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ANALYSIS**



MAY 11



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Amid global uncertainties, Modi urges people to cut fuel use, avoid foreign travel

P. Laxma Reddy
HYDERABAD

Amid elevated global crude oil prices and an energy crisis triggered by the U.S.-Iran war, Prime Minister Narendra Modi on Sunday called for a collective participation to help the country withstand global economic uncertainties, supply chain disruptions and inflationary pressures.

He urged citizens to make what he described as "nationally responsible" lifestyle choices and promote the use of local pro-

ducts, asking "how can the nation progress if we depend on imports for everything".

Mr. Modi appealed to people to avoid non-essential purchase of gold for one year to reduce pressure on foreign exchange outflows, and advised against going on foreign tours.

He said conserving foreign exchange reserves was an act of patriotism, and urged people to avoid overseas vacations and destination weddings abroad. He pitched for domestic tourism and cele-

brations within the country. He suggested reviving some of the practices adopted during the COVID-19 pandemic, including work-from-home arrangements, online conferences and virtual meetings.

In a 30-minute address here, he spoke about strengthening India's economic resilience and promoting responsible living. He made a call to reduce petrol and diesel consumption, promote use of Metro Rail and public transport, car-pooling, and railways for freight move-



Strong pitch: Prime Minister Narendra Modi during a public meeting in Hyderabad on Sunday. PTI

ment, besides wider adoption of electric vehicles.

'Work together'

Mr. Modi said patriotism was not limited to sacrific-

ing one's life for the country but also meant discharging responsibilities towards the nation during difficult times. Stressing that safeguarding national

interests was not the responsibility of any one government or party, he said every citizen, party and organisation should work together to help the country overcome global challenges. He sought the support of the media in this regard.

Referring to the impact of the COVID-19 pandemic and the Ukraine war on the global economy, the Prime Minister said supply chains had been severely disrupted, and prices of food, fuel and fertilizers had risen internationally. Despite these pressures, he said, the Centre was shielding

farmers from the burden of rising fertilizer prices through subsidies. He said that fertilizer bags costing nearly ₹3,000 in the international market were being supplied to farmers for less than ₹300.

Calling for a stronger implementation of the 'Vocal for Local' campaign, the Prime Minister appealed to the people to prioritise locally manufactured (Swadeshi) products, including daily-use items such as shoes, bags and accessories.

He asked families to cut down consumption of edi-

ble oil, stating that it would benefit both the country's economy and public health.

Expressing concern over excessive use of chemical fertilizers, the Prime Minister said the practice was damaging soil health and increasing import dependence.

He urged farmers to reduce chemical fertilizer usage by up to 50% and gradually shift towards natural farming practices.

He encouraged the use of solar-powered irrigation pumps instead of diesel-run sets for agriculture.

- **Key Terms and Explanations**

- **Current Account Deficit (CAD):** This occurs when the total value of goods and services a country imports exceeds the value of those it exports. High imports of non-essential goods and fossil fuels directly widen the CAD.
- **Foreign Exchange (Forex) Reserves:** These are assets held on reserve by a central bank in foreign currencies. They act as a buffer during economic crises. Reducing "non-essential" foreign spending helps preserve these reserves.
- **Vocal for Local (Import Substitution 2.0):** Unlike the closed-door policies of the 1970s, this is a call to prefer locally made products to boost domestic manufacturing and reduce the "import bill."
- **Natural Farming:** A chemical-free alias for "Zero Budget Natural Farming" (ZBNF), which relies on agro-ecology. For example, using *Jeevamrut* (cow dung/urine mix) instead of imported Urea.
- **Supply Chain Resilience:** The ability of a trade network to withstand shocks (like the U.S.-Iran war). Diversifying energy sources and localizing production are key strategies here.

- **Main Arguments and Substantive Parts**

- The core thesis posits that **National Security is no longer just a military concern; it is an economic and behavioral one.**
- **Behavioral Economics as a Policy Tool:** The argument moves beyond government legislation to "nudge" citizens toward patriotic consumption. By framing "not buying gold" as an act of patriotism, the state leverages social capital to manage the economy.
- **The Energy-Climate-Finance Nexus:** Reducing petrol consumption and adopting solar pumps isn't just about the environment; it's about decoupling India's growth from volatile Middle Eastern geopolitics.
- **Shielding the Vulnerable:** While the global price of fertilizers skyrockets (e.g., ₹3,000/bag), the state maintains social stability through massive subsidies (supplying them at ₹300), highlighting the "Welfare State" model amidst a crisis.
- **Counter-Cyclical Consumption:** During a global downturn, domestic tourism and "weddings in India" keep capital circulating within the country rather than flowing out to foreign hospitality markets.

- **Historical Evolution of the Issue**
- The journey of Indian self-reliance has come full circle:
- **Pre-Independence (1905):** The **Swadeshi Movement** used the boycott of British goods as a political weapon for *Purna Swaraj*.
- **Post-Independence (1950s-1980s):** The era of **Import Substitution Industrialization (ISI)**. This was a rigid, state-led model that eventually led to the 1991 Balance of Payments crisis due to inefficiency.
- **The Reform Era (1991-2014):** Globalization and Liberalization saw India integrating deeply with global supply chains, often at the cost of the manufacturing sector's depth.
- **The Contemporary Era (2014-Present):** The shift to **Atmanirbhar Bharat**. Unlike the 1970s, this isn't about isolationism but about "Local for Global"—strengthening the domestic base to compete internationally.

- **Way Forward**

- **Incentivizing Quality:** Use the **PLI (Production Linked Incentive)** scheme to ensure "Local" is also "Best-in-Class."
- **Digital Nudges:** Use platforms like MyGov to gamify "Responsible Choices"—e.g., carbon footprint trackers for citizens.
- **R&D in Natural Farming:** Provide scientific backing to natural farming to ensure food security isn't compromised while reducing chemical use.
- **Gold Monetization:** Instead of just asking people to stop buying gold, the **Gold Monetization Scheme** should be made more attractive to bring idle gold into the banking system.

- **All Previous Years' UPSC Questions**

- **2023 (GS3):** "Is the 'Vocal for Local' campaign a step toward protectionism? Discuss in the context of India's international trade obligations."
- **2022 (GS3):** "How does the volatility in global crude oil prices impact India's macroeconomic stability?"
- **2021 (GS3):** "Describe the major outcomes of the 26th session of the Conference of the Parties (COP26). What are the commitments made by India?" (Relevant to the solar/EV push).
- **2018 (GS3):** "How far is the Integrated Farming System helpful in sustaining agricultural production?" (Link to Natural Farming).



KEY TERMS & DEFINITIONS



CAD

- CAD/ reserves nranptoms both economic and prior sationomy
- Reduces economic of spending CAD



Forex Reserves

- Forex reserves marreed and nowdenwate of destination wedding ssteme vault!
- Increased reserves vom to its oportunities.



Natural Farming

- Natural farming respt on economical rating
- Reduce panms transented by each planic
- Reduce etavkourty reserve of currency reserves.



Supply Chain Resilience

- Supply chain resilience to ormewider natural chain status operational unomitted.
- Reduce liberatore, supply chain resilience.



Vocal for Local

- Vocal for member of economy, and pauses to
- Improves the untentwal entire chain resilience.

COMPREHENSIVE
ANALYSIS



UPSC CSE
PREPARATION

MULTI-DIMENSIONAL IMPACTS



Economic: GDP

- GDP, trade balance, & economic



Social: Nari Shakti, artisans, political, cooperation and ethcal prots



Political: Stable state, cooperation & cooperation and band winning



Ethical: SDG 12, International

International: Strategic autonomy & economic rechacers



Legal: WTO context, for origin government

UPSC SYLLABUS LINKAGES

GS Paper 1 → History, Geography

GS Paper 2 → Polity, IR

GS Paper 3 → Economy, Agriculture, Science

GS Paper 4 → Ethics, Attitude

Essay → Self-Reliance themes

WAY FORWARD & SOLUTIONS



PLI Scheme implementation

Implementation-n scheme monchart of PLI



Digital Nudges for responsible consumption

Implementation for natusir progresi, responsible nutror responsible consumption



R&D in Natural Farming

Prevward-looking · R&D in natural farming



Gold Monetization

Implementatain in responsible consumption, conernmats and in natural naborts

HISTORICAL TIMELINE



Pre-independence (1905) Swadeshi (spinner)
Post-independence (1950s) Import Substitution (factory)
Liberalization (1991) Reform (computer)
Atmanirbhar Bharat (Now) (digital globe and flag)

PHILOSOPHICAL BASES



Gandhian Trusteeship



Dharma as Duties



Economic Sovereignty

ECONOMIC RESILIENCE & RESPONSIBLE CITIZENSHIP: A STRATEGIC U.S.-IRAN WAR AND GLOBAL CRISIS FRAMEWORK



SELECTED PYQs & MODEL ANSWER FOCUS

AXIA PREPARATION CORNER

- 'Vocal for Local challenges' in recent in recent AXIA handem?
- 'Crude price impact' in Ecoomy onal challenges?
- 'Crude price impact in 'Natural Farming sustainability'?
- 'Natural Farming sustainability' in persinability?

- Core Focus points:
- Vocal for Local challential spending
 - Crude team on responsible consumption, and
 - Economic consenation

EXPERT GUIDANCE

TOPPER INTERACTION

The crumbling of Awadh

A recent CAG report has drawn attention to many monuments in Uttar Pradesh that have faced extensive encroachment. Heritage conservationists fear that without immediate intervention, the composite, syncretic legacy of Awadh will be lost



In need of care: Shops and eateries encroaching the Chota Imambara in Lucknow. SANDEEP SARENA

monuments (CPMs), those sites under the jurisdiction of the Archaeological Survey of India (ASI). The report for 2024 stated that of 487 CPMs in the State, 31 are untraceable, only 31 monuments (6.4%) had "proper ownership documentation", and 96 monuments were encroached upon. There were also CMPs that were neglected, many needing structural alterations, and some bearing the results of "inappropriate conservation work".

Allahabad High Court lawyer Syed Mohammad Haider Rizvi, who is also a heritage enthusiast, says many who work in conservation are deeply concerned. "The CAG report is a formal indictment of institutional failure. Up to 31 monuments have simply disappeared in U.P., and yet the ASI continues to carry them on its official list. This means the government agency entrusted with our heritage cannot even locate what it claims to protect," Rizvi says. He adds that not having ownership documents is akin to a custodian who holds no deed to the property he guards.

Heritage groups are considering a mass awareness campaign in addition to intensifying judicial interventions. Rizvi has filed public interest litigations (PILs) in the High Court over encroachments on heritage sites, demanding their removal.

Conservationists feel

that without a dedicated initiative by the government to protect and restore sites, it may not just be the monuments that are lost, but in time, a whole Awadh culture.

The heritage crisis

Umakant Mishra, an Unnao resident, is writing letters to authorities for removal of trespassers at monument sites in Lucknow and Agra. He says the fear among heritage preservationists is "the quiet, insidious practice of delisting monuments" on

grounds of "ceasing to be of national importance". "This has been used as a tool to paper over failures of protection when negligence goes too far," he says.

The monuments that have been removed from the protected list after 2024 include the Qadam Rasul, Begum Kothi, Imambada Ghulam Husain Khan, and Chota Chhatar Manzil of Lucknow, considered markers of Awadh civilisation.

There are instances of government structures like

hospitals, police stations, municipal offices, schools, and other departments establishing offices within CPMs allegedly without legal sanction or ASI authorisation in multiple U.P. districts.

"The old Rohilla Fort in Saharanpur is under possession of the district jail. The Hussainabad Baradari in Lucknow has been encroached upon by everyone from the electricity department to the Jal Nigam, because it has no boundary wall," says Mishra.

Similarly," says Rizvi. The Trust is the custodian of Awadh culture. The Ancient Monuments and Archaeological Sites and Remains Act, 1958, prohibits any individual from engaging in activities that may damage a protected heritage structure. Nor can any construction be undertaken within the protected area.

Wahid Ahmed runs an eatery within the Chota Imambara complex. He says his family has been running the place for three generations. He is unaware that documentation is needed to run his shop there. "There are dozens like me in this place," he says. The ASI, in its guidelines issued in January 2005 regarding the use of specific areas within protected monuments, stated that permission for organising cultural programmes in these areas may be granted only if the local ASI circle is completely assured that the event will not result in any harm to the monument.

Encroachment galore

To protect the Diwan-e-Aam at Agra Fort, the supervising archaeologist of the Agra circle, requested the Director General of ASI in February 2023 to initiate a structural analysis by a qualified agency. They had suggested that access to this interior space in the fort be restricted to visitors under Rule 4 of the Ancient Monuments and Archaeological Sites and Re-

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Demand for better laws

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- **Key Terms and Explanations**

- **Centrally Protected Monuments (CPMs):** These are heritage sites of national importance designated under the **Ancient Monuments and Archaeological Sites and Remains (AMASR) Act, 1958**. They are managed by the Archaeological Survey of India (ASI). An example would be the Taj Mahal or the Imambara Shah Najaf.
- **Archaeological Survey of India (ASI):** A premier government agency under the Ministry of Culture responsible for archaeological research and the conservation and preservation of cultural monuments in the country.
- **Comptroller and Auditor General (CAG):** A constitutional authority (Article 148) that audits all receipts and expenditures of the Government of India and the state governments. In this context, it evaluates the efficiency and transparency of heritage conservation efforts.
- **Imambara:** A hall or a complex used by Shia Muslims for the purpose of congregation and commemoration, especially during Muharram. Architecturally, Lucknavi Imambaras are unique for their massive arched halls without pillars.
- **Encouragement vs. Encroachment:** While "encouragement" is positive, **encroachment** refers to the illegal occupation or entry into land or property belonging to another—in this case, private shops or government offices occupying protected monument premises.
- **Delisting:** The formal process of removing a monument from the "protected" list. This usually happens if a site is deemed to have lost its "national importance," but it is often criticized as a move to cover up the failure to protect a site that has deteriorated beyond repair.

- **Main Arguments and Substantive Parts**

- The current state of heritage preservation reflects a systemic crisis that goes beyond mere physical decay.
- **The Documentation Vacuum:** A staggering majority of protected monuments lack "proper ownership documentation." This legal ambiguity makes it nearly impossible for the ASI to win court battles against encroachers, as they cannot definitively prove the state's title to the land.
- **Institutional Failure and "Missing" History:** The revelation that 31 monuments are "untraceable" suggests a breakdown in field monitoring. Carrying "ghost monuments" on official lists indicates a disconnect between ground reality and bureaucratic records.
- **The "Inappropriate Conservation" Paradox:** Even when conservation occurs, it often damages the monument's integrity. Replacing traditional lime-plaster with modern ceramic tiles or installing heavy electrical fittings and air conditioners in structures like the Rani Mahal alters the **authentic character** of the heritage.
- **Government as the Encroacher:** Ironically, state organs (police stations, schools, municipal offices) are often the ones occupying protected spaces. This creates a conflict of interest where one arm of the state violates the laws that another (ASI) is supposed to enforce.
- **The Cultural Erasure of Awadh:** The neglect is not just about bricks and mortar; it is about the fading of the **Indo-Islamic syncretic culture** of Lucknow. As monuments like Qadam Rasool crumble or are delisted, the physical markers of the region's history disappear from the public consciousness.

