AXIA IAS ACADEMY

DAILY NEWS ANALYSIS

MAY 18

CONSISTENT COMPREHENSIVE AND CREDIBLE

UNIQUE AND BEST IN QUALITY

• LAW

Great Nicobar megaproject: Case before HC hinges on legality of tribal consent

Nikhil Ghanekar
New Delhi, May 17

EARLIER THIS month, the Calcutta High Court's Port Blair circuit bench agreed to hear a PIL petition by former Union government secretary Meena Gupta, alleging violations of the Forest Rights Act (FRA), 2006, while seeking tribal consent for the Great Nicobar Island (GNI) infrastructure project. The Union government and the Andaman and Nicobar Islands administration had raised preliminary objections regarding the maintainability of the petition and two other matters: on the reduction of the buffer zone of Galathea National Park and Campbell Bay National Park.

The court, however, overruled these objections. Under its Rs 81,000-crore GNI project, the government proposes to build an integrated township, a transshipment container port, a solar and gas-based power plant, and a greenfield dual-use military and civilian airport.

The case

In 2024, Gupta challenged the different sets of procedures followed under the FRA and orders issued thereunder, alleging that they are unlawful.

This included the constitution of a subdivisional level committee (SDLC) for Campbell Bay tehsil; the Gram Sabhas convened in Campbell Bay, Laxmi Nagar, and Govind Nagar on August 12, 2022; and the resolutions passed consenting to forest diversion.

Further, the Recognition of Forest Rights (RoFR) certificate issued on August 18, 2022, by the Nicobar district's Deputy Commissioner, stating that all forest rights have been settled, was also challenged.

Before approaching the Calcutta HC, Gupta was one of the signatories of a representation made to the President of India regarding tribal rights and alleged procedural violations under the FRA.

The representation had not evoked any response.

Most of the 166.10 sq km of land being diverted for the Great Nicobar project is protected forest. WIKIMEDIA COMMONS

Challenging legality of consent

The plea argues that the process claiming consent of tribals for the diversion of land for the project was allegedly illegal, as it did not follow the norms under the FRA.

The plea alleges that not a single forest rights claim has been settled. Under the FRA, its Rules, and as per a 2009 order of the environment ministry, such claims must be identified and settled by the administration before diverting land.

The FRA recognises pre-existing rights of Scheduled Tribes (STs) and other forest dwellers, who have lived in the forests for at least three generations. These include both individual and community rights.

The petition states that the SDLC, which examines resolutions of a Gram Sabha, did not follow the FRA Rules. At least two of the three SDLC members must belong to STs, including one woman member. But the SDLC had only one Nicobarese member.

Also, the Gram Sabhas that purportedly gave consent (Campbell Bay, Govind Nagar, and Laxmi Nagar) were settler panchayats constituted for non-tribal settlers. The plea contends that these resolutions — pertaining to the diversion of 166.10 sq km of land, of which 121.87 sq km is protected forest and 8.88 sq km is deemed forest — have no legal standing, as the Gram Sabhas were not of STs or forest dwellers.

The plea also notes that there is no record available pertaining to a forest rights committee, which initiates the process of seeking claims under the FRA before a Gram Sabha is convened.

The plea also contests the consent of the Nicobarese community, claimed through the chairperson of the tribal council, on the grounds that the chairperson cannot consent on behalf of the entire community. Moreover, in November 2022, the council chairman, along with its captains, revoked their consent.

Rights of the Shompen

In the case of the Shompen tribe, which is largely an uncontacted group, their consent was obtained through an officer of the Andaman Adim Janjati Vikas Samiti, a government organisation, rather than from the Shompen themselves, the plea states.

The plea adds that three Shompen settlements, located within the proposed development area, including foraging and hunting regions which sustain the southern Shompen population on the GNI, will be "denuded and desecrated". This, it is argued, will violate their rights to food, water and shelter, displace their places of worship, forest groves used for horticulture, and sources of safe, clean drinking water.

Citing the setting up of habitation for 330 ex-servicemen on the east coast of the island in 1972, the plea argues that this activity had disturbed Shompen habitation, and that they subsequently moved into the interior of the forests.

The plea has also raised the question of whether the existing FRA framework is sufficient for tribes like the Shompen, who are semi-nomadic hunter-gatherers. The Shompen, the plea argues, have a right to self-determination and to live as they deem fit, and thus their habitat cannot be taken away by the government.

- **Key Terms and Explanations**
- **Forest Rights Act (FRA), 2006:** Formally known as the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, this legislation aims to redress the "historical injustice" meted out to forest-dwelling communities. It recognizes their customary rights to live in, cultivate, manage, and conserve forest lands which they have occupied for generations.
- **Particularly Vulnerable Tribal Groups (PVTGs):** A government classification for tribal communities characterized by pre-agricultural technology, stagnant or declining populations, extremely low literacy levels, and a subsistence-level economy. The Shompen of Great Nicobar are a prime example; they are largely isolated, semi-nomadic hunter-gatherers.
- **Gram Sabha (under FRA):** Unlike standard Panchayati Raj village assemblies that may include mixed or settler populations, a Gram Sabha under the FRA is ideally a village assembly comprising the actual traditional forest dwellers or Scheduled Tribes of a specific habitation. It holds the ultimate statutory power to safeguard community forest resources and give or withhold consent for forest land diversion.
- **Recognition of Forest Rights (RoFR) Certificate:** A formal legal document issued by the district administration certifying that all claims to individual and community forest rights in a given area have been thoroughly verified, settled, and recorded. Legally, forest clearance for any development project cannot be finalized until this certificate is authentically processed.
- **Sub-Divisional Level Committee (SDLC):** An administrative body tasked with processing, examining, and verifying the resolutions passed by Gram Sabhas regarding forest rights claims. By law, its composition must reflect tribal representation to ensure fair, unbiased oversight.
- **Forest Land Diversion:** The official process of reallocating designated forest land for non-forest purposes, such as building ports, airports, or townships, requiring strict statutory clearances from the Ministry of Environment, Forest and Climate Change (MoEFCC).

- **Main Arguments and Substantive Parts**
- The core tension lies in the fundamental friction between state-driven strategic development and the statutory, constitutional protections guaranteed to indigenous populations.

- **The Legality of Consent**
- The primary legal challenge rests on the argument that the consent obtained for diverting large tracts of forest land was procedurally corrupted. Under prevailing environmental regulations and the FRA, any diversion of forest land must be preceded by the complete identification and settlement of all forest rights. The contention is that clearances were granted without settling a single native forest rights claim on the island, rendering subsequent clearances legally void.
- **Flawed Institutional Processes**
- The mechanisms used to demonstrate local consent suffer from deep procedural flaws:
- **Inappropriate Assemblies:** The administration allegedly utilized resolutions passed by settler panchayats—bodies composed of non-tribal populations relocated to the islands in previous decades—rather than convening the authentic Gram Sabhas of the native tribal communities.
- **Deficient Committee Composition:** The SDLC, which validates these critical resolutions, lacked the mandatory statutory representation of Scheduled Tribe members, undermining its institutional legitimacy.
- **Proxy Consent:** For the highly isolated Shompen tribe, consent was bypassed through a government welfare body, the Andaman Adim Janjati Vikas Samiti (AAJVS), rather than being obtained directly from the community. Additionally, consent from the Nicobarese community via a tribal council chairperson was fiercely contested, especially after the council later revoked its endorsement.
- **Executive Overreach vs. Statutory Safeguards**
- The broader argument emphasizes that the local administration used legally fragile or fabricated administrative milestones—such as prematurely issued RoFR certificates—to secure final clearances from the union environment ministry, actively bypassing the spirit and letter of welfare legislation.

- **Historical Evolution of the Issue**
- The conflict over land, resources, and indigenous sovereignty in the Andaman and Nicobar Islands has evolved across distinct policy eras.
- **The Colonial Era (Pre-1947)**
- The foundations of Indian forest administration were built on the Indian Forest Act of 1927, which prioritized state monopoly over forest resources for timber extraction and revenue generation. Indigenous populations were viewed either as encumbrances or as cheap labor, establishing a structural template of top-down exclusion that persisted long after independence.
- **Post-Independence Resettlement Schemes (1950s–1970s)**
- Following independence, the union government viewed the Andaman and Nicobar islands through the dual lenses of demographic expansion and frontier security. In the late 1960s and 1970s, the state implemented formal resettlement strategies, establishing habitations for ex-servicemen and settlers from mainland India along the coastlines of Great Nicobar. This policy fundamentally altered the island's demographics and directly infringed upon the foraging grounds of the Shompen and Nicobarese, pushing them further into the interior forests.
- **The Rights-Based Legal Turn (2006)**
- Decades of civil society advocacy and tribal marginalization culminated in the passage of the Forest Rights Act in 2006. This legislation marked a paradigm shift from state-centric conservation to a rights-based governance framework, legally acknowledging that conservation and tribal survival are deeply intertwined. For the first time, local communities were given the statutory authority to veto state-led resource diversion.
- **The Modern Frontier and Geopolitics (2020s–2026)**
- In recent years, the Indo-Pacific region has emerged as a critical arena of global geopolitical competition. This shift has reframed the Great Nicobar Island as an indispensable strategic asset for India's maritime defense and trade. The resulting push for mega-projects has brought the state's geopolitical ambitions into direct conflict with the protective legal landscape established by the FRA, setting the stage for major constitutional and environmental litigations before the higher judiciary.

- **UPSC CSE Prelims**
- With reference to the 'Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006', who is the nodal authority to initiate the process for determining the nature and extent of individual or community forest rights or both? (2013)
- Consider the following statements: Under the Forest Rights Act, 2006, the Gram Sabha has the authority to protect, conserve and manage any community forest resource. (2018)
- The Shompen tribe is native to which of the following regions? (Highly representative)

AXIA IAS ACADEMY

RISE ABOVE THE REST

COMPREHENSIVE ANALYSIS: THE GREAT NICOBAR MEGA-PROJECT CONFLICT (A UPSC PREPARATION GUIDE)

CONTEXT & KEY TERMS

Key Terms (with Icons)

FRA, 2006: Customary Rights Recognition to legal natrata and eccometer

PVTGs: Pre-agricultural, Extremely Isolated (e.g., Shompen)

Gram Sabha (FRA): Actual traditional forest dwellers' assembly and aeneriiny.

RoFR Certificate: Legal seal, document to proev-andiltative witht proɒal-to tribal construction.

SDLC: Committee meeting, committees, munor::e-meroonten and expensive ot andrmors.

Forest Land Diversion: being replaced by a port and airport, navplcated.

Turtle nesting

HISTORY & PHILOSOPHY

Historical Timeline (Illustrated)

1927	1986	2006	2020s+
Colonial Exploitation (1927 Act)	**Post-Independence Resettlement** (Ex-Servicemen)	**Rights-Based Legal Turn** (2006 Enactment)	**Strategic-Growth Frontier** (2020s+ & Geopolitics)

Philosophical Dilemma

(Utilitarianism vs. Deontology)

UTILITARIANISM (State-Centric)

Greater Good, Strategic Defense, Economc, Economic Growth...

DEONTOLOGY (Rights-Based)

Fundamental Rights, Minorities, Absolute Moral Constraints... Absolute Moral Constraints...

Epistemic Violence

ANALYSIS & CHALLENGES

Multidimensional Analysis

Adapted from the text's analysis

Sustainability Matrix

Ecological	Legal/Resilience	Socio-Ethical
High Risk, Endemic Species loss	Fragile, Contested Consent	Critical, cultural extinction risk

Challenges

Strategic-Developmental vs Socio-Ecological Dilemma

Institutional Bypassing

Communication Barriers with uncontacted populations

UPSC RELEVANCE & WAY FORWARD

UPSC Syllabus Linkages (GS Papers)

GS 1
- Tribal dance, and awand
- Geographical features
- Hunter buth consttrctions

GS 2
- Parliament building
- Welfare icons, parliamencs
- Pundamerod constructions

GS 3
- Green energy, defense,
- Defense, strategy and Developments, and defense

GS 4
- Philosophical icons, and
- Public service values &
- Public service values quanes

Previous Years' Questions (PYQ) and Model Answer concept

Specific representative themes themes from 2013-2024. and selected...

Way Forward

- Tiered Consent Protocols (Strictly *No* Proxies!)
- Committee Auditing
- Separating Gram Sabhas
- Joint Strategic-Ecological Governance Model

• POWER

The challenge for India's renewables surge: Storage

Solar generation drops to zero after sunset, wind output fluctuates with weather. This is why storing power is key, and where India is falling short

PRATYUSH DEEP

AS INDIA rapidly scales up its renewable energy capacity, a key challenge is emerging — electricity supply that is abundant in some hours but insufficient in others.

This is because renewable power generation sources come with a fundamental limitation: they are intermittent. Solar power generation drops to zero after sunset and wind output fluctuates with changing weather. But electricity demand does not always align with these patterns. This creates a growing mismatch between when electricity is generated and when it is needed. This mismatch can stretch the grid and even threaten its stability if not managed properly.

This challenge is particularly relevant for India, where renewable sources account for 53% (281 gigawatts) of the total installed power generation capacity of 532 GW. Solar power alone contributes over 150 GW, making it the largest source in the renewable energy mix. This is where systems that "store" energy become critical — and where India has fallen short so far.

What is energy storage?

Energy storage refers to systems that can store excess renewable electricity during periods of high generation and discharge it when demand rises but power generation remains low. At its core, energy storage systems convert electricity from renewable sources such as solar and wind, when it is available, into forms that can be stored.

Types of energy storage

A range of energy storage technologies are used globally. Among them, pumped hydro storage (PHS) and battery energy storage systems (BESS) are the most popular.

PUMPED HYDRO STORAGE uses surplus electricity to pump water from a lower reservoir to a higher one. When demand peaks, it releases the stored water downhill through turbines to generate power.

BATTERY ENERGY STORAGE technology stores electricity chemically and discharges it when needed. Lithium-ion batteries, particularly lithium iron phosphate (LFP) batteries, are the dominant technology because of their falling costs, high efficiency and long operational life.

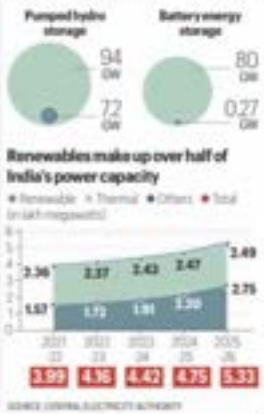
• Storing Power

How is electricity stored?

