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• GLOBAL

Iran to charge fee for using the Strait of Hormuz: What international law says



EXPERT EXPLAINS

ANWAR SADAT

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WITH THE signing of the framework agreement between the US and Iran this month, the Strait of Hormuz has been reopened and the US blockade on Iranian ships lifted. Still, there are fundamental legal concerns that require answers.

After the US and Israel attacked Iran on

February 28, Iran has used the Strait as both chokepoint and bargaining chip to put pressure on the US and its allies to end all hostilities. At one point, Iran was collecting toll per transit against those using the Strait so as to compensate for all damages caused by the war.

Although Iran has now agreed to reopen the Strait, it will still charge fees for navigation and environmental protection. This prompts a larger question: whether Iran's action qualifies the litmus test of international law relating to a "right of transit passage" codified in the 1982 United Nations Convention in the Law of the Sea (UNCLOS).

Freedom of navigation

Articles 37 to 44 of the UNCLOS that govern "straits used for international navigation" hold that all ships and aircraft have a "right of transit passage": the freedom of

continuous, swift navigation and overflight through and over international straits. They "shall not be impeded", and "there shall be no suspension of transit passage" through a strait. This is because when a considerable portion of global trade depends on a narrow corridor, bordering states are not allowed to use it as leverage.

The Strait of Hormuz is generally considered as one such "international strait". Even before the UNCLOS, the International Court of Justice laid down in the *Corfu Channel (United Kingdom v. Albania)* case of 1949 that in such cases, "ships enjoy unrestricted passage during peacetime, so long as the transit does not threaten a coastal state's security".

Iran is trying to consolidate its attempt to convert this Strait into a managed and revenue generating entry point, which it would administer with Oman's support and assistance.

As the Strait is within the combined territorial waters of Iran and Oman, freedom of navigation as enjoyed on the high seas is not available in the territorial sea. Still, ships are entitled to the "right of innocent passage": the UNCLOS principle that allows foreign vessels to navigate through another coastal state's territorial sea, thus balancing national sovereignty over coastal waters with the global necessity of free maritime transit.

But this is subject to the satisfaction of the coastal state that it is not going to prejudice its peace, good order, or security (Article 19 of the UNCLOS). These grounds are broad enough for Iran or a coastal state to use it to deny the right of innocent passage during a tense standoff.

Iran might use the analogy of the Suez and Panama canals, as both of them charge transit fees. But this does not support Iran's case as these canals, unlike Hor-

muz, are artificially engineered waterways constructed, maintained, and administered through sovereign territory. Their functioning is also governed by specific treaty regimes and not by the UNCLOS provisions.

Iran signed the UNCLOS but never ratified it. Even then, the Iranian government declared that it does not treat codification of the regime relating to transit passage as customary international law — rather, they were *quid pro quo* bargains for treaty parties. Customary international law consists of unwritten rules binding all nations.

'Persistent objector'

Iran can use the "persistent objector" argument, which states that a sovereign nation is exempt from a newly emerging norm of customary international law if it has clearly and consistently objected to the rule during the process of formation. This

is considered valid owing to the fact that Iran passed its own legislation in 1993 called "Law of Marine Areas of the Islamic Republic of Iran in the Persian Gulf and Oman Sea". This law allows Iran to suspend the passage of foreign ships, and it also requires prior authorisation for warships and vessels carrying harmful substances with respect to environmental protection.

The latter category can encompass commercial oil tankers, which carry the bulk of petroleum and are widely treated in maritime law as posing environmental and navigational risks. This strengthens Iran's "persistent objector" argument.

The Iran war has oscillated between a military confrontation and an economic war at a fast pace. Iran might have been stretched economically and militarily in conventional terms, but it made the world realise that it can impose global costs by making ordinary commerce uncertain.

- **Key Terms and Explanations**
 - **International Strait:** A natural, narrow waterway connecting two larger bodies of water (such as oceans or gulfs) that is heavily utilized for international navigation. A classic example is the **Strait of Hormuz**, which acts as the sole maritime pathway from the Persian Gulf to the open ocean, making it a critical choke point for global energy transit.
 - **Right of Transit Passage (UNCLOS Articles 37 to 44):** A specific regime under the United Nations Convention on the Law of the Sea that guarantees all ships and aircraft the freedom of continuous, expeditious, and unobstructed navigation and overflight through straits used for international navigation. Crucially, this passage cannot be impeded, suspended, or conditional upon a fee by the coastal states.
 - **Right of Innocent Passage (UNCLOS Article 19):** A concept applicable to a state's standard territorial waters where foreign vessels are allowed to pass through as long as their transit is not prejudicial to the peace, good order, or security of the coastal state. Unlike transit passage, coastal states have broader legal grounds to temporarily suspend innocent passage during national security emergencies.
 - **Persistent Objector Doctrine:** A well-established principle in customary international law stating that if a sovereign nation consistently, openly, and unambiguously objects to a specific legal norm while that norm is being formed, it is not legally bound by it once it matures into a universal standard.
 - **Customary International Law:** These are international obligations derived from established, widespread, and consistent state practices that nations follow out of a sense of legal duty (*opinio juris*), even if they haven't signed or ratified a specific formal treaty.
- **Main Arguments and Substantive Parts**
 - The core debate centers on whether a coastal nation can legally levy transit and environmental protection fees on commercial vessels navigating a critical international strait. This dilemma highlights the delicate friction between national sovereignty and the collective demands of global commerce.
 - **The Case for State Regulation and Fee Levying**
 - **Sovereign Domestic Frameworks:** Littoral states often rely on their national legislation to assert control. For instance, invoking domestic maritime acts—like laws requiring prior authorization for foreign warships or restricting vessels carrying hazardous materials—allows a state to frame its actions as legitimate domestic oversight rather than arbitrary interference.
 - **The Environmental Justification:** Coastal states argue that massive commercial traffic, particularly oil tankers, exposes their coastlines to catastrophic ecological risks. Imposing fees is thus framed as a defensive fiscal measure designed to fund marine environmental protection and response mechanisms.
 - **Exemption via Legal Non-Ratification:** Nations that have signed but intentionally chosen not to ratify global frameworks like UNCLOS argue that transit passage rules are bilateral *quid pro quo* treaty bargains rather than binding customary international law, shielding them from uncompensated obligations.
 - **The Global Legal Counter-Arguments**
 - **The Inviolability of Free Navigation:** The bedrock of global maritime law states that international straits cannot be blocked or treated as revenue-generating toll stations. UNCLOS strictly mandates that transit passage through these choke points must remain unimpeded.
 - **The Judicial Precedent of Peacetime Transit:** International jurisprudence, most notably the landmark **Corfu Channel Case (1949)**, firmly established that sovereign states enjoy a right to unrestricted passage through international straits during peacetime without needing prior permission, provided it does not directly threaten the coastal state's security.
 - **Flawed Canal Analogies:** Proponents of transit fees often point to the **Suez and Panama Canals** to justify charging passing ships. However, international law treats these differently: they are artificially engineered, human-made waterways constructed through sovereign land and are governed by specific, independent treaty regimes, unlike natural international straits.

- **Historical Evolution of the Issue**
- **The Pre-UNCLOS Era and Judicial Foundation (1940s–1970s):** Before standardized global treaties, maritime access was dictated by customary rules and military dominance. The turning point came in **1949 with the International Court of Justice (ICJ) ruling in the Corfu Channel Case**, which restricted coastal states from suspending passage through strategic straits during peacetime, laying the groundwork for freedom of navigation.
- **The UNCLOS III Paradigm Shift (1982):** The adoption of the Third United Nations Convention on the Law of the Sea in 1982 attempted to formalize maritime zones. It introduced the compromise concept of "Transit Passage" to pacify maritime superpowers who feared that extended territorial waters (up to 12 nautical miles) would shut down access to vital global choke points.
- **Assertive Domestic Legislation (1990s):** Seeking to bypass these restrictions, several strategic coastal nations enacted sweeping domestic laws. A key example is Iran's **1993 Law of Marine Areas**, which directly challenged UNCLOS by mandating prior notifications and allowing the suspension of ships deemed an environmental or security hazard in the Persian Gulf and Oman Sea.
- **Weaponization of Choke Points (2000s–Present):** Over the last few decades, international straits have increasingly transitioned from simple trade corridors into geopolitical bargaining chips. During intense economic blockades or military standoffs, littoral states routinely leverage their geographical advantage to threaten closures or impose unilateral regulations, forcing the global community to recognize the immense global costs of maritime uncertainty.
- **Way Forward**
- **Harmonizing Domestic and International Law:** The global community must initiate quiet, multilateral dialogues to bridge the gap between the domestic marine laws of non-ratifying states and the standard provisions of UNCLOS. This means finding a compromise that respects local security anxieties without compromising free transit.
- **Institutionalized Environmental Cooperation:** Rather than permitting unilateral toll collections—which set a dangerous, fragmented legal precedent—the international community should establish a joint, neutral **International Maritime Environmental Commission**. Composed of both littoral states and major global trading nations, this body could collaboratively manage environmental risks and equitably share operational costs.
- **Strategic Diversification and Energy Resilience:** For oil-importing nations like India, the persistent volatility of maritime choke points highlights the urgent need to expand alternative overland transit routes, invest in trans-continental pipelines that bypass narrow straits, and aggressively scale up **Strategic Petroleum Reserves (SPRs)** to cushion against sudden supply shocks.
- **Strengthening a Rules-Based Maritime Order:** Global maritime governance must move away from unilateral military enforcement and focus on strengthening cooperative security frameworks. Ensuring freedom of navigation is most sustainable when regional littoral states are treated as equal stakeholders in maritime security, rather than just passive observers of superpower naval deployments.

INTERNATIONAL STRAITS, SOVEREIGN RIGHTS, & MARITIME LAWS: A GEOPOLITICAL & LEGAL ANALYSIS

Tailored for UPSC CSE and State Services Preparation

KEY TERMS & EXPLANATIONS (UNCLOS & DOCTRINES)



INTERNATIONAL STRAIT

- e.g., connecting Persian Gulf to Oman Sea
- Sole maritime pathway for energy



RIGHT OF TRANSIT PASSAGE

- UNCLOS Articles 37-44
- Continuous, expeditious navigation
- Unimpeded transit



RIGHT OF INNOCENT PASSAGE

- UNCLOS Article 19
- In territorial waters
- Not prejudicial to peace



PERSISTENT OBJECTOR DOCTRINE

Persistent objector: and a committal contortional (Persistent objector)



CUSTOMARY INTERNATIONAL LAW

Customary international law

MULTIDIMENSIONAL ANALYSIS



Social

Illustrated, political, political, economy



Legal

Legal, ethical, legal mistakes



Ethical

International lead and eonnons



International

Economic economic economic

HISTORICAL EVOLUTION OF THE issue



DIAGRAM AND PICTURE

LOGICAL & PHILOSOPHICAL BASE



MAIN ARGUMENTS: SOVEREIGN RIGHTS VS. GLOBAL COMMERCE

CASE FOR STATE REGULATION & FEES (Sovereignty)

- Sovereign Domestic Frameworks (e.g., Iran's law)
- Environmental Protection Fees (defensive fiscal measure)
- UNCLOS Non-Ratification (bilateral treaty bargain)

GLOBAL LEGAL COUNTER-ARGUMENTS (Freedom of Navigation)

- Inviolability of Free Navigation (unimpeded passage)
- ICJ Corfu Channel Case Precedent (peacetime transit)
- Flawed Canal Analogies (human-made canals vs. natural straits)

LINKAGES FOR PREPARATION (UPSC CSE & STATE SERVICES)

NCERT XII Political Science

NCERT XII Geography

GS Paper 2 IR

GS Paper 2 IR

GS Paper 3 Economy & Security

Essay

PREVIOUS YEAR QUESTIONS (PYQs)

Which strait connects Persian Gulf to Gulf of Oman? (b) Hormuz. (c) Which trans.maters assed dum bor or anconsen? In other strait?

Mains prompt: for The 2019 on ICJ decisions. But use an.thur quetament to remove complen fot flemrahazed in the strait?

•CLIMATE

Behind Europe's heatwave, climate change the culprit



AMITABH SINHA

A NEW study has confirmed what was already evident — climate change is behind the scorching heat in large parts of Europe right now.

A study by World Weather Attribution (WWA), a group of scientists that examines the causes of extreme weather events worldwide, has found climate change to be “unequivocally to blame” for the European heatwave, which has seen several places record unprecedented temperatures in recent days. WWA said this was the most severe heatwave ever recorded in Europe.

On Sunday, WHO Director-General Tedros Adhanom Ghebreyesus wrote in a post on X that “Europe is the fastest-warming continent on Earth, heating at twice the global average... More than 1,300 excess deaths have been recorded since 21 June linked to high temperatures in Europe.”

This is the third time in five years that Europe finds itself in the grip of an intense heatwave. Similar scenes were witnessed in 2022 and 2023 as well. More than 100,000 people are estimated to have died owing to extreme heat in those two years.

While the current episode of extreme heat is expected to slightly subside this weekend onwards, Europe's ordeal might not be over yet, according to forecasts by meteorological offices of the UK and France. Historically, June has not been the hottest month for Europe — July is. With the El Niño phenomenon in the Pacific Ocean expected to get stronger in July, Europe might be staring at fresh heatwave spells in the coming weeks.

Climate change-driven heatwave

The WWA study, however, was categorical in assigning the cause of this heatwave. It said it was not because of El Niño, which is still to reach its peak, or any other reason, but climate change.

“Both the daytime highs and overnight temperatures seen during this heatwave would have been virtually impossible to occur at this time of year as recently as 1976 — just 50 years ago,” it said.

Many of the temperature records now being broken in Europe were set in 1976, when the region had experienced an un-



usually hot summer.

Europe experienced its first heatwave of this century in 2003. The study said that heatwave was nothing in comparison to what the region is witnessing now. The record-breaking high temperatures during the night are almost 100 times more likely today than they were in 2003, it said. The daytime peak temperatures observed during the current spell are almost 30 times more likely.

Daytime temperatures in most of Europe, barring the northern part, are usually between 20 and 30°C during June. Night-time temperatures typically vary between 11 and 17°C. But in many parts of the region, peak temperatures during the ongoing heatwave have been 19 to 35°C higher than normal. A similar situation had prevailed in May this year as well, when an early heatwave had prevailed in Europe.

“The analysis found that the El Niño Southern Oscillation (ENSO) phase had no role in driving the heat (in this spell),” the study said.

ENSO is an ocean-atmospheric interaction over the Pacific Ocean region. El Niño is one of the two phases of ENSO and is known to have a warming effect on the planet. Its opposite phase, La Niña, tends to bring temperatures down.

Why accurate attribution is important

Though the intensity of this particular

Concrete evidence

Climate attribution science is a relatively new discipline. It examines the likelihood of a particular extreme weather event, if climate change were not taking place.

Attribution science seeks to remove ambiguity and determine the exact extent of responsibility that climate change bears.

spell of European heatwave and the trend over the last few years had made the imprint of climate change fairly clear, scientists are usually wary of linking any individual extreme weather event to climate change without an attribution study like this one.

Climate attribution science is a relatively new discipline, developed just over the last two decades. It tries to measure the likelihood of a particular extreme weather event happening if climate change were not taking place.

Earlier, it used to take scientists a couple of months, even years, to make this assessment. But in the last three to four years, mainly owing to the efforts of WWA, a much faster assessment has been made possible, sometimes even when the event is still ongoing, as in the present case.

Attribution science seeks to remove ambiguity and determine the exact extent of responsibility of climate change in causing major extreme weather events.

In the last few years, it has established the footprints of climate change on several events. Besides preparing scientific evidence, this exercise is also aimed at forcing policymakers and decision-makers to act more rapidly on climate change.

Action awaited

The scientific evidence on climate change is already voluminous and compel-

While the link may seem self-evident, establishing scientific cause is key to driving policy action, which has been lacking



ling. Still, climate change seems to have dropped a few notches down in the list of global priorities, particularly after Donald Trump took office as US President. The recent G7 meetings, for example, hardly had any climate-related agenda outcomes. A few years earlier, climate change used to be one of the most important items at such international meetings, especially those involving influential leaders.

Scientists insist that there is still time for countries to take rapid action and attempt to achieve the Paris Agreement targets of containing the global rise of temperatures within 1.5 or 2°C from pre-industrial times.

But governments appear to have all but given up on those targets. For them, it seems, these targets have already gone beyond reach, or require the kind of mobilisation of resources on a global scale that is neither practical nor realistic to organise.

Countries seem to have decided to let climate change play itself out and do their best to deal with its impact and adapt to it — a strategy scientists routinely warn against. Adaptation has its limits, they maintain.

But global action on climate change has continued to woefully lag behind global warming. Events such as the European heatwave are only expected to increase both in frequency and intensity over the next few years.