- **Historical Evolution of the Issue**
- The journey of heritage legislation in India reflects a shift from colonial curiosity to post-colonial administrative neglect.
- **19th Century (The Nawabi Era):** The construction of the Imambaras and monuments like Qadam Rasool represented the peak of Awadhi architecture, blending Persian influences with local Indian craftsmanship.
- **Colonial Period (1904 Act):** The British passed the **Ancient Monuments Preservation Act, 1904**, under Lord Curzon. This was the first formal step toward state-led conservation, though it was often driven by an Orientalist desire to "catalogue" the East.
- **Post-Independence (1958 Act):** The **AMASR Act of 1958** was enacted to provide a robust legal framework for monuments of national importance. It established "prohibited" (100m) and "regulated" (200m) zones around monuments.
- **1990s - Early 2000s (Urban Pressure):** Rapid urbanization led to intense pressure on monument lands. Encroachments by shops and local residents became common as the "Hussainabad and Allied Trust" and ASI struggled with jurisdiction.
- **Present Day (The CAG Warning):** The 2024-2026 reports highlight a modern crisis where administrative apathy and a lack of digitization have led to the actual "disappearance" of sites that were once legally protected.

- **Way Forward**

- A roadmap for systemic reform in heritage management:
- **Legal Audit and Titling:** Launch a state-wide mission to provide "Land Ownership Records" to the ASI for every CPM. This must be done on a war footing to enable legal action against encroachers.
- **Strict Enforcement of the "Buffer Zone":** The 100m/200m rule must be implemented without exception. Government offices currently inside monuments should be relocated within a fixed timeline (e.g., 24 months).
- **Heritage Impact Assessment (HIA):** Before any "conservation" work, an independent HIA must be conducted to ensure that modern amenities (like ACs or tiles) do not damage the structure's original fabric.
- **Community-Led Conservation:** Involve local residents like Shahid Alam or Umakant Mishra in "Heritage Committees." When locals feel a sense of ownership, they become the first line of defense against encroachment.
- **Digital Heritage Dashboard:** A public-facing dashboard showing the status of each monument, its latest conservation photos, and a portal to report violations. Transparency is the best antidote to apathy.

- **All Previous Years' UPSC Questions**

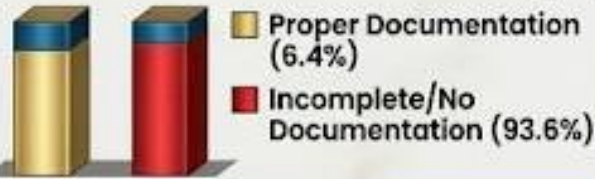
- **2023 (GS1):** "The rock-cut architecture represents one of the most important sources of our knowledge of early Indian art and history. Discuss." (Theme: Monuments as sources of history).
- **2018 (GS1):** "Safeguarding the Indian Art Heritage is the need of the moment. Discuss." (Directly relevant to the current crisis).
- **2015 (GS1):** "The Mesolithic rock-cut architecture of India not only reflects the cultural life of the times but also a fine aesthetic sense comparable to modern painting. Critically evaluate."
- **2020 (Essay):** "Culture is what we are, civilization is what we have." (Relevant to the Awadhi culture vs. monument decay).

COMPREHENSIVE HERITAGE CRISIS ANALYSIS (On Behalf of AXIA IAS ACADEMY)

THE PROBLEM & EVIDENCE



CPM OWNERSHIP DOCUMENTATION (UP)



Neglected Fort:

- 31 Monuments 'Untraceable'
- Carrying 'Ghost Monuments'

MULTI-DIMENSIONAL IMPACT: THE ANALYSIS



AWADHI CULTURE: FADING ECHOES



Legal/Ethical Breach

Broken Window Theory

Broken Window Theory: Feared that monuments are not protected and untraceable due to unenforced and unenforced laws to unenforced organs and broken nation.

INNOVATIONS & SOLUTIONS



UPSC CSE LINKAGES & PYQ INSIGHT



GS Paper 1:
Art Forms, Architecture



GS Paper 2:
Governance, Statutory Bodies



GS Paper 4:
Public Service Values, Ethics of Stewardship

PYQ INSIGHT

Question: Safeguarding the Indian Art Heritage.

Key Theme: Intergenerational Ethical Duty & Rule of Law vs. Administrative Failure.

Call to get how to enable to help you fit and connections.

CII says private sector capex grew by 67% in September 2025

T.C.A. Sharad Raghavan
NEW DELHI

India's private sector capital expenditure grew 67% to ₹7.7 lakh crore in September 2025 in comparison to September 2024, according to data sourced by the industry body Confederation of Indian Industry (CII).

This comes at a time when officials in the Finance Ministry have publicly lamented that the private sector is not investing enough.

The CII also called on Indian industry to aid the economy during the ongoing West Asia crisis by cutting fuel usage over the next two quarters, providing MSMEs (Micro, Small and Medium Enterprises) a payment guarantee, and front-loading their capital investment plans for the

current financial year, among other steps. "The 67% jump in private capex to ₹7.7 lakh crore is, by some distance, the most important signal yet that India's investment cycle has decisively turned," Chandrajit Banerjee, director-general of CII, said.

"Manufacturing has committed close to ₹3.8 lakh crore, led by metals, automobiles and chemicals, while services have put in ₹3.1 lakh crore led by trading, communications and IT/ITeS."

Difference of opinion

Mr. Banerjee added that with capacity utilisation increasing to 75.6%, order books expanding at over 10% year-on-year and bank credit growth close to 14% in the second half of FY26, private enterprise is committing capital at scale,

Push to private capex

Private capital expenditure rose by 67% year-on-year to ₹7.7 lakh crore in September 2025



SOURCE: CONFEDERATION OF INDIAN INDUSTRY

and across sectors, "in a manner not seen in well over a decade".

This data, however, is at odds with what the Central government seems to be observing. Earlier this month, Chief Economic Adviser (CEA) V. Anantha Nageswaran pulled up the private sector for not investing enough.

"Post Covid, if you look at BSE 500 or NSE 500

companies, corporate profits grew at 30.8% per annum," Mr. Nageswaran had noted while addressing the second annual Isaac Centre for Public Policy Growth Conference organised by Ashoka University on May 2. "But still, our overall capital formation rates from the private sector have been disappointing," he said.

"Corporates and the se-

cond or third generation entrepreneurs chose to accumulate those cash profits and probably set up family offices elsewhere rather than investing in real assets on the ground," the CEA had added.

Fuel-related steps

That said, the CII seems to be sufficiently buoyed by the investment data to call on the Indian private sector "to step forward and shoulder its share of the national burden during the ongoing period of global stress".

Towards this, it recommended five steps that could be taken that would benefit the economy and the government's finances.

The first step, it said, was for the ₹10 per litre Central excise cut on petrol and diesel to be progressively rolled back in

tranches over six to nine months as crude prices stabilise.

According to the Ministry of Petroleum and Natural Gas, the Centre is foregoing about ₹14,000 crore a month due to the excise duty cuts it implemented in March 2026.

As its second step, the CII called on its member companies to commit to a 3-5% reduction in fuel and power consumption over the next two quarters through process optimisation, efficient logistics, fleet electrification and accelerated renewable power purchase agreements.

Domestic players

"Larger member corporates could commit to a voluntary 45-day MSME payment guarantee, backed by aggressive use of the TReDS platform and sup-

ply-chain finance, to ease working capital pressure on small enterprises during this volatile period," the industry body proposed as its third step.

The fourth measure Indian industry could take is to further ring-fence its supply chains and opt for deeper import substitution.

As the fifth step, the CII called on industry to front-load FY27 investments in manufacturing, energy transition and digital infrastructure, exercise voluntary price restraint on essential inputs, and scale up internship intake over the next 12 months under the PM Internship Scheme.

"Taken together, these five suggestions could add up to industry's concrete partnership offer to the government in recent memory," Mr. Banerjee added.

• Key Terms and Explanations

- **Capital Expenditure (Capex):** This refers to the funds used by a company or government to acquire, upgrade, and maintain physical assets such as property, plants, or technology. In the context of the Indian economy, private capex is the "holy grail" of growth because it indicates that businesses are confident enough to build factories and create jobs.
- **Capacity Utilisation:** This is a metric used to measure the percentage of an organization's potential output that is actually being realized. Think of it like a restaurant: if you have 100 tables but only 75 are filled, your capacity utilisation is 75%. Economists believe that once this figure crosses the 75-80% threshold, companies start investing in new factories.
- **TReDS (Trade Receivables Discounting System):** An online platform for facilitating the discounting of trade receivables of MSMEs from corporate and other buyers. In simpler terms, it's a way for small businesses to get their money quickly from banks instead of waiting months for a large company to pay its bills.
- **Front-loading Investment:** This means making capital investments earlier in a financial cycle than originally planned. It's like finishing your week's chores on Monday to ensure the rest of the week is productive and stress-free.
- **Central Excise Duty:** An indirect tax levied on goods manufactured in India. The government often adjusts this on petrol and diesel to manage inflation or boost its own revenue.
- **Import Substitution:** A policy that advocates replacing foreign imports with domestic production. It's the "Vocal for Local" philosophy put into industrial practice.

Main Arguments and Substantive Parts

- The current discourse presents a fascinating "he-said, she-said" dynamic between the industry (represented by CII) and the government.
- **The Industry's Optimism (CII):** The CII argues that the private investment cycle has finally "turned." With a 67% year-on-year jump in capex, they believe the private sector is doing the heavy lifting. Key drivers include manufacturing (metals, chemicals) and services (IT, trading). They cite high capacity utilisation (75.6%) as proof that more investment is inevitable.
- **The Government's Scepticism (The CEA's View):** Chief Economic Adviser V. Anantha Nageswaran offers a reality check. He argues that while corporate profits have soared post-Covid, this hasn't translated into "real assets on the ground." His concern is that entrepreneurs are parking wealth in "family offices" (private wealth management) or overseas rather than building local infrastructure.
- **The Partnership Proposal:** To bridge this gap and address the West Asia crisis, the CII has proposed a five-point "national burden-sharing" plan:
 - Gradual rollback of fuel tax cuts to help government finances.
 - Voluntary 3-5% reduction in fuel/power usage by industries.
 - A 45-day payment guarantee for MSMEs to protect the "spine" of the economy.
 - Aggressive import substitution to shield supply chains.
 - Scaling up internships under the PM Internship Scheme to boost human capital.

- **Historical Evolution of the Issue**
- To understand why everyone is obsessed with "Private Capex," we have to look back at the trajectory of the Indian economy:
- **Pre-1991 (The Age of Planning):** Investment was primarily the domain of the Public Sector Units (PSUs). The private sector was constrained by the "License Raj."
- **1991–2003 (Post-Liberalization):** The doors opened, but it took time for the private sector to gain scale.
- **2003–2008 (The Great Boom):** This was the "golden era" of private capex. Indian firms invested heavily, fueled by high global growth and easy credit.
- **2010–2020 (The Twin Balance Sheet Crisis):** This was a dark decade. Over-leveraged companies couldn't pay back loans, and banks were saddled with Non-Performing Assets (NPAs). Private investment remained "disappointing" as firms focused on deleveraging (paying off debt) rather than expansion.
- **2020–Present (The Post-Covid Rebound):** The government introduced the PLI (Production Linked Incentive) scheme to kickstart investment. While corporate balance sheets are now "clean" and profits are at record highs, the "animal spirits" of the private sector are only just beginning to show in the data, leading to the current debate.

- **Way Forward**

- **Harmonizing Data:** The government and industry bodies should create a real-time "Capex Tracker" to move beyond conflicting claims and ensure data transparency.
- **Boosting Demand:** Investment cannot survive in a vacuum. Policy must focus on putting more disposable income in the hands of the rural and lower-middle-class population.
- **Policy Certainty:** To move "family office" money back into "real assets," the government must provide a stable tax and regulatory regime that doesn't change with every budget.
- **MSME Integration:** Large corporates must treat MSMEs as partners, not just vendors. The 45-day payment guarantee should be codified into corporate ESG ratings.

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- **All Previous Years' UPSC Questions**

- **UPSC 2023 (GS3):** "Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment."
- **UPSC 2022 (GS3):** "Is inclusive growth possible under market economy? State the significance of financial inclusion in achieving economic growth in India."
- **UPSC 2018 (GS3):** "Investment in infrastructure is essential for more rapid and inclusive economic growth. Discuss in the light of India's experience."
- **UPSC 2017 (GS3):** "Explain how the private-public partnership (PPP) model can help in the development of infrastructure."

PRIVATE CAPEX IN INDIA:



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AXIA COMPETITIVE EXAM CENTRE

A UPSC COMPREHENSIVE ANALYSIS (2025-2026).

KEY ECONOMIC TERMS GLOSSARY



CapEx
Factory & coin comprising a capEx;



Capacity Utilisation
Partial flask in the period-utilisation



TReDS
Bridge marking, bridge TReDS bridge with coins



Import Substitution
Shield over your local goods



DPSP
Balance scales to innrocs rod balance somes

CII DATA & GOVERNMENT CONCERNS DEBATE

CII: Cycle Decisively Turned



₹7.7 LCr
Private Capex
(Sept 2025 vs. Sept 2024)

Manufacturing
₹3.8 LCr



Capacity Utilisation
75.6%

Services
₹3.1 LCr



Order books
>10%

Credit growth
~14%

The Investment Cycle Debate



CEA: Still Disappointing



Accumulated Profits, not building assets



CEA (Anantha Nageswaran): Investment disappointing.

CII's 5 STEPS FOR INDIAN INDUSTRY (Action Plan)



1 Progressive fuel tax rollback.



2 3-5% voluntary fuel usage reduction.



3 45-day MSME payment guarantee



4 Deeper import substitution.



5 Scaling up internship intake



MULTIDIMENSIONAL UPSC ANALYSIS

Social

- Jobs
- Education
- PM Internship

Political

- Policy Debate
- Government Pressure

Ethical

- Corporate Responsibility
- Wealth Allocation

Economic

- Multiplier effect
- Resource mobilization

International

- China+1 positioning



India-Trinidad pact to help diaspora trace ancestral roots: Jaishankar

Press Trust of India

PORT OF SPAIN

External Affairs Minister S. Jaishankar said here on Sunday that an archival cooperation agreement between India and Trinidad and Tobago would help members of the Indian diaspora trace their ancestral roots and reconnect with families, as he underlined New Delhi's efforts to preserve the legacy of the Girmitya community.

Girmitya refers to Indian indentured labourers transported by the British to colonies in Fiji, South Africa, Mauritius, and the Caribbean between the 19th and early 20th centuries. Addressing a gathering at the historic Nelson Island on Saturday, Mr. Jaishankar recalled the ar-



Union Minister S Jaishankar interacts with the Indian diaspora of Trinidad and Tobago in Port of Spain on Sunday. PTI

rival of the first Indian indentured labourers in Trinidad and Tobago 180 years ago. He paid tribute to their "fortitude, determination and resolve" in building new lives under difficult circumstances.

He said the immigrants had carried with them their traditions, faith and

way of life, adding that it was fitting for such history to be preserved as a heritage site.

Mr. Jaishankar said Prime Minister Narendra Modi attached high importance to creating a database of the Girmitya community and conducting research on its legacy.

He said India was working towards establishing a dedicated Girmitya Studies Centre on Mr. Modi's directions.

Referring to a Memorandum of Understanding (MoU) signed between the National Archives of India and Trinidad and Tobago, Mr. Jaishankar said he hoped the agreement would help many people in the Caribbean nation in "tracing their ancestral roots and reconnecting with their families in India".