Energy storage systems store excess renewable electricity and discharge it when demand rises. These are the two most popular types

BATTERY ENERGY STORAGE

- Excess electricity is stored in batteries, just like your inverter battery gets charged and stores electricity
- These batteries are mostly made of lithium-ion phosphate (LFP), known for their falling cost and reliability
- They discharge this electricity into the grid when needed, just like your inverter battery does when the power goes off



CONCENTRATING SOLAR-THERMAL STORAGE SYSTEMS. This technology uses mirrors that capture and focus sunlight onto a receiver. As the receiver gets heated, materials such as molten salt are circulated inside the receiver to store the heat. The stored heat can later be used to produce steam. This steam is converted into mechanical energy in a turbine, which powers a generator to produce electricity.

COMPRESSED-AIR ENERGY STORAGE SYSTEMS use excess electricity to compress air and store it in underground caverns or tanks. When power demand rises, the compressed air is released to drive turbines and generate electricity.

FLYWHEEL ENERGY STORAGE SYSTEMS store electricity as rotational energy by spinning a rotor at extremely high speeds. Because they can inject power into the grid almost instantly, they are particularly useful for maintaining grid stability and managing short-term fluctuations.

GRAVITY ENERGY STORAGE SYSTEMS use electricity to lift heavy weights to higher elevations. When electricity is needed, the weights are lowered, converting gravitational energy back into electrical through generators.

Power trip

Electricity demand can surge at night, when, say, solar output is not available

•

This mismatch — between when electricity is generated and when it is needed — can stretch the grid and even threaten its stability

India's energy storage capacity

The deployment of energy storage systems in India has not kept pace with the rapid addition of renewable energy capacity. This widening gap is raising concerns over whether the grid will be able to efficiently absorb and manage the rising share of renewable power in the years ahead.

The government is focusing on PHS and BESS. At present, India has an installed BESS capacity of around 0.27 GW. PHS capacity stands at about 7.2 GW. There are plans for a scale-up over the next decade.

A Central Electricity Authority (CEA) plan projects the country's total energy storage capacity to reach 174 GW/888 gigawatt hours by 2035-36. This includes 80 GW/521 GWh of BESS and 94 GW/367 GWh of PHS.

The top power planning agency noted that storage systems with durations of around four to six hours would become increasingly critical for integrating larger volumes of renewable energy into the grid beyond 2030. This requirement is expected to grow alongside India's non-fossil fuel installed capacity, which is projected to rise from the current 283 GW to 786 GW by 2035-36.

Plans and the hurdle

The project pipeline for both technologies is already expanding rapidly.

Currently, 13,120 MW/78,720 MWh of PHS capacity is under construction. Another 9,360 MW/57,460 MWh has received concurrence and is awaiting construction. In addition, pumped storage projects totalling nearly 75,000 MW are under survey and investigation.

On the battery storage side, 10,658.94 MW/28,739.32 MWh of BESS capacity is currently under construction. Projects totalling 22,347.15 MW/69,606.70 MWh are at the tendering stage.

However, the CEA's long-term resource adequacy plan also flagged a major concern: India's heavy dependence on imports for battery storage systems. India currently imports nearly 75-80% of its lithium-ion cells, which account for roughly 80% of the total cost of a battery storage system.

"One of the Asian countries dominates over 75-80% of global battery manufacturing, exposing India to geopolitical risks, trade frictions and price volatility," it noted.

Global energy storage

Globally, PHS and BESS are the two most widely deployed electricity storage technologies. According to the International Renewable Energy Agency, global installed PHS capacity currently stands at around 160 GW.

China leads with nearly 66 GW of installed capacity, followed by Japan at 21.8 GW and the US at 19.9 GW. Europe collectively accounts for around 28 GW of pumped hydro capacity. Battery energy storage deployment is accelerating rapidly. Some estimates place the total installed global battery storage capacity at around 270 GW. According to the International Energy Agency, 108 GW of new battery storage capacity was added globally in 2025 alone — a 40% increase over 2024.

China continued to dominate battery storage deployment in 2025, accounting for nearly 60% of global additions, followed by the US and Europe. The technology, however, is also expanding quickly beyond the largest markets.

"Deployment is widening beyond the largest markets, with strong momentum in Australia and parts of the Middle East, where storage is increasingly seen as a key building block for electricity security and renewables integration," the IEA noted in its Global Energy Review 2026.

LONGER VERSION ON
WWW.INDIANEXPRESS.COM/EXPLAINED

- **Key Terms and Explanations**
- **Renewable Energy Intermittency:** Unlike conventional thermal power plants that burn fuel continuously, renewable sources like solar and wind depend entirely on weather patterns and diurnal cycles. This means power generation fluctuates unpredictably and drops to zero after sunset, creating structural gaps between when electricity is generated and when it is consumed.
- **Pumped Hydro Storage (PHS):** A mechanical energy storage system that acts as a giant water-based battery. It utilizes two water reservoirs at different elevations. During periods of low electricity demand and high renewable generation, excess power is used to pump water from the lower reservoir to the upper one. When electricity demand peaks, the water is released downward through turbines to generate electricity instantly.
    - **Battery Energy Storage Systems (BESS):** Electrochemical systems that store electrical energy in chemical form. Grid-scale BESS heavily relies on Lithium Iron Phosphate (LFP) chemistry due to its high thermal stability, longer lifecycle, and lower risk of combustion compared to standard cobalt-based lithium-ion options.
- **The Grid Mismatch (The "Duck Curve" Phenomenon):** An operational challenge where high solar generation during the midday hours causes a deep drop in net load demand on the conventional grid, followed by a sharp upward surge in demand during the evening hours just as solar generation completely vanishes.
- **Alternative Long-Duration Storage Technologies:**
    - *Compressed-Air Energy Storage (CAES):* Uses surplus power to compress air into underground caverns, releasing it to drive turbines during shortages.
    - *Flywheel Energy Storage:* Converts electricity into kinetic rotational energy in a high-speed rotor, delivering rapid bursts of power for immediate grid stabilization.
    - *Gravity Energy Storage:* Uses excess power to lift heavy structural blocks to high elevations, dropping them later to drive generators via gravitational potential energy.

- **Main Arguments and Substantive Parts**
- The contemporary energy landscape centers on a core thesis: **India’s clean energy revolution cannot succeed through generation capacity alone; its ultimate survival depends on utility-scale storage.**
- **The Generation-Demand Dichotomy**
- India has successfully scaled its non-fossil fuel capacity to cross the threshold of 50% of its total installed capacity, with solar energy driving a significant portion of this surge. However, this introduces an operational bottleneck. Peak power demand in India routinely occurs during late evening hours when domestic households activate cooling and lighting systems, matching up precisely with the complete withdrawal of solar generation.
- **The Scale of the Storage Deficit**
- The target set by central planning bodies highlights an immense infrastructural chasm. Current projections show a long-term requirement of roughly 174 GW of combined energy storage (comprising 94 GW of PHS and 80 GW of BESS) by 2035-36 to maintain grid stability. Currently, India possesses less than 8 GW of operational storage infrastructure, dominated almost entirely by legacy pumped hydro projects.
- **The Geopolitical Supply Chain Bottleneck**
- While battery storage costs continue to fall globally, the inputs required to manufacture them introduce a new strategic vulnerability. India relies on imports for nearly 75% to 80% of its lithium-ion cells. Global supply chains remain highly centralized, with a single country dominating over 75% of global battery manufacturing. This exposes India’s green energy transition to geopolitical shocks, trade disputes, and sudden price volatility.

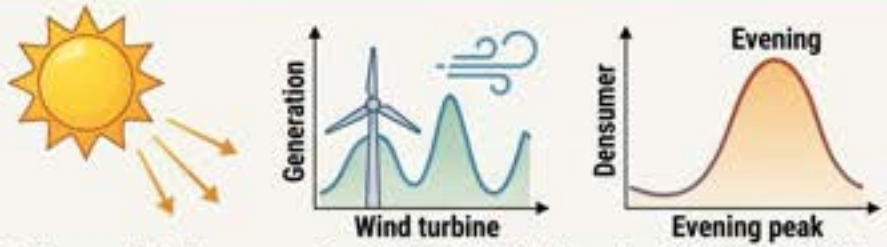
- **Historical Evolution of the Issue**
- Understanding India's energy transition requires looking back at how policy priorities have shifted over the decades:

- **The Era of Baseload Domination (Pre-1990s to early 2000s)**
- Following independence, India’s primary developmental challenge was raw generation deficits and widespread energy poverty. Policy focused on establishing large-scale coal-fired thermal power plants and run-of-the-river hydroelectric projects. The grid was linear, predictable, and designed around steady, controllable baseloads. Storage was a marginal concept reserved for localized industrial backups.
- **The Renewable Rush and Market De-regulation (2003–2015)**
- The enactment of the Electricity Act of 2003 opened up power generation to private players, introducing competitive bidding processes. With the launch of the National Solar Mission, policy shifted toward aggressively driving down the per-unit tariffs of solar and wind energy. The focus was entirely on rapidly scaling up green capacity, with little attention paid to the long-term systemic pressures that intermittent energy sources would place on grid stability.
- **The Integration Wall and the Storage Pivot (Post-2020 to Present)**
- As renewable penetration crossed critical thresholds, grid operators faced structural curtailment—where clean energy generation had to be intentionally wasted because the grid could not safely absorb it. Policy has since pivoted from "plain vanilla" solar and wind tenders to hybrid projects, Round-the-Clock (RTC) clean power supply tenders, and dedicated grid-scale storage mandates backed by viability gap funding.

- **UPSC CSE Prelims Themes**
- Core concepts of Lithium-ion vs. alternative battery technologies (e.g., Sodium-ion, Fuel Cells).
- Institutional frameworks under the Ministry of Power, such as the Central Electricity Authority (CEA) and Solar Energy Corporation of India (SECI).
- Global environmental alliances like the International Solar Alliance (ISA) and the mineral security frameworks India has joined.

COMPREHENSIVE ANALYSIS: THE CHALLENGE OF INDIA'S RENEWABLES SURGE: STORAGE

THE CORE PARADOX: INTERMITTENCY & THE DUCK CURVE

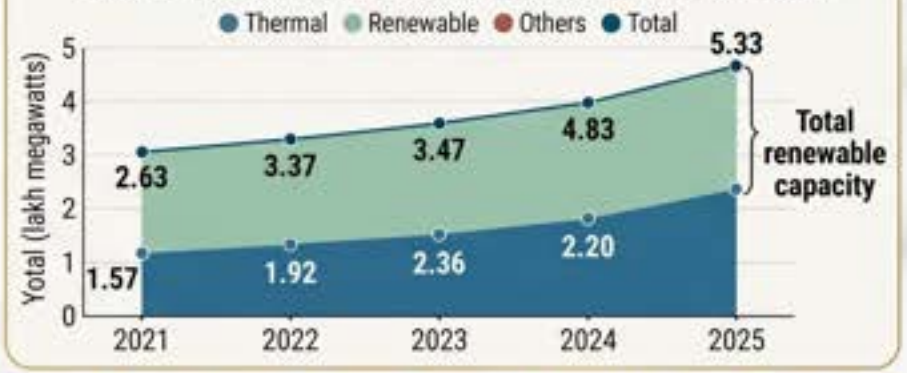


Solar and wind are weather-dependent. Massive mismatch with peak consumer demand. Storage is key for grid survival.

- Solar generation drops to zero after sunset.
- Wind output fluctuates with weather.

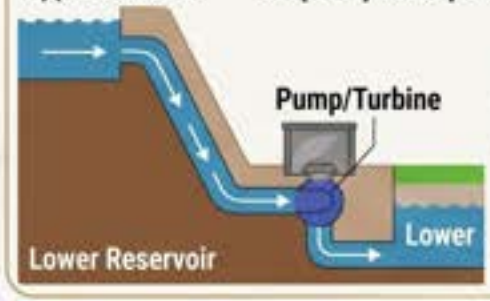
INDIA'S POWER CAPACITY SHIFT (2021-2025)

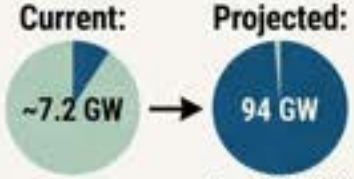
RENEWABLES MAKE UP OVER HALF OF POWER CAPACITY



1. PUMPED HYDRO STORAGE (PHS): MECHANICAL BATTERIES

Surplus power pumps water, peaks release it.





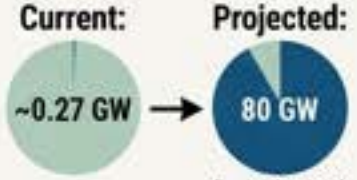
13,120 MW construction, 9,580 MW concurrence, ~75,000 MW survey.

2. BATTERY ENERGY STORAGE SYSTEMS (BESS): ELECTROCHEMICAL BATTERIES

Flexible, fast-response. LFP (Lithium Iron Phosphate) chemistry for safety.

Grid-scale BESS farm

BESS LFP cell



10,658.94 MW construction, 22,347.15 MW tendering.

OTHER LONG-DURATION STORAGE TECHNOLOGIES (EXPLORING ALTERNATIVES)

COMPRESSED-AIR
Cavern, compressor, turbine

FLYWHEEL
Spinning, magnetic bearings

GRAVITY
Heavy block on a cable

CONCENTRATING SOLAR-THERMAL
Heliostats
Heat storage
Steam turbine

KEY ARGUMENTS & MULTIDIMENSIONAL IMPACTS (GS 1-4 LINKAGES)

- **Storage Deficit:** Massive ~174 GW gap by 2035-36.
- **Geopolitical Risk:** Dependence on imported lithium cells (75-80%) and one-country dominance.
- **Economic Opportunity:** Local manufacturing jobs via PLI scheme.
- **Sustainability:** Balanced lifecycle assessments are vital. PHS lifespan vs. BESS critical mineral supply.
- **Regulatory Gaps:** Complex classification and double taxation need resolution.

WAY FORWARD: TOWARDS GRID RESILIENCE

- **Diversify Mineral Access & Downstream Capability.**
- Introduce **Regulatory & Fiscal Incentives** (VGF, tax simplification).
- **Scale Alternative** & **Long-Duration** Storage Technologies.
- Develop **Co-located Deep Hybrid Systems** (Solar-Wind-Storage).