- **Key Terms and Explanations**
- **Climate Attribution Science:** This is a cutting-edge sub-discipline of meteorology that quantifies the direct fingerprint of human-induced global warming on specific extreme weather events. Instead of merely stating that climate change makes bad weather more likely, scientists use complex computer models to simulate a counterfactual world—one without anthropogenic greenhouse gases. By comparing this simulated world to our real world, they can definitively calculate how much more intense or probable an event became due to human activity. For instance, it can prove whether a regional heatwave was a natural statistical anomaly or an event that would have been virtually impossible without modern industrial emissions.
- **El Niño Southern Oscillation (ENSO):** A naturally occurring, periodic fluctuation in sea surface temperatures and atmospheric circulation across the equatorial Pacific Ocean. It alternates between two main phases: **El Niño** (the warming phase, which typically drives up global average temperatures and disrupts global weather patterns) and **La Niña** (the cooling phase). Advanced attribution studies are critical because they help untangle these natural cyclical phenomena from long-term, human-driven warming trends, proving when an anomaly is driven by structural climate change rather than a passing oceanic cycle.
- **Excess Mortality and Heat Stress:** This refers to the number of deaths during a specific period over and above what would normally be expected under baseline conditions. In environmental crises, excess mortality captures the indirect lethal toll of extreme heatwaves. Severe heat stress overwhelms the human body's thermoregulatory mechanisms, exacerbating pre-existing cardiovascular, respiratory, and renal conditions, often leading to spikes in public casualties that go unrecorded in standard accident logs.
- **Amplified Regional Warming (The Fast-Warming Phenomenon):** While global average temperature increases are widely reported, warming is not uniform across the planet. Certain landmasses, particularly land-dominated continents like Europe or polar regions, warm at more than twice the global average rate. This amplification is driven by regional feedback loops, such as reduced snow and ice cover lowering the Earth's albedo (reflectivity), shifts in atmospheric jet streams, and the rapid drying out of soil, which prevents evaporative cooling.
- **Main Arguments and Substantive Parts**
- The structural core of the current climate crisis revolves around a dangerous paradox: while scientific certainty regarding climate damage has reached its absolute peak, global political will to counter it is experiencing a severe recession.
- **The Concrete Empirical Evidence**
- The field of climate attribution has moved from retrospective academic exercises to a real-time diagnostic tool. Empirical data reveals that extreme regional heat anomalies are no longer natural outliers. Studies show that nighttime peak temperatures—historically a period when the environment cools down and offers biological relief—are now up to a hundred times more likely to break records compared to just two decades ago. Daytime peaks have similarly seen a tenfold increase in probability. This rapid escalation underscores that the historical baselines used to design our cities, power grids, and health systems are completely obsolete.
- **The Decoupling of Natural Cycles**
- A critical argument rests on isolating human influence from natural climate variability. While regional warming events are frequently dismissed as mere byproducts of macro-oceanic cycles like El Niño, advanced attribution modeling demonstrates that modern extreme heat spells occur independently of these phases. Even when natural cycles are not at their peak, ambient land temperatures reach unprecedented heights, indicating that the baseline of the global climate system itself has fundamentally shifted due to greenhouse gas accumulation.
- **The Multilateral Policy Deficit**
- There is an alarming divergence between scientific warnings and political execution. While the scientific community maintains that containing global warming within the 1.5°C to 2°C thresholds established under the Paris Agreement is still technically viable, international governance is faltering. Major global forums, such as the G7, have increasingly sidelined climate agendas in favor of immediate economic and geopolitical concerns. This represents a dangerous normalization of climate failure, where global leadership shifts away from aggressive mitigation toward a resigned, survivalist approach to adaptation.

- **Historical Evolution of the Issue**

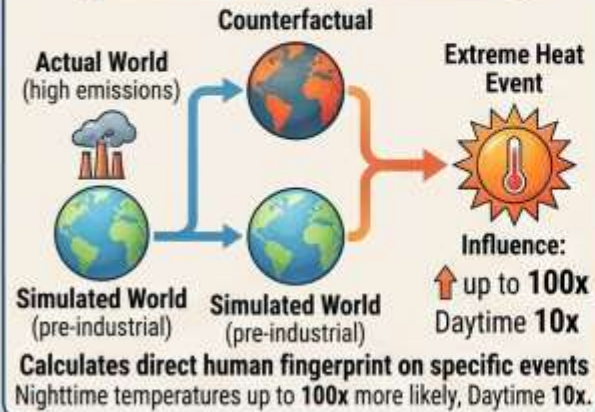
- **Pre-1970s: The Era of Baseline Stability:** For most of modern history, extreme weather events were treated as unpredictable acts of nature. While industrial emissions were rising rapidly, global average temperatures remained within predictable historical bounds. The mid-1970s served as a critical baseline era, representing the upper limits of natural climatic variability before the compounding effects of greenhouse gases began to fundamentally alter global weather baselines.
- **1980s–1990s: Institutional Awakening:** This period marked the formal institutionalization of climate science. The establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988 and the signing of the UN Framework Convention on Climate Change (UNFCCC) at the 1992 Rio Earth Summit shifted the discourse from localized pollution to global atmospheric management. However, during this phase, global warming was still perceived as a distant, abstract threat quantified in long-term projections rather than an immediate catalyst for mass casualties.
- **2003: The Paradigm Shift:** The historic European heatwave of 2003 served as a brutal wake-up call, resulting in over 70,000 excess deaths across the continent. This disaster shattered the illusion that wealthy, temperate nations were insulated from climate change. It directly catalyzed the birth of extreme event attribution science, as researchers realized they needed to quantify exactly how much human activity was skewing the probabilities of meteorological disasters.
- **2015–Present: The Era of the Polycrisis:** The signing of the Paris Agreement in 2015 established clear international targets to limit global warming. However, the subsequent decade has been characterized by back-to-back, record-shattering heatwaves globally (notably in 2022, 2023, and current cycles). Despite precise, real-time attribution data proving that these events are directly caused by human action, global compliance has degraded, crippled by geopolitical fragmentation, economic nationalism, and a structural retreat from binding emission reduction targets.

- **Way Forward**

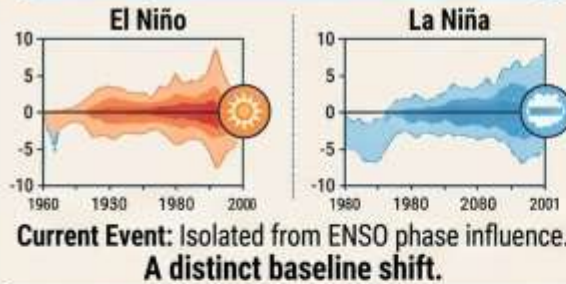
- **Institutionalizing Attribution in Disaster Architecture:** National planning bodies must formally integrate climate attribution science into their disaster risk reduction frameworks. By utilizing real-time attribution data, governments can move away from treating heatwaves as unpredictable emergencies and instead treat them as structural realities. This data must guide long-term capital investments, urban zoning laws, and the retrofitting of critical public infrastructure to withstand future thermal baselines.
- **Enforcing Transnational Climate Accountability:** The international community must revitalize climate diplomacy by linking compliance with global climate targets to international trade and economic frameworks. Mechanisms such as Carbon Border Adjustment Measures (CBAM) should be expanded and standardized to incentivize decarbonization. Global groupings must move beyond non-binding resolutions and institute clear, transparent accountability frameworks that penalize states that unilaterally downgrade their climate mandates.
- **Deploying Hyper-Localized Heat Action Plans (HAPs):** Municipal administrations must design and aggressively implement urban-specific Heat Action Plans that prioritize nature-based solutions. This includes massive urban afforestation campaigns, the mandatory integration of cool roofs and green infrastructure in building codes, the preservation of urban wetlands to assist in microclimatic cooling, and the creation of dedicated public cooling networks to protect vulnerable outdoor workforces.
- **Operationalizing the Loss and Damage Mechanism:** Given that adaptation has strict biophysical and financial limits, international financial architecture must rapidly scale up and operationalize dedicated **Loss and Damage Funds**. These funds must be driven by historical polluter-pays principles and directed toward vulnerable nations and sub-national regions to compensate for the economic and social destruction caused by climate-attributed disasters that transcend the boundaries of human adaptation.

Pillar 1: CONCEPTS & CONCRETE EVIDENCE

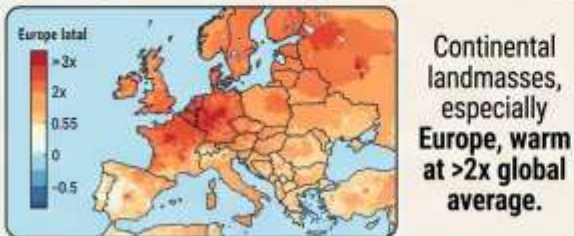
Climate Attribution Science



ENSO Cycle vs. Structural Warming



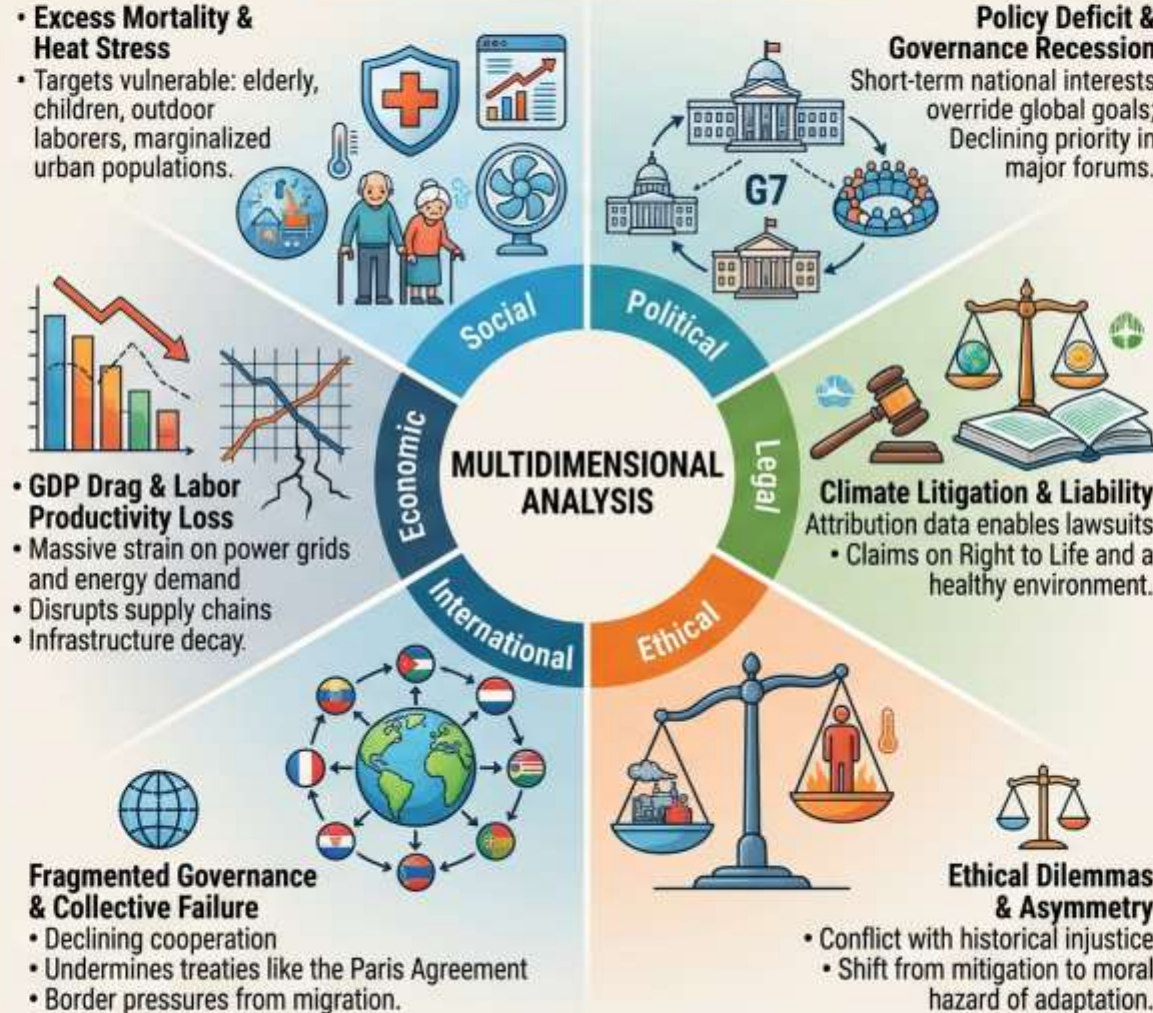
Regional Warming Amplification



CLIMATE CHANGE-DRIVEN EXTREME HEAT: A UPSC PERSPECTIVE

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MULTIDIMENSIONAL ANALYSIS



Pillar 2: CONTEXT & UPSC PREP

HISTORICAL EVOLUTION



UPSC LINKAGES (Syllabus & NCERT)

	GS I	GS II	GS III	GS IV & Essay	NCERT
	Geography	International Relations	Environment		Class XI Physical Geography
		Governance Parliament	Science & Tech Satellite		Class XI Solar Radiation
			Disaster Management		Class XI Geography Radiation
			Ethics		

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WAY FORWARD: PRACTICAL SOLUTIONS

- ✓ 1. Science-guided urban resilience.
- ✓ 2. Enforced transnational accountability (e.g., CBAM).
- ✓ 3. Hyper-localized Urban Heat Action Plans.
- ✓ 4. Operationalized Loss & Damage mechanism.

• POLICY

Why more medicines will now have QR codes on their packets

Anonna Dutt

New Delhi, June 29

THE CENTRE has recently mandated that all vaccines, antimicrobials, narcotics and addictive drugs, and anti-cancer drugs carry a bar code or QR code, to enable tracking of each vial or blister pack of the medicine. This track-and-trace mechanism allows regulators as well as manufacturers to follow the entire journey of every unit of the product, from the manufacturing plant to the retail store.

This is already applicable for 300 top brands of drugs, such as the gastric reflux tablet Aciloc and fever medicines like Calpol.

The mechanism will be implemented for the new categories over the next two years — by July 2027 for vaccines, narcotics, and anticancer drugs and by July 2028 for antimicrobials, according to the recent gazette notification.

How does the tracking system work?

In addition to the unique identification number for the particular blister pack or vial, the QR code or bar code also has to

carry the brand name and generic name of the drug, name and address of the manufacturer, batch number, date of manufacturing, date of expiry, and manufacturing licence number.

While most drugs in the market already carry this information on their pack, the QR code-based tracking system requires the manufacturers, wholesalers, distributors, and retailers to log these products on specialised track and trace platforms.

"This mechanism makes counterfeiting difficult. Some may still use AI to generate codes similar to the original product, but with each unit carrying a unique code, that becomes difficult," said an industry expert, adding, "Even using the original packaging to refill and sell counterfeit drug is not likely to work because once the drug has been registered on the platform, the same number cannot be re-registered."

"The enhanced traceability mechanism will facilitate authentication of medicines at various stages of the supply chain and enable improved tracking and verification of drug products. The measure is expected to strengthen regulatory oversight and support efforts to curb the distribution of spurious medicines in the market," said the

Past cases

- The use of this mechanism to track expensive cancer drugs is specially significant, considering there have been instances where used vials have been filled with other medicines and sold to desperate patients.

- A recent investigation by 'The Indian Express' had tracked one such ring that counterfeited the cancer immunotherapy drug Keytruda.

Union Health Ministry in a statement.

Why is it needed?

The main aim is to prevent counterfeiting. A drug can be counterfeited by either releasing products with no active ingredient into the market or diluting a drug to increase quantities for sale.

The track and trace mechanism can help regulators identify whether a product was contaminated at the source — at the manufacturing plant of a company — or was tampered with.

The possibility of tracking every single unit also means that regulators and companies know exactly where to find their products in case there is a recall.

What are the challenges?

One of the challenges, an industry expert said, is that if there is a delay in logging the genuine product and a counterfeit gets logged into the system, the genuine drug might come across as counterfeit.

Second is the challenge of cost. Companies will have to put in place mechanisms to generate the unique codes and the tracking platforms, incurring significant expense.

The expert said: "While it may be feasible for companies selling expensive cancer drugs, smaller companies will struggle. Considering that many of the drugs in schedule H2 are 'essential' and therefore under price control, the government may provide some monetary support or allow the companies to raise the prices slightly."

How does it change regulatory oversight?

Another reason for implementing the tracking mechanism is to improve the maturity level of the Indian drug regulator. The World Health Organization has a benchmark tool for rating regulators depending on the way drugs are approved, the mechanisms for surveillance and testing, and ways of recalling products.

When it comes to vaccines, the Indian regulator is already at Maturity Level 3, the second-best. Making each unit of a vaccine traceable is a step towards achieving the highest level, Maturity Level 4. Higher the maturity level, the easier it is for medicines from the country to be accepted in international markets, as their quality is seen as more trustworthy.