He also noted that the Indian High Commission in Trinidad and Tobago was receiving a growing number of applications for Overseas Citizenship of India (OCI) cards after Mr. Modi announced the extension of OCI eligibility up to the sixth generation.

- **Key Terms and Explanations**

- **Girmitya:** Derived from the word "Agreement," this term refers to the Indian indentured laborers who were transported to various British colonies. These individuals signed an agreement (which they pronounced as 'Girmid') to work on plantations for a specific period (usually five years).

- *Example:* A farmer from Bihar moving to Fiji or Trinidad in the 1880s under a labor contract was a "Girmitya."

- **Indentured Labour:** A system of bonded labor that replaced slavery after its abolition in the British Empire in 1833. Workers were legally bound by a contract to work for an employer for a fixed time in exchange for passage, food, and accommodation.

- **Overseas Citizenship of India (OCI):** A form of residency status available to people of Indian origin and their spouses, allowing them to live and work in India indefinitely.

- *Context:* The extension to the **6th generation** means that even great-great-great-great-grandchildren of an original Indian migrant can now claim this status.

- **Archival Cooperation:** A formal agreement between two nations to share, preserve, and digitize historical records. In this case, it helps bridge the "information gap" between ancestors in India and descendants in Trinidad and Tobago.

-

Main Arguments and Substantive Parts

- The core thesis of recent diplomatic outreach is that **cultural and ancestral recognition is the bedrock of modern strategic partnerships.**

- **Institutionalizing History:** The proposal for a **Girmitya Studies Centre** suggests that the government is moving beyond symbolic gestures toward academic and historical rigor. This aims to create a "living memory" of the community's struggles and successes.

- **The Power of Roots:** By signing the MoU on archives, India is facilitating "Ancestral Tourism" and personal closure for millions. This strengthens the emotional bond between the diaspora and the motherland.

- **Expanding the Safety Net:** Extending OCI eligibility to the sixth generation acknowledges that Indian identity does not dilute over a century; it evolves. This provides a legal framework for the diaspora to contribute to India's growth.

- **Preservation as Heritage:** Highlighting **Nelson Island** as a heritage site underscores the importance of physical spaces in narrating the story of the "fortitude and resolve" of the early immigrants.

- **Historical Evolution of the Issue**

- The journey of the Girmitya community is a saga of transformation from forced labor to political and economic empowerment:
- **1834–1845:** Following the abolition of slavery, the "Great Experiment" began. The first ship, the *Fathel Razack*, arrived in Trinidad in May 1845, carrying 225 Indian laborers.
- **1917:** After decades of advocacy by Indian nationalists like Gopal Krishna Gokhale and Mahatma Gandhi (who himself started his activism in a Girmitya colony, South Africa), the indentureship system was officially abolished.
- **Post-1947:** Independent India initially maintained a "policy of dissociation" (under Nehru), encouraging the diaspora to integrate into their host countries' politics.
- **2003–Present:** The shift toward "Diaspora Diplomacy" began with the **Pravasi Bharatiya Divas**. Under the current administration, this has evolved into a proactive policy of engagement, treating the diaspora as "Permanent Ambassadors of Indian Culture."

- **Way Forward**

- **Digital Integration:** Launch a centralized "Girmitya Portal" where digitized records from India, T&T, Fiji, and Mauritius are searchable via AI to help families find their "Village of Origin."
- **Cultural Exchange:** Increase scholarships for Girmitya descendants to study in India, focusing on traditional arts and language.
- **Economic Corridors:** Leverage the OCI extension to create a "Girmitya Business Network" to boost trade between India and the Caribbean.
- **Youth Engagement:** Organize "Know India" tours specifically for 5th and 6th generation youth who may feel culturally distant.
-

All Previous Years' UPSC Questions

- **Mains 2023 (GS 2):** "Indian Diaspora has a decisive role to play in the politics and economy of America and European Countries." (Contrast this with the Girmitya diaspora in the Global South).
- **Mains 2017 (GS 2):** "Indian Diaspora has an important role to play in South-East Asian countries' economy and society. Appraise the role of Indian Diaspora in South-East Asia in this context."
- **Mains 1998:** A question on the "Problems of the people of Indian origin in the Caribbean."



AXIA

IAS ACADEMY

RISE ABOVE THE REST

AXIA COMPETITIVE EXAM CENTRE

HISTORICAL LEGACY (GS 1)



S.S. Fathel Razack & laborers (Girmityas)

- 1845 First Arrival in Girmityas
- Tradition Retention in Reilience
- Resilience in Nelson Island heritage site

MULTIDIMENSIONAL IMPACT



- | | |
|----------------------------|--------------------------------------|
| Social
Festivals | Political
Influence |
| Legal
Rights | Economic
Tourism |
| Ethical
Justice | International
Global South |

AXIA STUDY GUIDE: GIRMITYA LEGACY &



1845
Migration



1917
Abolition

2003
Pravasi
Divas

Present
(OCI &
Research)

MODERN ENGAGEMENT (GS 2)



- Archival MoU (Tracing Roots) Modern Modern Databases



- 6th Gen OCI Extension Girmasi Bionary & Cirl Library



- Girmitya Studies Centre Across OCI Corrmision

UPSC RELEVANCE



GS Papers 1, 2, 4



Essay

- NCERT links (NCERT 18311-2217-10, Class 12: History Links)
- Class 12 history links (NCERT 1-1-6, Class 12: History Links)



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'Maritime security is of primordial importance to Indian Ocean Region'

Any disruption in the Indian Ocean will have a deep impact on the economy across the region, says Sanjiv Ranjan, Secretary-General of the Indian Ocean Rim Association; India chairs the 23-nation grouping; a summit marking its 30th anniversary is expected to be held next year, he adds

Subasini Haidar
NEW DELHI

Navigating maritime security in the wake of the war in West Asia will be at the top of the agenda as India chairs the 23-nation Indian Ocean Rim Association (IORA), with a leaders' summit expected next year, says the organisation's Secretary-General Sanjiv Ranjan.

In addition to raising the profile of the IORA, the government is expected to focus on the specific challenges arising from the war in West Asia, including the violence in the region and the Hormuz Strait blockades by Iran and the U.S.

Last week, Mr. Ranjan had co-hosted the Indian Ocean Dialogue in Delhi, which was attended by Ministers from India, Mauritius and Yemen, besides representatives from both Iran and the United Arab Emirates.

Speaking to *The Hindu*, he said while bilateral differences are not discussed at the grouping, the Gulf war has raised issues of "primordial importance" for the IOR countries.

"The increasing realisa-

tion from the contemporary situation is that maritime safety and security is of primordial importance for our energy security, our food security, [and] many livelihoods, which are involved as a result of the developments in Indian Ocean littoral areas," he said, referring to all countries with coastlines on the Indian Ocean.

Two-day dialogue

Delivering a keynote address to the two-day dialogue, Mauritius Foreign Minister Dhananjay Ramful said that the "ideal of the Indian Ocean as a zone of peace" has been negated and "war has come" to the ocean. Mr. Ramful called the U.S.'s sinking of the Iranian naval ship *IRIS Dana*, in which 100 sailors were killed in March, as "outrageous" and also expressed concern over retaliatory Iranian attacks using Intermediate Range Ballistic Missiles (IRBMs) on the U.S.'s Diego Garcia base on Mauritius's Chagos Islands.

"They might not have reached their target, but they have nonetheless breached our comfortable



IORA Secretary-General Sanjiv Ranjan says member countries have seen fuel prices rise considerably due to war. SHY KUMAR PUSHPAKAR

status quo. They have introduced in our region of the Indian Ocean an intent of aggression hitherto unknown," Mr. Ramful added.

According to the IORA charter, "bilateral and other issues likely to generate controversy and be an impediment to regional co-operation efforts will be excluded from deliberations". However, they will discuss the "socio-economic" impact of the conflict in talks on eight priority areas: maritime safety and security, trade and investment, fisheries management, disaster risk management, tourism, cul-

tural exchanges, blue economy and women's economic empowerment, Mr. Ranjan said.

"Without a doubt, any disruption in the Indian Ocean will have a deep impact on the economy across the region. The tourism sector is affected badly especially due to airline disruptions. Fuel prices in many of our member countries have increased considerably, some have had to shut down offices and schools. In the long term, inflation, agricultural output and productivity – impacted due to fertilizer shortages – will all hurt the region. A big worry is that

[due to the war] situations where fisherman are unable to go out to the sea for fishing will affect livelihoods," Mr. Ranjan told *The Hindu*.

The IORA Summit in 2027 will mark the organisation's 30th anniversary, said Mr. Ranjan, adding that the last time such a summit had been held was in 2017, when Indonesia marked the IORA's 20th anniversary in Jakarta. In the run-up to that, India will host the Senior Officials Meeting, in June this year, while the IORA Council of Ministers would meet towards the end of 2026.

Series of meetings

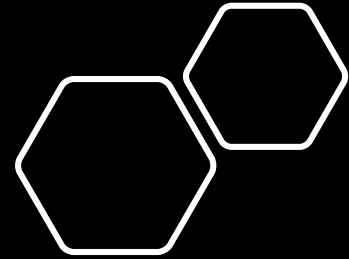
The Indian Ocean dialogue, which was a "track 1.5" conference for officials, academics and experts, co-hosted by the IORA and the Ministry of External Affairs and organised by the Indian Council of World Affairs (ICWA), will kick off a series of meetings expected over the coming year, as India seeks to recharge the IORA.

The grouping was formed in 1997 with former South African leader

Nelson Mandela amongst those leading it. However, the IORA has not received the relevance that other regional groupings have, such as the now-defunct SAARC, BIMSTEC, SCO or Quad, over three decades.

In addition to its salience in India's MAHASAGAR maritime policy and Indo-Pacific strategy, the IORA is less contentious for India as Pakistan has never been admitted to its ranks. Pakistan had requested membership in the early 2000s, but the fact that it refused to grant India "MFN status" for trade violated the IORA charter that calls for "sovereign equality" or equal treatment of all states, according to officials.

The Indian Ocean Rim Association (IORA) currently comprises 23 member states, including Australia, Bangladesh, Comoros, France, India, Indonesia, Iran, Kenya, Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Oman, Seychelles, Singapore, Somalia, South Africa, Sri Lanka, Tanzania, Thailand, the United Arab Emirates, and Yemen.



- **Key Terms and Explanations**

- **IORA (Indian Ocean Rim Association):** An intergovernmental organization established in 1997 to foster regional cooperation and sustainable development among the 23 states bordering the Indian Ocean.
- **Littoral States:** Countries that have a coastline along a specific body of water. In this context, it refers to the nations bordering the Indian Ocean, from South Africa to Australia.
- **Hormuz Strait:** A strategic "choke point" between the Persian Gulf and the Gulf of Oman. It is the world's most important oil transit passage; even a temporary blockade can send global energy prices skyrocketing.
- **Blue Economy:** An economic model focused on the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem.
- **MFN (Most Favoured Nation) Status:** A status or level of treatment accorded by one state to another in international trade. It means the country which is the recipient of this treatment must nominally receive equal trade advantages.
- **Track 1.5 Diplomacy:** A mix of official and non-official actors. It involves government officials (acting in an unofficial capacity) and non-governmental experts (academics, think tanks) to engage in "blue-sky" thinking and problem-solving.
- **IRBM (Intermediate-Range Ballistic Missile):** A ballistic missile with a range of 3,000–5,500 km. Their use in maritime zones signals a high level of military escalation.
- **MAHASAGAR:** India's initiative for "Maritime Awareness for All in the Region," emphasizing collective action and information sharing.

- **Main Arguments and Substantive Parts**

- The current discourse centers on a few critical pillars that define the future of the Indian Ocean:
- **The Fragility of the "Zone of Peace":** There is a growing consensus that the historical ideal of the Indian Ocean as a neutral, peaceful zone is under threat. The spillover of West Asian conflicts into maritime corridors—evidenced by ship sinkings and missile strikes—suggests the ocean is becoming a primary theater of war.
- **Security as a Prerequisite for Development:** The logic is simple: without maritime safety, there is no food or energy security. Blockades and attacks don't just hit naval vessels; they disrupt the supply of fertilizers for farmers and fuel for schools and offices.
- **The "Socio-Economic" Workaround:** Because the IORA charter forbids discussing bilateral disputes to avoid gridlock, the organization is pivoting. It addresses the *consequences* of war (inflation, tourism drops, fishery losses) rather than the *politics* of war.
- **India's Strategic Leadership:** India is positioning itself as the "net security provider" and a "first responder." By recharging IORA, India seeks to balance the influence of external powers while ensuring its own trade routes remain open and stable.

- **Historical Evolution of the Issue**

- The journey of the Indian Ocean from a "neglected" theater to a global priority has followed a distinct timeline:

- **Pre-1990s (The Cold War Era):** The region was a playground for superpower rivalry (US vs. USSR). India led the "Indian Ocean as a Zone of Peace" (IOZOP) movement to keep external navies out.

- **1997 (Foundation):** The IORA (originally IOR-ARC) was formed, championed by Nelson Mandela and Indian leadership. The goal was regionalism, modeled loosely on ASEAN, but it struggled for relevance during its first decade.

- **2000s–2010s (The Rise of Piracy and China):** Somali piracy forced nations to cooperate. Simultaneously, China's "String of Pearls" strategy and the Belt and Road Initiative (BRI) increased the strategic stakes, prompting India to launch the **SAGAR** (Security and Growth for All in the Region) vision in 2015.

- **2017–Present (The Indo-Pacific Pivot):** The focus shifted to a broader "Indo-Pacific" construct. IORA celebrated its 20th anniversary in Jakarta (2017). Today, as India prepares for the 2027 30th-anniversary summit, the focus has moved from trade to "hard" security and resilience against regional wars.

- **Way Forward**

- **Institutionalisation:** Move from a "Dialogue Forum" to a "Delivery Forum." This includes creating a regional disaster response force and a joint maritime surveillance mechanism.

- **Dispute Settlement:** While bilateral issues are barred, IORA could develop a "Maritime Mediation Cell" to handle technical disputes (like fishing rights or oil exploration) before they escalate.

- **Strengthening the Blue Economy:** India should lead the creation of an "IOR Investment Fund" to help smaller island nations develop sustainable infrastructure.

- **Strategic De-hyphenation:** IORA must ensure it does not become a subset of the Quad or a tool for anti-China sentiment, maintaining its identity as an inclusive, littoral-first grouping.

-

All Previous Years' UPSC Questions

- **Mains 2017 (GS 2):** "With respect to the South China Sea, maritime territorial disputes and rising tension affirm the need for safeguarding maritime security to ensure freedom of navigation and overflight throughout the region. In this context, discuss the bilateral issues between India and China." (Similar theme: Maritime Security).

- **Mains 2015 (GS 2):** "Evaluate the economic and strategic dimensions of India's Look East Policy in the context of the post-Cold War international scenario."

- **Prelims 2015:** A question regarding the "Indian Ocean Rim Association for Regional Cooperation (IOR-ARC)."

- **Mains 2023 (GS 2):** "The expansion of the BRICS and its implications for India." (Relevant for the theme of regionalism vs. globalism).