Ordinance increases number of SC judges to 37

President Droupadi Murmu has promulgated an ordinance, which will be taken up by Parliament when it convenes; the move is a step towards tiding over crisis of pendency of cases plaguing the court; current backlog of cases stands at over 93,000, which is threatening to reach six figures rapidly even as the court goes into summer recess in June

The Hindu Bureau
NEW DELHI

President Droupadi Murmu has promulgated an ordinance increasing the number of judges in the Supreme Court to 37 – excluding the Chief Justice of India.

The May 16 Gazette notification says "Parliament is not in session and the President is satisfied that the circumstances exist which render it necessary for her to take immediate action [issue of ordinance]".

The Supreme Court (Number of Judges) Amendment Ordinance, 2026, has been promulgated in accordance with the powers of the President under Article 123 of the Constitution. The ordinance will be placed in both Houses of Parliament when it convenes. It will cease to operate if six weeks expire without any resolution passed on it after the reassembly of Parliament or if resolutions are passed in both Houses of Parliament disapproving the ordinance.

The President can withdraw the ordinance at any time.

Strength crisis

The ordinance has amended Section 2 of the Supreme Court (Number of Judges) Act, 1956 to replace the word "thirty-three" with "thirty-seven".

The promulgation has happened nearly two weeks after the Union Cabinet approved the proposal to increase the number of Supreme Court judges. With the ordinance in place, the total sanctioned judicial strength in the Supreme Court, including the Chief Justice of India, will rise from 34 to 38.

The move is seen as a step towards tiding over the continuing crisis of pendency plaguing the court for years now, especially after the COVID-19 pandemic, when the facility of e-filing of cases caught on.

The current backlog is over 93,000 cases.

The backlog is threatening to reach six figures even as the court is going into summer recess. or "partial working days", in June.

Six-year hiatus

The government's approval for more judges in the Supreme Court had come after a six-year hiatus. Parliament had last amended Section 2 of the Supreme Court (Number of Judges) Act, 1956 in 2019, raising the sanctioned strength from 30 to 33, excluding the Chief Justice of India.

At present, there are two judicial vacancies in the top court. These are of the previous Chief Justice of India, Justice B.R. Gavai, who retired in November 2025, and Justice Rajesh Bindal, who completed office in April 2026.

Three more judges are scheduled to retire in 2026. Justices J.K. Maheshwari and Pankaj Mithal will end their tenure in June, and Justice Sanjay Karol in August.

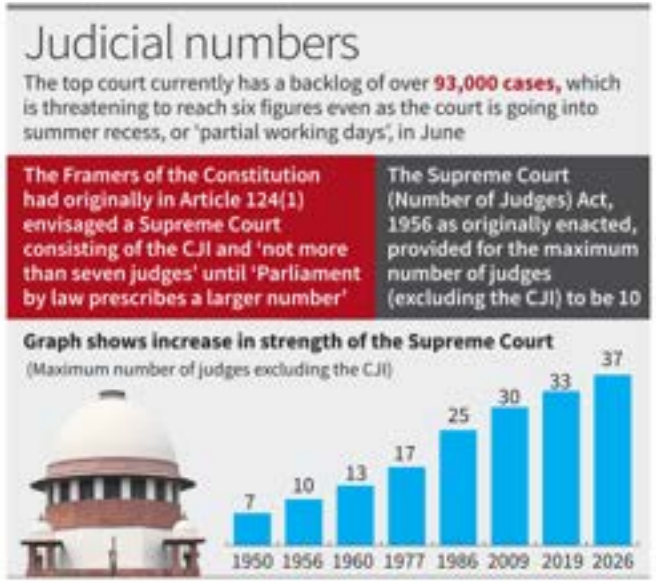
The Framers of the Constitution had originally in Article 124(1) envisaged a Supreme Court consisting of the Chief Justice of India and "not more than seven judges" until "Parliament by law prescribes a larger number",

The Supreme Court (Number of Judges) Act 1956, as originally enacted, provided for the maximum number of judges (excluding the CJI) to be 10.

This number was increased to 13 by the Supreme Court (Number of Judges), Amendment Act, 1960, and to 17 by another amendment to the law.

The Supreme Court (Number of Judges) Amendment Act, 1986, augmented the strength of the Supreme Court judges from 17 to 25, excluding the CJI. Subsequently, a fresh amendment in 2009 further augmented the strength of top court judges from 25 to 30.

This was followed by the previous amendment in 2019.



- **Key Terms and Explanations**
- **Ordinance (Article 123)**
- An ordinance is a temporary law promulgated by the President of India when both Houses of Parliament are not in session. Under Article 123, if the President is satisfied that circumstances exist requiring immediate action, they can exercise this executive law-making power. It holds the same legal weight as an Act of Parliament but must be approved by Parliament within six weeks of reassembly, or it lapses.
- **Sanctioned vs. Functional Judicial Strength**
- **Sanctioned Strength:** The maximum number of judges permitted to serve on a court by law. For instance, the expansion sets the sanctioned strength of the Supreme Court to 38 (37 judges plus the Chief Justice of India).
- **Functional Strength:** The actual number of judges currently presiding on the bench. The gap between these two figures represents vacancies that must be filled via the collegium system.
- **Pendency and Backlog**
- **Pendency:** The total volume of active cases that have been registered but are awaiting final adjudication or disposal.
- **Backlog:** A subset of pendency, referring specifically to cases that remain unresolved beyond an acceptable, standard timeframe (usually categorized by years).
- **Constitution Bench**
- A specific bench of the Supreme Court consisting of five or more judges. These benches are constituted under Article 145(3) to decide cases involving a substantial question of law regarding the interpretation of the Constitution.

- **Main Arguments and Substantive Parts**
- **The Core Thesis**
- Increasing the sanctioned judicial strength of India's apex court is an essential, quantitative intervention to counter an escalating case pendency crisis. However, while adding manpower expanded institutional capacity, it serves as a structural band-aid unless paired with procedural overhauls.
- **Key Supporting Points**
- **The Scale of the Crisis:** The backlog has climbed past 93,000 cases, threatening to cross into six figures. The introduction of e-filing systems streamlined case initiation but unintentionally widened the gap between daily filings and daily disposals.
- **The Attrition Problem:** The court faces constant attrition. Two vacancies opened following retirements in late 2025 and early 2026, with three additional retirements scheduled for mid-to-late 2026. Without expanding the absolute ceiling, the bench would remain in a perpetual state of catch-up.
- **Strategic Executive Intervention:** Utilizing Article 123 right before the summer recess highlights the urgency of the situation. It ensures that the framework to appoint new judges is active without waiting for the next full legislative session.

- **Historical Evolution of the Issue**
- The size of the Supreme Court has evolved through targeted legislative amendments to Article 124(1), which originally set a modest cap that Parliament could expand over time.

- 1950: 7 Judges + CJI (Original Constitutional Cap) |
- 1956: 10 Judges + CJI (First Legislative Expansion) |
- 1960: 13 Judges + CJI (Post-Independence Litigation Rise) |
- 1977: 17 Judges + CJI (Expanding State-Citizen Disputes) |
- 1986: 25 Judges + CJI (Rise of Public Interest Litigation) |
- 2009: 30 Judges + CJI (Economic Growth & Statutory Appeals) |
- 2019: 33 Judges + CJI (Modernization & Complex Appeals) |
- 2026: 37 Judges + CJI (Post-Pandemic Digital Litigation Surge)

- **UPSC Prelims**
- Who among the following has the power to increase the number of judges in the Supreme Court of India? (Options: President, Parliament, Chief Justice, Law Commission). **[Answer: Parliament]**
- Consider the statements regarding the Ordinance-making power of the President under Article 123. (Duration, Parliamentary approval timelines).

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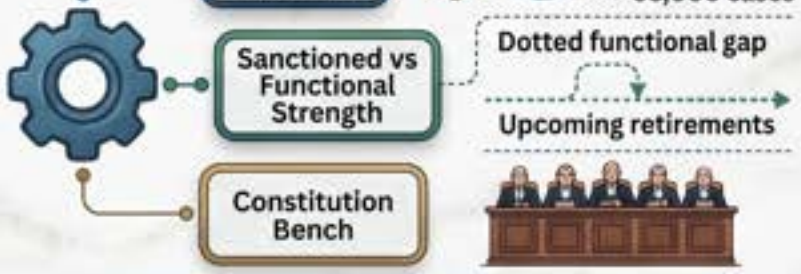
THE CATALYST: ORDINANCE 2026

- Art. 123 Promulgation
- SC (Number of Judges) Amendment Ordinance 2026

OLD: 33 → NEW: 37 Judges

TOTAL STRENGTH: 38 (incl. CJI)

KEY TERMS & EXPLANATIONS



MAIN ARGUMENTS & SUBSTANTIVE PARTS

QUANTITATIVE FIX FOR A QUALITATIVE PROBLEM?

- Pendency Crisis (Over 93k cases)
- Post-COVID Filing Surge
- Attrition (Upcoming and recent retirements timeline, with specific numbers lika Justice Gavai and Justice Bindal)
- Strategic Executive Action (Art. 123 scroll)

THE LOGICAL & PHILOSOPHICAL BASE

Justice Delayed is Justice Denied

(Utilitarian focus)

Proportionality Assumption

CHALLENGES RELATED TO THE ISSUE

- Appointment Bottleneck — Collegium-Executive relationship
- Infrastructural Scarcity — Unfinished courtroom, court registry stack, incluuis
- Human Capital — Face and mind on event maintaining high standards

MULTIDIMENSIONAL ANALYSIS (6-Aspect Radar)

HISTORICAL EVOLUTION (TIMELINE)

WAY FORWARD: A PRACTICAL PATH

Structuring
- Dedicated divisions: Constitution vs Appellate
- National Court of Appeals

Personnel
- Time-bound appointments
- Anticipation of retirements

Process
- Procedural modernization
- AI-case management
- Strict adjournments

LINKAGES & RELEVANCE (UPSC SYLLABUS)

GS Paper II
Polity
Separation of Powers
Judicial Reforms

GS Paper IV
- Ethics & Justice
- Rawls/Aristotle

NCERTs
- Class XI
- Class VIII

PYQs
- Theme similarity on Ordinance
- Separation of Powers
- Specific years/Pears/ papers included

Trade, energy, and global conflicts at top of agenda during PM's Norway visit

Suhasini Haidar
OSLO

Trade and energy supplies will top the agenda as Prime Minister Narendra Modi lands here on Monday for the first bilateral visit by an Indian Prime Minister in 43 years to Norway, one of the world's major oil and gas exporters.

Mr. Modi is scheduled to hold talks with Norwegian Prime Minister Jonas Gahr Støre, and both leaders will address a business summit as both countries seek new markets and new technological collaborations.

The visit will also include the 3rd Nordic-India summit, bringing together leaders of the five Nordic Countries of Norway, Sweden, Finland, Iceland, and Denmark on Tuesday. The summit had to be cancelled last year after the Pahalgam terrorist attack and the four-day India-Pakistan conflict. In addition, discussions on the conflicts in Ukraine, Iran, and Gaza are expected to come up in both bilateral and multilateral discussions.

India and Norway are expected to announce three government-to-government MoUs which will focus on health cooperation, digital infrastructure and space ties. At least 18 MoUs are expected between businesses during the visit, many of which will be in the field of energy. "We are discussing more and more what we can do together on energy, and we are expecting several business-to-business MOUs on the energy side," Norwegian Ambassador to India May-Elin Stener told *The Hindu*, citing a big consignment of LNG delivered to India last week, part of a 15-year deal with Norwegian energy major Equinor.

Prime Minister Narendra Modi being welcomed in Gothenburg, Sweden. Swedish Prime Minister Ulf Kristersson is present. PTI

India upgrades bilateral ties with the Netherlands

Suhasini Haidar
OSLO

India and the Netherlands upgraded bilateral ties to a Strategic Partnership and signes 17 pacts and MoUs during Prime Minister Narendra Modi's visit to the country on Saturday and Sunday.

FULL REPORT ON
» PAGE 4

India hopes to discuss more investment from Norwegian pension funds, the world's wealthiest, the Ministry of External Affairs said in a briefing last week. According to Ministry of External Affairs figures, over 700 Nordic firms operate in India, and around 150 Indian firms have a presence in Nordic regions. India's bilateral trade in goods and services is well below potential, say experts, with about $89 billion with Nordic countries, and both sides are seeking more collaborations.

The timing of Mr. Modi's visit to Norway and the Nordic Summit is significant, given that the leaders are converging for the first time since 2022, and the Russia-Ukraine war, Israel's attack on Gaza after the October 7 attacks and the U.S.-Israel war with Iran, all are having an impact on the global economy. "The world has changed a lot since [the last Nordic-India Summit]. So, all five Nordic countries are really looking forward to discussing geopolitical issues with the leader of the most populous country, and there will also be a lot of discussions on climate, on green future sustainability and how we can work closely together as democracies," Ambassador Stener said.

Focus will also be on India's response to U.S. sanctions waivers on Russian oil, which lapsed on Saturday.

Mr. Modi held also wide-ranging talks with his Swedish counterpart Ulf Kristersson on Sunday, focusing on trade, technology, defence, and other key sectors. Mr. Modi, who arrived on Sunday, was also awarded the 'Royal Order of the Polar Star, Degree Commander Grand Cross' in recognition of his exceptional contribution to India-Sweden relationship and his visionary leadership.

(With PTI inputs)

- **Key Terms and Explanations**
- **Nordic Countries:** A geographical and cultural region in Northern Europe consisting of five sovereign states: Denmark, Finland, Iceland, Norway, and Sweden. Politically and economically stable, these nations are global leaders in governance, sustainability, and human development indices.
- **Strategic Autonomy:** The capacity of a nation-state to pursue its own national interests and execute foreign policy choices independently, without being structurally constrained or coerced by other dominant global powers.
- **Sovereign Wealth Funds (SWFs) / National Pension Funds:** State-owned investment vehicles that manage a country's surplus reserves. Norway's Government Pension Fund Global is a prime example—it is funded by oil and gas revenues and represents the world's wealthiest institutional investor pool.
- **Bilateral vs. Plurilateral Diplomacy:** Bilateral diplomacy involves formal political, economic, or cultural engagements between exactly two sovereign nations. Plurilateral diplomacy involves a limited, specific group of countries (such as the India-Nordic framework) working together on shared strategic goals, differing from broad multilateral settings like the United Nations.
- **Sanctions Waivers:** Official exemptions granted by a sanctioning authority (often the United States or international bodies) that allow third-party nations to engage in restricted economic trade—such as purchasing Russian hydrocarbons—without facing punitive economic retaliations.
- **Memorandum of Understanding (MoU):** A formal bilateral or multilateral document that outlines a bilateral agreement and expresses a convergence of will between parties, signaling intended lines of action. While generally not legally binding, it carries substantial political and diplomatic weight.