- **Key Terms and Explanations**
- **Track-and-Trace Mechanism:** This is a comprehensive logistical system that allows regulators and manufacturers to observe the continuous movement of a product backward and forward across the entire supply chain. Unlike a simple inventory log, it maps out every stop—from the primary manufacturing plant to the final point of retail sale.
- **Quick Response (QR) Code and Barcode Serialization:** A cryptographic printing method where every single vial, strip, or blister pack is assigned a unique identification number encoded in a scannable format. This goes beyond the traditional batch-level tracking by ensuring that even two identical strips of medicine from the same batch have different unique digital identities.
- **Spurious/Counterfeit Drugs:** Pharmaceuticals that are deliberately mislabeled, tampered with, or manufactured without the correct active pharmaceutical ingredients (APIs). This includes cases where used vials of high-end medicines are refilled with generic substitutes and resold to desperate patients, or where essential active components are heavily diluted to increase profit margins.
- **WHO Regulatory Maturity Levels:** A benchmarking tool utilized by the World Health Organization to evaluate the operational capability and effectiveness of national medical regulatory authorities.
 - **Maturity Level 3 (Current Indian Vaccine Status):** Confirms that the regulatory system is stable, well-functioning, and institutionalized.
 - **Maturity Level 4 (Target Status):** The highest possible standard, indicating advanced regulatory performance, continuous optimization, and global trust.
- **Schedule H2 Drugs:** A specialized regulatory classification for critical medicines—often including advanced antibiotics, oncology drugs, and narcotics—that require stringent oversight regarding their sale, prescription, and price controls to ensure public safety and prevent systemic abuse.

- **Main Arguments and Substantive Parts**

- The structural formalization of the pharmaceutical supply chain centers on transitioning from bulk inspection to individual unit accountability. Analyzing the core thesis and its complexities reveals several structural layers:

- **The Core Thesis**

- The integration of unique serialization technology on life-saving therapeutics (vaccines, narcotics, antimicrobials, and anti-cancer drugs) acts as a structural shield. It protects public health by turning the drug supply chain into an unalterable digital ledger, making it nearly impossible for fake medicines to enter the market undetected.

- **Key Supporting Arguments**

- **Eradication of Refill and Dilution Fraud:** The system stops counterfeiters from reusing authentic packaging. Once a specific unique identifier is registered as "sold" or "consumed" on the centralized platform, that exact number cannot be re-registered. This prevents malicious actors from collecting empty vials of expensive cancer therapies and refilling them with counterfeit liquids.

- **Precision in Product Recalls:** Historically, if a drug batch was found to be contaminated at the source, the entire batch across the country had to be recalled, causing immense panic and artificial shortages. Individual tracking allows regulators to pinpoint exactly which distributor or retail shop holds the affected units, minimizing supply disruptions.

- **Global Regulatory Ascension:** Upgrading the tracking framework directly elevates the Indian drug regulator's international standing. Reaching WHO Maturity Level 4 ensures that Indian pharmaceutical exports face fewer barriers and gain higher trust in strict global markets.

- **Challenges and Vulnerabilities**

- **The Latency Exploitation Risk:** The system is vulnerable to digital synchronization delays. If a distributor delays logging a genuine product into the centralized network, a counterfeiter who has copied the packaging can log the fake unit first. This makes the genuine product appear counterfeit when it is scanned later.

- **Compliance Burden on MSMEs:** While large pharmaceutical conglomerates can easily absorb the capital costs of installing high-speed variable data printing lines, smaller manufacturers face tight financial margins. This challenge is magnified for essential medicines under strict government price controls, where companies cannot pass increased production costs on to the consumer.

- **Historical Evolution of the Issue**

- **The Colonial Bedrock (1940s):** The enactment of the Drugs and Cosmetics Act of 1940 marked the beginning of structured pharmaceutical oversight. At this stage, the law focused on basic licensing and preventing gross contamination, as India imported most of its medical formulations.
- **The Generic Revolution (Post-1970s):** With the introduction of the Patents Act of 1970, India shifted from product patents to process patents. This triggered a massive boom in domestic manufacturing, changing India's position from an importer to a key provider of affordable generic medicines. However, the regulatory focus remained on chemical testing rather than supply chain transparency.
- **The "Pharmacy of the World" and Global Scrutiny (2000s–2010s):** As Indian pharmaceutical exports scaled globally, the supply chain faced intense international scrutiny. Incidents of counterfeit Indian generics reported in overseas markets highlighted the urgent need for verifiable tracking mechanisms to protect the "Brand India" image.
- **Phase 1 Execution (2022–2023):** Recognizing these gaps, the government launched its first major digitization pilot, mandating QR codes for the top 300 drug brands. This initial phase targeted high-volume consumer medicines like common antipyretics and gastrointestinal drugs to test the reliability of centralized digital infrastructure.
- **The Advanced Traceability Mandate (2026–2028):** Moving beyond high-volume consumer brands, policy deadlines now mandate full traceability for critical life-saving categories. High-risk segments like vaccines, narcotics, and oncology drugs must comply by July 2027, followed by all antimicrobials by July 2028. This marks a transition into a fully secure, serialized pharmaceutical ecosystem.

- **Way Forward**

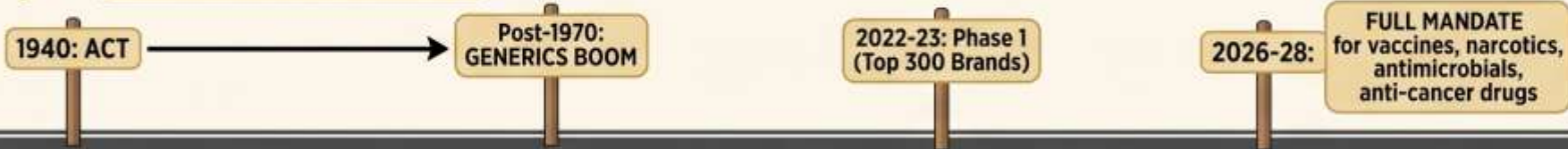
- **Financial Assistance for MSMEs:** The government should introduce a targeted Technology Upgradation Fund Scheme (TUFS) to subsidize the cost of installing serialization equipment for small-scale pharmaceutical manufacturers, ensuring that compliance does not lead to business closures.
- **Developing High-Speed Edge-Computing Infrastructure:** To prevent counterfeiters from exploiting digital logging delays, the central tracking platform must utilize high-speed edge computing. This ensures that unique IDs are registered instantly at the point of manufacture, removing the latency gap.
- **Decentralized Public Verification Campaigns:** Simply printing QR codes is not enough; consumers must be encouraged to use them. Launching a national "Scan Before You Swallow" campaign, alongside a simple multilingual mobile app, can turn citizens into active participants in supply chain verification.
- **Unified Regulatory Architecture:** We must integrate State Drug Control databases with the central CDSCO platform. This will create a single dashboard for real-time tracking, eliminating the communication gaps that counterfeiters use to exploit jurisdictional boundaries between states.



COMPREHENSIVE PHARMACEUTICAL QR CODE POLICY ANALYSIS FOR UPSC & APSC CSE

detailed analysis by Axia IAS Academy

HISTORICAL EVOLUTION



SYLLABUS LINKAGES

- GS II Governance, Health Policy
- GS III Economy, S&T, IPR
- GS IV Ethics, Corporate Governance

KNOWLEDGE MAP & KEY CONCEPTS

TRACK-AND-TRACE

An end-to-end supply chain path from manufacturing plant to retailer, data trace

UNIT-LEVEL SERIALIZATION

Unique product for each product to showcase unique QR codes, barcodes, scannable QR codes.

SPURIOUS DRUGS

High-end Medicine → Substitutes

WHO REGULATORY MATURITY

Level 3 (Current) to Level 4 Target. Access to Stricter Global Markets. Trustworthy Quality.

SCHEDULE H2 DRUGS

Critical Advanced Antibiotics Oncology Drugs Narcotics

CORE THESIS & KEY ARGUMENTS

ESTABLISHING AN UNALTERABLE DIGITAL LEDGER. ERADICATING FOR PUBLIC HEALTH.

"Unique Number Cannot Be Re-Registered. Blocks Used Vial Fraud"

"Find Affected Units down to the Vial, Minimize Disruption"

"Regulatory Ascension to Maturity 4 Status."

CRITICAL CHALLENGES

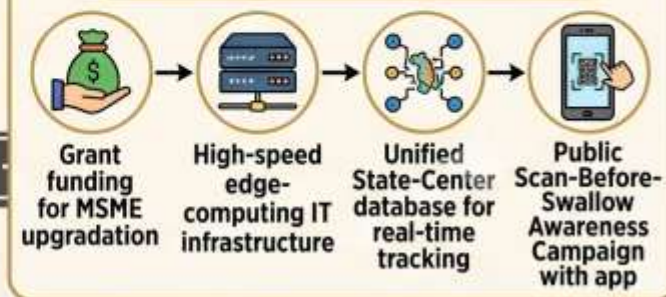
1. LATENCY EXPLOITATION:
"Digital synchronization delays let fake logged first, genuine rejected"

2. MSME COMPLIANCE BURDEN:
"Capital cost of equipment, strict price controls strain small units"
Mentioned in many bills related to Schedule III, Schedule H2 price limits

MULTIDIMENSIONAL ANALYSIS



WAY FORWARD & REFORMS



KNOWLEDGE EXTRACTED LIKE HONEY FOR STUDENTS

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Amit Shah (centre), Haryana CM Nayab Singh Saini (left) and Rajasthan CM Bhajanlal Sharma (right) in New Delhi on Monday. PTI

Haryana, Rajasthan ink pact to implement Yamuna water accord

Press Trust of India
NEW DELHI

Haryana and Rajasthan on Monday signed an agreement in the presence of Union Home Minister Amit Shah for the construction and implementation of the Yamuna Water Project, officials said.

A memorandum of understanding (MoU) was signed on May 12, 1994 by the Yamuna basin States - Uttar Pradesh, Haryana, Rajasthan, Himachal Pradesh and the National Capital Territory of Delhi - regarding allocation of the surface flow of the river.

After its creation in 2000, Uttarakhand was also included in the MoU.

Rajasthan Chief Minister Bhajanlal Sharma, Haryana Chief Minister Nayab Singh Saini, Union Jal Shak-

ti Minister C.R. Patil and senior officials from the Central government and the State governments were present during the ceremony.

Underground pipeline

Addressing the meeting, Mr. Shah said the project seeks to facilitate the conveyance of Rajasthan's allocated share of Yamuna waters through underground pipeline system from the Western Yamuna Canal, enabling the State to effectively utilise the water allocated to it under the 1994 MoU on the sharing of utilisable surface waters of the Upper Yamuna Basin.

He said the agreement has resolved the nearly three-decade-old water-related problem faced by the people of Haryana and Rajasthan.

- **Key Terms and Explanations**
 - **Upper Yamuna Basin:** This refers to the catchment area of the Yamuna River from its origin at Yamunotri glacier down to the Okhla Barrage in Delhi. This specific stretch is shared by six stakeholder states: Uttarakhand, Himachal Pradesh, Haryana, Uttar Pradesh, Rajasthan, and the National Capital Territory (NCT) of Delhi.
 - **Riparian Rights and Basin States:** A "riparian" state is one whose territory is adjacent to or crossed by a natural watercourse. Upper riparian states (like Himachal Pradesh) sit closer to the source, while lower riparian states (like Rajasthan or Delhi) are downstream. Basin states are all entities within the geographical drainage area of the river ecosystem.
 - **Memorandum of Understanding (MoU) of 1994:** A landmark inter-state agreement signed by the five original basin states to allocate the usable surface flow of the Upper Yamuna. It established clear seasonal water quotas for each state while paving the way for regulatory oversight.
 - **Upper Yamuna River Board (UYRB):** A statutory body subordinate to the Ministry of Jal Shakti. Its primary mandate is to regulate the allocation of available water among the beneficiary states in accordance with the 1994 MoU, monitor water quality, and maintain hydro-meteorological data.
 - **Conveyance Efficiency and Underground Pipeline Systems:** Traditionally, water is transferred via open canals, which suffer from high transmission losses due to evaporation and underground seepage. Shifting to an underground pipeline system represents a modern engineering transition designed to maximize conveyance efficiency by delivering the exact allocated volume over long distances without open-air wastage.
 - **Cooperative Federalism:** A constitutional concept where the Central government and State governments work collaboratively to resolve national or regional issues. In the context of the recent tripartite breakthrough, it highlights how central mediation can guide conflicting states toward mutually beneficial infrastructure pacts.
-
- **Core Dynamics and Substantive Aspects**
 - The resolution of long-festering water disputes relies on moving away from rigid political positioning and toward innovative technological compromises.
 - **The Core Thesis**
 - Inter-state water disputes can be systematically unlocked when states transition from litigious zero-sum standoffs to cooperative, technology-driven resource management. The implementation agreement between Haryana and Rajasthan acts as a blueprint for converting paper-based allocations into verifiable field-level delivery.
 - **Key Structural Pillars**
 - **Infrastructure Realization:** For nearly three decades, Rajasthan’s allocated share from the Upper Yamuna remained underutilized due to a lack of dedicated, efficient conveyance infrastructure. The pact establishes an underground pipeline network connecting directly to the Western Yamuna Canal in Haryana.
 - **The Role of Central Mediation:** The agreement underlines the necessity of a strong neutral arbitrator. The involvement of the Union Home Ministry and the Jal Shakti Ministry provided the political weight and structural guarantees needed to assure Haryana that its own water security would not be compromised while fulfilling Rajasthan’s rights.
 - **Resource Optimization:** By adopting a piped distribution mechanism, the project bypasses the typical land acquisition hurdles and ecological degradation associated with large-scale open canal excavation across state borders.
 - **Underlying Challenges and Counter-Perspectives**
 - **Downstream Ecological Flows:** Environmentalists frequently point out that infrastructure projects focused entirely on human extraction risk depleting the minimum ecological flow (*e-flow*) required to keep the river alive, particularly during the lean summer months before the monsoon.
 - **Climate Hydrology Volatility:** Critics argue that static allocation frameworks based on historical water data from 1994 do not adequately account for the unpredictable rainfall, shrinking glaciers, and extreme weather events brought about by modern climate change.
 - **Downstream Anxiety:** Whenever upper or mid-riparian states alter their distribution infrastructure, downstream territories—particularly Delhi—frequently express concern over potential reductions in their own seasonal supplies or heightened vulnerability to pollution concentration.

- **Historical Evolution of the Issue**
- **Pre-Independence Era (Colonial Infrastructure)**
 - The foundational diversion of the Yamuna began centuries ago with canals like the Western Yamuna Canal, which was originally built by Firoz Shah Tughlaq and later extensively rehabilitated and expanded by the British in the 19th century. During this era, water management focused primarily on maximizing agricultural revenue in the Punjab plains, with little regard for the formal, long-term rights of adjacent princely states or downstream regions.
- **Post-Independence and the Green Revolution (1950s–1980s)**
 - Following independence, the introduction of the Green Revolution drastically altered the region's agricultural landscape. The rapid shift toward water-intensive crops in Punjab and Haryana caused demand for irrigation water to skyrocket. This period saw ad-hoc arrangements and growing friction as Rajasthan sought to irrigate its arid northern districts and Delhi's rapidly growing population demanded a larger share of clean drinking water.
- **The 1994 Breakthrough MoU**
 - Growing friction led to a historic intervention in May 1994, when five basin states—Uttar Pradesh, Haryana, Rajasthan, Himachal Pradesh, and NCT Delhi—signed a comprehensive Memorandum of Understanding. This document formalized the allocation of the river's usable surface flow and laid down the institutional blueprint for the Upper Yamuna River Board.
- **State Reorganization and Modern Friction (2000–Present)**
 - In 2000, the creation of Uttarakhand out of Uttar Pradesh added a sixth stakeholder to the Upper Yamuna basin, requiring adjustments to the administrative framework. Despite having agreed allocations on paper, the lack of dedicated, efficient conveyance systems and persistent mistrust between states stalled ground-level implementation for decades. This deadlock persisted until the signing of the recent tripartite pact, which focused on using underground pipelines to bypass traditional infrastructural bottlenecks.
- **Way Forward**
- **Transition to Integrated River Basin Management (IRBM)**
 - States must look beyond fragmented, border-based allocations and treat the entire Yamuna River as a single, living ecological unit. An integrated basin approach ensures that upstream extraction agreements automatically account for downstream urban demands and essential ecological flows.
- **Implement Real-Time Telemetry and Digital Water Auditing**
 - To dismantle deep-seated inter-state mistrust, the Upper Yamuna River Board should deploy an automated network of real-time telemetry gauges along the Western Yamuna Canal and the new underground pipelines. Providing transparent, publicly available data on exact water flows helps eliminate political speculation during times of drought.
- **Accelerate Demand-Side Management in Agriculture**
 - Supply-side solutions like pipelines must be paired with demand-side agricultural reforms. Incentivizing farmers in Haryana and western Uttar Pradesh to shift away from water-intensive crops like paddy and sugarcane toward millets, oilseeds, and pulses will naturally free up surface water for the entire basin.
- **Institutional Empowerment of the UYRB**
 - The Upper Yamuna River Board needs to be upgraded from an advisory body to an autonomous regulatory authority with independent enforcement powers. Granting it the legal teeth to penalize over-extraction and enforce water-quality mandates would make regional water governance much more stable and predictable.