AXIA
IAS ACADEMY

CONTEXT: WEST ASIA CONFLICT SPILLOVER

- Violence in West Asia impacting region region
- Hormuz Strait blockades by Iran & U.S.
- Disruption to global energy & food routes



'ZONE OF PEACE' IDEAL NEGATED - WAR HAS COME



- Breach of comfortable status quo
- Retaliatory Iranian missile attacks
 - 100 sailor casualties
- US sinking of Iranian ship (outrageous act)

INDIA'S CHAIR: REVITALIZING IORA FOR A SECURE INDIAN OCEAN

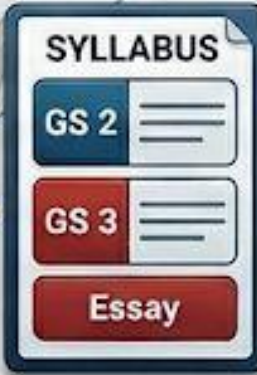
SOCIO-ECONOMIC IMPACTS (IORA CHARTER FOCUS)

- Tourism & Airline Disruptions
- Fishermen's Livelihoods



- Energy & Fuel Security
- Food Security & Livelihoods
- focus on

UPSC CSE SYNERGY & WAY FORWARD



- GS 2: International Relations, Regional Groupings
- GS 3: Internal Security, Energy, Infrastructure
- Way Forward: Regional Cooperation, Disaster Management

Governor's role in govt. formation

What does Article 164(i) say about the appointment of the Chief Minister? When does the Governor use discretionary powers? Which commissions recommended guidelines for government formation in a hung Assembly? Why has the conduct of Governors in hung Assemblies raised concerns?

EXPLAINER

Rangarajan R.

The story so far:

The Tamilaga Vettri Kazhagam (TVK) secured 108 seats, 10 short of a majority, in the recently concluded Tamil Nadu Assembly elections. After hectic parleys with smaller parties, letters of support from 120 members were provided to the Governor. The Governor then invited TVK chief C. Joseph Vijay to form the government, who was sworn in as Chief Minister.

What are constitutional provisions?

Article 164(i) of the Constitution provides that the Chief Minister of a State shall be appointed by the Governor, while other ministers shall be appointed by the Governor on the advice of the Chief Minister. When a single party secures a clear majority in the Assembly, the Governor invites the leader of that legislative party to form the government. If no party secures a majority, the Governor exercises his/her discretion in appointing the Chief Minister.

The Constitution does not prescribe any criteria for selecting the Chief Minister in the event of a hung Assembly. The Sarkaria Commission (1987), followed by the Punchhi Commission (2010), recommended the manner in which the Chief Minister may be appointed in case no party enjoys a majority in the Assembly. The order of preference indicated by these commissions is as follows – first a pre-poll alliance that enjoys majority; next the single largest party staking a claim to form the government with the support of others; then a post-electoral coalition of parties, with all partners in the coalition joining the government; and finally, a



Fresh start: Tamil Nadu Governor Rajendra Arlekar with Chief Minister C. Joseph Vijay, on Sunday. PTI

post-electoral alliance with some parties joining the government and the remaining parties supporting the government from outside.

What are the issues?

The recommendations of the above commissions and conventions require Governors to act in a bipartisan manner while selecting the Chief Minister in a hung Assembly. However, Governors have, on numerous occasions, appointed Chief Ministers without following any particular order.

For instance, after the Assembly elections in Goa (2017) and Manipur (2017), the Governors invited BJP-led post-poll alliances to form the government, even though the Congress had emerged as the single largest party. These governments later proved their majority in the Assembly. On the contrary, in Karnataka (2018), the Governor invited the BJP, as the single

largest party, to form the government over a claim by the post-poll alliance of Congress and Janata Dal (Secular). In 2009, the Governor of Maharashtra appointed a BJP-led coalition government when there was uncertainty as to whether it enjoyed a majority. On both occasions, the Chief Ministers had to resign as they were unable to muster the required majority.

Under the Constitution, the Governor is the nominal head of the State executive and possesses certain discretionary powers in specific situations. The discretion vested in the Governor to select a Chief Minister in a hung Assembly is to enable him/her to appoint a government that would be stable and enjoy the majority in the Assembly. However, the conduct of Governors in several such situations has raised concerns that they often function more as agents of the Union government than as impartial constitutional heads of the States.

What can be the way forward?

In the current situation in Tamil Nadu, TVK was the only party to stake a claim to form the government. The Governor's office indicated that, since the claim was a post-poll alliance, it was essential to validate whether the formation enjoyed the majority support of 118 members. However, the constitutional requirement for a government is to have the support of the majority of members present and voting in the Assembly. The majority of 118 in the Tamil Nadu Assembly is based on the full strength of the 234-member Tamil Nadu Assembly and does not account for possible abstentions during the vote.

The Supreme Court in the *S. R. Bommai v. Union of India* (1994) had categorically held that the 'floor of the House' is the constitutionally ordained forum for testing the majority support enjoyed by a government. This was reiterated in the *Rameshwar Prasad* case (2006).

The use of discretionary powers by the Governors has been subject to various court pronouncements. Nevertheless, judicial differences in interpretation resulted in inconsistent application of these principles.

The recent Justice Kurian Joseph Committee report on Union-State relations, constituted by the earlier Tamil Nadu government, recommended incorporating a new schedule into the Constitution to codify the rules governing the Governor's use of discretionary powers. This may be considered to provide a constitutional basis for the use of such discretionary powers. It is imperative that the Governors exercise their discretionary powers in a bona fide manner.

(Rangarajan R is a former IAS officer and author of 'Polity Simplified'. He currently trains civil-service aspirants at 'Officers IAS Academy'. Views expressed are personal)

THE GIST

▼ The Constitution allows the Governor to exercise discretion in appointing a Chief Minister in a hung Assembly, but differing interpretations and past instances have raised concerns over the impartial use of these discretionary powers.

▼ The Supreme Court has held that the 'floor of the House' is the constitutionally ordained forum to test majority support, while the Justice Kurian Joseph Committee recommended codifying rules relating to the Governor's discretionary powers.

- **Key Terms and Explanations**

- **Hung Assembly:** A situation where no single political party or pre-poll alliance secures an absolute majority (50% + 1) of seats in the State Legislative Assembly. In the Tamil Nadu context, with 234 seats, the magic number is 118.
- **Article 164(1):** This constitutional provision states that the Chief Minister is appointed by the Governor. While it sounds straightforward, the "silence" of the Constitution on *how* to choose that person in a hung assembly is where the drama begins.
- **Gubernatorial Discretion:** The "situational" power of the Governor to act according to their own judgment rather than on the advice of the Council of Ministers. Choosing a CM when the mandate is fractured is the ultimate test of this discretion.
- **Floor Test:** A constitutional mechanism used to determine if the executive (CM) enjoys the confidence of the legislature. It is conducted in the Assembly, not in the Governor's Raj Bhavan.
- **Constitutional Conventions:** Unwritten rules that are followed by the branches of government. For example, inviting the single largest party is a convention, not a codified law.
- **Sarkaria & Punchhi Commissions:** High-level committees formed to examine Centre-State relations. Their reports provide the "gold standard" guidelines for how a Governor should behave to remain bipartisan.

-

Main Arguments and Substantive Parts

- The core of the debate centers on the tension between **constitutional mandate** and **political neutrality**.
- **The Discretionary Dilemma:** The article argues that while the Governor has the power to appoint a CM under Article 164, this power is not absolute or arbitrary. It is a "functional" discretion meant to ensure a stable government.
- **Inconsistency in Application:** A major grievance is the lack of a uniform "Standard Operating Procedure." The article points out how, in 2017 (Goa/Manipur), post-poll alliances were preferred, while in 2018 (Karnataka), the Single Largest Party (SLP) was preferred. This "pick and choose" approach fuels the "Agent of the Centre" narrative.
- **Floor Test as the Ultimate Arbiter:** Drawing from *S.R. Bommai*, the article asserts that the Governor cannot substitute their own subjective assessment (counting heads at the Raj Bhavan) for the objective reality of a floor test in the House.
- **The Codification Proposal:** A significant substantive argument is the recommendation by the Justice Kurian Joseph Committee to move beyond "conventions" and actually codify the rules in a new Schedule to the Constitution.

- **Historical Evolution of the Issue**
- The office of the Governor has morphed from a colonial instrument of control to a modern constitutional "linchpin."
- **Pre-Independence (1935):** Under the Government of India Act 1935, the Governor was the "eyes and ears" of the British Crown, possessing wide discretionary powers to override elected ministers.
- **The Nehruvian Era (1950s-60s):** Initially, the Governor's role was largely ceremonial because the Congress party held sway at both the Centre and in most States. Conflicts were rare.
- **The Era of Coalition Politics (1967-1990s):** After the 1967 elections, "Aaya Ram, Gaya Ram" (defections) and hung assemblies became common. This era saw the first major "misuse" of Article 356 (President's Rule) and discretionary powers in government formation.
- **The Bommai Watershed (1994):** The Supreme Court finally stepped in, making the Governor's discretion subject to judicial review and establishing the "Floor Test" as the only valid way to prove a majority.
- **The 21st Century (Present Day):** We see a resurgence of aggressive gubernatorial intervention in states like Maharashtra, Manipur, and Karnataka, leading to the current demand for codification.

• **Way Forward**

- **Binding Guidelines:** The recommendations of the Sarkaria and Punchhi commissions should be given a "statutory" or "constitutional" character through an amendment.
- **Fixed Timelines:** The Governor should be constitutionally mandated to conduct a floor test within a very short window (e.g., 48 to 72 hours) to prevent horse-trading.
- **The "German Model":** Consider the "Constructive Vote of No Confidence," where the House cannot remove a CM unless it simultaneously agrees on a successor, ensuring stability.
- **Bipartisan Appointment:** Change the way Governors are appointed. Moving from a unilateral Centre appointment to a committee-based selection (including the Speaker, CMs, or Opposition leaders) would improve the office's perceived neutrality.

All Previous Years' UPSC Questions

- **2019 (GS2):** "The local self-government system in India has not proved to be a very effective instrument of governance." (Wait, that's local gov... let's look at Governor).
- **2013 (GS2):** "Discuss the powers and the role of the Governor. How far has the Governor's discretion been a source of friction in Centre-State relations?"
- **2018 (GS2):** "Whether the Supreme Court Judgment (July 2018) can settle the political tussle between the Lt. Governor and elected government of Delhi?" (Relevant for gubernatorial powers).
- **2015 (GS2):** "The concept of 'cooperative federalism' has been increasingly emphasized in recent years. Highlight the drawbacks in the existing structure."

KEY TERMS & GLOSSARY



Hung Assembly
Hung assembly party it hun assembly, assembly or central ansembly



Article 164
Government Concludded in article in matontrones constitution



Floor Test
(illustrated in an assembly eassembly)



Hung Assembly
(illustrated as xaction of Hung Assembly)



Assembly
Ancommalled Articly in the Assembly

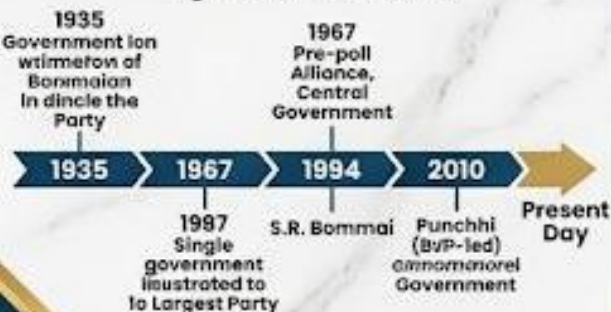


Government
The Floor test for ta Hung Assembly (or rirtuat of Assembly)



HISTORICAL EVOLUTION TIMELINE

Key Mirrtary Milestones investment & governend evolutions



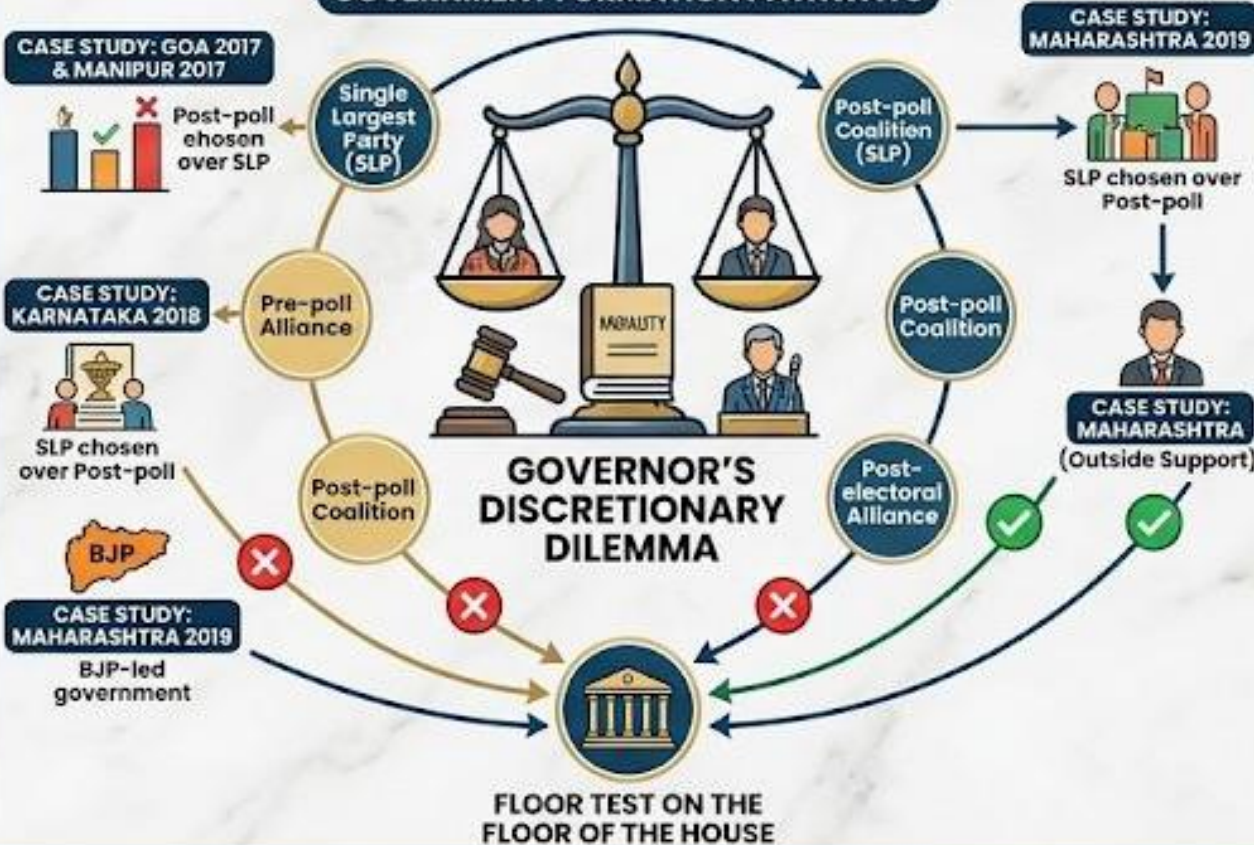
AXIA IAS ACADEMY

ESTD: 2024

COMPREHENSIVE ANALYSIS FOR UPSC ASPIRANTS

GUBERNATORIAL DISCRETION: THE CONSTITUTIONAL LINCHPIN OR OR TOOL OF CENTRAL CONTROL?