- **Main Arguments and Substantive Parts**
- The contemporary engagement between India and the Nordic region underscores a deliberate shift toward issue-based coalitions, driven by clear economic and geopolitical realities.
- **The Energy Transition and Security Matrix**
- A primary driver of this engagement is the restructuring of global energy supply chains. India's long-term energy security relies on diversifying its energy basket. Securing sustained supplies of Liquefied Natural Gas (LNG)—exemplified by long-term corporate supply frameworks with energy giants like Equinor—serves as a vital transitional bridge. It stabilizes domestic energy grids while India builds out its renewable capacity.
- **Mobilization of High-Value Sovereign Capital**
- India faces a substantial infrastructure financing deficit. Tapping into the immense capital reserves of Nordic pension funds offers a structural solution. These funds seek stable, long-term, and ethically sound yields. India's expanding infrastructure, digital ecosystem, and green energy projects provide a mutually beneficial investment destination.
- **Geopolitical Rebalancing and Strategic Autonomy**
- Navigating fractured international relations requires sophisticated diplomatic balancing. As global geopolitical landscapes fracture due to prolonged conflicts in Eastern Europe and the Middle East, India maintains open, constructive channels with the Nordic bloc (largely comprised of NATO members and Western allies). This engagement proceeds without compromising India's independent stances on unilateral sanctions or its traditional defense and energy relationships elsewhere.
- **High-Tech and Digital Collaborative Ecosystems**
- Modern bilateral ties have evolved beyond basic commodity trade. The core value proposition now lies in joint technological development. By signing targeted agreements across digital public infrastructure, space systems, and healthcare, India aims to combine its scalable tech capabilities with Nordic innovation and high R&D standards.

- **Historical Evolution of the Issue**
- [1947 - 1990s: Post-Independence Era]
- └— Development aid focus (e.g., Indo-Norwegian Fisheries Project)
- └— Ideological divergence due to India's Non-Alignment and Cold War blocs

- [1991 - 2010s: Post-Liberalization Pivot]
- └— Shift from aid recipients to economic and trade partners
- └— Introduction of Nordic ICT majors (Ericsson, Nokia) into the Indian market

- [2018 - Present: Strategic Institutionalization]
- └— Launch of the India-Nordic Summit framework (Stockholm 2018, Copenhagen 2022)
- └— Deep focus on the Blue Economy, green hydrogen, and sovereign fund investments

- **The Post-Independence Phase (1947–1990s):** Initial engagements were primarily built around developmental aid, technology transfers, and humanitarian assistance rather than strategic or commercial partnerships. Early milestones, such as the Indo-Norwegian Project in Kerala during the 1950s, focused on modernizing fisheries. Politically, interactions remained limited due to the structural dynamics of the Cold War, where India pursued Non-Alignment while several Nordic states integrated into Western security frameworks.
- **The Economic Liberalization Shift (1991–2010s):** India's 1991 economic reforms transformed the relationship into a commercial partnership. Nordic expertise in telecommunications, heavy manufacturing, and maritime logistics found an expanding market in India. Diplomatic focus shifted toward standardizing double taxation avoidance agreements and building basic trade frameworks.
- **The Contemporary Strategic Era (2018–Present):** The relationship was elevated with the inception of the India-Nordic Summit format in Stockholm (2018). This shifted the diplomatic paradigm from isolated bilateral tracks to a coordinated plurilateral strategy. The partnership now targets systemic global issues: climate adaptation, Arctic research, green hydrogen production, and the sustainable exploitation of marine resources through the Blue Economy framework.

UPSC CSE ACADEMY

COMPREHENSIVE ANALYSIS: PM MODI'S NORWAY VISIT & ORGAVII IATIONS & INDIA-NORDIC RELATIONS

AXIA IAS ACADEMY

AN AXIA IAS ACADEMY INSIGHTS REPORT

NORWAY VISIT MoUs (G2G & B2B)

Health
- Health on supply
- Public digildilfa

Digital Infra
- Digital digitination unevanment
- Corsinnt nevelopment

Space
- Drosorhed infra
- Space rockets tands

Energy
- Equission supply energy
- Energy cooered

GLOBAL AGENDA

Map-confflicts: Ukraine, Iran, Gaza dialogues ofron-trian strends dialogues, **Gaza dialogues,** which dialogues

Green Energy: offshore wind, hydrogen, endoure and nong divides

Pension Funds: capital flow

UPSC CSE & NCERT LINKS

Linkages to UISC CSE Certificate:
- **NCERT Classe 1** (UPSC pape 1)
- **NCERT Classe 2** (UPSC pape 1)
- **NCERT Classe 3** (UPSC pape 2)
- **GS Paper 1,** (fiith GS paperl)

Linkages to NCERT:
- **NCERT Classe 1** vs. **Classe** (vn GS paper)
- **GS Paper 1** GS Paper
- **GS Paper 1,** NtSOV, Classe on GS Paper

CHALLENGES

Geopolitical friction	Development, of geopolitical iricition, procerairs and consinistration repesentantiles
Bureaucratic inertia	Bureaucratic inertia of genemic internationals hichonugies and market cnaction
Market access barriers	Canegonetics and renceive lisits of change and manfactusted by internal access xxas grammillies

HISTORICAL EVOLUTION (1947 - Present)

- **1947** — Hydrocarbon supply (LNG, Equanor)
- **1960** — Investments Energy and Romy Renota
- **1970** — Balatesal refense Murway (HASIG)
- **1980** — Incinoring India 'a Cooperation Matrix
- **2015** — Anchoring India as Global Power
- **2020** — SWF / Pension For Investment; Svits
- **2025** — Balancing magic! corbrvatic

India, Netherlands upgrade bilateral ties, sign 17 pacts

Deals inked cover areas of water, agriculture, health, renewable energy, critical minerals and a semiconductor project; govt. pushes back on Dutch concerns over press freedom, minority rights

Suhasini Haidar
OSLO

India and the Netherlands upgraded bilateral ties to a Strategic Partnership during Prime Minister Narendra Modi's visit to the country on Saturday and Sunday. The two sides signed 17 agreements and memoranda of understanding (MoUs) in areas of "WAH" (water, agriculture, and health), renewable energy, critical minerals, and a semiconductor fabrication project between TATA Electronics and Dutch company ASML.

Recently elected Dutch Prime Minister Rob Jetten said he had raised "sensitive topics" with Mr. Modi, including a legal custody and abduction case involving a Dutch-born child, Inshya. Besides, a number of Dutch media outlets reported that Mr. Jetten spoke about concerns over "press freedoms and minority rights in India", which the External Affairs Ministry later pushed back on.

Diplomatic visit: Prime Minister Narendra Modi with his Dutch counterpart Rob Jetten at a meeting in The Hague on Saturday. AFP

'New momentum'

Mr. Modi said the meetings had added a "new momentum" to the India-Netherlands ties. "From elevating our relationship to a Strategic Partnership to expanding cooperation in water resources, semiconductors, innovation, defence, sustainability and mobility, we have charted an ambitious road map for the future," he said in a social media post after leaving the Netherlands. Mr. Modi flew to Sweden on Sunday for a half-day stop as part of his five-nation week-long visit, which will bring him to Oslo on Monday for bilateral talks and the Nordic-India Summit.

"The strategic partnership we are entering into today between India and the Netherlands also offers us opportunities to discuss sensitive topics more frequently," said Prime Minister Jetten during press statement at his official residence, the Catshuis, where he met with Mr. Modi, Dutch newspaper *Het Parool* reported.

'Lack of understanding'

Mr. Jetten also reportedly said that "the Netherlands and the European Union are worried about press freedom and minority rights, among them the Muslim community and smaller communities". At an External Affairs Ministry briefing on Sunday, two Dutch journalists sought the Ministry's response to the comments and also asked why the Prime Minister had not joined the press conference.

"This question comes because of the lack of understanding," retorted Ministry Secretary (West) Sibi George in a lengthy response about India's diversity in culture, language, food, and religion to a question from Dutch newspaper *de Volkskrant*. "Today we are 1.4 billion people, diverse, living in peace and harmony. And a democratically elected government where peaceful transition of power happens," he said. However, he added that he had not seen the statement by Mr. Jetten that the journalists had referred to, but was giving the "factual position". "You need to have more understanding of India to appreciate what India is," he told another journalist from *NRC*.

The spokesperson also told *The Hindu* that the Dutch PM "didn't raise anything like that in the bilateral meetings or any other engagement with PM".

Mr. George acknowledged Mr. Jetten raised the case of Inshya, allegedly abducted by her father (an Indian) in 2016, as her mother protested during Mr. Modi's visit, seeking India's help to trace and extradite the child and bring the father to justice. "A case is in the court, it is *sub judice*, so I would not like to comment on this at this stage, but it was raised [by the Dutch PM]," he said.

- **Key Terms and Explanations**
- **Strategic Partnership**
- A formal framework of long-term cooperation between two sovereign nations that goes beyond transactional trade. It signifies deep mutual trust, alignment of geopolitical interests, and regular high-level institutional dialogue across sensitive sectors like defense, intelligence, and advanced technology.
- *Example:* India's historic partnership with France or its expanding security and tech architecture with the United States.
- **Semiconductor Fabrication and Lithography**
- Semiconductor fabrication refers to the highly complex industrial process of creating integrated circuits (microchips). Lithography is the most critical step in this chain, using light to print microscopic circuit patterns onto silicon wafers. The Dutch company ASML holds a global near-monopoly on advanced extreme ultraviolet (EUV) and deep ultraviolet (DUV) lithography machines, making it the ultimate gatekeeper of global chip manufacturing tech.
- **"WAH" Agenda**
- A specialized diplomatic acronym representing the traditional foundational pillars of Indo-Dutch cooperation: **W**ater management, **A**griculture, and **H**ealth. This framework utilizes Dutch expertise in delta management and high-yield agricultural tech to solve Indian structural challenges.
- **Critical Minerals**
- Non-fuel mineral elements (like lithium, cobalt, nickel, and rare earth elements) that are vital for clean energy technologies, electronics, defense systems, and electric vehicle batteries. They are considered "critical" due to their economic vulnerability and high risk of supply chain disruption.
- **Sub Judice and Extradition**
- **Sub Judice:** A legal term indicating that a case is currently under judicial consideration and active review by a court of law. Public discussion or government interference is restricted to avoid influencing the outcome.
- **Extradition:** The formal, legal process where one country surrenders a suspected or convicted criminal to another state to face trial or serve a sentence, typically governed by bilateral treaties.

- **Main Arguments and Substantive Parts**
- **Core Thesis**
- The contemporary evolution of India-Netherlands bilateral relations highlights a shift toward high-tech, strategic interdependence. However, this economic alignment must navigate structural friction arising from the West's normative scrutiny of domestic governance versus India's assertive defense of its national sovereignty.

- **Key Points and Supporting Evidence**
- **Elevating the Bilateral Architecture:** Transitioning from a purely commercial relationship to a Strategic Partnership indicates that both nations view each other as vital nodes in the emerging multipolar world order. Signing 17 pacts confirms this institutional deep-dive.
- **The High-Tech Pivot:** The collaboration between TATA Electronics and ASML serves as concrete proof of India's push for technological indigenization under the India Semiconductor Mission. Accessing Dutch lithography ecosystems is a massive win for India's manufacturing aspirations.
- **Expanding the Material Footprint:** Diversifying into critical minerals and renewable energy shows a shared intent to decouple supply chains from dominant single-country monopolies, particularly looking at global green transition goals.

- **Counterarguments and Friction Points**
- **Normative vs. Pragmatic Diplomacy:** The Dutch leadership's public expression of concerns over press freedom and minority rights reflects the domestic political compulsions of European liberal democracies.
- **Sovereign Pushback:** Indian diplomatic channels countered these views, attributing them to a fundamental "lack of understanding" of India's complex, pluralistic governance model. This positions India as a civilizational democracy that rejects external lecturing.
- **Transnational Human Rights and Consular Friction:** The mention of localized custody disputes (like the Insiya case) shows how individual civil disputes can spill over into high-level statecraft, testing the boundaries of bilateral legal cooperation.

- **Historical Evolution of the Issue**
- **The Mercantilist Era (Pre-Independence)**
- The relationship began in the early 17th century with the arrival of the Dutch East India Company (Vereenigde Oostindische Compagnie - VOC). Trading posts established along the Coromandel Coast (Pulicat), Gujarat, and Bengal (Chinsurah) focused primarily on textiles, spices, and indigo. This early contact was purely commercial and competitive, eventually giving way to British colonial dominance.
- **The Cold War Realities (1947–1991)**
- Diplomatic ties were officially established in 1947. However, foreign policy paths diverged due to systemic global alignments. The Netherlands emerged as a core NATO member, firmly integrated into the Western bloc, while India championed the Non-Aligned Movement (NAM). Despite these geopolitical differences, steady developmental assistance flowed from the Netherlands to India, primarily targeting rural development and water infrastructure.
- **The Economic Liberalization Era (Post-1991)**
- India’s economic opening in 1991 transformed the relationship from a donor-recipient dynamic into a robust commercial partnership. The Netherlands quickly became one of India’s top trading partners in the European Union and a key route for Foreign Direct Investment (FDI), with the Port of Rotterdam acting as India's main maritime gateway to continental Europe.
- **The Contemporary Strategic Horizon (2021–Present)**
- **2021:** The launch of a Strategic Partnership on Water formalized long-standing cooperation in flood control, treated wastewater reuse, and river cleaning.
- **2026:** The relationship expanded into a comprehensive Strategic Partnership. This modern phase integrates deep-tech manufacturing, critical mineral supply chains, and semiconductor diplomacy, marking a major shift from traditional agricultural trade to high-tech geopolitical alignment.

AXIA IAS ACADEMY | INDIA-NETHERLANDS STRATEGIC PARTNERSHIP:

UPSC COMPREHENSIVE STUDY GUIDE

THE PIVOT: STRATEGIC PARTNERSHIP & 17 PACTS

India & Netherlands elevate ties to a Strategic Partnership.

WAH AGENDA

17th C	1947	1991	2021
VOC/Trading	NATO/NAM Diplomatic	FDI/Rotterdam Port	Strategic Water

HISTORICAL & PHILOSOPHICAL FOUNDATIONS

EVOLUTION:
Mercantilism → Developmental Aid → Comprehensive Strategic.

