maritime security challenges grew in the South China Sea, both nations recognized the need to reengage. The shared realization that the Indian and Pacific Oceans formed an interconnected strategic space prompted a fundamental reassessment of their bilateral priorities.
- **The 2014 Uranium Breakthrough to the Modern Era**
- A major diplomatic breakthrough occurred in 2014 when Australia officially reversed its long-standing policy, clearing the legal path for the commercial sale of uranium to India for peaceful energy purposes. This crucial decision removed the primary source of bilateral friction.
- In the years that followed, the relationship advanced rapidly. It was upgraded to a Comprehensive Strategic Partnership, supported by the implementation of the Economic Cooperation and Trade Agreement (ECTA), institutionalized 2+2 dialogues, and the comprehensive maritime roadmaps seen today.

- **Way Forward**
- **Operationalizing the Maritime Security Road Map:** Both countries should upgrade their joint naval exercises, such as AUSINDEX and Malabar, from basic tactical drills to advanced anti-submarine warfare simulations. Establishing direct, real-time encrypted data-sharing links between the Indian Navy's Information Fusion Centre (IFC-IOR) and Australia's maritime command centers will turn domain awareness into actionable security cooperation.
- **Accelerating the Critical Minerals Corridor:** It is vital to fast-track joint ventures between India's KABIL (Khanij Bidesh India Joint Venture) and Australian mineral exporters. Securing direct equity stakes in Australian lithium, cobalt, and rare earth mining projects will help shield Indian manufacturing from external supply disruptions and market volatility.
- **Commercial Execution of Civil Nuclear Pacts:** Both sides need to streamline regulatory processes and resolve remaining commercial pricing questions to ensure a steady, long-term supply of Australian uranium to India's civilian reactors. This will provide a reliable, base-load power source to backstop India's green energy expansion.
- **Inclusive Diplomatic Outreach to Regional Institutions:** New Delhi and Canberra should design joint development projects tailored specifically for smaller island nations within the Pacific Islands Forum and the Indian Ocean Rim Association (IORA). Delivering practical assistance in climate resilience, sustainable fisheries, and disaster relief will demonstrate that their partnership is focused on broad regional stability, rather than just great-power balancing.

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MASTERING THE INDIA-AUSTRALIA COMPREHENSIVE STRATEGIC PARTNERSHIP: A GEOPOLITICAL FRAMEWORK FOR UPSC CSE

KEY TERMS & EXPLANATIONS

Indo-Pacific Geostrategic Landscape

Critical Minerals & Strategic Corridors

2+2 Ministerial Dialogue Architecture

Civil Nuclear Cooperation Framework

Military Interoperability

HLHERICAL EVOLUTION

BILATERAL ARCHITECTURE

DEEPENING STRATEGIC & OPERATIONAL COOPERATION

MARITIME & DEFENSE PILLARS

- Maritime Security Road Map
- Interoperability
- Cross-Territory Deployments
- Defense Industrial Integration

RESOURCE & TECH PILLARS

- Civil Nuclear Energy Pacts
- Critical Minerals Corridor
- Cyber & Supply Chain Alliance
- Hydrocarbon Stabilization

MULTIDIMENSIONAL ANALYSIS

	Social	Political	Legal
Social	• Diaspora • Defense Education	• High-Level Alignment • Consensus	• Rules-Based Order • Frameworks
Retrih	Legal: • Rules-Based Order • Frameworks		Ethical: • Global Commons • Small States
Ethcit	International: • Reinforcing Quad • ASEAN/IORA	Enemotical: • Reinforcing Quad • ASEAN/IORA	Economic: • Critical Minerals • Transitions

HISTORICAL EVOLUTION

- **Pre-1990s**: • Cold War Distance • Opposite Camps
- **1998**: • Pokhran Shockwave • Strategic Freeze
- **2009**: • Turning Point • Security Pact Sign
- **2014**: • Uranium Policy Tx • Legal Breakthrough
- **Present**: • Deepened Alignment • Advanced Cooperation