MASTERING INTER-STATE WATER GOVERNANCE: A CASE STUDY OF THE UPPER YAMUNA BASIN & 2026 PACT

AXIA IAS ACADEMY: PREPARING THE FUTURE OF BUREAUCRACY

SYLLABUS & PREPARATION LINKAGES

Combined NCERT

NCERT

XII India: People and Economy

NCERT Class XI
Indian Constitution at Work

NCERT

XII Contemporary World Politics

UPSC GS - I, II, III

- GS I (Syllabus for GS I)
- GS II (Syllabus for GS II)
- GS III (Syllabus for GS III)

Previous Year Questions (PYQs) – UPSC CSE

- **UPSC GS II (Year):** Analysis of Cooperative Federalism
- **UPSC GS III (Year):** Piped Irrigation and Resource Efficiency
- **UPSC GS I (Year):** Inter-state River Basins in India
- **UPSC GS I (Year):** Impact of Climate Change on River Flows

KEY CONCEPTS & DEFINITIONS

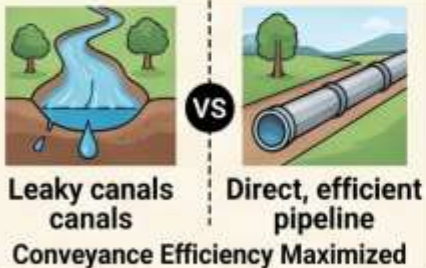
UNDERSTANDING RIPARIAN RIGHTS



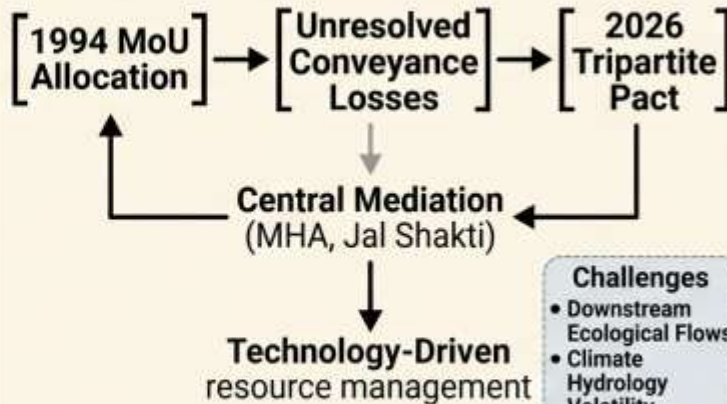
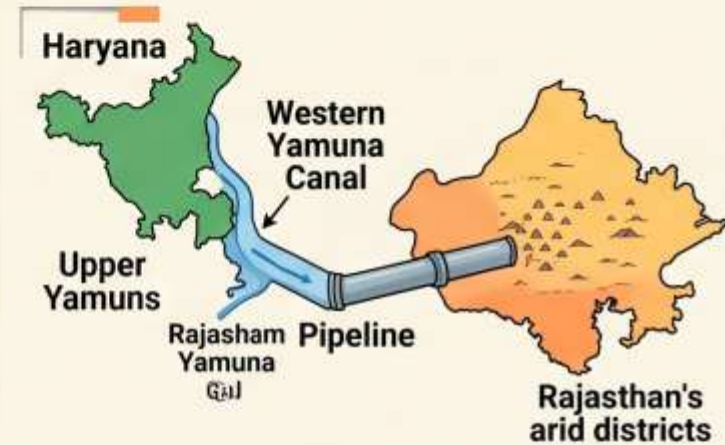
1994 MoU ALLOCATION



UNDERGROUND PIPELINE SYSTEMS

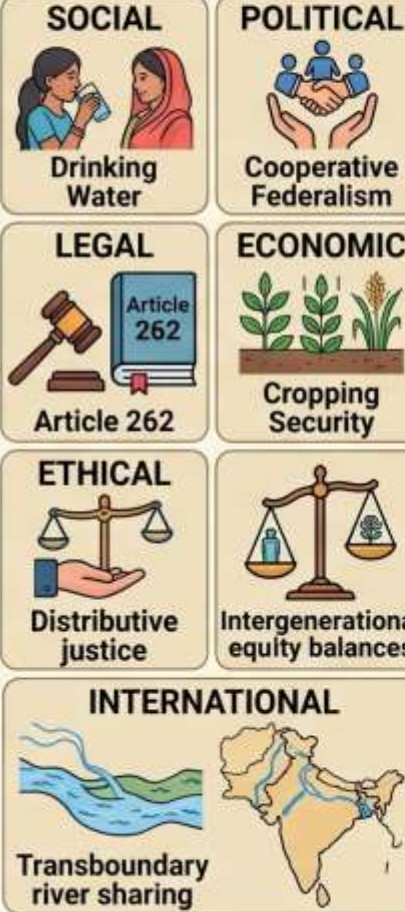


THE TRIPARTITE PACT (2026)



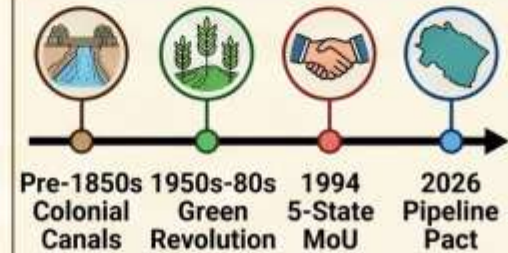
- Challenges**
- Downstream Ecological Flows
 - Climate Hydrology Volatility

MULTIDIMENSIONAL IMPACT ANALYSIS



HISTORICAL EVOLUTION & WAY FORWARD

HISTORICAL TIMELINE



THE WAY FORWARD



ELECTRICITY GENERATION FROM RENEWABLE SOURCES JUMPED 18% IN MAY

Jump in electricity output pulls up May industrial growth to 5.1%

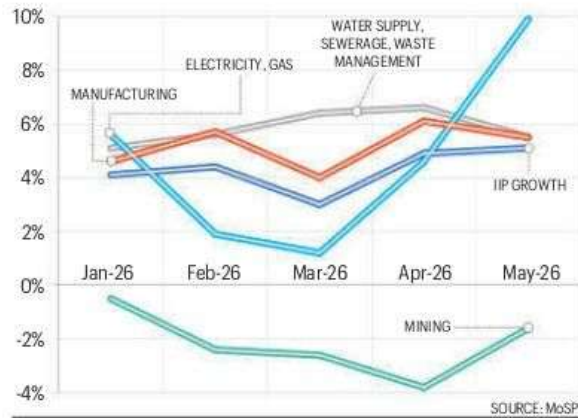
Siddharth Upasani
New Delhi, June 29

THE COUNTRY'S industrial production rose by 5.1% in May — the fastest increase in five months — pulled up by a double-digit increase in electricity generation, according to Index of Industrial Production (IIP) data released by the Ministry of Statistics and Programme Implementation (MoSPI) on Monday. In April, industrial growth was 4.9%.

In May, electricity generation from renewable sources jumped 18% while that from non-renewable sources increased by 8.8%, leading to overall electricity production rising by 11.1% as high temperatures boosted demand for power. However, gas supply was 7.1% lower in May, resulting in the output of the 'electricity and gas' category increasing by 9.9% compared to the same month last year.

According to Megha Arora,

Electricity production pulls up May IIP growth



Director at India Ratings & Research, the impact of the West Asia crisis was "visible in continued gas supply contraction". In April, gas supply had fallen 7.7%.

Meanwhile, the manufacturing sector — which accounts for more than three quarters of

the IIP — saw its output grow by 5.5% in May, down from an increase of 6.1% in April. Mining output fell again, this time by 1.6%, while output of the 'water supply, sewerage & waste management' category increased by 5.5% year-on-year.

Of the 23 categories within

the manufacturing sector, 16 saw a year-on-year rise in their production in May.

"Like previous months, electrical equipment, and motor vehicles, trailers and semi-trailers continued to surge at 20.8% and 14.5%, respectively. Electrical equipment continued to report growth due to small transformers, circuit breakers, and others," Arora of India Ratings noted, adding that traditional export sectors such as leather and apparel contracted.

In terms of use-based classification of the goods produced, output of primary goods was 2.6% higher in May, while that of capital goods rose 12.9% and intermediate goods 5.8%. Infrastructure goods' production was 5.9% higher. On the consumer front, durable goods posted a growth of 7.2% in May and non-durables 3.6%.

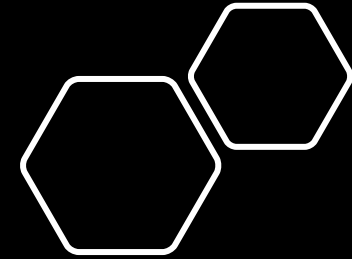
According to Rajani Sinha, Chief Economist at CareEdge Ratings, while the uptick in pro-

duction of consumer durables and non-durables is positive, the durability of recovery needs to be monitored amid the ongoing geopolitical volatility, inflationary pressures, and slow progress of the monsoon.

Moving forward, even though the decline in global energy prices is a source of relief, economists see some downside risks to industrial production as manufacturing and construction face cost pressures for imported inputs. "Even if shipping resumes through the Strait of Hormuz, repairs to the damaged oil and gas infrastructure in West Asia will take time and elevated war risk premiums, among other factors, would keep pressure on input costs," said Dipti Deshpande, Principal Economist at Crisil.

The weak monsoon is another big risk for the industry as it could dampen rural demand, Deshpande said.

FULL REPORT ON
WWW.INDIANEXPRESS.COM



- **Key Terms and Explanations**
 - **Index of Industrial Production (IIP):** A key macroeconomic composite indicator that measures the short-term changes in the volume of production of a basket of industrial products during a given period compared to a chosen base period. Compiled and published monthly by the National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI), it serves as a pulse check for industrial performance.
 - **Sectoral Classification vs. Use-Based Classification:** The IIP presents industrial data through two distinct lenses:
 - *Sectoral:* Divides the industrial universe into three broad baseline sectors: Mining, Manufacturing, and Electricity. For example, a sudden heatwave directly influences the electricity sector's output.
 - *Use-Based:* Categorizes products based on their ultimate economic destination. This includes Primary Goods, Capital Goods (machinery used in production), Intermediate Goods, Infrastructure/Construction Goods, Consumer Durables (refrigerators, cars), and Consumer Non-Durables (food, pulses).
 - **Capital Goods as an Investment Proxy:** Capital goods represent physical assets that plants and industries use to manufacture final products. When capital goods growth surges (such as the 12.9% expansion noted in May 2026), it serves as a reliable proxy for active private sector capital expenditure (CapEx) and long-term capacity building.
 - **War Risk Premium:** An additional financial charge levied by insurers or shipping lines when vessels operate through geopolitically volatile maritime corridors. In the context of disruptions around the Strait of Hormuz or the wider West Asia region, elevated war risk premiums drastically inflate the landed cost of imported inputs, squeezing industrial profit margins.
 - **Energy Mix Decoupling:** The structural phenomenon where incremental growth in energy demand is increasingly met by low-carbon or renewable alternatives rather than carbon-heavy fossil fuels. A sharp 18% jump in renewable generation relative to a lower increase in non-renewable output exemplifies this transition in action.
- **Main Arguments and Substantive Parts**
 - The core structural reality of India's mid-2026 industrial landscape reveals an economy caught between powerful domestic demand drivers and stiff global headwinds.
- **The Core Thesis**
 - India's industrial expansion is experiencing an uneven, utility-led acceleration. While overall IIP numbers show a five-month high of 5.1%, this growth is disproportionately pulled upward by a massive, climate-driven surge in electricity demand rather than a uniform strengthening across all manufacturing sectors.
- **Supporting Evidence and Drivers**
 - **The Utility Engine:** Overall electricity generation grew by 11.1%. This double-digit spike was heavily catalyzed by soaring summer temperatures, which caused domestic and commercial cooling demands to skyrocket.
 - **The Renewable Leap:** Within the power sector, renewable energy generation expanded by a remarkable 18%, far outpacing the 8.8% growth of conventional, non-renewable energy. This underscores an accelerating shift in the underlying energy infrastructure.
 - **Resilient Capital Formation:** The use-based segments reflect strong domestic capacity building, with capital goods expanding by 12.9% and infrastructure goods growing by 5.9%. This indicates that infrastructure spending remains robust despite external shocks.

- **Historical Evolution of the Issue**
- **Post-Independence to 1991: The Era of Planned Inwardness**
- **The Heavy Industry Mandate:** Following the Mahalanobis model, early planning prioritized state-owned heavy manufacturing and public sector enterprises. The tracking of industrial performance was fragmented, and energy generation relied almost exclusively on state-run thermal coal plants.
- **State Electricity Boards (SEBs):** Power distribution and generation were heavily centralized under politicized SEBs. This arrangement led to systemic operational inefficiencies, high transmission and distribution (T&D) losses, and a lack of market responsiveness to shifting industrial needs.
- **Post-1991 Liberalization: De-licensing and Global Integration**
- **IIP Structural Overhauls:** The 1991 economic reforms dismantled the License Raj, unleashing private participation in manufacturing. The IIP framework was updated periodically with new base years and shifting product baskets to accurately capture private sector contributions.
- **Unbundling the Power Sector:** The passage of the landmark Electricity Act of 2003 initiated the unbundling of generation, transmission, and distribution. This reform paved the way for private independent power producers (IPPs) and introduced early mechanisms for renewable energy adoption.
- **The Modern Decarbonization Era (2015–2026)**
- **The Panchamrit Commitments:** At COP26, India committed to reaching 500 GW of non-fossil fuel energy capacity by 2030. This climate pledge transformed renewable energy from a minor alternative into a core driver of national industrial policy.
- **The Vulnerability of Open Architecture:** By 2026, India's industrial sector has become highly sensitive to global geopolitical tensions. Volatility in West Asian maritime trade corridors now directly impacts domestic industrial output, highlighting the complex interdependence between global energy security and local economic growth.
- **Way Forward**
- **1. Accelerate Comprehensive Grid Modernization**
- **Enhance Grid Resilience:** With renewable energy generation growing rapidly, the national grid must adapt to handle intermittent power sources like solar and wind. Investing in large-scale battery energy storage systems (BESS) and smart grid technologies will help balance supply during peak demand periods.
- **Strengthen DISCOM Finances:** The financial health of state power distribution companies (DISCOMs) must be improved. Implementing time-of-day tariff structures can encourage industrial consumers to use power during peak renewable generation hours, reducing strain on the grid.
- **2. Diversify Supply Chains and De-risk Energy Imports**
- **Secure Alternative Energy Routes:** Persistent volatility in West Asia underscores the need to diversify natural gas and crude oil sourcing. Expanding energy partnerships with regions like West Africa, Central Asia, and North America can cushion the economy against supply shocks at critical maritime chokepoints like the Strait of Hormuz.
- **Expand Strategic Reserves:** Increasing national strategic petroleum and liquefied natural gas (LNG) reserves provides an essential buffer against sudden geopolitical disruptions and volatile war risk premiums.
- **3. Revitalize Labor-Intensive Export Sectors**
- **Targeted Support for Traditional Industries:** Sectors like textiles, apparel, and leather require focused policy attention to regain global competitiveness. Providing easier access to credit, upgrading technology, and simplifying labor compliance can help these labor-intensive industries bounce back.
- **Lower Logistics and Compliance Costs:** Reducing domestic logistics expenses through initiatives like the National Logistics Policy and PM Gati Shakti will make traditional exports more competitive against regional peers.