17th C	1947	1991	2021	2026
VOC/Trading	NATO/NAM Diplomatic	Rotterdam Port	Strategic Water	Strategic Partnership

KEY TERMS & CHALLENGES

KEY TERMS:

- **STRATEGIC PARTNERSHIP:** Deep mutual trust.
- **WAH AGENDA:** Core traditional ties.
- **CRITICAL MINERALS:** Supply chain security.
- **SUB JUDICE:** Active court case.

CHALLENGES:

- **GEOPOLITICAL EXPORT CONTROLS** (Chips)
- **DIVERGENT NORMATIVE VIEWS** (Human Rights)
- **LEGAL HURDLES** (Cross-border custody)

UPSC CSE SYLLABUS INTEGRATION

GS PAPER 2:
- International Relations
- Bilateral Pacts
- Indian Diaspora
- Normative Diplomacy.

GS PAPER 3:
- Technology (Semiconductors),
- Critical Minerals, Renewable Energy.

GS PAPER 4:
International Ethics, Sovereignty vs. Norms.

NCERT XII World Politics

NCERT XII World Politics

XII India Politics

XI Political Theory

MULTIDIMENSIONAL ANALYSIS (GS2-GS3)

Social
- Diaspora bridge

Political
- High-level dialogue

Legal
- Consular cooperation

Ethical
- Values vs. Interests

International
- Multipolar world anchor

Economic
- FDI, trade gateway

PREVIOUS YEARS' QUESTIONS (PYQs)

SELECT SAMPLE PYQs FOR GS2-GS3:

GS2 - 2022: Describe the role of the Indian diaspora in national development.

GS3 - 2023: Introduce clean energy & discuss its significance in global climate change mitigation. Highlight international partnerships.

ASML

TATA

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AXIA IAS ACADEMY
Website: axiaiasacademy.com
Contact: +91 6002-417488

Return of Chola-era copper plates should spark efforts for further repatriations, say Indian archaeologists

T.S. Subramanian
CHENNAI

The Chola-era copper plates, which were handed back to India by the Netherlands on Saturday, and, right, the tower of the Buddha vihara, called Chulamanivarma Vihara, near Nagapattinam in Tamil Nadu, which was demolished by Jesuit priests in 1867. PTI

The return of the Chola-era Anaimangalam copper plates charter from the Netherlands this week marks a watershed event in the history of the repatriation of India's invaluable bronzes, stone sculptures, and carved temple pilasters, according to historians and archaeologists.

The artefacts, which have been in the possession of Leiden University for almost two centuries and are popularly known as the Leiden copper plates, were presented in a ceremony at the Hague on Saturday , in the presence of Prime Minister Narendra Modi and his Dutch counterpart, Rob Jetten.

"This is the first time that the Chola-period copper plates are being brought back to India," said V. Vedachalam, an archaeologist who specialises in the Pandya, the Pallava and the Chola copper plate charters, welcoming the development.

"We should make efforts to bring back the Velvikkudi copper plates issued by the Pandya ruler Parantaka Nedunchadaiyan (regnal years 765-815 CE) from the British Museum, London, to Tamil Nadu," he added.

'Enduring history'

Former Tamil Nadu Archaeology Minister Thangam Thenarasu, who is also a scholar of Chola history, said the Anaimangalam copper plate inscriptions were "enduring records of Tamil history, culture, and the grandeur of the Chola era".

The late R. Nagaswamy, who was the director of the Tamil Nadu State Department of Archaeology, had described the artefacts in this way in a 2009 lecture: "One of the most important copper plates of Raja Raja Chola I (regnal years 985-1014 CE) is from Anaimangalam near Nagapattinam."

The plates recorded Raja Raja Chola I's gift of land at Anaimangalam village to a Buddha *vihara*, he had said. This *vihara* was built by the king Sri Mara Vijayotunga Varman of Java in the name of his father Sri Chudamani Varman, and so was called the Chulamanivarma Vihara.

Unfortunately, the tower of the *vihara* itself was demolished by Jesuit priests in 1867, with the permission of the colonial government of Madras.

Buddhist vihara

"The plates are an interesting example of how a Saivite king helped in building a Buddha *vihara*," Nagaswamy said, according to an article published in *The Hindu* on December 25, 2009.

While Raja Raja Chola I gave the order for building the Buddha *vihara*, it was his son Rajendra Chola I (regnal years 1014-1044 CE), who implemented the command. This is mentioned in the larger Leiden plates, Dr. Vedachalam said.

The Chulamanivarma *Vihara* was also called the Raja Raja Cholan Perumpalli (or the big *vihara*), during the time of Rajendra Chola I.

"The Leiden copper plates... are a complete set of 21 large plates and three small plates. The large plates were committed to writing by Rajendra Chola I in five Sanskrit plates and 16 Tamil plates, honouring his father Raja Raja's oral commitment," says K. Kirubanidhi in the book titled *Epic saga of the Cholas: Their art, temples and heritage*, first published by *The Hindu* in August 2023.

"The small plates in Tamil, later given effect to by Kulottunga Chola I (regnal years 1070-1120 CE), talk about the additional grants made to the *sangha* associated with the *vihara* in Nagapattinam," Mr. Kirubanidhi wrote.

Dr. Vedachalam added that two emissaries from the Javanese kingdom appealed to Kulottunga Chola I to ensure the implementation of Raja Raja Chola I's order.

Kulottunga not only gave them that assurance but made a grant of 4,500 *kalam* (an unit of measurement) of paddy plus land to the Chulamanivarma Vihara. This was in addition to Raja Raja Chola I's grant of 8,943 *kalam* of paddy.

Chola insignia

The Leiden plates were strung together by a ring bearing the royal insignia of the Chola dynasty. These included a tiger, the royal emblem of the Cholas, the two fish of the Pandyas, the bow of the Cheras, two *chamaras*, the royal parasol, lamps, and a swastika. The inclusion of the two fish and the bow signified that the Cholas had defeated the Pandyas and the Cheras.

The bigger Leiden plates carry the word "Anaimangalam" in Tamil on the royal emblem, and a short *sloka* in Sanskrit in praise of Rajendra Chola I, Dr. Vedachalam said. The small plates carry a brief *sloka* lauding Kulottunga Chola I.

- **Key Terms and Explanations**
- **Copper Plate Charters (*Tamra-shasana*):** These were legal and administrative documents engraved on copper sheets, used widely in ancient and medieval India. They served as official records of land grants, royal genealogies, and tax exemptions. Bound by a metallic ring and secured with a royal seal, they carried indisputable legal authority.
- **Repatriation of Antiquities:** The formal process of returning cultural property, artifacts, or historical documents to their country of origin. This practice is deeply rooted in international law, seeking to reverse the illicit extraction or colonial appropriation of national heritage.
- **Vihara (or *Perumpalli*):** A Buddhist monastery, educational hub, or place of worship. In the context of medieval South India, large monasteries were occasionally referred to as *Perumpalli*, serving as vibrant centers of religious and economic life.
- **Royal Insignia (*Lanchhana*):** A dynastic seal or emblem that authenticated royal decrees. For instance, the Chola insignia combined their dynastic symbol (the tiger) with those of conquered territories—the fish of the Pandyas and the bow of the Cheras—to project sovereign dominance.
- **Kalam:** A traditional unit of volumetric measurement used in ancient and medieval South India, primarily for quantifying agricultural yields like paddy. It formed the bedrock of the agrarian tax and revenue system.
- **Sangha:** The monastic community in Buddhism. In epigraphic records, grants made to the *Sangha* typically funded the daily maintenance of monks, ritual performances, and the upkeep of monastery buildings.

- **Main Arguments and Substantive Parts**
- The historical and contemporary discourse surrounding the restitution of ancient charters centers on several core arguments that highlight their civilizational value.
- **The Milestone in Heritage Restitution**
- The return of the 21 large and three small copper plates from the Netherlands—collectively known as the Leiden plates—marks a watershed moment. It establishes an important precedent for cultural diplomacy, demonstrating that complex administrative records can be successfully repatriated through bilateral negotiations. This success strengthens the case for reclaiming other foundational records currently held abroad, such as the Pandyan Velvikkudi plates in the British Museum.
- **Epigraphic Evidence of Inter-Faith Harmony**
- The substantive content of these charters challenges modern assumptions about rigid religious binaries in medieval India. The inscriptions reveal a fascinating dynamic: a staunchly Saivite state apparatus, under **Raja Raja Chola I** and later implemented by **Rajendra Chola I**, actively patronized and legally protected a Buddhist institution (*Chulamanivarma Vihara*). This demonstrates a pragmatic, pluralistic approach to governance where political legitimacy and economic integration bypassed sectarian divisions.
- **Trans-Oceanic Geopolitical and Economic Linkages**
- The records provide clear evidence of deep diplomatic and commercial ties between the Chola Empire and the Srivijaya Kingdom (modern-day Java/Sumatra). The construction of the vihara at Nagapattinam by the Javanese king **Sri Mara Vijayotunga Varman**, and the subsequent revenue grants confirmed by **Kulottunga Chola I**, show that South Indian ports were critical nodes in a highly integrated Indian Ocean trade network.

- **Historical Evolution of the Issue**
- The trajectory of Indian antiquities shifting from domestic cultural landmarks to contested foreign holdings follows a distinct historical timeline.
- **The Colonial Era and Extraction (18th–19th Century)**
- During the expansion of the British East India Company and subsequent direct Crown rule, thousands of manuscripts, charters, and sculptures were systematically collected, gifted, or confiscated. The destruction of the *Chulamanivarma Vihara's* tower by Jesuit priests in 1867, with the permission of the Madras colonial government, illustrates the institutional neglect and dismantling of indigenous architectural heritage. During this period, the Leiden plates were transported to Europe, ending up at Leiden University.
- **Post-Independence Legal Frameworks (20th Century)**
- Following independence in 1947, India sought to protect its remaining heritage. The enactment of the **Antiquities and Art Treasures Act, 1972**, criminalized the unauthorized export of items over one hundred years old. Internationally, India became a signatory to the **1970 UNESCO Convention** on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. However, these legal mechanisms lacked retroactive power, leaving colonial-era extractions in a legal grey area.
- **The Modern Era of Proactive Cultural Diplomacy (21st Century)**
- In recent decades, India's approach has shifted from passive legal appeals to proactive executive diplomacy. Heritage restitution is now a key feature of bilateral summits. The return of these artifacts by the Dutch government highlights a growing international ethical shift, where Western institutions are increasingly acknowledging the historical injustice of colonial-era cultural accumulation.

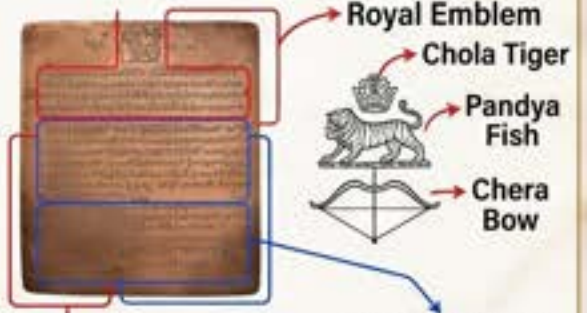
AXIA IAS ACADEMY

CHOLA-ERA COPPER PLATES: REPATRIATED

- Returned from Netherlands (Leiden Univ.) by Prime Minister.
- 21 large, 3 small plates. Foundational administrative & religious record.

Anaimangalam Charter (Raja Raja Chola I).

INSIGHTS FROM THE ANIMALMANGALAM CHARTER



Profound inter-faith harmony: Saivite king (Raja Raja I) granting land to a Buddha Vihara.

Implemented by Rajendra Chola I.

CHOLA-SRIVIJAYA MARITIME DIPLOMACY & TRADE

Chulamanivarma Vihara (Raja Raja Cholan Perumpalli) built by Javanese King.

Kulottunga Chola I's expanded grants to fornest nadiln expanded grants.

THE WAY FORWARD: POLICY & REPATRIATION

Ethical principles:
- Decolonization of history
- Cultural Sovereignty
- Epistemic Ownership.

Prepare with AXIA for policy challenges.

The predictability pandemic: how your keyboard is stealing the soul of language

Predictive keyboards, AI systems are not just helping us communicate faster: they may slowly shape how humans think and write; as people select rather than construct language, the diversity and unpredictability that give communication its human 'soul' risk shrinking into statistical averages

[redacted]

Type "I feel..." on your phone. Before you finish the sentence, three suggestions may appear: happy, sad, tired. Your keyboard is already guessing how the sentence might end. Predictive keyboards today do far more than correct spelling. Systems like Gboard or Microsoft SwiftKey are trained on massive language data, looking at patterns across billions of sentences to suggest the most likely next word. In a way, your phone is not just finishing your sentence; it is completing it.

At first, this feels harmless, even helpful. You type faster, and conversations flow easily. But if you pause, an uncomfortable question emerges: Are these tools just helping us communicate, or are they slowly shaping how we think as well? The relationship is not one-sided. While we train these systems with our words, by using them every day, we might also be letting them train us back.

Humans have always been looking to outsource thinking, a concept psychologists call cognitive offloading. We shift mental effort to tools around us like calculators for math, GPS for routes, and search engines for facts.

Consequently, instead of remembering everything, we remember where to find it. A study by Betsy Sparrow, a psychology professor at Columbia University, in 2011 showed that when people knew information would be saved, they were less likely to remember the information itself, focusing instead on its location. This became known as the "Google Effect."

Now, apply this to language. Forming a sentence involves searching your memory, choosing words, and arranging them carefully to convey what we intended. It is an active, constructive process. Increasingly now, we just look at suggestions on a phone screen and let them complete our thoughts and sentences. The effort has shifted from creating to selecting.

This might seem like a small change, but the brain does not treat repetition as small. Through neuroplasticity, the brain physically changes based on what it repeatedly does. A famous study by Neuroscientist Eleanor Maguire looked at London taxi drivers who had to memorise complex street maps. Over time, the part of their brain linked to spatial memory actually grew larger, meaning their daily practice reshaped their physical biology.

The same pattern appears everywhere, from musicians to mathematicians. What you practice, your brain strengthens. If we slowly practice selecting words instead of constructing them, we must wonder what kind of brain patterns we are strengthening. These systems do not understand meaning; they work on probability. They analyse datasets to learn which words usually follow others, suggesting what is most common, expected, and average.