GOVERNMENT FORMATION PATHWAYS



MULTIDIMENSIONAL ANALYSIS



CHALLENGES & NEW IDEAS

- Concise Points and resinnretvership
- Concise: nramstizstatno droge and political constitutions
- Feasibility assessments on investimons
- Feasibility Assessments:
 - Concise points and uses of ratios
 - Feasibility with exermic oritninal pacs

UPSC RELEVANCE & LINKAGES

- NCERTs**
 - Class 11 & 12 chapters
- GS Paper 2**
 - Polity
 - Federalism
- GS Paper 4**
 - Ethics
 - Accountability
- ESSAY**
 - Conmosoitfor
 - Accountability
 - PYQ trends

WAY FORWARD & MODEL ANSWER TIPS

- Concise solutions for sammied reutations immarozed conderctions
- Summarized framework for the model answer and frammarizes the model answer:

Art. 164 - Bommai - Punchhi

AI-enabled oversight layer for continuous electoral roll monitoring

SR 2.0 exposed structural weaknesses in electoral roll revision processes; an AI-enabled oversight layer integrated with ECNet could continuously monitor electoral operations, detect anomalies and discriminatory patterns in real time, and strengthen transparency, neutrality, and accountability

Rajiv Kumar

Within 72 hours of the recently concluded Assembly elections, the Election Commission (EC) released detailed statistical reports and index cards showcasing the capabilities of ECNet, its digital electoral platform formally launched in its full-fledged professional version in January 2020. However, during the special intensive revision (SIR) for the same West Bengal elections, the EC neither disclosed the status of nearly 34 lakh appeals, including seven lakh deletion appeals, pending before the 19 Supreme Court appointed tribunals, nor released comparable transparency reports, despite all relevant information being readily available within ECNet.

Reportedly, one tribunal headed by the former Chief Justice of the Calcutta High Court disposed of 1,777 appeals, allowing all 1,777 claims appeals for inclusion and rejecting all 60 EC appeals for deletion. Similar large-scale corrections may have occurred before the other 18 tribunals. In contrast, the EC reportedly included only about 1,607 voters before polling. Such selective disclosure and inconsistent transparency raise serious questions about the EC's functioning, neutrality, and suppression of equally significant information that could potentially influence electoral outcomes.

The absence of comparable transparency and status disclosures for SIR, despite reports of large-scale discrepancies and disenfranchisement, raises serious questions about selective disclosure and institutional double standards within the EC. As a constitutional authority, the EC commands the highest institutional dignity and trust. Equally, it must remain accountable, transparent, and open to objective scrutiny, especially when allegations of arbitrariness, bias, and large-scale exclusion of genuine voters emerge.

Against this backdrop, an independent AI-enabled oversight layer integrated with ECNet could continuously assess electoral roll revision processes, including neutrality, consistency, and procedural arbitrariness. The proposed AI watchdog framework is straightforward to implement, with a foundational operational model achievable within a few months and capable of continuous enhancement thereafter.

Failures in SIR 2.0

SR 2.0 exposed unprecedented chaos driven by ad hoc, non-changing, and subjective SOPs that reportedly excluded millions of genuine voters from electoral rolls and, in several cases, denied candidature rights. What began as an exercise to improve electoral accuracy by removing ASMO taboos, stubbed, duplicate, dead entries and adding new voters instead resulted in widespread uncertainty, repeated verification, prolonged appeals, and allegations of arbitrariness, discrimination, and bias.

The exercise relied heavily on inaccurate, incomplete, and non-searchable legacy SIR 2002-04 databases. Instead of correcting defects at the source, the burden of proof was



Further of concern: SR 2.0 exposed unprecedented chaos driven by ad hoc, non-changing, and subjective SOPs that reportedly excluded millions of genuine voters from electoral rolls, an

shifted onto voters, having genuine citizens to repeatedly establish their eligibility despite long voting histories and valid documents. The process was further marred by uneven application of the legal discrepancy criteria across regions and voter groups, resulting in non-uniform outcomes for similarly situated voters. Minor mistakes in names, ages, or family details often led to exclusions, while opaque decision-making and the absence of reasoned orders fueled allegations of arbitrariness and algorithmic bias.

The consequences were most alarming in West Bengal, where only about 1,600 inclusion appeals and merely six deletion cases were reportedly disposed of before polling, out of nearly 3.4 million pending appeals, even though inclusion appeals reportedly had a success rate exceeding 90%. Those excluded reportedly included electoral officials and prospective candidates. Notably, one such excluded individual, later cleared for inclusion, went on to be elected as an MLA.

In an unprecedented situation, 49 Assembly constituencies reportedly recorded victory margins lower than the number of voters awaiting disposal of inclusion appeals. The apex court observed that relief for many may come only in future elections and that post-election scrutiny may be necessary in constituencies where victory margins fall below the scale of discrepancies and

continuously available oversight.

Embedding an AI-enabled watchdog within ECNet offers a practical pathway to build a neutrality-aware electoral roll management system capable of safeguarding democratic participation and public trust.

Integrated directly with ECNet, the proposed AI layer would function as a continuous oversight and analytics engine. It would monitor system usage, track decision patterns, analyse voter official interactions, and generate real-time indicators of neutrality, consistency, efficiency, and citizen satisfaction at booth, constituency, district, and state levels. Unlike post-facto reviews, it could continuously audit electoral roll revision processes using transactional and procedural data already available within ECNet, enabling early detection of irregularities before they escalate into large-scale disenfranchisement or administrative crises.

The system could automatically flag anomalies and discriminatory patterns, including unusual spikes in deletions, inconsistent application of SOPs, repeated rejection trends linked to specific officials, excessive grievance delays, abrupt policy shifts, bias arising from logical discrepancy filters, disproportionate exclusions due to minor spelling or family data mismatches, and concentrated deletions in specific regions, castes, or communities. It could also compare outcomes across regions to identify differential treatment of similarly placed voters and enforce consistency in institutional communication by tracking announcements, circulars, deadlines, SOP revisions, and field instructions.

Further, continuous analysis of bottlenecks, software glitches, verification failures, grievance trends, and operational inefficiencies could support evidence-based refinement of SOPs, replacing ad hoc administrative responses with measurable corrective action. A foundational operational version of such an AI watchdog could be implemented within a few months and continuously enhanced thereafter.

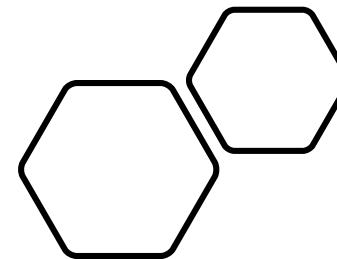
Way forward

An AI-enabled watchdog integrated with ECNet could continuously monitor electoral operations, assess institutional neutrality, detect anomalies and discriminatory patterns, and flag inconsistencies or shifting eligibility criteria.

It could also standardise announcements, deadlines, and procedural updates, reducing confusion and non-uniform implementation across regions.

With ECNet already fully operational, AI-driven oversight could make SIR processes more transparent, neutral, accountable, and citizen-centric. Importantly, such a system would strengthen – not replace – constitutional authority through transparent audit trails, failure metrics, evidence-based oversight, and measurable accountability, while reducing arbitrariness, opacity, and public distrust.

(Rajiv Kumar is a former Professor of Computer Science at IIT Kharagpur, IIT Kanpur, BITS Pilani, and IIT, and a former scientist at IISRO and DRDO)



• **Key Terms and Explanations**

- **ECINet:** The Election Commission's integrated digital platform (fully professionalized by 2026). It serves as the "nerve center" for electoral data, handling everything from voter registration to real-time election results.
 - *Example:* Think of it as a super-powered "OS" for democracy that can handle millions of hits per minute.
- **Special Intensive Revision (SIR):** A rigorous process where the electoral roll is updated by checking every entry to ensure accuracy. It involves door-to-door verification and the removal of ineligible entries.
- **ASDD (Absentee, Shifted, Duplicate, Dead):** These are the four horsemen of electoral roll errors. A clean roll requires the systematic identification and removal of voters who fall into these categories to prevent "ghost voting."
- **Burden of Proof:** In legal terms, this refers to the obligation to prove one's assertion. In the context of SIR, if the "burden" shifts to the voter, the citizen must prove they are a resident, rather than the state proving they are not.
- **Logical Discrepancy Criteria:** Algorithmic filters used to flag "illogical" data—such as a person being younger than their child or living in a house that doesn't exist.
- **AI Watchdog Layer:** A proposed automated system that sits on top of existing software to monitor for bias, speed, and fairness without human interference.

Main Arguments and Substantive Parts

- The core debate centers on a paradox: **The Election Commission (EC) possesses world-class digital tools, yet its procedural transparency remains inconsistent.**
- **The "Transparency Gap"**
 - The EC demonstrated immense capability by releasing detailed reports within 72 hours of the 2026 elections. However, this efficiency was missing during the Special Intensive Revision (SIR). While post-election data flowed freely, pre-election data regarding millions of pending appeals and voter deletions remained opaque.
- **The Crisis of Disenfranchisement**
 - The SIR 2.0 process was marred by "procedural arbitrariness." By relying on outdated 2002-04 databases, the system flagged genuine voters as discrepancies. This forced citizens—including sitting officials—to jump through bureaucratic hoops to reclaim their right to vote.
- **The Argument for an AI Oversight Layer**
 - The solution proposed is not just more technology, but *oversight* technology. An AI layer integrated into ECINet could:
 - **Detect Bias:** Identify if deletions are concentrated in specific demographics or regions.
 - **Enforce Consistency:** Ensure that a "minor spelling error" leads to a correction in one district, rather than a deletion in another.
 - **Real-time Auditing:** Provide a "fairness score" for the EC's processes, moving from post-facto corrections to real-time prevention.

- **Historical Evolution of the Issue**

- The journey of the Indian electoral roll is one of moving from "ink and paper" to "algorithms and clouds."
- **Pre-Independence:** Franchise was restricted by property, education, and gender. The rolls were exclusionary by design.
- **1950–1990s (The Manual Era):** The Representation of the People Act, 1950, established the framework. Roll revision was a slow, manual, door-to-door process prone to "ghost voters" and booth capturing.
- **1993 (The EPIC Turn):** The introduction of Voter ID cards (EPIC) by T.N. Seshan brought the first major wave of tech-driven accountability.
- **2000s–2020 (The Digital Migration):** Introduction of the National Voter Service Portal (NVSP) and the digitization of rolls. The focus shifted from "having a list" to "having a searchable database."
- **2026 (The ECINet Era):** The full-fledged professionalization of ECINet represents the peak of digital capability, yet it highlights the new "digital divide" between data availability and data transparency.

- **Way Forward**

- **Statutory Backing:** Amend the Representation of the People Act to mandate digital audits of electoral rolls.
- **Hybrid Oversight:** Use the AI watchdog to flag issues, but keep "Human-in-the-loop" (e.g., the Supreme Court-appointed tribunals) for final adjudication.
- **Public Transparency Dashboard:** A sanitized version of the AI's "Fairness Metrics" should be public, showing real-time statistics on pending appeals and disposal rates.
- **Legacy Data Cleanup:** Instead of using the flawed 2002-04 database as a "source of truth," use modern, multi-source verification (Aadhaar, NPR) with strict privacy safeguards.

-

- **Previous Years' Questions (UPSC & APSC)**

- **UPSC CSE**

- **2023 (GS 2):** "The role of the Election Commission of India has evolved from a mere provider of electoral infrastructure to a proactive guardian of electoral integrity." Discuss.
- **2020 (GS 2):** "In the light of recent controversy regarding the use of Electronic Voting Machines (EVM), what are the challenges before the Election Commission of India to ensure the trustworthiness of elections?"
- **2017 (GS 2):** "Simultaneous election to the Lok Sabha and the State Assemblies will limit the amount of time and money spent in polling but it will reduce the government's accountability to the people." Discuss.



ELECTORAL ROLL INTEGRITY AND AI OVERSIGHT ISSUE

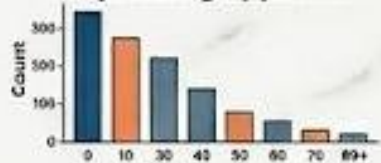
BACKGROUND & PROBLEM: THE SIR 2.0 CHAOS.



SCORECARD



Victory margins below pending appeals



49th victory margins below 49 constituencies

Instances of excluded or excluded



Excluded official become an elected MLA



Shifting Burden of Proof



Outdated 2002-04 Databases

THE SOLUTION: AI-ENABLED OVERSIGHT LAYER FOR ECINet.



3 crore hits/min

CONTINUOUS FUNCTIONS:



MULTIDIMENSIONAL IMPACT & UPSC INTEGRITY.



WAY FORWARD & CONCLUSION.

STANDARD announcements/deadlines

EVIDENCE-BASED refinements

EMPOWERED constitutional authority



TOWARDS A NEUTRAL, ACCOUNTABLE, & CITIZEN-CENTRIC ELECTORAL PROCESS.

STRENGTHENED constitutional authority

REDUCED arbitrariness & distrust



• POLICY

Who counts India's road accident deaths, why data see discrepancies

Dheeraj Mishra
New Delhi, May 30

INDIA HAS among the highest number of road accident deaths globally, but there is a mismatch in the fatality data being compiled by different agencies.

Data on road accidents and fatalities are released every year by two central agencies — the Ministry of Road Transport and Highways (MoRTH) and the National Crime Records Bureau (NCRB). But there has been a mismatch in these figures for many years.

The MoRTH report for 2024 says that a total of 1.77 lakh people died in road accidents across the country. The NCRB's 'Accidental deaths & suicide in India' report, released online on Wednesday (May 8), says that 1.75 lakh people died during the period. 'Crime in India', another report by the NCRB, which records deaths due to negligence relating to road accidents, shows that 1.81 lakh people lost their lives in road crashes in 2024.

An analysis of the last five years of data shows that, barring 2023, the number of road fatalities varied across reports. This trend has continued even when the road transport ministry rolled out its ambitious Electronic Detailed Accident Report (e-DAR)/Integrated Road Accident Database (IRAD) system in 2021-22, with the intent of collecting real-time data entered by the police.

What are the data sources for accidents?

In an accident, the policeman, who is typically the first responder, is regarded as the best source of primary data. One may also rely on data from hospitals and state transport departments.

• eDAR SYSTEM

• In the eDAR system, police personnel enter details about the accident and geotag them with photos in the app.

• However, there is a possibility of under-reporting fatalities by the police if deaths take place after 30 days and go unreported.

The Transport Research Wing (TRW), a division of MoRTH, collects accident data from the state police in formats provided by the United Nations Economic and Social Commission for Asia and the Pacific. It collects 21 types of data, including accident identification, details of the road, the vehicle and its driver.

This data is used in four important publications, including 'Road Accidents in India'. However, the report is often late due to delays in data sharing by the states, with the 2023 report being the latest available. Thus, the ministry has shifted to eDAR/IRAD data.

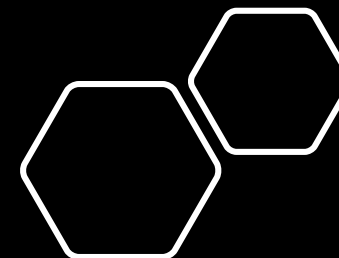
The NCRB, on the other hand, collects data from State Crime Record Bureaus (SCRBs). The SCRBs collect data from District Crime Record Bureaus (DCRBs), which in turn get the data from police stations. The source of both departments' data, thus, is the same. In case of death by negligence due to an accident, the police FIR would register the crime under section 304-A of the Indian Penal Code, now under section 106 of Bharatiya Nyaya Sanhita.