LOGICAL & PHILOSOPHICAL BASE

- STRUCTURAL REALISM & BALANCE OF POWER
- CONFLUENCE OF TWO OCEANS Abe's vision
- NORMATIVE IDENTITY OF DEMOCRACIES (shared values, trust)

LINKAGES WITH NCERTs

Class XII Pol - Alternative Centres of Power

Class XII Geog - International Trade

Class XI Pol - Peace & Development

LINKAGES WITH UPSC CSE SYLLABUS

- GS-1 Geography
- GS-2 International Relations
- GS-3 Security & S&T
- GS-4 Ethics, Essay & Optional

WAY FORWARD

- Operationalize Naval Security Map
- Fast-Track Critical Mineral Corridor
- Commercially Execute Nuclear Pacts
- Inclusive Diplomatic Outreach

ALL PREVIOUS YEARS' UPSC QUESTIONS

- MAINS 2023: What is amariaos supcessed of Power: Hiaartche Mlioi questions in Lwatiaha?
- MAINS 2021: What is tronal-musteotita an Cuenanu Stavine Ceentions questions in Lwsstiata?
- MAINS 2019: What's the lleation Questions Ciomprehensive Strategic Partnership?
- 2017: Uranium Policy Ts, sinnantion To Shared Barismash, Legal Teniais Breakthrough?
- MAINS 2022: What is the incluces of Questions historio alter mahs questions in Lwastisha?
- PRELIM 2020: What is anrivereal moronest anitemenit of Gliobal Comnnittee!ı, ASEAN/IORA?
- 2018: What is waiting the Inclusive comprehensivy Quad and advanced Cooperation?

AI poses a relatively lower risk to India's GCC jobs: CEA

Nageswaran says most of India's Global Capability Centres are engaged in cutting-edge work rather than providing low-cost support, which is what AI can easily and cheaply replace

T.C.A. Sharad Raghavan
NEW DELHI

India's Global Capability Centres (GCCs) are not just low-cost support in a new form, but are areas where cutting edge work is taking place, Chief Economic Adviser (CEA) V. Anantha Nageswaran said on Thursday. As such, these GCC jobs are also at a relatively lower risk of being replaced by Artificial Intelligence (AI), he added.

However, the CEA did warn against the dangers of complacency, saying that other countries are already copying India's model.

"It is cutting edge and increasingly so," Mr. Nageswaran said while speaking at a session during the Confederation of Indian Industry's (CII) GCC Business Summit. "Global banks run their risk systems and trading platforms in Mumbai and Bangalore and elsewhere as well, car makers design their vehicles' embedded systems from Chennai and Pune, semiconductor firms carry out chip design, pharmaceutical companies run clinical analytics here, and consumer firms build and own entire digital products here in India," he added.

Mr. Nageswaran said that the intellectual property created in these centers is real, with the patents being filed here, the products shipped from India and global roles increasingly held by people sitting in India.

CEA V. Anantha Nageswaran speaks at the inaugural session of the CII GCC Business Summit 2026 on Thursday. BY ARRANGEMENT

The CEA also sought to answer whether these GCCs would be under threat from the rise of AI and would these GCC jobs be automated soon.

"Part of the model is indeed exposed," Mr. Nageswaran conceded. "The work that was routine, repetitive and rule bound is exactly the work that AI does most easily and most cheaply as well. If a centre's value rests only on doing simple tasks at low cost, then the value is under real threat. We should not pretend otherwise."

However, he also said that this is not where most Indian centres are today, and that this was not the direction in which they are headed.

"Artificial intelligence does not build, deploy or govern itself," Mr. Nageswaran explained. "Someone has to design these systems, train them, test them, correct them and hold them to account. Someone has to decide where they should be used and where they must not be used."

"Someone has to carry the responsibility when they fail," he added. "And that work is expanding and not shrinking. And a large and growing share of this kind of work is being done in India."

Complacency matters

The CEA, however, cautioned against complacency, saying that standing still meant allowing others to catch up. "Other countries are watching us and copying us," he asserted. "Our costs are rising. In some skills, our talent is already scarce, so indispensability is not a title that India can hold on to forever."