This is where something subtle begins to happen. Common phrases appear more often, while unusual or creative ones appear less. If millions of people keep selecting the same suggestions, language starts moving toward those patterns, not because we are forced to, but because it is easier and faster. Humans have always picked up language from their surroundings, borrowing phrases from books or memes. However, there is a difference here. While we debate how AI is trained on our data, we often ignore how we are being trained in return.

Every time we accept a suggestion, we are exposed to specific patterns and sentence flows. Over time, these patterns settle into how we naturally write. This could explain why human-written text is increasingly flagged as AI-generated. It's not always that the tool is wrong but that human writing is starting to resemble the machine's statistical averages. The gap between how machines write and how humans write is shrinking.

This matters because language is not just for communication. It shapes how we think and understand the world. Take emotions, for example. Research by psychologist Lisa Feldman Barrett shows that people who can distinguish between specific emotions like feeling "overwhelmed" versus just "sad" are better at regulating them. This is called emotional granularity. More words mean more clarity. Yet, predictive systems suggest simpler, high-probability phrases like "I'm fine" or "I'm okay." If we choose these more often because they are right there, our emotional vocabulary may shrink. And when vocabulary shrinks, our thinking shrinks with it.

Words are tools for thought. If you only have a few words, you can only make a few distinctions. Subtle differences blur together, and complex feelings become harder to explain, even to yourself. This also affects our outward communication. When everyone uses similar words and structures, conversations may become smoother, but they also become flatter. Nuance is reduced, and it becomes harder to express unique disagreement because language becomes more general and less precise.

Writing has always been a way for people to leave a signature of themselves. You could tell who wrote something just by the rhythm of their prose. But if suggestions nudge us toward the same patterns, those unique edges soften. There is also a cultural layer to consider. Language carries identity, slang, regional phrases, and personal quirks reflecting where we come from. Systems trained on global datasets favour what is most common across the majority. Less common expressions appear less often, and local diversity in language might become less visible in everyday life.

None of this happens overnight. It is slow and almost invisible, which makes it easy to ignore. It is also important to stay balanced; language has always evolved with technology. The printing press standardised spelling, and the typewriter shaped sentence structure. Predictive AI may just be the next step in this evolution. However, the scale is different. For the first time, billions of people are in a constant, daily conversation with systems that learn from them and instantly suggest language back.

This brings us to a technical warning known as "Model Collapse." As more AI-generated text fills the internet, future models are trained on that synthetic, average data. If humans also start writing like the models to save time, we enter a loop of diminishing returns where the diversity of the dataset shrinks. If we optimise entirely for speed, we might accidentally delete the unpredictability that makes human communication valuable.

Language is how we think, remember, and feel. Predictive systems make life easier, but they also create a feedback loop where we train the machine and the machine shapes us back.

We should treat predictive text like a "suggested route" rather than a mandatory path. We need to maintain a critical "scientific temper," as suggested by the principles of making curious and analytical about the tools we use. Science communication isn't just about making things simple, it's about making them clear without losing the complexity of the human experience.

If we let our language converge to the point of total predictability, we aren't just making writing faster; we're blurring the line between who is teaching whom. Are we training the AI to be more human, or is the AI training us to be more like a model? In that blur, the most important thing we can hold onto is the "low probability" word, the one the keyboard didn't see coming. That is where the soul of communication lives.

[Name] is an undergraduate student at Makaka University majoring in Computer Science and artificial intelligence

- **Key Terms and Explanations**
- **Cognitive Offloading:** This is the psychological phenomenon where humans use physical actions or external tools to alter the information-processing demands of a task. Instead of keeping everything in our internal mental space, we delegate the work to our environment.
    - *Example:* Relying on a calculator to solve a basic arithmetic problem, or using a GPS device to navigate a route instead of reading a physical map and tracking landmarks.
- **The Google Effect (Digital Amnesia):** A specific offshoot of cognitive offloading, this describes our tendency to forget information that can be easily retrieved online. Research shows that when we know a system will save data, our brain prioritizes remembering *where* the information is stored rather than the information itself.
    - *Example:* Forgetting a close friend's phone number because it is saved in your contacts, or failing to memorize historical dates because they can be searched in seconds.
- **Neuroplasticity:** The brain's ability to reorganize itself by forming new neural connections throughout life. Our physical brain structure is not static; it dynamically changes, grows, or shrinks based on our environment, behavior, and repetitive habits.
    - *Example:* London taxi drivers developing a significantly larger posterior hippocampus—the area governing spatial memory—after years of navigating the city’s complex, unmapped streets.
- **Model Collapse:** A degenerative technical process that occurs when generative AI models are trained on data produced by other AI models, rather than data generated naturally by humans. Over successive generations, the AI's output becomes increasingly narrow, loses variety, and misinterprets rare but essential pieces of information.
    - *Example:* An AI image generator trained only on AI-generated images eventually producing distorted, repetitive, and nonsensical visuals because it lacks fresh, diverse human reference points.
- **Emotional Granularity:** The ability to identify and express specific, nuanced emotions rather than using vague, broad terms. High emotional granularity allows a person to pinpoint exactly what they are feeling, which is critical for mental resilience and emotional regulation.
    - *Example:* Recognizing that you feel "disillusioned" or "overwhelmed" rather than just stating "I feel bad" or "I'm sad."
- **Scientific Temper:** A mind-set characterized by rationality, critical thinking, observation, and an analytical approach to everyday life. In India, developing a scientific temper is a constitutional duty under Article 51A(h), requiring citizens to question systems rather than accept them blindly.
    - *Example:* Questioning why an algorithm suggests a specific phrase or product, rather than passively accepting the recommendation as the default choice.

- **Main Arguments and Substantive Parts**
- The core discourse explores a quiet but profound shift in human communication: our transition from creators of language to selectors of pre-packaged choices. This shift carries far-reaching consequences for our minds and cultures.
- **The Shift from Creation to Selection**
- Historically, writing and speaking required active mental construction. The brain had to retrieve words from memory, evaluate their meaning, and arrange them to fit a specific context. Predictive algorithms alter this dynamic. By presenting instant choices, they turn an active creative process into a passive act of selection. Over time, this convenience chips away at our cognitive drive to think deeply before we communicate.
- **Neuroplasticity and the Atrophy of Expression**
- Because the brain reshapes itself around repetitive behaviors, outsourcing word selection has biological consequences. If we stop exercising our linguistic memory, the neural pathways responsible for deep vocabulary retrieval may weaken. Just as memorizing maps builds spatial intelligence, actively constructing sentences builds cognitive clarity. Passive selection risks shrinking our inner vocabulary.
- **The Homogenization and Flattening of Language**
- Predictive systems do not understand meaning; they calculate probability. They prioritize what is common, expected, and average across massive datasets. When millions of people rely on these recommendations to save time, language begins to converge toward a uniform standard. Unique cultural idioms, regional slang, and distinct writing styles are smoothed out, leaving behind a flatter, more generic form of communication.
- **The Feedback Loop of Model Collapse**
- This issue extends beyond human behavior into technology itself. As humans write more like machines to communicate faster, the internet fills with highly predictable, standardized text. Future AI models are then trained on this synthetic, human-machine hybrid data. This creates a closed loop where diversity shrinks, eventually causing model collapse—a state where both human writing and machine outputs lose the creative surprises that make communication meaningful.

- **Historical Evolution of the Issue**
- The tension between human memory and technology is not new. The shift toward predictive AI is the latest chapter in a long evolution of how we store and share thoughts.
- **Pre-Independence and the Oral Tradition**
- For centuries, human knowledge relied on oral traditions. In ancient India, information—from philosophical Vedas to local histories—was memorized and passed down through spoken word. This required immense internal memory, deep focus, and active mental retention. The mind was the primary archive, and language was deeply personal, localized, and adaptive.
- **The Rise of Print and Mechanical Standardization**
- The introduction of the printing press changed how humanity interacted with language. It shifted our reliance from internal memory to external texts. While print democratized knowledge, it also enforced standardization. Spelling became rigid, regional variations faded, and a uniform linguistic structure took hold. Later, the typewriter introduced mechanical speed, shaping the rhythm and length of sentences to fit mechanical constraints.
- **The Internet Era and Digital Offloading**
- The turn of the 20th century brought search engines, moving society from standard print to dynamic digital retrieval. This era birthed the "Google Effect." Instead of memorizing facts, the human brain adapted to remember the digital pathways to those facts. While this freed up mental space, it began to change our cognitive habits, making us dependent on an active internet connection to recall information.
- **The Present Era of Predictive and Generative AI**
- Today, we are moving beyond searching for information to outsourcing the expression of our own thoughts. Predictive tools actively anticipate our intent. This marks a fundamental shift: technology has evolved from a passive container of human knowledge into an active participant that shapes our language in real time.

AXIA IAS ACADEMY

UPSC CSE CRITICAL ANALYSIS: PREDICTIVE AI & THE FUTURE OF HUMAN COGNITION

MIND & MEMORY

COGNITIVE OFFLOADING & MENTAL ATROPHY

DIGITAL AMNESIA (GOOGLE EFFECT)

- Shift from creation to selection reduces cognitive depth.
- **Neuroplasticity:** Repeated actions physically rewire the brain.
- **Compare:** London Taxi driver brain growth vs. passive word selection.

LANGUAGE & CULTURE

FLATTENING DISCOURSE & CULTURAL HOMOGENIZATION

MODEL COLLAPSE

- Predictive tools prioritize common probability over unique expressions.
- Loss of personal signature, regional quirks, and cultural diversity.
- Convergence to total predictability.

ETHICS & WAY FORWARD

ETHICS, PHILOSOPHY & RECLAIMING CONTROL

- **Erasing Emotional Granularity:** Fewer words means less emotional distinction.
- **UPSC CSE Relevance:** GS1 (Diversity), GS3 (IT Policy), GS4 (Ethics).
- **WAY FORWARD:** Reframe predictive text as 'Suggested Route', not 'Mandatory Path'. Practice 'Low-Probability' words to retain cognitive soul.

1st made-in-India military plane assembled, ready for flight test

C-295 Transport Aircraft Built By Tatas In Collaboration With Airbus In Guj

Surendra.Singh
@timesofindia.com

New Delhi: India has achieved a major milestone in military aircraft production as the first domestically produced C-295 transport aircraft has been assembled at the Tata-Airbus facility in Vadodara and is ready for a flight test.

Air Marshal Awadhesh Kumar Bharti, deputy chief of the air staff, recently visited the final assembly line of the C-295 to get an update.

IAF said in a post on X on Friday, "Deputy Chief of the Air Staff visited the final assembly line of the C-295 at Tata Advanced Systems Limited (TASL), Vadodara, where the first C-295 under the Make in India initiative is getting ready for its first flight. The programme, executed in partnership between TASL and Airbus, represents a major advancement in indigenous aerospace manufacturing and is a significant step towards Atmanirbhar Bharat."

Air Marshal A K Bharti and other IAF officials inspected the C-295 aircraft at the Tata Advanced Systems Ltd final assembly line in Vadodara on Friday

The Vadodara plant was inaugurated in Oct 28, 2024 by PM Narendra Modi and his Spanish counterpart, Pedro Sanchez. India had signed a Rs 21,935 crore contract with Spain for 56 C-295 transport aircraft. Of these, 16 are being supplied directly from Spain in fly-away condition, while the remaining 40 are planned to be manufactured in India.

The project is being hailed as a major success for govt's Make in India and Atmanirbhar Bharat initiatives, aimed at reducing dependence on imported defence aircraft.

External affairs minister S Jaishankar had earlier said the first made-in-India C-295 aircraft would roll out before Sept 2026. The C-295, which will replace the aging Avro-748 fleet of IAF, is a medium tactical military transport aircraft designed for troop movement, cargo transport, medical evacuation and special operations missions. It can ca-rry up to 70 troops, 48 paratroopers or 24 medical stretchers.

Powered by two Pratt & Whitney PW127G turboprop engines, it is equipped with short take-off and landing capabilities and can operate from rugged, semi-prepared and short airstrips, making it ideal for Indian operational requirements, especially in mountainous regions and remote forward bases. Each aircraft is being equipped with a custom, indigenous electronic warfare suite jointly developed by DRDO, Bharat Electronics Ltd and Bharat Dynamics Ltd.

- **Key Terms and Explanations**
- **Atmanirbhar Bharat (Self-Reliant India):** A comprehensive policy umbrella launched to reduce import dependencies in critical sectors, particularly defense, through domestic manufacturing, indigenous research, and structural supply chain resilience. Example: Transitioning from direct off-the-shelf foreign purchases to joint development programs.
- **Make in India Initiative:** A national program designed to transform India into a global manufacturing hub. In defense, it incentivizes foreign Original Equipment Manufacturers (OEMs) to partner with Indian entities to set up local production lines.
- **Final Assembly Line (FAL):** The ultimate stage in aerospace manufacturing where major structural components—such as the fuselage, wings, empennage, landing gear, and powerplants—are integrated, wired, tested, and prepared for flight certification.
- **Fly-away Condition:** A procurement term indicating that an aircraft is delivered completely built, tested, and fully operational by the foreign manufacturer directly from their overseas facility, requiring no local assembly.
- **Short Take-Off and Landing (STOL):** An aircraft capability defined by the capacity to clear standard obstacles and operationalize both departures and arrivals within highly restricted runway lengths. This is crucial for operations at high-altitude Advanced Landing Grounds (ALGs) in regions like Ladakh and Arunachal Pradesh.
- **Electronic Warfare (EW) Suite:** An integrated system of sensors, radar warning receivers, counter-measure dispensing systems, and electronic jammers designed to detect, disrupt, and deceive enemy radar and missile threats, thereby protecting the aircraft in hostile airspace.
- **Tactical Airlifter:** A medium-capacity transport aircraft optimized for operating within a specific theater of operations to move troops, drop paratroopers, and deliver cargo directly into forward bases, as opposed to strategic lifters (e.g., C-17 Globemaster) built for intercontinental logistics.