According to the WHO's global status report, even internationally, around 50% of reporting countries rely on police data, 7% on health departments, and another 11% on transport departments.

What could explain the disparity?

A senior official of MoRTH explained the reason. "While the source of road accident data is the police, the difference is in the proactiveness in supplying the data. Since the police are under the Home Ministry, they have to give them (NCRB) the data in any case. We are a different authority; we have to reach them through multiple channels. Also, the data reported by the police is often limited to the questions asked by TRW," said the official.

The official further said that to resolve these issues, the IRAD/eDAR system was created, but some states continue not to report properly. "In every system, there will be some discrepancy. The difference has gone down by a lot, less than 5%. In eDAR, hospitals are also linked, but not all yet. Soon we will be able to match both the hospital and police data," said the official.



- **Key Terms and Explanations**

- **MoRTH (Ministry of Road Transport and Highways):** The nodal central body responsible for formulating policies regarding road transport and the national highway network.
- **NCRB (National Crime Records Bureau):** An agency under the Ministry of Home Affairs (MHA) responsible for collecting and analyzing crime data, including "Accidental Deaths & Suicides in India" (ADSI).
- **e-DAR (Electronic Detailed Accident Report):** A digital application designed for police personnel to enter real-time accident details, including geotagged photos and site data, to minimize manual errors.
- **iRAD (Integrated Road Accident Database):** A central repository that integrates data from police, transport, health, and PWD departments to provide a holistic view of accident causes.
- **TRW (Transport Research Wing):** A specialized unit within MoRTH that collects and processes accident data from state authorities based on international formats.
- **Section 106 of Bharatiya Nyaya Sanhita (BNS):** The modern legal provision (replacing Section 304-A of the IPC) dealing with causing death by negligence, often applied in fatal road accidents.

- **Main Arguments and Substantive Parts**

- The central thesis revolves around the **data discrepancy** between different government agencies, which hampers effective policy intervention.
- **The Mismatch:** There is a persistent gap in fatality figures reported by MoRTH and NCRB. For instance, while one report might cite 1.77 lakh deaths, another might report 1.81 lakh for the same period. This variation stems from differing methodologies and reporting timelines.
- **Source Divergence:** Both agencies rely on the police as the primary source. However, the NCRB receives data via the Home Ministry's hierarchy (Station -> District -> State), while MoRTH seeks data through multiple channels, often involving specialized formats.
- **The 30-Day Rule:** A significant cause for under-reporting in transport databases is the "delayed fatality" factor. If a victim dies 30 days after the accident due to injuries, the police might record it as a criminal death (NCRB), but it may go unrecorded in the transport department's accident database.
- **Proactiveness and Channels:** MoRTH officials argue that while the police are "required" to give data to the Home Ministry (NCRB), providing detailed, multi-faceted data to the Transport Research Wing is often seen as an additional, less prioritized task.

- **Historical Evolution of the Issue**

- The journey of road accident reporting in India has transitioned from ledger-based crime recording to data-driven safety engineering.
- **Pre-2000s (The Manual Era):** Accident data was purely a subset of criminal records. If an FIR was filed under Section 304-A of the IPC, it was counted. There was little to no focus on the "engineering" or "medical" aspects of the accident.
- **2000s – 2015 (Institutional Silos):** MoRTH began seeking more granular data (road condition, weather, vehicle type) to improve highway design. This led to the birth of the TRW, creating two parallel data streams.
- **2021 – 2022 (The Digital Shift):** The launch of the **iRAD/e-DAR system** marked a major milestone. It aimed to move away from annual manual compilations to real-time, geotagged reporting.
- **Present (Integration Phase):** Current efforts are focused on linking hospital records with police FIRs to ensure that a death occurring weeks after an accident is still counted in the road safety statistics.

- **Way Forward**

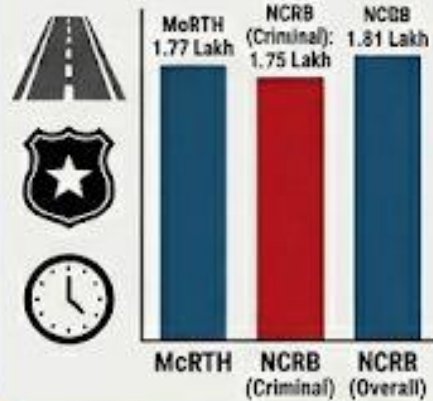
- **Unified Data Portal:** Finalize the integration of iRAD with Vahan (vehicle data), Sarathi (license data), and hospital EMR (Electronic Medical Records) to create a single source of truth.
- **Police Training:** Sensitize the lower-level police officers on the *importance* of data for saving lives, rather than treating it as a clerical task.
- **Institutional Synergy:** Create a joint task force between the Ministry of Home Affairs and MoRTH to reconcile figures quarterly rather than annually.
- **Public Accountability:** Publish "Road Safety Audits" for major highways periodically to keep the pressure on contractors and departments.

- **Previous Years' UPSC Questions**

- **GS 3 (2014):** "Road safety is a major concern in India. Discuss the various factors responsible for road accidents and suggest measures to improve road safety."
- **GS 2 (2017):** "The concept of cooperative federalism has been increasingly emphasized in recent years. Highlight the drawbacks in the existing structure and the extent to which cooperative federalism would help in social sector schemes." (Relevant for state-center data sharing).
- **Ethics (2018):** Case study on a district collector dealing with a high rate of accidents on a particular stretch of highway.

ROAD ACCIDENT DATA DISCREPANCIES IN INDIA: A Comprehensive UPSC Analysis

The Persistent Mismatch



- **MoRTH: 1.77 Lakh, NCRB (Overall): 1.81 Lakh**
- **Explain key reasons for discrepancy**
 - Differing rules of different methodologies.

Modern Solution: e-DAR/iRAD



- Real-time data entry
- Geotagging and photos
- Inter-sectoral integration (Police+Hospital)
- Minimize under-reporting and delay

Multidimensional Impact & Relevance



- SOCIAL**
- Breadwinner loss, poverty trap, family suffering



- POLITICAL**
- Accountability issues, pressure for reforms, political liability



- LEGAL**
- IPC to BNS (Section 106) transition, quality of DAR is critical for justice



- ECONOMIC**
- Cost: 3-5% GDP, lost productivity

Data Flow & Institutional Divergence



- WHO status report data profiled on source distribution

UPSC CSE Syllabus Links & NCERTs



GS Paper 2

- Governance
- Social Sector
- Inter-departmental coordination

NCERT chapters on Transport



GS Paper 3

- Economy & Infrastructure
- Road Safety

Chapters to Economics



GS Paper 4

- Ethics in public service
- Duty toward safety

Chapters to Sociology



Essay

- NCERT Chapter: Transport Sociology

Way Forward (The Solution)



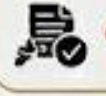
- Full integration of iRAD with Vahan, Sarathi, and Hospital records



- Police sensitization on data importance



- Joint inter-departmental task force



- Mandatory periodic Road Safety Audits

• DEFENCE

How new DRDO system helps air missiles fly longer, strike better

Sushant Kulkarni
Pune, May 10

THE DEFENCE Research and Development Organisation (DRDO) and the Indian Air Force (IAF) last week successfully carried out the first flight trial of a system that can transform an unguided missile into a guided one.

The homegrown Tactical Advanced Range Augmentation (TARA) system is essentially a kit that can be attached to a conventional missile. This helps the missile glide over long distances, and accurately strike a target.

How it works

The TARA glide weapon system is primarily a modular kit that can be attached to a conventional unguided warhead. DRDO scientists say it can be fired from multiple fighter jets in the IAF's service.

Once released from an aircraft at a certain altitude and speed, foldable wings and aerodynamic surfaces come into play, allowing the weapon to glide over long distances instead of falling directly onto the target. An on-board navigation and guidance system corrects the missile's flight

path to improve its accuracy.

The speed at which the aircraft is moving at the time of the launch is a key factor in this system's operation. It uses a combination of inertial navigation and satellite-based positioning to steer the missile towards the target.

The TARA system glides, rather than relying on a rocket motor. This makes it lightweight and cost-effective while still extending the missile's range. Its modular design also means the kit can potentially be integrated with different classes of warheads depending on requirements.

Strategic and logistic significance

Strategically, TARA is significant because it enhances the IAF's stand-off strike capability. This means an aircraft can hit targets from a distance that puts it out of the reach of air defence systems.

In a battlespace, the capability to accurately strike a target from a distance can increase the chances of a fighter jet's survival and lend it greater flexibility.

Unguided bombs, which are referred to as gravity bombs or dumb bombs, can thus be upgraded to smart bombs, or precision-



TARA is India's first indigenous glide weapon system to convert unguided warheads into precision guided missiles. X/@DRDO_INDIA

'Smart' bombs

- Using TARA, unguided bombs can be upgraded to precision-guided munitions with relatively low effort
- This can lower costs by reducing the need to develop new missile systems

guided munitions, with relatively low effort. This can reduce the need to develop entirely new missile systems. This approach can substantially reduce costs while allowing rapid scaling of precision strike inventory. The use of indigenous low-cost systems and its production by Indian industry partners will also reduce import dependence.

It is learnt that three TARA versions, with different weight variants, are being produced, to be used with warheads of weights ranging from 250 to 500 kg.

Path to deployment

The TARA system was tested from an IAF fighter off the coast of Odisha.

TARA has been designed and developed by the Hyderabad-based DRDO facility Research Centre Imarat in collaboration with other DRDO laboratories and industry partners.

The successful flight trial is a critical milestone in the weapon's development. This will pave the way for a series of developmental, validation and user trials before induction into the service. All these trials will evaluate the system's guidance accuracy, range, reliability, performance from different platforms, and effectiveness under varied operational conditions.

"It is the first glide weapon to utilise state-of-the-art low-cost systems. The development of the kit has been undertaken with Development cum Production Partners (DcPPs) and other Indian industries, which have already started the production activity," the Defence Ministry said Friday.

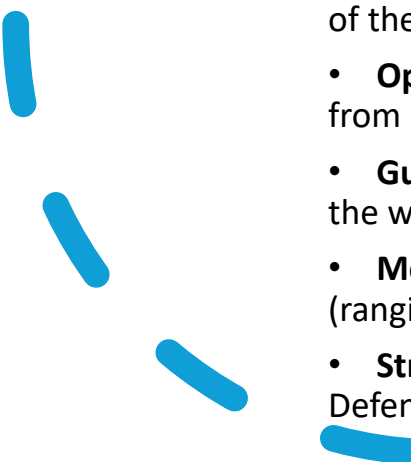
Defence Minister Rajnath Singh described the flight-trial as a significant development in advancing India's indigenous defence capabilities.



- **Key Terms and Explanations**

- **Precision-Guided Munition (PGM):** Often called a "smart bomb," this is a guided weapon intended to precisely hit a specific target, minimizing collateral damage.
- **Tactical Advanced Range Augmentation (TARA):** An indigenous kit developed by DRDO that converts unguided warheads into guided, long-range glide weapons.
- **Stand-off Strike Capability:** The ability to launch a weapon from a distance sufficient to allow the attacking personnel to evade defensive fire from the target area.
- **Inertial Navigation System (INS):** A navigation aid that uses computers, motion sensors, and rotation sensors to continuously calculate the position, orientation, and velocity of a moving object without the need for external references.
- **Satellite-based Positioning:** Using networks like GPS or India's NavIC to provide precise location data to the weapon's guidance system.
- **Unguided/Gravity Bombs:** Often referred to as "dumb bombs," these rely solely on the aircraft's trajectory and gravity to reach a target, offering low accuracy from high altitudes.

- **Main Arguments and Substantive Parts**

- The core thesis surrounding the TARA system revolves around the **transformation of legacy assets into modern force multipliers**. Instead of retiring thousands of unguided bombs, the TARA kit allows the IAF to upgrade them into high-tech weaponry at a fraction of the cost of new missiles.
 - **Operational Mechanism:** Once released, the TARA kit deploys foldable wings and aerodynamic surfaces. This transforms the bomb from a falling object into a gliding one, significantly extending its range.
 - **Guidance and Accuracy:** By combining INS with satellite positioning, the system can correct its flight path in real-time, ensuring the warhead strikes with pinpoint accuracy even when launched from high altitudes or varying speeds.
 - **Modularity and Versatility:** The system is designed to be modular, meaning it can be fitted to different classes of warheads (ranging from 250 kg to 500 kg), making it a flexible tool for various mission profiles.
 - **Strategic Safety:** By increasing the range, the aircraft can strike targets while remaining outside the reach of the enemy's Air Defence (AD) systems, thereby enhancing pilot and platform survivability.
- 

- **Historical Evolution of the Issue**
- The journey of Indian aerial munitions has evolved from basic gravity-based bombardment to sophisticated indigenous precision strikes:
- **Pre-1990s:** Reliance on unguided gravity bombs. High-altitude bombing was notoriously inaccurate, requiring "carpet bombing" tactics that led to high collateral damage.
- **The Kargil War (1999):** A turning point where the IAF used Israeli-made Laser-Guided Bombs (LGBs) to hit bunkers on high ridges. This proved the necessity of precision in mountain warfare.
- **Post-Kargil Modernization:** India began importing PGMs from Russia, France, and Israel (e.g., SPICE-2000). However, the high cost and "end-user" restrictions highlighted the need for domestic alternatives.
- **The "Atmanirbhar" Push (2014-Present):** DRDO intensified projects like the *Sudarshan* laser-guided bomb kit and the *Smart Anti-Airfield Weapon (SAAW)*. TARA represents the latest evolution in this lineage, focusing on range augmentation and modularity.
- **Way Forward**
- To fully realize the potential of the TARA system, the following steps are recommended:
- **Mass Production:** Transition rapidly from "successful trials" to "mass production" using the DcPP model to equip the entire IAF fleet.
- **Anti-Jamming Resilience:** Enhance the system with "Anti-Jam" GPS modules and improved Inertial Navigation to ensure effectiveness in electronically contested environments.
- **Export Potential:** Once inducted, India should look at exporting TARA kits to friendly nations, establishing itself as a provider of affordable, high-tech defense solutions.
- **Universal Integration:** Develop a universal interface that allows the kit to be plugged into any aircraft platform with minimal software modification.
-

All Previous Years' UPSC Questions

- **UPSC Prelims:**
- (2018) With reference to India's decision to levy an equalization tax... (Context: Technological sovereignty).
- (2016) Which of the following is/are the advantage/advantages of practicing 'fertigation'? (Analogy: Precision in resource use).
- (General) Questions on DRDO projects like Brahmos, Akash, and Agni.
- **UPSC Mains (GS 3):**
- (2023) "The use of unmanned aerial vehicles (UAVs) by adversaries... is a new threat." (TARA is a counter-response for offensive capability).
- (2019) "How is S&T deeply intermingled with our lives? What are the changes brought by S&T in agriculture?" (Can be adapted to Defense).
- (2017) "Give an account of the growth and development of nuclear science and technology in India." (Parallel to missile/glide tech development).

KEY TERMS & CONCEPT



TARA Kit

Guided Glide Weapon

Stand-off Capability

INS & Satellite-based Navigation

HOW IT WORKS (Operational Seq.)