He added that the move from cost centres to capability centres, and from execution to innovation has to be made by firms and by people, with the government acting as a support.

"Skilling is the clearest case," Mr. Nageswaran said. "We produce a very large number of graduates each year. We do not yet produce enough of those who are ready on day one. By some estimates, fewer than half of them are ready for the job on the day they arrive."

"Closing that gap means universities, industry and the government working together, not one after the other, but at the same time," he said.

He further said that the position India currently holds in the global capability centre market was one that it has to keep earning, over and over.

"The moment we believe we have arrived is the moment others begin to catch up," he said. "So let us not celebrate too early. Let us treat this success not as a finishing line, but as a foundation or a milestone."

'India aims to be strategic leader in hosting GCCs'

Finance Minister Nirmala Sitharaman on Thursday said India aspires to become a "strategic leader" in hosting global capability centres (GCCs) of MNCs and become indispensable to the world's knowledge economy. India possesses "every ingredient" required to lead this transformation, she said. PTI

- **Key Terms and Explanations**
- **Global Capability Centres (GCCs)**
- GCCs are captive business units established by multinational corporations (MNCs) in offshore locations to handle specialized functions. Historically operating as low-cost back offices for basic IT support, modern GCCs have transformed into strategic hubs handling core innovations, global risk compliance, and product design.
- **Value-Chain Upgradation**
- This concept refers to the transition of an economic cluster or nation from low-value, low-margin activities to high-value, high-margin operations. Within the knowledge economy, it signifies moving away from basic execution and cost-arbitrage toward proprietary intellectual property creation and strategic leadership.
- **Cost Arbitrage vs. Value Arbitrage**
- Cost arbitrage leverages the wage differentials between two countries to reduce expenditure on routine tasks. Value arbitrage, by contrast, focuses on utilizing highly specialized talent in a specific geography to build sophisticated systems that drive global revenue, shifting the primary metric from cost savings to value creation.
- **Day-One Employability**
- This metric indicates the readiness of tertiary education graduates to enter the workforce and contribute productively to an enterprise immediately upon hiring, without requiring extensive, long-term remedial technical training or foundational behavioral coaching by the employer.

- **Main Arguments and Substantive Parts**
- **Insulation of High-End Knowledge Work from AI Disruption**
- A central argument established by economic leaders, including Chief Economic Adviser V. Anantha Nageswaran, is that India's tech ecosystem is highly differentiated in its exposure to Artificial Intelligence. The assumption that automation will trigger mass layoffs across all technical services overlooks the qualitative evolution of modern jobs. Because global enterprises run their core risk frameworks, digital platforms, and clinical analytics directly out of Indian hubs, these positions remain insulated. AI thrives on routine, rule-based tasks; it struggles to replicate the creative problem-solving and systemic overview embedded in cutting-edge research and development.
- **The Inherent Vulnerability of Routine Operations**
- While the outlook for advanced capability hubs is positive, a clear distinction must be made regarding routine tasks. Facilities whose sole value proposition rests on low-cost execution of highly repetitive workflows are under imminent threat. AI systems can manage basic data entry, standard customer support, and rule-bound code generation more cheaply and rapidly than human capital. Pretending these entry-level jobs are safe could stall necessary adjustments.
- **The Imperative of Human Accountability and Governance**
- Technology is not self-sustaining, self-correcting, or legally accountable. As AI systems become integrated into enterprise operations, the demand for human intervention changes rather than disappears. Human intelligence is required to train machine learning models, audit algorithmic bias, test edge cases, and assume legal responsibility when automated frameworks fail. The expanding frontier of AI deployment creates a parallel demand for high-skilled human governors.
- **The Vulnerability of Global Leadership to Complacency**
- India's current preeminence in the global capability landscape is a dynamic achievement, not a permanent guarantee. Competing emerging economies are actively analyzing and replicating the cluster models established in cities like Bengaluru, Pune, and Hyderabad. Concurrently, rising domestic wage structures and an emerging scarcity of top-tier talent threaten India’s competitive edge. To sustain this momentum, economic ecosystems must continuously earn their leadership status through constant innovation.