- **Main Arguments and Substantive Parts**
- The operationalization of the domestic aerospace assembly ecosystem represents a fundamental shift in India's defense acquisition and manufacturing philosophy. The core themes break down as follows:
- **Breaking the Monopolistic Paradigm**
- Historically, military aviation in India was the exclusive domain of state-owned Defense Public Sector Undertakings (DPSUs), primarily Hindustan Aeronautics Limited (HAL). The current framework introduces a private-sector enterprise—Tata Advanced Systems Limited (TASL)—as the primary system integrator for a major military aircraft platform. This establishes a competitive, dual-track ecosystem in Indian aerospace manufacturing.
- **Structural Import Substitution**
- The economic and operational thesis rests on a structured 16+40 formula. By importing 16 aircraft in a fly-away state, the Indian Air Force (IAF) addresses immediate operational gaps caused by the aging Avro-748 fleet. Simultaneously, building the remaining 40 units within India ensures deep technology absorption, infrastructure creation, and long-term domestic maintenance, repair, and overhaul (MRO) capabilities.
- **Enhancing Tactical Frontier Logistics**
- Geopolitical realities along northern and western frontiers demand highly responsive logistical capabilities. The technical performance profile of the platform—such as its capacity to operate from rugged, unpaved, and semi-prepared short airstrips—directly addresses the challenging terrain of remote forward bases, ensuring sustained troop and material deployment during crises.
- **Counter-Arguments and Operational Nuances**
- **Depth of Technology Transfer (ToT):** Critics point out that assembling an aircraft from Completely Knocked-Down (CKD) or Semi-Knocked-Down (SKD) kits is not the same as foundational design and core component manufacturing. The high-value propulsion systems (Pratt & Whitney engines) remain imported, meaning critical dependencies persist.
- **Ecosystem Scale:** If production ceases after the mandatory 40 units, the specialized capital infrastructure and trained workforce at the Vadodara facility risk underutilization unless export markets or domestic paramilitary/civilian variants are secured.

- **Historical Evolution of the Issue**
- The trajectory of India’s military transport acquisition and production reflects shifting geopolitical alignments and evolving industrial policies from independence to the present day.
- [1940s-1950s] Early Independence: High reliance on British legacy platforms (e.g., Dakotas).
- |
- [1960s] Licence Production: Licensing of HS-748 (Avro) with HAL; entry into turboprop transport.
- |
- [1970s-1980s] Soviet Alignment: Mass induction of Soviet tactical & strategic lifters (An-32, IL-76).
- |
- [2000s] Market Liberalization: Defense sector opens to private players & FDI (2001); introduction of DPP.
- |
- [2014-Present] Indigenization Push: Launch of Make in India, Positive Indigenization Lists, and the landmark C-295 private-sector aerospace program.
- **The Post-Independence & Legacy Era (1947–1960s):** India's military transport capability relied heavily on World War II-vintage legacy platforms like the Douglas C-47 Dakota. Realizing the vulnerability of total import reliance, the government entered into a license-manufacturing agreement in the 1960s to produce the Hawker Siddeley HS-748 (Avro) via HAL, which became the backbone of tactical airlift for decades.
- **The Soviet Pivot and Strategic Expansion (1970s–1990s):** Due to geopolitical realignments, India diversified into Soviet-engineered logistics platforms. The induction of the Antonov An-32 for tactical operations and the Ilyushin Il-76 for heavy strategic lifts created a bifurcated fleet. However, private sector involvement remained barred under strict state-monopoly industrial resolutions.
- **The Modern Reform and Hybrid Sourcing Era (2000s–2014):** In 2001, the defense manufacturing sector opened to private industry with capped Foreign Direct Investment (FDI). The Ministry of Defence introduced the Defense Procurement Procedure (DPP) in 2002 to formalize acquisition structures. Despite this, complex acquisitions remained biased toward government-to-government foreign deals, leading to purchases of C-130J Super Hercules and C-17 Globemaster platforms from the United States.
- **The Paradigm Shift (2014–Present):** The introduction of 'Make in India' (2014) and 'Atmanirbhar Bharat' (2020) institutionalized "Positive Indigenization Lists," which banned the import of specific defense platforms. This policy shift enabled the signing of the C-295 contract, bypassing traditional DPSU routes to anchor a foreign military aviation project directly within India's private sector.

INDIA'S AEROSPACE REVOLUTION: THE C-295 PROGRAM & STRATEGIC SELF-RELIANCE

ON BEHALF OF AXIA IAS ACADEMY

THE CORE CONTRACT & ACQUISITION MODEL (56 AIRCRAFT)

16 DIRECT FROM SPAIN (FLY-AWAY)

40 ASSEMBLED IN INDIA (TASL-AIRBUS PARTNERSHIP)

LEGACY DAKOTAS → LICENCE HS-748 (AVRO) → SOVIET PIVOT (AN-32, IL-76) → MODERN SOURCING (C-130J, C-17) → C-295 PARADIGM SHIFT

STRATEGIC FOUNDATIONS

STRATEGIC AUTONOMY (non-alignment)

ECONOMIC MULTIPLIER EFFECT
- Govt capital flow to TASL
- 100+ Indian MSMEs
- Generating high-skill jobs

TECHNOLOGICAL SPILLOVERS (MILITARY → CIVIL AIRCRAFT BUILD)

MULTIDIMENSIONAL ANALYSIS MATRIX

Import Substitution	Autonomy	Ecosystem	Social	DAP 2020/ IPR	Sovereign Defense
Import Substitution	Autonomy	Ecosystem	Jobs	DAP 2020/ IPR	Sovereign Defense

UPSC & NCERT LINKAGES (GS PAPER 3 CORE)

- GS PAPER 3: SCIENCE & TECH (ToT, FAL, EW)
- GS PAPER 3: INTERNAL SECURITY (Border Logistics)
- NCERT (Class X & XII Concepts)
- GENERAL STUDIES PAPER 2 (DAP 2020, International Relations)

WAY FORWARD & CHALLENGES

WAY FORWARD:
- FLEET STANDARDIZATION
- DOMESTIC RAW MATERIALS (Titanium Alloys)
- ORIGINAL DESIGN TRANSITION

CHALLENGES:
- TECHNOLOGY ABSORPTION
- Raw Material Dependency
- Certification Timelines

Website: axiaiasacademy.com
Contact Number: +91 6002-417488

Globally, 80% of cities in 'cleaner & richer' category: Study

▶Continued from P 1

As part of the study, the researchers used satellite observations of nitrogen dioxide (NO2), a pollutant strongly associated with fossil fuel combustion from transport, industries and thermal power generation, and paired the data with city-level GDP estimates to classify urban centres into four categories: "cleaner and richer", "dirtier and richer", "cleaner and poorer", and "dirtier and poorer".

Globally, around 80% of cities with significant trends fell in the "cleaner and richer" category, where economies expanded while NO2 pollution declined. Major metropolitan regions across East Asia, Western Europe and North America showed varying degrees of success in decoupling economic growth from fossil fuel-linked pollution.

File photo

China accounted for 719 'cleaner and richer' cities, the highest worldwide. Researchers linked this to large-scale air quality interventions

However, out of the 902 Indian cities examined in the study, 15.3% showed a statistically significant increase in NO2 levels between 2019 and 2024.

India also dominated the study's "dirtier and richer" category, described by researchers as cities where GDP per capita rises alongside increasing pollution. Of the 390 cities worldwide in this category, 35.4% were in India, the highest share for any country.

"These are not failing cities. They are growing cities," the study noted, pointing to automobile-dependent transport, heavy industry, urban sprawl and fossil fuel-based electricity generation as key drivers behind the trend.

Among the prominent Indian cities highlighted in the study's top ten "dirtier and richer" group was Nashik. India also appeared in the study's smallest but most worrying category — "dirtier and poorer" cities — where pollution rises even as local economies stagnate or weaken.

China accounted for 719 "cleaner and richer" cities, the highest number globally. Major urban centres such as Beijing, Shanghai, Guangzhou and Chengdu recorded declining NO2 levels alongside rising incomes. Researchers linked this to large-scale air quality interventions, including stricter industrial emission controls, relocation of polluting industries and rapid electrification of public transport systems.

The researchers said governance quality, environmental regulation and technology adoption play a major role in determining whether cities become cleaner as they grow richer.

- **Key Terms and Explanations**
- **Nitrogen Dioxide (NO2)**
- A highly reactive gas composed of nitrogen and oxygen. It primarily enters the atmosphere through the high-temperature combustion of fossil fuels.
- **Context:** It serves as a primary marker for air pollution stemming from vehicular exhaust, thermal power plants, and heavy manufacturing.
- **Example:** When a diesel truck idles in heavy urban traffic, the brown haze often visible in the air is heavily concentrated with NO2, directly contributing to respiratory ailments like asthma.
- **Economic Decoupling**
- An economic and environmental concept where a region's economic growth ceases to be positively correlated with environmental degradation.
- **Absolute Decoupling:** Occurs when the economy grows while environmental pressures decrease absolute terms (e.g., GDP rises while total emissions fall).
- **Relative Decoupling:** Occurs when emissions grow, but at a slower rate than economic growth.
- **The Four-Quadrant Urban Growth Typology**
- A analytical framework used to classify cities by pairing economic performance with environmental quality. It categorizes urban centers into four distinct quadrants:
- **Cleaner and Richer:** High economic growth coupled with declining pollution levels.
- **Dirtier and Richer:** Rising GDP per capita accompanied by deteriorating air quality.
- **Cleaner and Poorer:** Stagnant or declining economic output alongside lower pollution.
- **Dirtier and Poorer:** Economic stagnation coupled with increasing environmental degradation.
- **Urban Sprawl**
- The uncontrolled, low-density expansion of urban areas into surrounding rural lands.
- **Context:** This pattern of development creates long distances between residential, commercial, and industrial zones.
- **Example:** The expansion of metropolitan fringes where agricultural land is converted into housing colonies, forcing residents to rely on private automobiles for long daily commutes due to a lack of mass transit.
- **Airshed Approach**
- A holistic environmental management concept that treats an entire geographic area sharing the same air mass as a single regulatory unit, ignoring arbitrary political or administrative boundaries.
- **Example:** Managing the air quality of the National Capital Region (NCR) by regulating crop burning in Punjab and industrial emissions in Haryana simultaneously, acknowledging that air pollution does not stop at state borders.

- **Main Arguments and Substantive Parts**
- **The Feasibility of Decoupling Growth from Pollution**
- The central thesis of modern environmental economics is that economic advancement does not inherently require ecological destruction. Globally, approximately 80% of urban centers demonstrating significant trends have successfully transitioned into the "cleaner and richer" quadrant. This empirical reality challenges the traditional assumption that developing nations must endure severe pollution as an inevitable cost of industrialization.
- **The Divergent Indian Trajectory**
- While global trends lean toward absolute decoupling, Indian urban centers present a distinct divergence. A significant portion of Indian cities fall into the "dirtier and richer" category. India accounts for more than a third (35.4%) of all global cities within this quadrant—the highest share of any nation. This indicates that India's current urban wealth creation is deeply tied to rising emissions, with cities like Nashik serving as prominent examples of this trend.
- **Structural Drivers of the "Dirtier and Richer" Trend**
- This specific growth pattern is not an indicator of urban failure, but rather a reflection of rapid, uncoordinated expansion. The structural drivers behind this trend include:
- **Automobile Dependency:** A growing middle class transitioning from public transit to private vehicles.
- **Industrial Clusters:** The co-location of heavy, fossil-fuel-reliant manufacturing units near urban boundaries.
- **Horizontal Sprawl:** Low-density urban expansion that lengthens commute times and increases fuel consumption.
- **Fossil-Heavy Energy Mix:** Continued reliance on coal-fired thermal power plants to meet rising urban electricity demands.
- **The East Asian Mitigation Template**
- The successful transition of major East Asian metropolitan centers—such as Beijing, Shanghai, and Chengdu—into the "cleaner and richer" category demonstrates the impact of targeted policy interventions. Their strategy relies on three main components:
- Strict, technology-mandated industrial emission limits.
- The geographic relocation of legacy polluting industries away from population centers.
- The large-scale, state-backed electrification of public transportation networks.

- **Historical Evolution of the Issue**
- **Pre-Independence Era: Unregulated Industrial Nuclei**
- During the colonial period, urban industrialization was concentrated around port cities like Calcutta and Bombay, driven by jute mills, cotton mills, and coal-fired rail transport. Environmental considerations were absent, and urban growth was governed purely by colonial resource extraction, establishing an early pattern of high-pollution industrial clusters near urban populations.
- **Post-Independence & State-Led Industrialization (1947–1980s)**
- The push for industrial self-reliance during the Five-Year Plans prioritized heavy industries like steel, chemicals, and mining. Cities grew around these industrial centers (e.g., Bhilai, Jamshedpur). Environmental regulation began to emerge during this period with the enactment of the Water Act of 1974 and the Air Act of 1981, which established the Central and State Pollution Control Boards (CPCB and SPCBs). However, enforcement remained secondary to economic production targets.
- **Neoliberal Urbanization and Vehicular Explosion (1990s–2010s)**
- The 1991 economic reforms accelerated GDP growth, led to a real estate boom, and rapidly expanded the urban middle class. This period saw a massive surge in private vehicle ownership, outpacing public transport infrastructure.
- In response to worsening urban air quality, the judiciary intervened, leading to the introduction of Bharat Stage (BS) vehicular emission norms and the mandatory transition of public transport to Compressed Natural Gas (CNG) in cities like Delhi in the early 2000s.
- **Modern Paradigm: Satellites, Spatial Data, and Comprehensive Programs (2019–Present)**
- The current era uses satellite observation and big data to monitor air quality, moving beyond a reliance on sparse ground-based monitoring stations. The launch of the National Clean Air Programme (NCAP) in 2019 marked a formal shift toward target-based urban pollution reduction.
- However, as urban centers expand into surrounding regions, managing the balance between rapid economic growth and environmental quality remains a key challenge for local and national governance.

AXIA GLOBAL IAS ACADEMY PRESENTS: URBAN GROWTH & POLIUTION ANALYSIS

INDIA FOCUS

15.3%
of 902 Indian Cities saw significant NO_2 increase (2019-2024).

35.4%
Share of Global 'Dirtier & Richer' Cities.

DRIVERS OF INDIAN TREND: NOT FAILING, GROWING CITIES

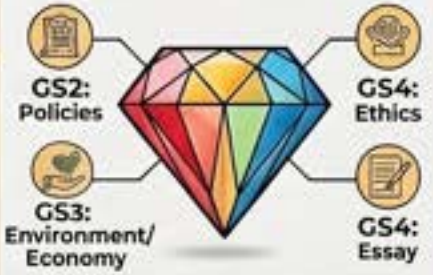
> "These are not failing cities. They are growing cities."

- Automobile-Dependent Transport
- Heavy Industry
- Urban Sprawl
- Fossil Fuel-Based Electricity Generation

CRITICAL DETERMINANTS

- Governance Quality
- Environmental Regulation
- Technology Adoption

UPSC CSE ANALYTICAL LENS



ESSENTIAL FOR ANALYTICAL EXCELLENCE IN CSE.