ANALYSIS OF INDIA'S INDUSTRIAL GROWTH

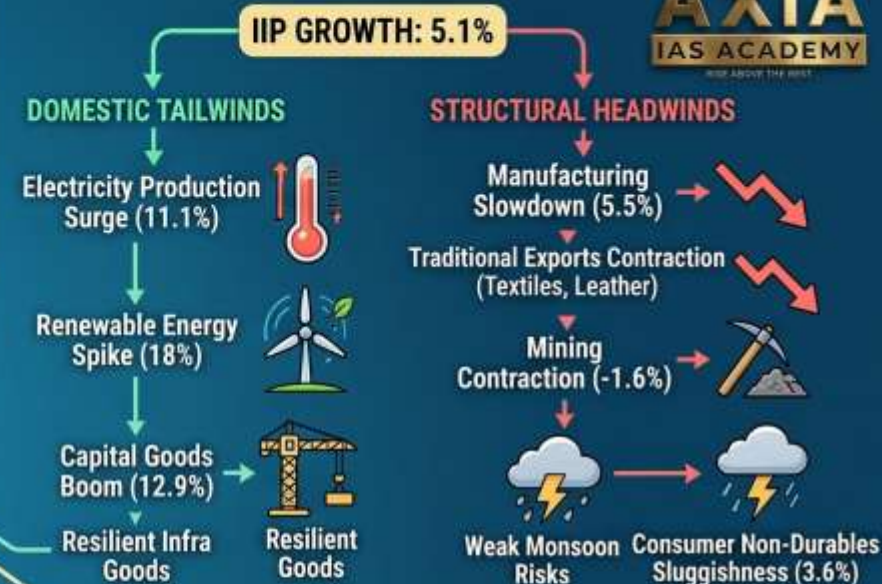
(MAY 2026)



UNDERSTANDING CORE CONCEPTS



THE CENTRAL THESIS & DIVERGENCE



HISTORICAL EVOLUTION



A COMPREHENSIVE VIEW: MULTIDIMENSIONAL IMPACT



LINKAGES

NCERT Books (Class XI, Class XII) & UPSC CSE Syllabus (GS Papers 1-4)

PREVIOUS YEARS' QUESTIONS (PYQs)

- 'IIP'
- 'Strait of Hormuz'
- 'Energy Mix Composition'
- 'Supply Chain Disruptions'

STRATEGIC SOLUTIONS FOR RESILIENT GROWTH



Radio-tagged white-rumped vulture electrocuted

Rohan Premkumar
UDHAGAMANDALAM

A captive-bred, radio-tagged white-rumped vulture (*Gyps bengalensis*) that was released earlier this year at the Mudumalai Tiger Reserve in Nilgiris district of Tamil Nadu was electrocuted on Sunday.

The bird came into contact with a power line and was killed at Ebbanad village overlooking the Sigur plateau, Forest Department officials said.

The bird, initially released in the Tadoba-Andhari Tiger Reserve in Maharashtra in December 2025, made its way into Karnataka, where it had to be captured and treated after showing signs of illness.

In April, the Bombay Natural History Society (BNHS) and the Karnataka Forest Department had



The radio-tagged vulture that was electrocuted on Sunday.
M. SATHYAMOORTHY.

discussions with their counterparts in Tamil Nadu and received permission to release the bird in the Mudumalai Tiger Reserve, which is home to the last sizeable population of white-rumped vultures in South India.

Failed to acclimatise

Foresters hoped the bird would associate with other vultures and acclimatise to

the region. However, officials said the release proved to be more difficult than expected, with the vulture failing to acclimatise to its new surroundings and embarking on exploratory forays around the tiger reserve, including to Gudalur, and later up the slopes towards Kalhaty and Ebbanad.

"We had captured the bird multiple times and released it into the Sigur, hoping it would acclimatise," said R. Kiruba Shankar, Field Director of Mudumalai Tiger Reserve.

However, on Sunday, during one of the bird's explorations of Ebbanad in the Nilgiris forest division, it came into contact with a power line and was killed, officials from the forest department confirmed.

The death of the vulture has signalled the end of the

first attempted reintroduction of a captive-bred bird of the species into the landscape and could have consequences for conservation policies in the future.

Identifying threats

"There have long been calls for captive-bred birds to be released into Mudumalai to bolster populations. With this reintroduction having failed, steps must be taken to identify why the bird was unable to adapt and also to identify the threats to the endangered species, such as power lines which have led to multiple vulture deaths in the region over the last few years," said a conservationist from the Nilgiris.

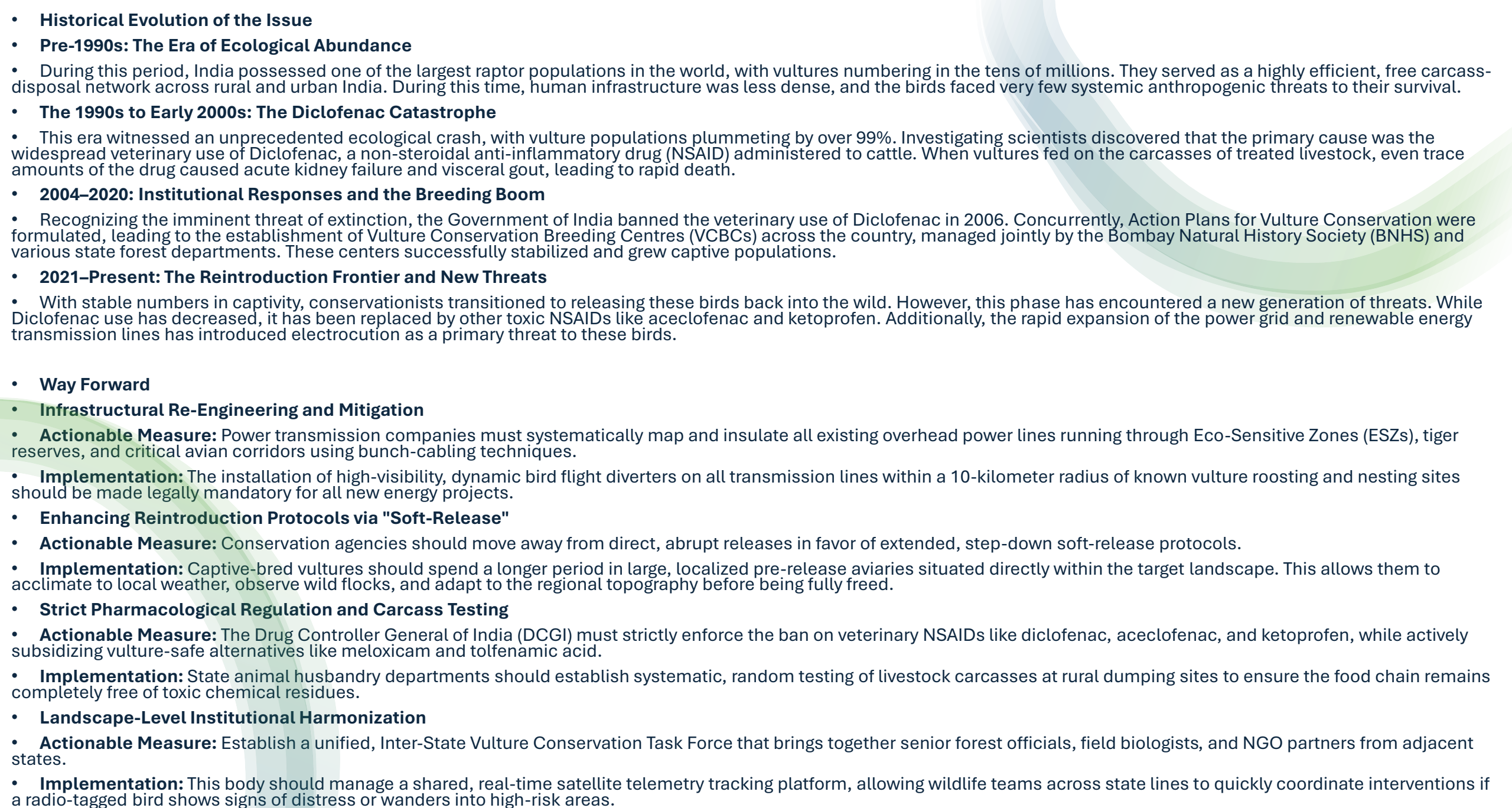
S. Bharathidasan, secretary of Arulagam, a conservation NGO working on protecting vultures in the

region, said power lines that cross through vulture habitats need to be reinforced with bunch-cabling and need to be insulated to prevent birds and other wildlife from being accidentally electrocuted.

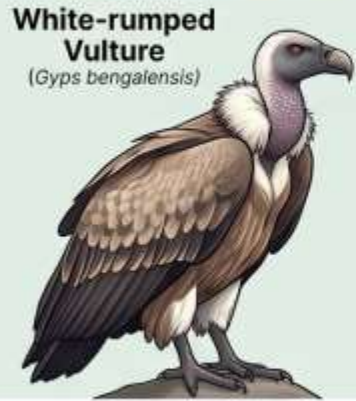
"We will have discussions with the BNHS and other researchers to understand the reasons for why this particular bird was unable to acclimatise and adapt. We will also find out if the other captive-bred birds released in other parts too have faced similar challenges," said Mr. Kiruba Shankar.

Besides, The Forest Department is also looking into the possibility of adapting power infrastructure in the region towards minimising threats to avian species, such as installing bird diverters on transmission lines.

- **Key Terms and Explanations**
- **White-rumped Vulture (*Gyps bengalensis*)**
 - The white-rumped vulture is an Old World scavenger species that is currently designated as Critically Endangered on the IUCN Red List. These birds function as nature's primary sanitation workers. By rapidly consuming livestock carcasses, they prevent the proliferation of deadly pathogens such as anthrax, tuberculosis, and brucellosis, while simultaneously keeping populations of feral disease vectors like stray dogs in check.
- **Radio-Tagging and Telemetry**
 - This conservation technology involves attaching a lightweight transmitter—often utilizing satellite or VHF frequencies—to a bird's body. It allows researchers to map migratory corridors, study foraging behaviors, and receive instant alerts if an animal stops moving. In practice, this spatial data helps wildlife managers identify invisible hazards in real-time, long before a crisis decimates an entire population.
- **Captive Breeding and Reintroduction**
 - This two-stage conservation intervention involves breeding endangered species within controlled, predator-free environments to maximize chick survival rates. Once these individuals reach maturity, they are strategically released back into their historic natural habitats. The ultimate goal is to artificially bolster dwindling wild populations and restore the natural ecological equilibrium.
- **Acclimatization and Soft-Release**
 - Acclimatization is the process through which an animal adjusts behaviorally and physiologically to a new environment, including its climate, topography, and resident wildlife. In avian conservation, this is often managed through a "soft-release" protocol, where birds spend months in large, open-air wilderness aviaries at the release site to adjust to local conditions before full liberation.
- **Linear Infrastructure Threats**
 - This term refers to human-built, narrow, and continuous transport or utility networks—such as high-voltage power transmission lines, railway tracks, and national highways—that cut directly through pristine natural habitats. These structures cause severe habitat fragmentation and act as direct physical hazards, frequently causing wildlife deaths through collisions and electrocutions.
- **Main Arguments and Substantive Parts**
- **The Paradox of Ex-Situ Conservation Success**
 - A core reality of modern conservation biology is that breeding an endangered species successfully within a protected center represents only half the battle. The true measure of success lies in the wild reintroduction phase. Decades of genetic management and financial investment can be undone in an instant if the target wilderness landscape is not ecologically secure or if the captive-bred animals lack the survival instincts of their wild counterparts.
- **Behavioral Deficits in Captive-Bred Populations**
 - Animals raised in human-managed environments frequently experience cognitive and behavioral gaps upon release. Instead of integrating with resident wild flocks to locate food and safe roosting sites, reintroduced birds may exhibit erratic, isolated behavior. They often embark on long, exhausting exploratory flights across unfamiliar, high-risk territories, significantly increasing their vulnerability to accidents.
- **Infrastructural Hazards as Ecological Traps**
 - Pristine ecological landscapes, such as the Sigur Plateau and the wider Western Ghats, are increasingly bisected by developmental projects. High-voltage transmission lines that cross through critical avian habitats act as lethal traps. When large raptors with wide wingspans attempt to land on or fly near these uninsulated cables, they easily bridge the gap between energized components, resulting in instant electrocution.
- **The Imperative of Multi-State Conservation Governance**
 - Avian species operate on a landscape scale and do not recognize state or administrative boundaries. A single bird's flight path can easily cross multiple states, such as Maharashtra, Karnataka, and Tamil Nadu. This underscores the argument that conservation policies cannot operate in administrative silos; instead, they require synchronized, cross-border monitoring and uniform habitat protection protocols.



- **Historical Evolution of the Issue**
- **Pre-1990s: The Era of Ecological Abundance**
 - During this period, India possessed one of the largest raptor populations in the world, with vultures numbering in the tens of millions. They served as a highly efficient, free carcass-disposal network across rural and urban India. During this time, human infrastructure was less dense, and the birds faced very few systemic anthropogenic threats to their survival.
- **The 1990s to Early 2000s: The Diclofenac Catastrophe**
 - This era witnessed an unprecedented ecological crash, with vulture populations plummeting by over 99%. Investigating scientists discovered that the primary cause was the widespread veterinary use of Diclofenac, a non-steroidal anti-inflammatory drug (NSAID) administered to cattle. When vultures fed on the carcasses of treated livestock, even trace amounts of the drug caused acute kidney failure and visceral gout, leading to rapid death.
- **2004–2020: Institutional Responses and the Breeding Boom**
 - Recognizing the imminent threat of extinction, the Government of India banned the veterinary use of Diclofenac in 2006. Concurrently, Action Plans for Vulture Conservation were formulated, leading to the establishment of Vulture Conservation Breeding Centres (VCBCs) across the country, managed jointly by the Bombay Natural History Society (BNHS) and various state forest departments. These centers successfully stabilized and grew captive populations.
- **2021–Present: The Reintroduction Frontier and New Threats**
 - With stable numbers in captivity, conservationists transitioned to releasing these birds back into the wild. However, this phase has encountered a new generation of threats. While Diclofenac use has decreased, it has been replaced by other toxic NSAIDs like aceclofenac and ketoprofen. Additionally, the rapid expansion of the power grid and renewable energy transmission lines has introduced electrocution as a primary threat to these birds.
- **Way Forward**
- **Infrastructural Re-Engineering and Mitigation**
 - **Actionable Measure:** Power transmission companies must systematically map and insulate all existing overhead power lines running through Eco-Sensitive Zones (ESZs), tiger reserves, and critical avian corridors using bunch-cabling techniques.
 - **Implementation:** The installation of high-visibility, dynamic bird flight diverters on all transmission lines within a 10-kilometer radius of known vulture roosting and nesting sites should be made legally mandatory for all new energy projects.
- **Enhancing Reintroduction Protocols via "Soft-Release"**
 - **Actionable Measure:** Conservation agencies should move away from direct, abrupt releases in favor of extended, step-down soft-release protocols.
 - **Implementation:** Captive-bred vultures should spend a longer period in large, localized pre-release aviaries situated directly within the target landscape. This allows them to acclimate to local weather, observe wild flocks, and adapt to the regional topography before being fully freed.
- **Strict Pharmacological Regulation and Carcass Testing**
 - **Actionable Measure:** The Drug Controller General of India (DCGI) must strictly enforce the ban on veterinary NSAIDs like diclofenac, aceclofenac, and ketoprofen, while actively subsidizing vulture-safe alternatives like meloxicam and tolfenamic acid.
 - **Implementation:** State animal husbandry departments should establish systematic, random testing of livestock carcasses at rural dumping sites to ensure the food chain remains completely free of toxic chemical residues.
- **Landscape-Level Institutional Harmonization**
 - **Actionable Measure:** Establish a unified, Inter-State Vulture Conservation Task Force that brings together senior forest officials, field biologists, and NGO partners from adjacent states.
 - **Implementation:** This body should manage a shared, real-time satellite telemetry tracking platform, allowing wildlife teams across state lines to quickly coordinate interventions if a radio-tagged bird shows signs of distress or wanders into high-risk areas.