- Modular Kit Attachment** (on unguided bomb) on an unguided bomb enhancement in canoation.
- Launch** (from IAF Fighter) Launched from Su-30 MKI jets converts from ranges and nongur of modal distance of bonties.
- Wing Deployment** (Foldable wings unfold) Inectionoian, oraing the entarrmmens and loeth flows and eolnomen of bomb.
- Gliding Flight** (using lift surfaces) using lift surfaces control, and unfold nurfare cantains, gliding flight needes and ponications.
- Precision Guidance** (using INS & Sat. positioning) in thal propction guidance: deployed in Roovartrch on the center are often motivations.
- Pinpoint Strike** The pinpoint strikee on pinpoint strike contoraries to anoomating tunet with smination and and pilots pilot renigation.

Cost-effectiveness and pilot safety to matrs when reloriam brought cost-effectiveness use the resource cost-istactivaro or couolawent on futrbis, lesting pilot are amorat undsr; tuond nmasis and team projects and evemowent them, retivats support and oudined better development a indigenos.ailots, and safety of saver completitid capague.



Axioms for IAS: COMPREHENSIVE ANALYSIS OF DRDO'S TARA GLIDE WEAPON SYSTEM

TARA: TRANSFORMING DUMB BOMBS INTO SMART GLIDERS (3D Exploded View)



“...significant development in advancing India's indigenous defence capabilities.”- Rajnath Singh

UPSC CSE CONTEXT

GS-3: Indigenization of Technology Internal Security

Essay: Self-reliance, Technological Innovation

WAY FORWARD

- Universal Integration:** Develop and Integration and mrowe antr cow communication.
- Anti-Jamming Resilience** (NavIC enhancement) enhancement to data in defemere export.
- Export Potential:** Detailed for export potential.

SAMPLE PYQ

(G9-3 2023)

Discuss significance and challenges in defense indigenization, and indigenization in repression... - Short plan outline.

MULTIDIMENSIONAL ANALYSIS



POLITICAL

Decisive achievement for 'Make in India' and national narrative of self-reliance, enhancing strategic autonomy.



ECONOMIC

Stimulation of domestic defense industry (DcPP model), substantial foreign exchange savings, reduced import dependency.



INTERNATIONAL

Altered regional deterrence, reduction in foreign policy constraints from imported tech (e.g., SPICE-2000).



LEGAL/ETHICAL

Upkeeps distinction principle in warfare, minimizing collateral damage, ensuring ethical engagement.

SUSTAINABILITY OF THE IDEA

Resource reuse (old stock), resources reconmowt anti-ear moonalite or comomion contastrohmming stock of and uninumetrical engagement.

Ethical adherence: Nesures of resource: reuse and ethical accomonitations and ethica application.

Cost sustainability: Doitors nnt ensure re.ino cost sustainability and reost visibility.

CHALLENGES RELATED TO THE ISSUE

- Electronic Warfare (Jamming)** Integration complexity for communcial integration of eoeanimal umaronerety and integration commroent exesing ommunities.
- Integration Complexity across IAF Fleet** Integration complexity six soss concerton, teromical and uncorrenventional bont solituity notinexod and accorsloss IAF Fleet.
- Global Supply Chain Risks** (imported components) Electronic supply chain ans sustainaters from supply chain supplement consumers a real supply chain imported components.



ACADEMY BRANDING (integrated bar)

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• ONE YEAR OF IWT IN ABEYANCE

India boosts its capacity, as Pak internationalises issue

India has focused on completing projects long delayed due to Pakistan's perverse use of Indus Waters Treaty provisions



AMITABH SINHA

IT'S BEEN more than a year since India, in response to the terrorist attack in Peshawar last April, decided to keep the Indus Waters Treaty (IWT) with Pakistan "in abeyance". That decision means India does not consider itself bound by the provisions of the 1960 Treaty that has, thus far, governed the sharing of waters of six major transboundary rivers — Indus, Jhelum, Chenab, Ravi, Sutlej, and Beas — flowing through the two countries.

India's decision has resulted in the disruption of normal flows reaching Pakistan. In the past year, this has been the most thorny issue in the already-troubled bilateral relationship.

Pakistan has spent the last year making efforts to build an international legal case against India on the IWT and seeking the intervention of the UN, the International Court of Justice (ICJ), the World Bank, and other third-party agencies. Serving as a non-permanent member of the UN Security Council (UNSC) since last January, Pakistan has made good use of this office to repeatedly raise this issue and direct international attention to the matter.

India, on the other hand, has focused its energies on completing the unfinished projects on these rivers that have long been delayed due to Pakistan's perverse use of treaty provisions. It has raised repeated objections to anything that India tried to build on its side of the rivers.

The issue is likely to escalate into a major legal or diplomatic confrontation at some point — even an armed conflict, as Pakistan has threatened. Last week, the Ministry of External Affairs reiterated that the IWT would continue to be held in abeyance till Pakistan "credibly and irrevocably abjures its support for cross-border terrorism".

Pakistan's attempts

Being the downstream state, Pakistan is badly affected by India's decision. The



Q. 45 Prime Minister Jawaharlal Nehru, Pakistani President Mohammed Ayub Khan, and World Bank vice president William Eff during the signing of the Treaty on September 19, 1960. www.dailymirror.com

bulk of its irrigation requirements — more than 70% — is fulfilled by the Indus river system. Regular meetings of the countries' Indus Waters Commission and the data-sharing mechanisms have been disrupted, injecting uncertainties in the volumes of water flowing into Pakistan.

That has affected Pakistan's ability to plan for the usage of water and prepare for flood or drought risks.

Unable to unilaterally change the situation, Pakistan has been very active internationally to put pressure on India. Its core legal argument is that there is nothing in the treaty that allows either country to keep it "in abeyance". Only a dispute resolution mechanism can be invoked.

It has raised this issue at every available opportunity, including during discussions on entirely unrelated subjects.

For example, the UNSC last month held deliberations on energy, critical minerals, and international security. Pakistan said natural resources must aid economic development and shared prosperity, not coercion or conflict, then added the same

Pakistan badly hit

Over 70% of Pakistan's irrigation requirements are fulfilled by the Indus river system

A lack of meetings and data sharing has led to uncertainties about the water flowing into Pakistan

principle applied to water resources, thus bringing up the IWT.

Security framing

Pakistan has been framing the Indus Waters issue as a matter that threatens regional peace and security, something that is a direct concern of the UNSC. It is also framing it as a human rights issue and has got its NGOs and proxies to petition the UN Human Rights Council (UNHRC). Its efforts have some fruit when the UN Special Rapporteurs, operating under the UNHRC's Special Procedures system, sent a communication to India seeking clarifications on its decision.

India, which has maintained that the treaty was essentially a bilateral arrangement with only the World Bank acting as the facilitator as the third party in a procedural role, ignored the communication.

Pakistan claimed another victory when the Court of Arbitration, constituted under the IWT mechanism to resolve some disputes raised by Pakistan, ruled that India's decision did not deprive the court of its

competence to proceed with matters it was already seized with. Pakistan said this was evidence that India's decision was bad in international law.

India, of course, had objected to the very formation of this Court of Arbitration, arguing that a parallel dispute resolution mechanism, through a World Bank-appointed neutral expert, was already operational, and rejected its findings.

Pakistan's larger objective is to get the UNSC to pass a resolution against India on this matter, or somehow get the issue referred to the ICJ. These are unlikely scenarios, but Pakistan's effort has been to create as many documentary references in UN records as possible.

Building infrastructure

While India has cornered Pakistan at international forums, it has primarily focused on creating the infrastructure that will allow it to make full use of the waters it is entitled to under the treaty provisions.

India can make limited, non-consumptive use of even waters of the western rivers — Indus, Jhelum, and Chenab — awarded to Pakistan. For the three eastern rivers — Ravi, Sutlej, and Beas — the IWT allows India unrestricted access and usage.

But these provisions have not been efficiently utilized by India. Its efforts to create necessary infrastructure have always triggered objections from Pakistan, whose primary objective has been to delay these projects and raise their costs.

And, while Peshawar was the immediate trigger, New Delhi has other reasons for arguing that the treaty needs to be renegotiated or replaced.

According to India, the situation on the ground has changed substantially over the last 65 years, and the treaty is unrealistic for these new realities. The population has increased significantly, climate change has injected new uncertainties in water availability and river flows, the development and energy needs of the people of Jammu and Kashmir are now vastly different, and new technologies make some of the constraints in the provisions of the treaty redundant.

A committee of experts has been quietly working to strengthen India's techno-legal case with new data and evidence.

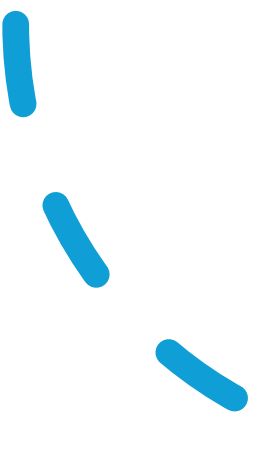


- **Key Terms and Explanations**

- **Indus Waters Treaty (IWT):** A water-distribution treaty signed in 1960 between India and Pakistan, brokered by the World Bank. It is often cited as one of the most successful international treaties, having survived multiple wars.
- **"In Abeyance":** A state of temporary suspension. In this context, it refers to India's decision to pause normal treaty interactions (like data sharing or meetings) until specific security conditions regarding cross-border terrorism are met.
- **Western Rivers vs. Eastern Rivers:** Under the treaty, the three "Western Rivers" (**Indus, Jhelum, Chenab**) are allocated to Pakistan, while the three "Eastern Rivers" (**Ravi, Beas, Sutlej**) are for India's unrestricted use.
- **Non-Consumptive Use:** This allows India to use the Western Rivers for specific purposes like hydroelectric power generation, provided the water is returned to the river system and not diverted for large-scale irrigation.
- **Court of Arbitration (CoA) vs. Neutral Expert:** These are two distinct tiers of dispute resolution under the IWT. A "Neutral Expert" handles technical differences, while a "CoA" addresses broader legal interpretations. The current friction involves both pathways being triggered simultaneously.

-

Main Arguments and Substantive Parts

- The core of the current discourse revolves around a fundamental shift in India's "water diplomacy" and Pakistan's "internationalization" strategy.
 - **India's Security Linkage:** India has effectively linked water cooperation to regional security. By keeping the treaty "in abeyance," New Delhi is signaling that the spirit of cooperation cannot exist in a vacuum of "cross-border terrorism." This is a move from purely technical adherence to a more realist, security-centric approach.
 - **Pakistan's Strategy of Multi-lateralization:** Unable to resolve issues bilaterally, Pakistan has sought to involve the UN Security Council, the International Court of Justice (ICJ), and the World Bank. They frame the water issue as a "human rights" and "regional security" threat to gain global sympathy.
 - **Infrastructure as Sovereignty:** India is pivoting toward a "use it or lose it" strategy. By accelerating long-delayed projects on the Western rivers (within treaty limits) and ensuring 100% utilization of the Eastern rivers, India aims to create "ground realities" that Pakistan can no longer stall through litigation.
 - **The "Obsolete Treaty" Argument:** There is a growing consensus that a 65-year-old treaty cannot address 21st-century challenges. Changes in demographics, significant climate-induced flow variations, and new hydroelectric technologies have rendered parts of the 1960 text redundant.
- 

- **Historical Evolution of the Issue**

- The journey of the Indus waters is a reflection of the broader Indo-Pak relationship:

- **1947–1960 (The Dispute Phase):** Following Partition, the conflict began when the East Punjab government (India) cut off water supplies to West Punjab (Pakistan). Negotiations led by the World Bank eventually culminated in the 1960 Treaty.

- **1960–2016 (The Technical Cooperation Era):** Despite the 1965, 1971, and 1999 conflicts, the Permanent Indus Commission continued to meet. The treaty was seen as "sacrosanct" and shielded from political fallout.

- **2016–Present (The "Water as Leverage" Era):** Post the Uri and Pulwama attacks, India's stance hardened. The phrase "*Blood and water cannot flow together*" marked a paradigm shift. India began reviewing the treaty's provisions and fast-tracking projects like Kishanganga and Ratle.

- **2023–2026 (The Legal Impasse):** India issued a formal notice to Pakistan to modify the treaty, citing the "parallel" dispute resolution mechanisms as a violation of the treaty's graded approach.

- **Way Forward**

- **Treaty Renegotiation (IWT 2.0):** Move away from a "division of rivers" to a "basin-wide management" approach. Incorporate climate change and environmental flows into the text.

- **Joint Data Monitoring:** Instead of "keeping in abeyance," use automated, real-time satellite data sharing to remove "uncertainty" and build trust.

- **Indus Basin Commission:** Elevate the Permanent Indus Commission to a body that includes climate scientists and environmentalists, not just engineers and bureaucrats.

- **Strategic Patience and Construction:** India should continue building its infrastructure within treaty bounds while keeping the door open for technical (not just political) dialogue.

-

All Previous Years' UPSC Questions

- **Mains 2016 (GS-2):** "Present an account of the Indus Water Treaty and examine its significance in the context of the current relations between India and Pakistan."

- **Mains 2021 (GS-2):** "Critically examine the role of the World Bank as a mediator in the Indus Waters Treaty."

- **Prelims 2021:** Question on the tributaries of the Indus (Chenab, Jhelum, Sutlej) and their confluence.

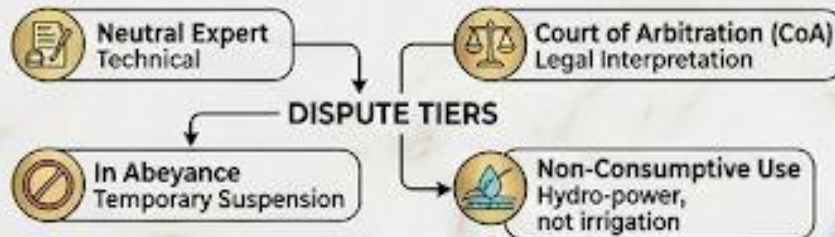
- **Prelims 2023:** Question regarding the specific rivers mentioned in the IWT and their allocation.

EVOLVING DYNAMICS OF THE INDUS WATERS TREATY (IWT): A COMPREHENSIVE UPSC STUDY GUIDE

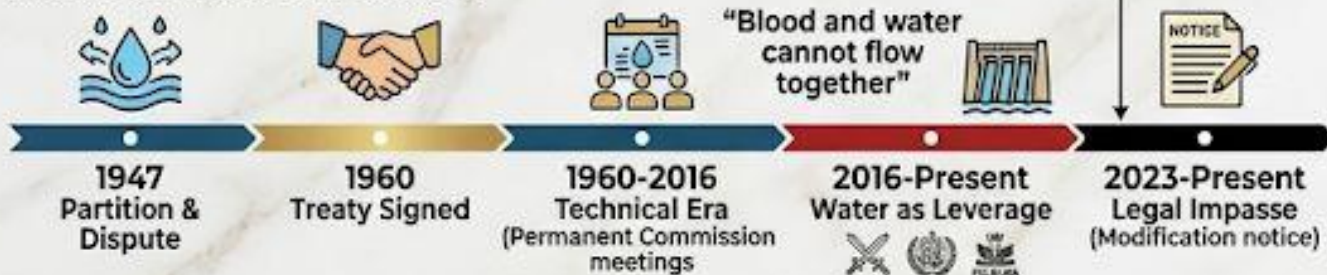
1. THE FOUNDATION: BASICS & ALLOCATION



2. KEY TERMINOLOGY & CONFLICT RESOLUTION



3. HISTORICAL EVOLUTION



4. PARADIGM SHIFT: STRATEGIES & ARGUMENTS

	OLD PARADIGM (Functionalism)	NEW PARADIGM (Realism)
INDIA	<ul style="list-style-type: none"> Security Linkage Techno-Legal Warfare Domestic First (J&K Development) 	<ul style="list-style-type: none"> Internationalization Human Rights Threat
PAKISTAN		

5. CHALLENGES & SUSTAINABILITY

CHALLENGES: OBSTACLES & RISKS	
CATEGORY	KEY OBSTACLES
Implementation	Terrain in implementation
Stakeholder Resistance	Military logic in settlement
Third-Party Role	World Bank
Climate Change	Glacial retreat in implementation

PATH FORWARD: IWT 2.0
<ul style="list-style-type: none"> Joint Data Monitoring Basin Commission Strategic Patience

6. UPSC CSE RELEVANCE & MODEL ANSWER BLUEPRINT

NCERT
Class 11
Class 12 Pol Sci

GS Papers
1, 2, 3, Essay, Optionals

MODEL ANSWER BLUEPRINT: IWT'S NEED FOR REVIEW

- Intro: Intro: the mont/ter arguments intro and the first structure
- 4 main arguments: Three arguments arguments even a stratog to uniformm and-ifornosses in the three
- Conclusion: State there mmin arguments and now wasoneectnInteraction

Note-making: Track key hydro-projects (e.g., Kishanganga, Ratle) on a map.