‘India’s growth drivers firmly in place, banks cleaner than ever’

Mayur Shetty & Sidhartha | TNN

Mumbai: Veteran banker KV Kamath is now the chairman of Jio Financial Services, helping guide its expansion in a crowded market. Kamath, credited with turning ICICI from a staid development financial institution into an aggressive retail powerhouse, remains upbeat on India and technology. Excerpts:

■ PM Modi’s appeal to defer gold purchases and conserve fuel is seen as a call to prepare for difficult times. What is your reading of the situation?

The 25-year growth trajectory towards Viksit Bharat remains intact. The underlying drivers—investment in infrastructure, urban transformation and the adoption of new technologies—continue to be firmly in place. These are structural in nature and are not easily derailed.

At the same time, it is prudent on the part of govt to assess emerging headwinds in a changing global environment and calibrate the response. The impact of current disruptions on Indian citizens is relatively contained when compared with those in several other economies.

In this context, conservation assumes importance at two levels. One is efficiency in usage, and the other is the prudent management of foreign exchange.

It is here that India’s macroeconomic strength—both in terms of growth momentum and reserve buffers—provides comfort and ensures that the growth trajectory is not unsettled.

There will, of course, be near-term challenges, and these may persist until global conditions stabilise. However, they are unlikely to materially disrupt the broader growth path. The second dimension to watch is the impact on global production capacity and its longer-term implications. At this stage, there is limited visibility, and therefore a degree of caution is warranted.

I would view the PM’s statement in that light—as a timely signal to sensitise citizens to the evolving situation and the need for measured, responsible action.

■ Govt has plans for a high-level committee to look at reforms in banking. What are your thoughts on the road ahead?

Six years back, post-Covid, Indian companies saw a huge jump in productivity and banks have cleaned up their balance sheets. I have never seen a banking system so clean in India and most parts of the world that I have worked in. Net non-performing assets, by and large, are less than 50 basis points. Mostly in the 25-35 bps level. You can’t ask for better. Your credit cost is virtually not there. One issue is to see how this strength can be sustained. Second, they will have to look at growth which means they should be able to raise capital efficiently. Third, is technology, the use of AI is going to redefine banking. The fourth area is inclusion and finally, the role of institutions as banks, NBFCs and new age players will evolve and their architecture will have to be defined so that it is efficient and stable.

■ Are banks fleet footed enough to take on the challenge of the fintechs?

From a global context, banks are built on legacy systems — software, which was appropriate at that time. But over time, it became a legacy. Some pieces are getting replaced as there was some movement to the cloud. But after the cloud, you had open source where a whole lot of things could be built. Then came SaaS followed by digitechs building their own systems. Post 1980s, there are at least three or four waves which have been opportunities but it is only on the surface they have been internalised.

Now in the last three to six months, we have the agentic wave. Today, for an institution to compete, you have to be native in what you are doing. Good news for India is, we have young people who can understand this.

We have the people who can implement this and we frontline people who can handle it.

■ When ICICI transformed from project finance to retail, a lot of the demand came from white-collar jobs in IT. Now we see that segment being disrupted by technology. Where will future retail demand come from?

We used to say for every white-collar job created, there are four other jobs created. My view is that because of where we are on our journey, we may have a change in the mix of jobs. We may not have the white-collar jobs we had 25 years ago, but the growth path will require a whole lot of skills where you may wear a blue jumpsuit or a dark blue jumpsuit and not necessarily a tie to go to work.

People who will build India are needed. Our educational institutions need to see what skills are required and retrofit skills accordingly.

■ How do you see the debate surrounding private investment not picking up?

My belief is that corporate investments need to be tracked through the balance sheet. Economists tend to use bank lending as a proxy, but that has changed post-2021. A reasonably small company might have a profit of Rs 300-400 crore a quarter. Adding back depreciation, they are generating Rs 2,000 crore themselves. They don’t need to go to a bank for a loan to expand. Most often, they are adding balancing equipment or increasing productivity. Unless it’s a massive greenfield project like a steel plant, they fund through cash flows. The real number to look at is the increase in Gross Fixed Assets and Capital Work in Progress year-over-year for all of corporate India. Corporate India has learned to live within its own four corners.

‘Smaller cos generating own funds’

“It is prudent on the part of govt to assess emerging headwinds in a changing global environment and calibrate the response. The impact of current disruptions on Indian citizens is relatively contained when compared with those in several other economies

“My belief is that corporate investments need to be tracked through the balance sheet. Economists tend to use bank lending as a proxy, but that has changed post-2021. If you look at companies now, a reasonably small company might have a profit of Rs 300-400 crore a quarter. Adding back depreciation, they are generating Rs 2,000 crore themselves. They don’t need to go to a bank for a loan to expand

—KV Kamath | Chairman, Jio Financial Services

- **Key Terms and Explanations**
- **Viksit Bharat (Developed India by 2047):** This is a long-term strategic vision aimed at transforming India into a fully developed nation by the centenary of its independence. It rests on pillars like economic growth, social progress, environmental sustainability, and good governance. A practical example is the massive scaling up of national infrastructure through the PM Gati Shakti program, which acts as a foundational driver for this vision.
- **Net Non-Performing Assets (Net NPAs):** Non-performing assets are loans or advances that are in default or in arrears. While Gross NPAs represent the total value of bad loans, Net NPAs are calculated by subtracting the provisions (money set aside by the bank to cover bad loans) from the Gross NPAs. For instance, if a bank has 100 rupees in bad loans but has set aside 70 rupees as a cushion, its Net NPA is 30 rupees. A lower Net NPA indicates a healthier, more stable banking system.
- **Basis Points (bps):** A standard unit of measure for interest rates and other percentages in finance. One basis point is equal to $1/100$th of 1%, or 0.01%. Therefore, a drop in Net NPAs to 25–35 basis points means they are sitting at a mere 0.25% to 0.35%, which signifies negligible systemic credit risk.
- **Agentic AI (The Agentic Wave):** The next paradigm shift in artificial intelligence, moving beyond static, prompt-response systems (like basic chatbots) to autonomous AI agents. These agents can reason, plan multi-step workflows, make decisions, and execute complex tasks independently. In banking, an example would be an autonomous AI agent that monitors a user's spending patterns, shifts capital between accounts to maximize yield, and independently negotiates micro-loans based on predefined risk profiles without human intervention.
- **SaaS (Software as a Service):** A software distribution model where a cloud provider hosts applications and makes them available to end-users over the internet. Instead of a bank buying expensive hardware and licensing massive software suites locally, it rents access to specific software, such as customer relationship management tools, which drastically reduces capital expenditure.
- **Gross Fixed Assets (GFA) and Capital Work in Progress (CWIP):** GFA represents the historical cost of all fixed assets (like land, buildings, and machinery) acquired by a corporate entity. CWIP represents the capital locked up in fixed assets that are currently under construction or installation. Together, these metrics serve as a reliable real-world indicator of actual industrial expansion, far more accurate than simply looking at how much money companies are borrowing from banks.
- **Internal Accruals:** The profits that a company retains and accumulates over time after paying taxes, dividends, and other expenses. Instead of approaching external lenders or capital markets for expansion, companies utilize this internal cash pool. For example, a manufacturing firm earning a solid profit can directly fund its factory expansion using its own savings.

- **Main Arguments and Substantive Parts**

- The overarching discourse surrounding India’s economic trajectory highlights a fundamental shift in macroeconomics, banking resilience, technological integration, and industrial financing. The key arguments can be categorized into four interconnected areas:

- **Macroeconomic Prudence and Long-term Growth**

- The long-term trajectory toward a developed economy remains fundamentally secure, anchored by deep structural drivers like urban transformation, infrastructural investment, and technological penetration. Recent government advisories encouraging resource conservation—such as deferring gold purchases and optimizing fuel consumption—should not be misread as signs of distress. Instead, they represent a proactive approach to managing foreign exchange reserves and boosting domestic resource efficiency. This calibration provides a vital buffer against global macro headwinds, ensuring that short-term international disruptions do not derail India's broader growth story.

- **The Great Clean-up of the Banking Sector**

- The Indian banking system has achieved an unprecedented level of financial health, characterized by exceptionally clean balance sheets. Net NPAs sitting comfortably below 50 basis points (frequently ranging between 25 and 35 basis points) mean that the credit costs for major institutions have virtually vanished.

- This structural strength, largely driven by corporate productivity gains and stringent regulatory oversight over the last few years, changes the banking narrative. The immediate challenge is no longer about managing bad loans; it is about sustaining this asset quality, raising capital efficiently, and redesigning the institutional architecture to integrate banks, NBFCs, and fintech firms into a cohesive financial ecosystem.

- **The Transition to Native Digital and Agentic Systems**

- While traditional banking systems have historically integrated technological upgrades in waves—moving from on-premise legacy software to cloud architecture and SaaS frameworks—these transitions have often been superficial adaptations rather than complete transformations. To survive the emerging "agentic wave" of autonomous AI, financial institutions must build native digital systems. India holds a distinct geopolitical and economic advantage here, given its massive pool of young, tech-literate professionals capable of implementing and managing these autonomous platforms from the ground up.

- **Redefining Investment Metrics and the Labor Landscape**

- The nature of both capital expenditure and employment is undergoing a structural evolution. First, traditional economic models that use bank lending as a proxy to measure private investment are becoming obsolete. Profitable corporate entities are increasingly funding their expansions through internal accruals and cash flows rather than bank loans, making Gross Fixed Assets (GFA) and Capital Work in Progress (CWIP) the true indicators of industrial investment. Second, the labor market is shifting away from traditional white-collar IT jobs toward highly skilled, technology-adjacent technical roles. This emerging class of specialized workers emphasizes technical execution and adaptive skills over traditional corporate credentials.

- **Historical Evolution of the Issue**
- To appreciate the current strength of the Indian economic and financial sectors, we must analyze the structural shifts that brought us here, dividing the journey into five distinct phases.
- **The Era of Development Financial Institutions (1947–1969)**
- Following Independence, India’s financial architecture was designed to channel capital into long-term, capital-intensive industrial projects. Because commercial banks lacked the long-term liability profiles needed to fund heavy industries like steel, power, and manufacturing, the state established specialized Development Financial Institutions (DFIs) like ICICI, IDBI, and IFCI. These institutions operated on state-guided mandates, focusing purely on project finance. However, this model lacked competitive pricing mechanisms and left the broader public largely disconnected from formal retail credit.
- **Bank Nationalization and the Shift to Social Banking (1969–1991)**
- The nationalization of 14 major commercial banks in 1969, followed by six more in 1980, fundamentally altered the banking landscape. The core objective shifted from commercial profitability to "social banking," prioritizing credit flow to underserved sectors like agriculture and small-scale industries. While this era massively expanded the rural branch network and brought millions into the formal banking ambit, it also introduced systemic inefficiencies. Bureaucratic hurdles, directed credit programs, and a lack of modern risk-assessment tools left the banking sector financially strained and technologically backward by the late 1980s.
- **Liberalization, Universal Banking, and the Tech Boom (1991–2010s)**
- The Narasimham Committee reforms of 1991 opened the doors to private sector competition, paving the way for tech-savvy institutions like HDFC, ICICI Bank, and Axis Bank. DFIs transitioned into universal commercial banks, pioneering the retail credit revolution by offering home, auto, and personal loans. This period coincided with the meteoric rise of India's IT services sector. The growing pool of white-collar professionals became the primary consumer base for this expanding retail credit market, while corporate India leaned heavily on bank consortia to fund aggressive, debt-driven infrastructure projects.
- **The Twin Balance Sheet Crisis and the Clean-up (2015–2020)**
- The aggressive lending of the mid-2000s eventually led to the Twin Balance Sheet crisis, where over-leveraged infrastructure corporations and bad-loan-burdened public sector banks severely slowed economic growth. By 2015, the Reserve Bank of India (RBI) instituted the Asset Quality Review (AQR), forcing banks to recognize hidden bad loans.
- The implementation of the Insolvency and Bankruptcy Code (IBC) in 2016 provided a formal, time-bound framework for asset resolution. Over the next few years, massive write-offs, corporate deleveraging, and capital infusions systematically restored the financial health of Indian banking.
- **The Post-Pandemic Self-Funding and Agentic Era (2020s–Present)**
- Today, the financial landscape looks completely different. Corporate India has largely deleveraged, generating robust profits that allow companies to fund expansions internally rather than relying on bank credit. Concurrently, the banking sector boasts historically clean balance sheets with Net NPAs at less than 50 basis points. The frontier has shifted from basic financial inclusion to navigating the disruptive currents of fintech and Agentic AI, while the labor market adapts to a highly technical, specialized workforce.

AXIA IAS ACADEMY

RISE ABOVE THE REST - UPSC CSE STRATEGIC ECONOMIC ANALYSIS

MACROECONOMIC PRUDENCE

- 25-YEAR GROWTH TRAJECTORY REMAIN INTACT

- STRUCTURAL DRIVERS: INFRASTRUCTURE, URBAN TRANSFORMATION, TECH ADOPTION

- PROACTIVE RESERVE MANAGEMENT
- PROACTIVE FX RESERVE MANAGEMENT ENSURES STABILITY

THE BANKING CLEAN-UP

- HISTORICAL CLEANLINESS ACHIEVED: NET NPAs <50 BPS (VIRTUAL ZERO CREDIT COST)

- REFRAMING INST-ARCHITECTURE: Banks, NBFCs, New Age Players

- REFRAMING INSTITUTIONAL ARCHITECTURE: Banks, NBFCs, New Age Players

TECHNOLOGICAL ADAPTATION

- MOVE BEYOND LEGACY & SUPERFICIAL CLOUD ADOPTION
- BUILD NATIVE, AGENTIC SYSTEMS TO COMPETE
- INDIA'S YOUNG TECH TALENT is a strategic edge.

- BUILD +. AGENTIC SYSTEMS TO COMPETE

- INDIA'S YOUNG TECH TALENT is a strategic edge.

REAL CAPEx & FUTURE WORKFORCE

- TRACK GROSS FIXED ASSETS (GFA) & CWIP, NOT BANK LOANS

- CORPORATE CAPEX FUNDED VIA INTERNAL CASH FLOWS
- SHIFT TO SPECIFIC SKILL RETROFITTING (THE 'BLUE JUMPSUIT' WORKER)