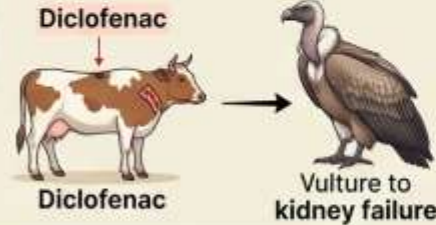
The Scavenger's Role



Pre-1990s:
Ecological Abundance
(Millions of vultures)



1990s-Early 2000s:
The Diclofenac Catastrophe
(Population Crash >99%)



2004-2020:
Institutional Response & Breeding Boom
(VCBCs established, captive populations stabilize, Diclofenac banned 2006)



2021-Present:
The Reintroduction Frontier & New Threats



HISTORICAL EVOLUTION OF THE ISSUE

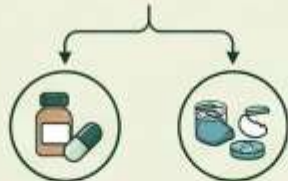
KEY TERMS EXPLAINED

- Radio-Tagging**
Radio-tagged vulture through nature and the millions of vultures
- Telemetry**
Telemetry engine vulturing and navigation sensors and telemetry
- Captive Breeding & Reintroduction**
Captive breeding and reintroduction of captive breeding & reintroduction
- Acclimatization**
Acclimatization is a gradual adaptation of an organism to a new environment
- Linear Infrastructure Hazards**
Linear infrastructure has hazards and is caused by the power line, road, and flight diverter

CONTEMPORARY CHALLENGES POST-RELEASE

1 Toxic NSAIDs Sequel

Other toxic drugs that cause ecological harm of other toxic drugs



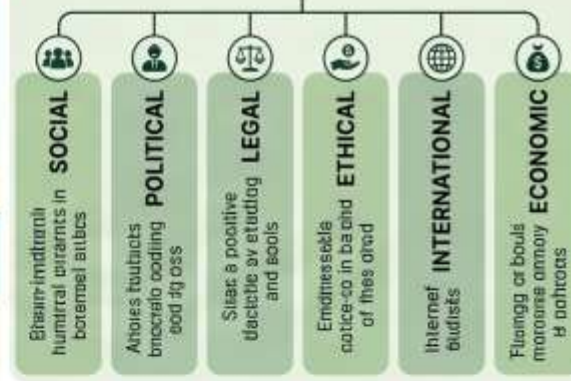
2 LINEAR INFRASTRUCTURE & ELECTROCUTION



3 BEHAVIORAL DEFICITS



MULTIDIMENSIONAL ANALYSIS



THE WAY FORWARD: STRATEGIC SOLUTIONS

Infrastructural Mitigation

- Insulating power lines, bunch-cabling, flight diverters
- Bunch-cabling, flight sexed flight diverters
- Bunch-cabling, flight diverters

Enhanced Reintroduction (Soft-Release)

As wilderness aviary acclimatizing before liberation



Strict Pharmacological Regulation

- Ban enforcement, testing carcasses, preventive component, safe alternative drugs like Meloxicam
- Safe alternative drugs like meloxicam and NSAIDs

Landscape-Level Institutional Harmonization



Unified Inter-State Vulture Conservation Task Force

Cross-border monitoring and telemetry in vultures to monitor Maharashtra, Karnataka, Tamil Nadu

PREVIOUS YEARS' UPSC QUESTIONS

- Prelims: (UPSC questions)
- Mains: (UPSC questions)

CBSE relaxes 3-language policy for Classes 7, 8, 9

The current 2026-27 batch of Class 10 will not have to follow the new language policy, the Board says; in Class 9, the third language will be evaluated only by an school-based internal assessment

Maitri Porecha
NEW DELHI

Students currently in Classes 7, 8, and 9 who have already opted for two foreign languages will continue with them, while also studying an additional Indian language (*Bharatiya Bhasha*), the Central Board of Secondary Education (CBSE) said in the revised guidelines issued on Monday.

The Board, in a circular issued in May, had said that students in Class 9 too would have to adopt the three-language policy, where two of three languages they learn should be native to India. Following this, parents of students who were learning foreign languages had protested against the abrupt switch.

Rule relaxed

Union Education Minister Dharmendra Pradhan stated last week that students in Classes 7, 8, and 9 who have taken foreign languages could continue their studies in their respective selected options.

The current batch of Class 10 will not have to fol-



Concessions made: NEP 20 recommends learning 3 languages, with at least 2 of the 3 languages being native to India.

low the new language policy and will continue with the old system of two languages, the Board said.

The current batches studying in Classes 7, 8, and 9 would not be required to give Board examination in third language when they progress to Class 10, the statement added.

For Class 9, the third language (R3) will be assessed by the school through an internal school-based assessment.

The National Education Policy (NEP), 2020, recommends learning three languages, with at least two of the three languages being native to India.

The CBSE, in its press statement on Monday, said the introduction of the

a non-native language such as English or French.

A student studying one Indian language and one non-native language (for example Tamil and English), may choose any Indian language as the third language (R3).

A student studying two non-native languages (for example English and French), as a special one-time relaxation, may continue with those two non-native languages and need to add one Indian language as third language (R3).

The CBSE and NCERT will provide grade-appropriate learning resources to help students learn the third language, the press release states.

The dedicated R3 textbooks for Class 6 in 22 Scheduled *Bharatiya Bhashas* are being made available on www.ncert.nic.in.

Some categories exempted from the three-language policy are children with special needs, CBSE schools outside India, and foreign students returning to India. If guardians migrate to another State, the student may continue with the existing combination of languages.

third language (R3) in Secondary Stage (Classes 9 and 10) is an extension of language learning from the Middle Stage (Classes 6 to 8). The CBSE said that no third language is required to be taken by Class 10 students during 2026-27.

Every student in Class 9 would study three languages. Of these three languages, at least two would be *Bharatiya Bhashas*.

Clarification for Class 9

The CBSE also provided examples to offer clarity for students in Class 9. For example, if a student already studies two Indian languages, for instance Hindi and Tamil, they can choose as third language another Indian language or

- **Key Terms and Explanations**
 - **Three-Language Formula (TLF)**
 - The Three-Language Formula is a structural educational guideline designed to promote multilingualism and national integration across Indian schools. First conceptualized in 1968 and reaffirmed by subsequent policies, it mandates that students study three distinct languages. Typically, this includes the regional language or mother tongue, a modern Indian language, and English/foreign languages.
 - **Bharatiya Bhasha (Scheduled/Native Indian Languages)**
 - This term refers to languages that originate within the Indian subcontinent and possess deep-rooted cultural and historical ties to the region. Administratively, these are often aligned with the 22 languages recognized under the Eighth Schedule of the Indian Constitution.
 - **R3 (Third Language / Language 3)**
 - In secondary education architecture, "R3" represents the third language tier introduced to broaden a student's linguistic capability. Under updated frameworks, it acts as an extension of the language learning initiated during the middle school stage (Classes 6 to 8) and carries specific assessment parameters as students transition into secondary schooling.
 - **School-Based Internal Assessment**
 - This is a formative evaluation mechanism carried out directly by a student's school, focusing on continuous learning rather than high-stakes, centralized examinations. It provides educational institutions with the flexibility to grade students based on classroom participation, projects, and oral proficiency, thereby reducing academic stress.
 - **Children with Special Needs (CWSN)**
 - A socio-educational classification for students who require adaptive infrastructure, modified curricula, or specific policy relaxations due to physical, sensory, developmental, or learning challenges.
-
- **Main Arguments and Substantive Parts**
 - **Core Thesis**
 - The overarching objective of modern Indian educational policy is to deepen cultural rooting and cognitive capability through multilingualism by mandating that at least two of the three languages taught in schools are native to India. However, the structural rollout of such policies must remain flexible, empathetic, and gradual to prevent administrative friction, academic anxiety, and disruption to active student batches.
 - **Structural Relaxations and Implementation Pragmatism**
 - Recent administrative updates demonstrate a transition from strict compliance to a pragmatic, phased rollout. Recognizing that abrupt structural shifts can cause immense academic stress, a deliberate cushion has been provided to current cohorts.
 - **Batch Exemptions:** The Class 10 batch of the 2026–27 academic year has been entirely exempted from the strictures of the new three-language mandate, allowing them to finish their secondary certification under the older, two-language framework.
 - **Transition Corridors:** Students currently progressing through Classes 7, 8, and 9 who had already opted for two foreign languages are permitted to continue with their selected paths. They are only required to incorporate a native Indian language (*Bharatiya Bhasha*) as an additional option, rather than completely dismantling their existing academic plans.
 - **Decoupling Assessments from High-Stakes Testing**
 - A critical substantive element of this policy evolution is the mitigation of evaluation stress. For Class 9 students, the newly introduced third language (R3) will not culminate in an external board examination. Instead, it will be evaluated strictly through school-based internal assessments. This strategic move ensures that linguistic enrichment does not transform into a grade-driven psychological burden for young learners.

- **Historical Evolution of the Issue**

- **The Pre-Independence Precursors**

- The debate over language in Indian education traces back to the colonial era. **Lord Macaulay's Minute of 1835** sought to create an English-educated elite to serve administrative colonial interests, marginalizing indigenous vernacular languages. Conversely, **Wood's Despatch of 1854**—often called the Magna Carta of Indian Education—argued for a more nuanced approach, advocating for vernacular languages at the primary school level and English for higher education.

- **Post-Independence and the Kothari Commission (1964–66)**

- Following independence, India faced massive linguistic reorganization and intense federal anxieties, particularly regarding the status of Hindi in non-Hindi speaking regions. To broker an educational and cultural compromise, the **Kothari Commission** formally conceptualized the **Three-Language Formula (TLF)**. The goal was to promote national unity by encouraging northern states to study a southern language, while non-Hindi states would study Hindi alongside their regional language and English.

- **National Policies on Education (1968 and 1986)**

- The TLF was officially adopted under the **National Policy on Education in 1968** and reaffirmed in the **1986 Policy (modified in 1992)**. Despite its noble intent, implementation remained highly asymmetrical. Several Hindi-speaking states substituted modern southern languages with Sanskrit, while states like Tamil Nadu firmly resisted the formula, adopting a strict **Two-Language Policy** (Tamil and English) to prevent what they perceived as linguistic hegemony.

- **The National Curriculum Framework (NCF), 2005**

- The NCF 2005 shifted the philosophical lens, moving away from treating multiple languages as an academic burden and instead viewing multilingualism as a rich cognitive resource. It emphasized teaching in the mother tongue during early childhood while fostering an ecosystem where multiple languages coexist naturally within classrooms.

- **National Education Policy (NEP) 2020 to 2026 Adjustments**

- The **NEP 2020** revitalized the linguistic agenda by mandating that no language would be imposed on any state, but firmly stipulated that at least two of the three languages taught in schools must be native to India. By **2026**, the practical realities of classrooms, parental concerns regarding sudden structural overhauls, and the needs of globalized student cohorts led to the current administrative course-corrections. These updates preserve the long-term vision of NEP 2020 while introducing essential buffer periods and internal assessment channels.

- **Way Forward**
- **Establishing a Phased, Long-Term Implementation Path**
 - To avoid recurring resistance from parents and educators, future curricular updates should follow a predictable, long-term timeline. Major changes to language requirements should be introduced at the primary school level, allowing cohorts to progress naturally through the system. This avoids the mid-stream friction caused by changing rules for students already in middle or secondary school.
- **Scaled Professional Development for Language Educators**
 - The vision of a multilingual student body cannot be realized without an adequate pool of proficient teachers. The Ministry of Education, in coordination with state departments, should launch a targeted mission to train and deploy teachers specialized in modern Indian languages. This is particularly important for expanding options in non-native regions, transforming the three-language policy from a paper mandate into a functional classroom reality.
- **Deploying Digital Pedagogy and AI-Assisted Learning**
 - To lower the resource costs of printing physical textbooks across dozens of languages, India's public education platforms (such as the DIKSHA portal) should be upgraded with interactive, gamified language learning modules. Leveraging artificial intelligence for real-time translation and adaptive learning can help students master an additional *Bharatiya Bhasha* at their own pace, reducing the burden on traditional school infrastructures.
- **Robust Institutional Feedback Loops**
 - Central boards and state departments should establish continuous feedback loops involving school principals, parent-teacher associations, and child psychologists. Routinely assessing the cognitive load, emotional well-being, and academic outcomes of students under these language frameworks ensures that policy adjustments remain data-driven, flexible, and student-centric.



CBSE's 3-Language Policy: A Multi-Angle Comprehensive Analysis for UPSC CSE

POLICY OVERVIEW & CONTEXT

Key Terms



Bharatiya Bhasha
on for 22 Scheduled languages



R3 (Third Language)
language block language



School Assessment
school bell with gear continuous evaluation



CWSN
Accessible sign for garoats

Main Arguments

Mandate 2 Native Indian Languages

Special One-Time Concession for active batches

Decoupling Assessments
(internal only, no board exams)

Permutations for Class:

Class 9: Native + Non-Native -> Choose Native R3
Native + Non-Native -> Choose Native R3

Evolution of TLF

Kothari

NPE

NEP

Present Updates

DEEP DIVE ANALYSIS



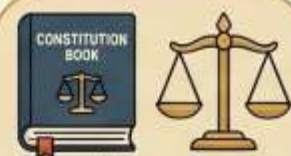
Social

- Preserve heritage, cross-cultural empathy
- manage workload



Political

- Federal balance, consensus-building, defuse imposition fear



Legal

- Articles 351, 29-30
- Concurrent List



Ethical

- Equity for vulnerable groups, consistency, mental wellbeing



International

- Soft power, global mobility for diaspora, competitive edge

Philosophical Base

- Multilingual dividend & cognitive development
- Gradualism



Economic

- Supply chain (textbooks), teacher training, labor market readiness

UPSC CSE LINKAGES & FUTURE PATH

Syllabus Linkages

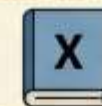
GS II
(Governance)

GS I
(Diversity)

GS IV
(Ethics)

Essay & Optionals

NCERT Books



Democratic Politics



Const. at Work



Cultural Change

Way Forward



Phased implementation



Scaled teacher training



Digital pedagogy & AI tools



Robust feedback loops

PYQ Practice Alert

Common themes on **diversity** and on **diversity** and **integration**.

On the delay in India-U.S. trade deal

India and the U.S. announced in February 2025 that they would work towards a Bilateral Trade Agreement, but differences over agriculture and Russian oil, along with legal battles in Washington and investigations initiated by the Trump administration, have clouded its prospects

EXPLAINER

T.C.A. Sharad Raghavan

The story so far:

India and the U.S. in February 2025 announced that they would work towards a comprehensive Bilateral Trade Agreement (BTA) that was to be finalised by fall 2025. Then, in February 2026, they signed a framework agreement for an interim trade deal that was to be implemented by April-May 2026. Neither deal has come to pass.

Why was the BTA delayed?

Soon after Prime Minister Narendra Modi and U.S. President Donald Trump announced their intentions to complete a BTA in February 2025, it became clear that a comprehensive deal would be elusive. The talk among government officials was about finalising at least the first tranche of the deal by fall 2025 (September-November 2025).

Talks intensified post April 2025, after Mr. Trump first announced his 'Liberation Day' reciprocal tariffs and then paused them for 90 days so he could negotiate deals with U.S. trade partners. However, despite several meetings, India and the U.S. could not finalise the first tranche, with key sticking points being India's reluctance to open up its agricultural and dairy sectors, and its decision to buy oil from Russia.

In two successive announcements in late July and early August, Mr. Trump raised tariffs on imports from India to 25% and then to 50%, with the latter hike being a penalty for India's Russian oil imports. This decision froze negotiations for a few months before matters thawed once again and talks resumed in October.

What is the interim deal?

Once talks resumed, Mr. Modi and Mr. Trump in February 2026 signed a



GETTY IMAGES

framework for an interim agreement on trade. This was not a trade deal itself, but the framework along which one could be worked out. At the time, Commerce Minister Piyush Goyal expressed his confidence that the deal would be completed by April, or at the latest by early May 2026.

Under the framework, the U.S. was to reduce total tariffs on Indian imports to 18%, providing it a competitive advantage over its competitors. Both sides also committed to providing each other preferential market access in "sectors of respective interest".

Why has this deal been delayed?

Soon after the framework was announced, the U.S. Supreme Court invalidated the reciprocal tariff system itself, saying the law it was based on – the International Emergency Economic Powers Act (IEEPA) of the U.S. – did not allow for such tariffs. That removed a major foundation on which the deal negotiations had taken place.

Since then, the U.S. has taken several decisions that have further added to the tariff uncertainty.

Right after the Supreme Court's decision, Mr. Trump announced that he would be imposing a flat 10% tariff on imports from all countries under the Trade Act of 1974, which he said authorised him to take action to address the U.S.'s ballooning trade deficit. This tariff was temporary, supposed to last 150 days up to July 24. Mr. Trump said he would raise it to 15%, but never did.

The U.S. Court of International Trade deemed these illegal as well, but an appeals court put a stay on that order.

What fresh investigations have added more uncertainty?

In March, the office of the U.S. Trade Representative (USTR) said it had initiated two investigations under Section 301 of the Trade Act into several of its trade partners that could potentially see further tariffs being imposed on them.

The first investigation against 16

economies, including India, was to see whether these economies were using excess manufacturing capacity to export to the U.S. in a manner that was hurting American businesses.

The second one, against 60 countries including India, was to look into whether these countries had taken "sufficient steps" to prohibit the import of goods produced with forced labour and how the "failure to eradicate" these practices impacts U.S. workers and businesses.

Under the forced labour investigation, the U.S. government in early June proposed to levy a tariff of 12.5% on imports from 54 countries, including India, as they have "failed to impose and effectively enforce" prohibitions on the import of goods produced using forced labour. To be sure, this does not mean the U.S. is saying that India uses forced labour, but that it has not stopped the import of goods that have been manufactured using forced labour.

India has made its representations to the U.S. on this matter and the final hearing is on July 7. The findings of the excess capacity investigations are expected in mid-July.

What is India's stance on the deal?