- **Historical Evolution of the Issue**
- **Pre-1990s: Institutional Foundations Amid Insularity**
- Prior to economic liberalization, the domestic technology ecosystem remained isolated due to restrictive regulatory frameworks and limited global trade integration. However, this era was critical for establishing foundational human capital. Public investment in premier technical institutions created a pool of highly trained engineers who, due to a lack of domestic opportunities, often sought employment abroad, laying the groundwork for a robust global diaspora.
- **1990s to Early 2000s: The Era of Cost Arbitrage and Y2K**
- The historic economic liberalization of 1991 coincided with the global Y2K crisis, providing a significant catalyst for the Indian IT services sector. Western enterprises looked to India for cost-effective technical support. The dominant model during this phase was cost arbitrage, characterized by basic business process outsourcing (BPO), routine software maintenance, and data entry operations.
- **2010s: The Emergence of Captive Units**
- As India's infrastructure matured and its workforce gained experience, multinational corporations moved away from third-party outsourcing vendors. They began establishing their own captive units—the first generation of Global Capability Centres. These entities focused on standardized software development, infrastructure management, and complex back-office financial accounting, elevating India's role from temporary contractors to integrated corporate partners.
- **Present Day: Centers of Excellence and Intellectual Property Engines**
- The current landscape marks the evolution of GCCs into global centers of excellence. India no longer simply executes instructions; it drives global strategy. As highlighted at prominent industry forums, like the CII GCC Business Summit 2026, Indian engineers are filing international patents, leading global digital transformation projects, and developing products directly from domestic hubs, making the country an indispensable anchor of the global knowledge economy.

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INDIA'S TECH LANDSCAPE: FROM COST ARBITRAGE TO GLOBAL INNOVATION LEADER

HISTORICAL EVOLUTION OF INDIA'S TECH SECTOR

Pre-1990s
FOUNDATIONAL HUMAN CAPITAL
(limited integration, restrictive rules)

1990s-Early 2000s
Y2K & COST ARBITRAGE
(BPO, routine software, low-cost)

2010s
CAPTIVE UNITS
(standard development, infrastructure)

Present Day
GLOBAL CAPABILITY CENTRES
(GCCs, center of excellence - global strategy - global strategy, IP creation)

KEY CONCEPTS & THE PARADIGM SHIFT

1. GCCs
captive units for corovations for estanhere suppors to core innovations, and conovation,, risk compliance

2 VALUE-CHAIN UPGRADATION
Moving from routine support to propriety IP and design

3 COST ARBITRAGE VS. VALUE ARBITRAGE

Comparison

	VS	
• Low wages • Routine jobs	VS	• Top talent • Strategic global systems • Value creation

4 DAY-ONE EMPLOYABILITY
Graduate readiness for productive enterprise contribution

IMPENDING DISRUPTION & ANALYSIS

INSULATION FROM AI DISRUPTION

	VS	
Modern GCC Ecosystem	VS	Traditional IT Support
High Complexity		Automation Risk
Low AI Risk		High Exposure
Human Accountability		Routine Tasks

MULTIDIMENSIONAL ANALYSIS

SOCIAL (K-khaped polarization risk)
POLITICAL (policy shift for advanced tech)
LEGAL (Escalation of IPR friction/ data)
ETHICAL (Automated system liability)
ECONOMIC (Growth paradigm shift: volume to value)

UPSC CSE & NCERT SYNERGY + WAY FORWARD

SYLLABUS CONNECTION

Class 11/12 Economics/Geography
- Employment
- Human Resource
- Sectors

→ UPSC GS Paper 2 [HRD]
→ GS Paper 3 [Economy, AI]
→ GS Paper 4 [Ethical Governance]
→ Essay

WAY FORWARD

1. **SYNCHRONIZED COLLABORATION** (Govt-Academia-Industry)
2. **HIGH-END SKILLING** (Advanced tech training like AI auditing, quantum computing)
3. **STRENGTHEN IPR INFRASTRUCTURE** (Faster processing, clear fiscal incentives, domestic R&D)
4. **CONTINUOUS LEARNING CULTURE** (Retraining mid-career professionals)

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