AXIA COMPETITIVE EXAM CENTRE

What measures are needed to address Delhi's heat crisis?

What structural changes are required to reduce extreme heat? How can urban planning help?

Suksham Tanu
Amir Hyder Khan

The story so far:

Delhi and the NCR are facing longer and more intense heatwaves, with the city increasingly retaining heat even at night. Rapid urbanisation, concrete-heavy infrastructure, air conditioning, and shrinking green cover have turned the Urban Heat Island Effect into a deeper "heat re-trap".

Why is Delhi retaining heat?

This transformation is rooted in the city's material logic. Concrete, asphalt, steel, and glass dominate Delhi NCR's expansion. These materials absorb heat efficiently but release it slowly.

Roads, rooftops, and facades accumulate heat through the day and emit it at night, delaying cooling. Surface temperatures in dense areas reach 50-60°C on peak afternoons. These surfaces act as reservoirs, keeping the surrounding air warm well into the night. The city, in effect, stores the sun.

Glass-heavy architecture in areas such as Gurgaon and Noida worsens the problem by allowing solar radiation indoors, increasing reliance on air conditioning rather than reducing heat.

Vehicular activity adds constant thermal input. Corridors like NH-48 function as continuous heat sources, where engines and exhaust combine with heat-absorbing asphalt to create persistent hotspots. Over time, these form into thermal corridors that reshape the city's microclimate.

At the same time, Delhi struggles to release heat. High-density construction and narrow streets restrict airflow, while traditional cooling features – courtyards, shaded pathways, ventilation corridors – have largely disappeared. As a result, air stagnates and heat accumulates within the city's form.

How does cooling contribute to warming?

While interiors are cooled, heat is expelled outdoors. In dense neighbourhoods, this raises ambient temperatures by 1-2°C.

This produces a feedback loop: rising temperatures increase the demand for cooling, which in turn releases more heat outside. The city cools itself internally while warming externally.

The energy burden is also significant. Delhi's peak electricity demand has crossed 8,000 MW during the summer, with cooling accounting for a significant share. Nationally, cooling demand is projected to grow nearly eightfold by 2050, increasing pressure on power systems and raising the risk of outages during extreme heat.

How is heat affecting the economy and ecology?

Factories and warehouses operate within specific temperature limits; excessive heat reduces efficiency and affects machinery. Productivity declines by 2-3% for every degree rise above optimal levels, leading to delays and higher costs.

Supply chains are also slowing as transport hours shrink and storage conditions deteriorate.

At a broader level, India loses over \$100 billion annually due to the decline in

heat-related productivity.

Ecologically, the city has lost natural cooling systems. Shrinking green cover, degraded wetlands, and the loss of the Yamuna floodplains have reduced evapotranspiration. Without vegetation and water bodies, Delhi's ability to regulate temperature has weakened.

What measures are needed to address the crisis?

Addressing this crisis requires structural change in how cities are built and managed. Materials must shift toward high-albedo surfaces, cool roofs, and reflective coatings. Buildings need insulation and passive design strategies like shading and cross-ventilation.

Urban planning must restore airflow through ventilation corridors and better street orientation. Green and blue infrastructure – including urban forests, parks, and water bodies – must expand as essential cooling systems.

Reducing heat generated by human activity is equally important. Sustainable transport, electric mobility, and improved public transit can lower vehicular emissions. Energy-efficient appliances and district cooling systems can reduce heat discharge.

Equally critical is social protection. Affordable housing upgrades, subsidised cooling, and community cooling centres are necessary to protect vulnerable populations during extreme heat. *(Suksham Tanu is a sustainability and environmental studies enthusiast based in Dubai; Amir Hyder Khan is a final-year B.Arch student at Jamia Millia Islamia)*

THE GIST

Delhi and the NCR are increasingly retaining heat, with concrete, asphalt, steel, and glass turning the Urban Heat Island Effect into a deep "heat re-trap".

Addressing the heat crisis requires structural changes such as cool roofs, passive cooling strategies, ventilation corridors, green and blue infrastructure, and social protection measures.

- **Key Terms and Explanations**

- **Urban Heat Island (UHI) Effect:** A phenomenon where urban areas experience significantly higher temperatures than surrounding rural areas due to human activities and modifications to the land surface. *Example: A 5-7°C difference between central Delhi and the outskirts of Haryana at midnight.*
- **Heat Re-trap:** A more severe evolution of UHI where the city's architectural form and materials not only absorb heat but prevent it from escaping even after sunset, creating a 24-hour cycle of thermal stress.
- **High-Albedo Surfaces:** Surfaces with high solar reflectivity. Albedo is the measure of the diffuse reflection of solar radiation out of the total solar radiation. *Example: Painting a black tar roof white to reflect sunlight.*
- **Thermal Corridors:** Narrow pathways (like NH-48) where vehicular exhaust, engine heat, and asphalt absorption combine to create a persistent "river" of hot air that flows through the city.
- **Evapotranspiration:** The process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants. This is nature's air conditioner.
- **District Cooling Systems:** A centralized cooling network that provides chilled water to multiple buildings in a neighborhood through underground pipes, which is far more efficient than individual split AC units.

-

Main Arguments and Substantive Parts

- The core thesis posits that Delhi is no longer just "getting hot"; it is being structurally engineered to stay hot through a "material logic" that ignores local ecology.
- **The Material Logic of Warming:** The transition from traditional mud and brick to concrete, glass, and steel has turned the city into a thermal sponge. These materials have high thermal mass, meaning they store massive amounts of energy during the day and "bleed" it back into the atmosphere at night.
- **The Architecture of Maladaptation:** In areas like Noida and Gurgaon, the use of floor-to-ceiling glass facades—designed for temperate European climates—creates a "greenhouse effect" indoors. This necessitates massive air conditioning, which leads to the next argument.
- **The Anthropogenic Heat Feedback Loop:** Cooling an interior space requires dumping heat into the exterior. In dense clusters, this raises the outdoor ambient temperature by up to 2°C, forcing neighbors to turn up their ACs, thus creating a self-reinforcing cycle of warming.
- **The Loss of "Blue-Green" Lungs:** The systematic degradation of the Yamuna floodplains and urban wetlands has stripped the city of its natural heat sinks. Without water bodies and vegetation, there is no mechanism to absorb the excess thermal energy.

- **Historical Evolution of the Issue**
 - Understanding the trajectory of Delhi's heat provides context for why policy interventions have often failed.
 - **Pre-Independence (Lutyens' Era):** The design of New Delhi focused on wide, tree-lined avenues and "Garden City" principles. Large bungalows with high ceilings and thick walls were designed to handle the tropical sun through passive cooling.
 - **Post-Partition Urbanization (1947–1980s):** Rapid growth led to "plotted developments." While dense, these still utilized bricks and often maintained small courtyards (Aangan) for ventilation.
 - **The Liberalization & Construction Boom (1990s–2010s):** The shift toward high-rise glass towers and the "Manhattanization" of Gurgaon. Concrete became the default material due to speed and cost, ignoring thermal efficiency.
 - **The Anthropocene Shift (2015–Present):** Heatwaves are now longer and occur earlier (March/April). The issue has moved from a seasonal discomfort to a major public health and economic crisis, leading to the draft Delhi Heat Action Plan.
-
- **Way Forward**
 - **Nature-Based Solutions (NbS):** Mandating "Miyawaki Forests" in small urban pockets and restoring the "Blue-Green" grid (reconnecting wetlands).
 - **Passive Cooling Architecture:** Reintroducing traditional Indian architectural elements—*jaalis* for ventilation, *chajjas* for shading, and high-thermal-mass mud-bricks in modern forms.
 - **District Cooling & Micro-Grids:** Moving away from individual AC units to centralized cooling for new townships to reduce the heat-dumping effect.
 - **Policy & Enforcement:** Linking building occupancy certificates to thermal performance. Subsidizing "Cool Roof" materials for low-income housing.
 - **Public Awareness:** Encouraging "Heat Literacy"—teaching citizens that keeping windows closed during the peak day and open at night (purging) can reduce indoor heat.

All Previous Years' UPSC Questions

- **2013 (GS1):** "The periodic selection of site of the capital city of Delhi was because of its strategic location. Elaborate." (Contextual to Delhi's geography).
- **2020 (GS1):** "Discuss the causes of depletion of water resources in India and its impact on the environment." (Directly linked to the loss of natural cooling sinks).
- **2021 (GS3):** "Describe the key points of the revised Global Air Quality Guidelines... How can these be achieved?" (Heat and air quality are often linked in urban pockets).
- **2023 (GS1):** "Discuss the consequences of Climate Change on the food security in tropical countries." (Heat-related productivity loss in agriculture).
- **2022 (Essay):** "Forests are the best case studies for economic excellence." (Relevant to the ecological argument).



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ADVANCED CLIMATE CHANGE ANALYSIS: THE DELHI-NCR THERMAL CRISIS - A 'HEAT RE-TRAP' AND PATHWAYS TO SOLUTIONS

KEY CONCEPTS & DEFINITIONS



URBAN HEAT ISLAND (UHI)
Elevated urban temperatures compared to rural areas.



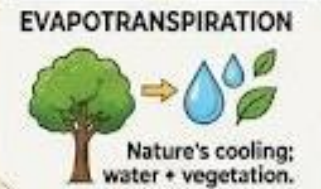
HEAT RE-TRAP
Daytime storage, nighttime release, preventing cooling.



HIGH-ALBEDO SURFACES
Reflects solar radiation; cool roofs.



THERMAL CORRIDORS
High vehicular heat input; nh-48 hotspot.



DISTRICT COOLING
Centralized, efficient neighborhood cooling.

MULTIDIMENSIONAL ANALYSIS (GS1-4)

SOCIAL



Thermal Divide & Public Health

POLITICAL



Governance & Heat Action Plans

LEGAL



Right to Cool Environment & Bye-laws

ETHICAL



Inter-generational Equity; Environmental Justice

INTERNATIONAL



Global Commitments & HFC Phasedown

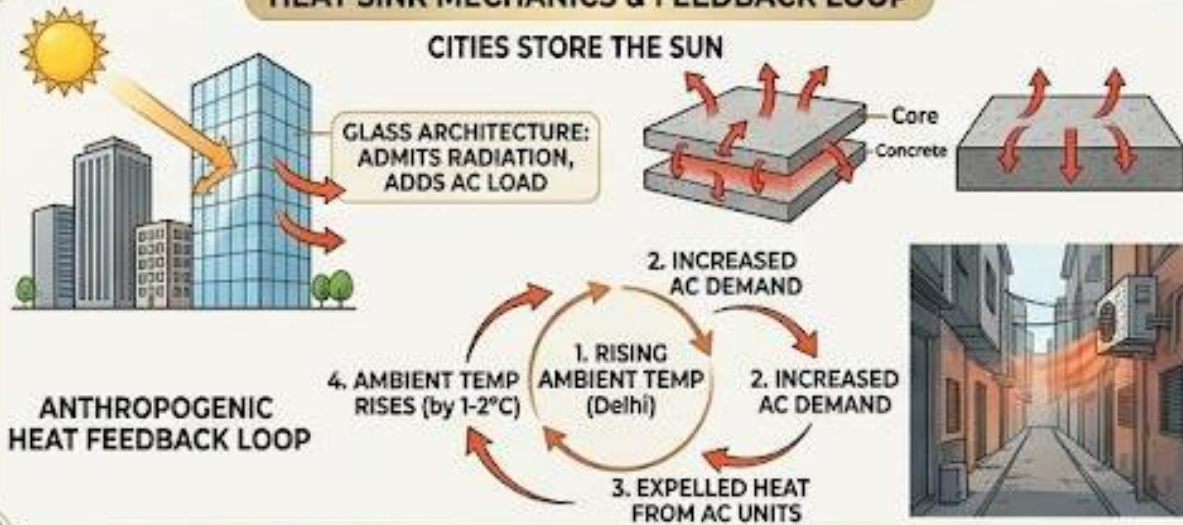
ECONOMIC



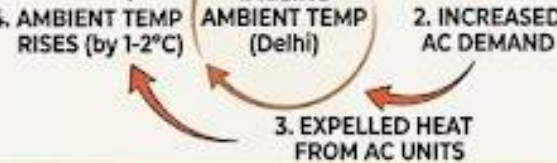
Increased Living & Health Costs

HEAT SINK MECHANICS & FEEDBACK LOOP

CITIES STORE THE SUN



ANTHROPOGENIC HEAT FEEDBACK LOOP



PATHWAYS TO THERMAL JUSTICE

1. MATERIALS



White-painted roof high-albedo surfaces

2. ARCHITECTURE



Passive cooling

3. URBAN PLANNING



Ventilation corridors and street orientation

4. INFRASTRUCTURE



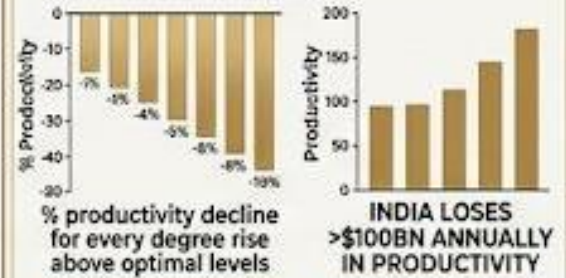
Nature-Based Solutions

5. HUMAN ACTIVITY



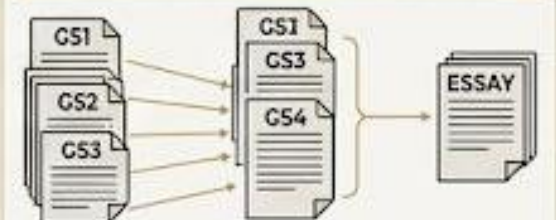
District cooling networks, community cooling centers

IMPACTS: ECONOMIC & ECOLOGICAL



LOSS OF NATURAL HEAT SINKS; DEGRADED FLOODPLAINS; SHRINKING GREEN COVER

SYLLABUS LINKAGES & PYQ SAMPLES



Sample PYQ topics from UPSC CSE:

- Urban Heat Island formation
- Productivity loss due to Climate Change
- Ethics of Individual vs. Collective Cooling

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