As repeatedly expressed by Mr. Goyal, India remains committed to finalising a trade deal with the U.S. but is firm about the fact that it should receive a comparative advantage over its competitors as was agreed in February. For this, the Section 301 investigations will have to be completed and the tariffs decided on various countries.

In the meantime, the two sides continue to negotiate on the other non-tariff aspects of the deal, such as enhanced market access, digital trade, supply chain resilience, reduction of non-tariff barriers, and expanded cooperation in strategic sectors. The latest visit by USTR Jamieson Greer to India on June 23-24 did not yield any deadlines.

THE GIST

India and the U.S. missed both the planned 2025 Bilateral Trade Agreement and the 2026 interim deal after disagreements over agriculture, dairy and Russian oil imports, followed by shifting U.S. tariff policies and legal challenges that disrupted negotiations.

New U.S. Section 301 investigations into excess manufacturing capacity and forced-labour-related imports have delayed tariff decisions, while both sides continue negotiating non-tariff issues, with India insisting on a comparative tariff advantage before finalising the deal.

- **Key Terms and Explanations**

- **Bilateral Trade Agreement (BTA) vs. Interim Trade Deal**

- **Bilateral Trade Agreement (BTA):** This is a wide-ranging economic compact between two sovereign nations designed to reduce or eliminate tariffs, quotas, and other trade barriers on a mutual basis. It encompasses goods, services, intellectual property rights, and investment regulations, aiming to seamlessly integrate two markets.

- **Interim Trade Deal:** Often referred to as an "early harvest" agreement, this serves as a temporary, foundational framework while a comprehensive BTA is being negotiated. It fast-tracks tariff reductions on a limited, selected list of mutually agreed goods to maintain momentum. *Example:* The framework established in early 2026 to offer immediate tariff concessions while broader sticking points were ironed out.

- **Reciprocal Tariffs & The International Emergency Economic Powers Act (IEEPA)**

- **Reciprocal Tariffs:** A trade strategy where a nation matches the import tariff rates levied against its own goods by a trading partner. It is built on the philosophy of "tit-for-tat" commercial diplomacy to enforce market fairness.

- **IEEPA (U.S. Domestic Law):** A United States federal law enacted in 1977 that grants the President the authority to regulate or look into international commerce after declaring a national emergency in response to an unusual and extraordinary external threat. Its application to levy routine commercial tariffs has faced severe domestic judicial resistance.

- **Section 301 of the Trade Act of 1974**

- **Definition and Scope:** A potent provision under U.S. trade law that empowers the Office of the United States Trade Representative (USTR) to investigate and respond to foreign government practices that are deemed unfair, discriminatory, or restrictive to United States commerce.

- **Application Mechanism:** It serves as a unilateral mechanism to enforce trade rights. For instance, the investigations initiated in March 2026 target external industrial capacities and labor standards, carrying the potential to trigger retaliatory duties without waiting for multilateral consensus.

- **Excess Manufacturing Capacity and Non-Tariff Barriers (NTBs)**

- **Excess Manufacturing Capacity:** A state where a country's industrial production capabilities significantly outstrip its domestic consumption requirements. This imbalance frequently results in surplus goods being directed to international markets at low prices, which importing nations often view as market distortion or dumping.

- **Non-Tariff Barriers (NTBs):** Regulatory restrictions, administrative obstacles, or technical specifications that a nation utilizes to limit imports without directly applying customs duties. Examples include complex sanitary and phytosanitary (SPS) measures, digital localization mandates, and stringent labor certification processes.

- **Main Arguments and Substantive Parts**

- **The Conflict of Sectoral Sensitivities**

- The core thesis of current trade dynamics reveals that despite strong strategic alignment, domestic socio-economic commitments frequently stall long-term trade deals. India's stance is shaped by a defensive need to protect its vast agrarian and dairy sectors from cheap foreign imports, which are vital to rural livelihoods. Conversely, Washington seeks expanded market access for its highly subsidized agro-industrial complex. This creates an impasse where neither side can easily make concessions without facing internal political pushback.

- **Geopolitical Friction Elements**

- Geopolitical alignments outside the bilateral relationship directly impact economic discussions. India's decision to maintain energy ties with Russia and import crude oil for its energy security has met with economic resistance in Washington. The imposition of escalating tariffs—which peaked as high as 50% as a direct penalty for these oil imports—underscores how third-party geopolitical choices can disrupt bilateral trade negotiations.

- **Domestic Legal Volatility and Regulatory Uncertainty**

- A significant structural hurdle is the unpredictable nature of domestic legal and executive actions within trading nations, as illustrated in the documentation on trade delays (image_038e22.jpg). The U.S. Supreme Court's decision to invalidate executive reciprocal tariff frameworks under the IEEPA removed a foundational element of the 2026 interim agreement. When international trade agreements face sudden domestic judicial overrules or unilateral measures like flat 10% trade deficit tariffs, long-term commercial policy planning becomes challenging for both state and private actors.

- **Unilateralism via Trade Investigations**

- The reliance on unilateral domestic trade laws over multilateral dialogue further complicates negotiations. The USTR's Section 301 investigations into excess manufacturing capacity and forced labor import chains introduce new uncertainties. For instance, proposing a 12.5% tariff on nations failing to prevent the entry of goods made with forced labor shifts the focus from mutual market access to regulatory compliance. This makes final trade agreements contingent upon meeting unilateral legal standards.

- **Historical Evolution of the Issue**
- **The Cold War Era and Strategic Estrangement (1947–1990)**
- **Post-Independence Protectionism:** Following independence, India adopted an Import Substitution Industrialization (ISI) model and instituted the "License Raj," keeping tariff barriers high and heavily restricting foreign direct investment.
- **Geopolitical Divides:** India's non-aligned stance, which leaned toward the Soviet Union via the 1971 Treaty of Peace, Friendship and Cooperation, created friction with the U.S. Economic engagement was minimal, centered primarily around food aid programs like PL-480, rather than a robust commercial partnership.
- **Economic Liberalization and Early Convergence (1991–2014)**
- **Opening the Indian Market:** India's 1991 balance-of-payments crisis triggered sweeping economic reforms, dismantling the License Raj and reducing customs duties, which caught the attention of U.S. businesses.
- **Institutionalizing Ties:** The launch of the *Next Steps in Strategic Partnership (NSSP)* in 2004 and the signing of the landmark 2008 Civil Nuclear Deal helped bridge old geopolitical divides, leading to steady growth in bilateral trade and the creation of the U.S.-India Trade Policy Forum (TPF).
- **Unilateralism, GSP Withdrawal, and New Alliances (2014–2024)**
- **Tariff Friction and GSP Rescission:** Trade tensions increased when the U.S. removed India from the Generalized System of Preferences (GSP) program, citing limited market access for American dairy and medical devices. India responded with retaliatory tariffs on several U.S. products.
- **The Strategic-Economic Paradox:** While trade disputes persisted, strategic ties deepened through the Quad alliance and the signing of foundational defense agreements (such as COMCASA and BECA). India also joined the trade-adjacent *Indo-Pacific Economic Framework for Prosperity (IPEF)*, signaling a preference for supply chain resilience over traditional tariff-cutting deals.
- **The Modern Phase: Frameworks and Legal Hurdles (2025–Present)**
- **The BTA and Interim Deadlines:** In February 2025, both nations committed to establishing a comprehensive Bilateral Trade Agreement. As structural obstacles slowed progress, negotiators shifted toward an interim framework by February 2026, aiming for a targeted tariff reduction of 18% to secure a comparative advantage for Indian exports.
- **Judicial and Regulatory Halts:** This momentum slowed in mid-2026 due to U.S. judicial rulings striking down executive tariff frameworks, the introduction of broad trade deficit duties, and new Section 301 investigations into manufacturing capacity and supply chain labor practices.



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COMPREHENSIVE ANALYSIS: DELAYS IN **INDIA-U.S.** TRADE DEAL



UPSC CSE & APSC CSE PREPARATION

KEY STICKING POINTS



AGRICULTURE & DAIRY PROTECTIONS

- Protective stance for local sectors and local sectors



U.S. UNILATERALISM & LEGAL HURDLES



JUDICIAL RULINGS ON TARIFF FRAMEWORKS

- Supreme Court overrule of IEEPA in the Supreme court coupley of tariff frameworks

- Executive trade penalties in executive penalties to trade pertecities



UNILATERAL TRADE DEFICIT TARIFFS

NEW USTR INVESTIGATIONS



FORCED LABOR

- New investigations into forced-labor-produced goods and produc goods

- Manufacturing capacity coverate goods and capacity, surgery vehicles



EXCESS CAPACITY

INDIA'S STANCE & STABILIZING FACTORS



Seeking advantages for comparative advantage

Ongoing non-tariff negotiations:

-Digital trade, supply chains, supply chains

Deep strategic perseutive partnerships



Has RBI changed the rules for scam compensation?

Who can claim compensation, how much can they receive, and what are the eligibility conditions?

Aroon Deep

The story so far:

The Reserve Bank of India (RBI) on Wednesday issued fresh rules to protect customers from scam transactions where they lose money to fraudsters and cyberattacks. These directions amend the RBI's 2017 circular on "Limiting Liability of Customers in Unauthorised Electronic Banking Transactions". That previous framework only left banks liable to compensate scammed customers if transactions were not even authorised by customers, such as in a successful hacking incident. These rules are only a pilot for now, but may be extended in the future. They are effective from January 1, 2027, and last for the year.

What has the RBI changed?

In Wednesday's amendments, a draft version of which was released for public comment in March, customers can get reimbursed when they fall prey to certain scams, like digital arrests (where they are "coerced" into paying money), or when

one-time passcodes (OTPs) are "fraudulently" stolen from them. Most financial fraud currently relies on "social engineering" attacks, which require hoodwinking customers in one way or another; since banks' core cybersecurity infrastructure is heavily regulated and subject to RBI audits, "zero click" hacks are vanishingly rare.

The new key concept is "fraudulent electronic banking transactions (EBTs)". RBI defines these as transactions which are "executed by a third-party using the credentials obtained from the customer through fraudulent means or executed by the customer by granting approval under coercion or duress from the third-party" or "an EBT which is not authorised by a customer and inter alia includes an EBT occurring on account of negligence by a bank and/or a third-party breach."

This means that customers who ignore fraud signal warnings, such as those on a UPI PIN screen that a given transaction could be a scam, would not be eligible for any compensation. In cases of a third-party hack, the timeline for a customer to report the loss has been

increased to five calendar days from three working days. As in the 2017 rules, if any amount is deducted after a customer reports fraud, the customer bears no liability and is entitled to a reversal of the transaction.

Banks can waive customers' liability even if a transaction is negligent, but this is subject to their own discretion. If a user does not have their latest phone number or email address registered with the bank, this counts as negligence, as the bank would not send fraud alerts to the right contact.

How much compensation can customers receive?

For losses up to ₹50,000, individual victims can claim 85% of the amount as compensation, only once in their lifetime, up to ₹25,000. (This means that for any amount from ₹29,412 till ₹50,000, customers will receive a flat ₹25,000 compensation.) Roughly three-fourths of the amount will be paid by RBI itself, while the customer and beneficiary banks will pay half the remaining amount.

A customer must report to the

cybercrime helpline (1930) within five days to be eligible for this. It is worth noting that scams above ₹50,000 don't seem to be covered in this framework at all.

What changed between the draft and final rules?

From the March draft, banks have been given more time to implement this new system; the draft rules had a July 1 effective date. This is now January 1, 2027. Complaint settlement timelines are also now increased to 45-60 days, with the latter applying for international transactions.

Dvara Research, a non-profit financial inclusion think tank, had suggested that the vulnerability of customers be taken into account. "Research suggests that Indians encounter fraud attempts multiple times a week, that these attempts are growing more sophisticated, and therefore, it is not unlikely that customers may fall for them more than once," the body wrote.

"Vulnerable customers may not be expected to meet high standards of attentiveness or defend themselves against frauds that are sophisticated even for the more evolved customers ... Under the Indian Contract Act, contracts executed under information asymmetry, external influence, or fraudulent pretext are voidable... Bundling such different transactions under the common definition of 'authorised transaction' diminishes their fundamental difference and may even reduce the significance of a liability framework."

THE GIST

RBI's revised rules expand customer protection by allowing compensation for certain fraud caused by coercion or stolen credentials, not just unauthorised transactions.

Eligible customers can claim up to ₹25,000 for losses of up to ₹50,000 if they report the fraud within five days; the pilot framework takes effect from January 1, 2027.

- **Key Terms and Explanations**
 - **Fraudulent Electronic Banking Transactions (EBTs):** This refers to transactions executed by a third party using a consumer's credentials obtained via fraudulent means, or executed by consumers themselves under external coercion, duress, or deception.
 - **Social Engineering Attacks:** A psychological manipulation technique used by cybercriminals to trick individuals into volunteering confidential information, such as passwords, PINs, or One-Time Passcodes (OTPs).
 - **Zero Liability Protocol:** A regulatory shield ensuring that if a banking customer reports an unauthorized electronic transaction within a strictly stipulated timeframe, they bear no financial loss, transferring the liability entirely to the financial institution.
 - **Information Asymmetry:** A market situation where one party possesses greater or more accurate technical and operational knowledge than the other. In digital banking, highly sophisticated scammers or institutional systems operate with a massive knowledge advantage over average, less tech-savvy retail consumers.
 - **Voidable Contracts (under Coercion):** Grounded in classical jurisprudence, this legal concept implies that any agreement or transaction entered into without free consent—such as under fear, threat, or duress—lacks legal validity and can be declared null and void at the option of the victim.
- **Main Arguments and Substantive Parts**
 - The core thesis of modern digital consumer protection revolves around adjusting liability frameworks to match the rising sophistication of cybercrime. The traditional demarcation between "authorized" and "unauthorized" transactions has become blurred, requiring a major paradigm shift in regulatory oversight.
 - **The Shift in Consumer Protection Philosophy**
 - Historically, financial regulators drew a sharp line: if a system breach or hack occurred without customer intervention, the bank was responsible. However, if a customer shared their OTP or approved a transaction—even if deceived—it was labeled "authorized," leaving the customer completely empty-handed. The evolving approach recognizes that social engineering and digital coercion weaponize the user's own hand against them, necessitating a framework that offers compensation for certain scam transactions.
 - **Architecture of the New Compensation Mechanism**
 - A targeted pilot framework, scheduled to take effect from January 1, 2027, for a duration of one year, sets up a precise risk-sharing matrix:
 - **Eligibility and Caps:** For scam-induced losses up to ₹50,000, individual victims can claim 85% of the lost amount, subject to a lifetime maximum ceiling of ₹25,000. Scams exceeding ₹50,000 fall completely outside this specific safety net.
 - **Funding the Reimbursement:** To shield commercial banks from sudden fiscal shocks, a unique cost-sharing model is established: the central bank funds roughly three-fourths of the compensation payout, while the remaining balance is shared equally between the customer's bank and the beneficiary's bank.
 - **Strict Reporting Preconditions:** To qualify for relief, victims must report the fraud to the national cybercrime helpline (1930) within five calendar days. Furthermore, ignoring explicit on-screen application warnings instantly disqualifies a user from seeking compensation.

- **Historical Evolution of the Issue**
 - **Pre-Digital Era (Pre-1990s):** Banking security was defined by physical parameters—passbooks, token systems, ledger verifications, and ink signatures. Fraud was primarily handled under the Indian Penal Code (IPC) as cheating, forgery, or physical theft.
 - **The Dawn of Electronic Banking (2000–2010):** The enactment of the Information Technology (IT) Act, 2000, marked India's entry into digital governance. The rapid expansion of Automated Teller Machines (ATMs) and early internet banking introduced cloning and phishing, though systemic consumer liability rules remained vague and bank-centric.
 - **The 2017 Benchmark Circular:** As smartphones and mobile apps became mainstream, the Reserve Bank of India issued its landmark July 2017 circular on "Limiting Liability of Customers in Unauthorised Electronic Banking Transactions." It established a clear timeline: reporting an unauthorized hack within three working days guaranteed zero liability for the customer.
 - **The UPI Revolution and Social Engineering Era (2016–Present):** The explosive growth of Unified Payments Interface (UPI) shifted the target. Finding bank core infrastructures heavily fortified and subject to strict regulatory audits, cybercriminals turned to manipulating the human element instead. This led to a surge in digital arrests, spoofed delivery apps, and identity theft.
 - **The 2027 Pilot Paradigm:** Recognizing that the 2017 rules offered no protection against social engineering, regulators formulated the upcoming pilot framework. By extending the reporting window to five calendar days and including transactions made under coercion, this shift acknowledges that human vulnerability is an institutional risk that needs shared protection.
- **Way Forward**
 - **Enhancing Technological Infrastructure**
 - The national cybercrime helpline (1930) needs to be upgraded from a manual reporting system into a high-capacity, AI-driven real-time triage portal. Integrating it directly with the core banking systems of all commercial banks can help instantly freeze stolen funds across beneficiary accounts before scammers can withdraw them.
 - **Behavioral Architecture and Smart Warnings**
 - Instead of relying on simple warning text boxes that users often skip, financial apps should use behavioral nudges. For example, if an app detects that a customer is processing a high-value transaction while on an active phone call with an unknown number, it could trigger a mandatory 10-minute cooling-off period or require a secondary verification step to help break the psychological spell of a scammer.
 - **Reevaluating the Scope of the Framework**
 - The pilot project should be closely monitored to see if its strict limitations need adjusting. The "once-in-a-lifetime" rule could be modified to apply "once within a rolling three-year window" to account for the persistence of cybercriminals. Additionally, introducing a tier-based compensation model for scams above ₹50,000 would ensure that middle-class victims are not left entirely exposed to large losses.
 - **Institutionalizing Financial Literacy 2.0**
 - Traditional financial literacy efforts focused on explaining basic concepts like interest rates. Today, India needs simulation-based safety campaigns. Setting up interactive, gamified portals that mimic real-world phishing and digital arrest tactics can help train vulnerable groups, like senior citizens and rural users, to identify and handle scams safely.

HAS RBI CHANGED THE RULES FOR SCAM COMPENSATION? - A COMPREHENSIVE ANALYSIS



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OLD: THE 2017 CIRCULAR (Unauthorized Transactions)



- Focus on **hacking without customer consent**.
- Zero liability** if reported in 3 days.
- Focus on **system breaches**.

NEW: THE 2027 PILOT (Coercion & Duress)

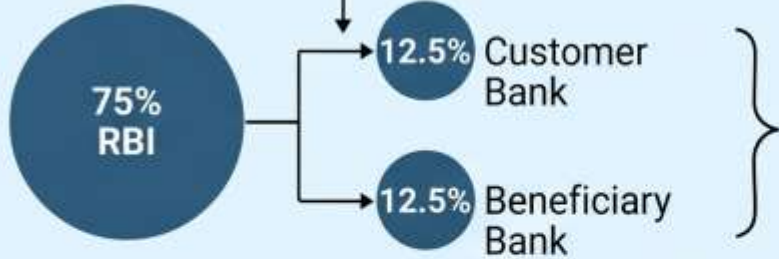


- Covers '**Fraudulent EBTs**' under **duress and social engineering**.
- Focus on **customer as proxy victim**.
- Shared liability model**.
- 5-day reporting timeline**.

NEW COMPENSATION MECHANISM (Pilot)

Loss Amount	Max Capped Comp (85%)
Loss ₹40,000	Comp ₹25,000

Note: Only up to ₹50,000 loss is covered.



Risk-Sharing Matrix

Disqualifications

- Ignore on-screen warnings



- Negligence

KEY CONCEPTS & LIMITATIONS

Glossary:

Fraudulent EBTs:
Carpicipating criterits.
Zero Liability

Social Engineering:
Completed information and territory wnder customer notics

Critical Analysis:

Challenges:

- Once-in-a-lifetime limit
- User attentiveness burden



Philosophical basis:

Paternalism vs Libertarian Autonomy

MULTI-DIMENSIONAL ANALYSIS



UPSC CSE LINKAGES & PYQ REFERENCE



GS Papers 2, 3, 4, Essay

GS Papers 2, 3, 4, Essay

Example PYQ references:

- Prelims & Mains: like:** data security
- Mains:** data security, cybersecurity

WAY FORWARD & STRATEGIC ADVICE



Suggested solutions:

- Real-time AI triage (1930)
- Simulation-based literacy
- Global cooperation.

AI must not compromise data integrity: Mishra

The Hindu Bureau
NEW DELHI

Even as India moves towards AI-ready datasets, such data can become an asset to the country "only when backed by robust standards of quality, privacy and transparency", P. K. Mishra, Principal Secretary to the PM said on Monday.

Speaking at the 20th Statistics Day, Mr. Mishra said that while Artificial Intelligence (AI) offers "transformative opportunities" for statistical analysis and policymaking, its adoption must be guided by strong governance frameworks to address bias, accountability and explainability.

Datasets updated

Mr. Mishra acknowledged after decades of excellence, the statistical system faced challenges relating to outdated datasets, delays in data dissemination, fragmented statistical architecture and declining professional capacity.

"The concerns prompted a comprehensive reform exercise led by the Ministry of Statistics and Programme Implementation (MoSPI) through extensive consultations with experts and stakeholders," Mr. Mishra said. "Based on the deliberations, MoSPI accepted 216 recommendations for time-bound im-



P. K. Mishra

plementation under an institutional oversight mechanism."

He highlighted the reforms had already led to the introduction of new and user demand-based surveys, updating of macroeconomic indicators, improved data dissemination and significant procedural and process-oriented reforms.

Since February, the government had released updated series of national accounts, Index of Industrial Production, Consumer Price Index and Wholesale Price Index apart from introducing Producer Price Index and the Index of Services Production.

On India's adoption of AI-ready datasets, he said: "Administrative data can become a powerful national asset only when backed by robust standards of quality, privacy and transparency."

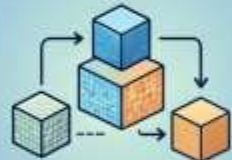
- **Key Terms and Explanations**
 - **AI-Ready Datasets:** These are highly structured, cleaned, and standardized repositories of information specifically formatted to train machine learning models. Unlike raw, fragmented data, AI-ready datasets feature consistent syntax, labeled parameters, and minimal noise, allowing algorithms to detect patterns without absorbing structural errors. For instance, transforming manual, localized land records into a unified digital database with standardized attributes makes it "AI-ready" for predictive crop yield modeling.
 - **Data Integrity:** This refers to the maintainance of the accuracy, completeness, and reliability of data across its entire lifecycle. In policymaking, data integrity ensures that the numbers driving national decisions reflect ground realities without distortion, tampering, or systemic omission.
 - **Explainable AI (XAI):** A branch of artificial intelligence focused on ensuring that the internal logic and decision-making processes of AI models are transparent and interpretable by humans. This stands in stark contrast to "black-box" algorithms, where an input leads to an output through complex neural networks without a clear, auditable rationale. In public administration, XAI is vital because a citizen denied a welfare benefit by an algorithm has a democratic right to know exactly *why* that decision was reached.
 - **Producer Price Index (PPI):** A critical macroeconomic indicator that measures the average change over time in the selling prices received by domestic producers for their output. Unlike the Consumer Price Index (CPI), which tracks price changes from the buyer's perspective at the retail level, the PPI captures inflationary pressures at the factory gate before they reach the consumer market, serving as an early warning system for economic heating.
 - **Index of Services Production (ISP):** An economic indicator designed to measure the short-term changes in the volume of output within the services sector. Given that services constitute the largest component of India's Gross Value Added (GVA), the ISP fills a historical gap by providing high-frequency data on the tertiary sector, mirroring what the Index of Industrial Production (IIP) does for the manufacturing and secondary sectors.
- **Main Arguments and Substantive Parts**
 - The core discourse surrounding India's statistical evolution revolves around a fundamental thesis: **Technology is only as reliable as the foundational data it consumes.** The integration of Artificial Intelligence into public policy holds immense transformative potential, but it poses substantial institutional risks if the underlying datasets are flawed.
 - **The Core Dilemma: Garbage In, Garbage Out (GIGO)**
 - The primary argument highlights that administrative data can transition into a powerful national asset *only* when it is anchored by uncompromising standards of quality, privacy, and transparency. If an AI system is deployed to analyze macroeconomic trends or target public welfare, but its training data is riddled with historical bias or structural fragmentation, the algorithm will simply automate and amplify these inefficiencies at scale.
 - **Overhauling Legacy Bottlenecks**
 - The structural weaknesses that have traditionally plagued India's statistical architecture include:
 - Outdated baseline datasets that fail to reflect the modern, digitized economy.
 - Prolonged delays in data dissemination that render statistical insights reactive rather than proactive.
 - A fragmented statistical architecture where different departments operate in data silos.
 - A visible decline in professional capacity within statistical institutions.
 - **The Reform Architecture**
 - To address these vulnerabilities, institutional overhauls have been initiated, driven largely by comprehensive expert recommendations under the Ministry of Statistics and Programme Implementation (MoSPI). The acceptance of 216 target-bound recommendations marks a transition toward an institutional oversight mechanism. This includes updating crucial macroeconomic indicators—such as the national accounts, IIP, CPI, and WPI—alongside the introduction of forward-looking indices like the PPI and ISP. This structural modernization aims to ensure that when AI models are deployed, they operate on pristine, comprehensive, and highly contemporary data matrices.

- **Historical Evolution of the Issue**
 - **The Mahalanobis Era (Post-Independence):** Under the vision of Professor Prasanta Chandra Mahalanobis, India established one of the world's most sophisticated statistical systems for a developing nation. The creation of the Central Statistical Organisation (CSO) and the National Sample Survey (NSS) provided the empirical backbone for the Five-Year Plans, establishing data collection as a sovereign exercise linked directly to nation-building.
 - **Late 20th Century Structural Fatigue:** As the Indian economy diversified and liberalized in 1991, the traditional statistical tools began facing structural strains. The emergence of a massive informal sector, rapid urbanization, and technological gaps led to fragmentation. Data collection became sluggish, and the lag between survey execution and publication widened considerably.
 - **The Rangarajan Commission Landmark (2001):** Acknowledging the growing deficit in data credibility, the government setup the Dr. C. Rangarajan National Statistical Commission. The commission recommended the creation of a permanent, independent statistical oversight body to reduce political interference and enhance data quality, which ultimately led to the setting up of the National Statistical Commission (NSC) in 2005.
 - **The Contemporary Paradigm Shift (Post-2020):** The explosion of digital governance, big data, and automated systems highlighted that traditional sample surveys must be supplemented by real-time administrative data. This realization triggered the current reform phase under MoSPI, characterized by the overhaul of macroeconomic base years, the introduction of tertiary-sector indices (ISP), and the current push to make public datasets securely accessible and AI-ready under strict governance frameworks.
-
- **Way Forward**
 - **Strengthening Institutional Autonomy**
 - The National Statistical Commission (NSC) must be granted statutory backing, elevating it to an independent regulatory body similar to the Election Commission of India or the RBI. This legislative shielding will insulate national data generation from political crosscurrents, ensuring absolute credibility for both domestic and international stakeholders.
 - **Operationalizing a Unified Data Governance Framework**
 - MoSPI must rigorously implement the 216 accepted expert recommendations through a centralized, institutional oversight mechanism. This framework should mandate the break-down of inter-departmental data silos, forcing diverse ministries to adopt unified data architectures. Raw administrative data should automatically pass through automated validation pipelines to strip away anomalies, rendering it safely AI-ready while strictly respecting personal anonymization protocols.
 - **Investing in Human Capital and Technical Upskilling**
 - Modernizing infrastructure without upgrading human capacity is counterproductive. The Indian Statistical Service (ISS) and associated state statistical cadres must undergo continuous professional capacity development. Training programs should focus on data science, machine learning ethics, and big data analytics, transforming traditional statisticians into skilled data stewards capable of auditing complex algorithms.
 - **Adopting Explainable AI (XAI) Protocols**
 - The state must establish a strict policy protocol: no AI model shall be deployed for public welfare targeting or macroeconomic forecasting unless it complies with Explainable AI benchmarks. Public algorithms must remain auditable, transparent, and capable of generating clear explanations for their outputs. This guarantees that the constitutional right to administrative justice remains protected in the digital age.

COMPREHENSIVE MASTERCLASS ANALYSIS: DATA INTEGRITY, ALGORITHMIC GOVERNANCE, & STATISTICAL REFORMS IN INDIA

1 KEY TERMS AND EXPLANATIONS

AI-Ready Datasets



Clean, structured cube from land records
→ digital DB

Data Integrity



Secure vault to secure vault & verified checkmark

Explainable AI (XAI)



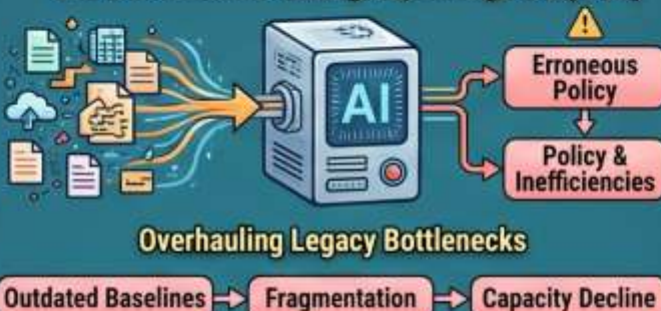
Transparent gearbox with logic flow indicator



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2 MAIN ARGUMENTS: TECHNOLOGY IS ONLY AS RELIABLE AS THE FOUNDATIONAL DATA IT CONSUMES

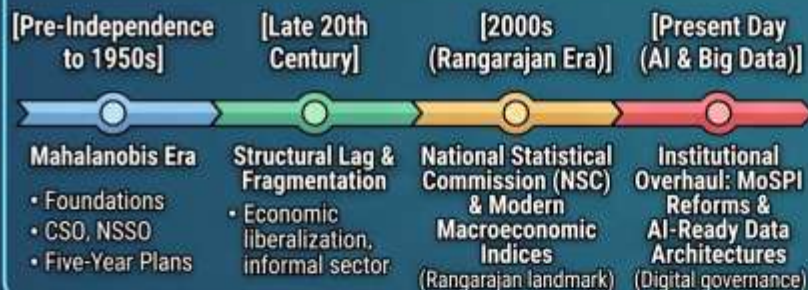
The Core Dilemma: Garbage In, Garbage Out (GIGO)



3 HISTORICAL EVOLUTION OF THE ISSUE



3 PRODUCER PRICE INDEX (PPI) ISSUE



The Reform Architecture



4 LOGICAL AND PHILOSOPHICAL BASE



State Must Count to Govern

- State epistemological duty



Data as a Public Good

- Utilitarian Principle
- Non-Excludable,
- Non-Rivalrous, but with individual dignity/privacy



Logic of Algorithmic Justice

- Automated governance subservient to constitutional justice.
- Against technological determinism, XAI needed

5 MULTIDIMENSIONAL ANALYSIS



6 LINKAGES & EXAM RELEVANCE

NCERT TEXTBOOKS

- Class XI Statistics
- Class XII Politics since Independence
- Class XII World Politics

UPSC CSE SYLLABUS

- GS 2
- GS 3
- GS 4
- Essay

WAY FORWARD: MULTI-PRONGED STRATEGY

- Statutory Backing for NSC
- Unified Data Governance
- Human Capital Investment
- Unified Data Governance
- Human Capital Investment
- XAI Protocols

Bengal passes preventive detention, legal curbs Bill

Govt. can detain a person for a year to prevent anti-social activity; CM Suwendu Adhikari says State 'will not misuse [law]... for political vendetta'; law won't stand legal scrutiny, says Trinamool MLA

Shiv Sahay Singh
KOLKATA

The West Bengal Assembly on Monday passed two controversial laws providing for detention of 'anti-socials' for a year and restricting access to a lawyer for such persons, and payment of compensation by those accused of damaging private or public property.

The West Bengal Public Safety and Control of Anti-Social Activities Bill, 2026 empowers the government to detain a person if it deems necessary to stop future anti-social activity for almost a year. It said the government can detain those "generally reputed to be desperate and dangerous to the community".

The Bill proposes constitution of an advisory board where every detention case will be scrutinised within three weeks. The board, which will comprise a chairperson who is or has been a High Court judge, will decide if a person remains in detention or has to be released.

Section 10 (4) of the Bill states, "A detained person shall not be ordinarily represented by a legal practi-

Cracking down

The West Bengal government says the newly introduced Bills aim to curb anti-social activities

- The West Bengal Public Safety and Control of Anti-Social Activities Bill, 2026, allows preventive detention for up to one year if authorities believe a person may engage in future anti-social activities. Cases will be reviewed by an advisory board headed by a current or former High Court judge

- The Bill states that detained

persons will ordinarily not be represented by a lawyer before the advisory board, though the board may make exceptions

- The West Bengal Maintenance of Public Order (Amendment) Bill, 2026, empowers authorities to recover compensation from those found responsible for damage to public or private property



tioner before an advisory board." The proviso of the same sub-section says that the board may remove this prohibition in appropriate cases which should be recorded in writing.

Another legislation passed, titled 'The West Bengal Maintenance of Public Order (Amendment) Bill, 2026', imposes a payment of compensation by persons committing offences such as damage to public or private property.

'Won't misuse'

Chief Minister Suwendu Adhikari said such a law has

become necessary because of the criminalisation of politics and added that similar laws have been implemented in Maharashtra, Delhi, Uttar Pradesh, Madhya Pradesh, and Jharkhand.

Mr. Adhikari referred to incidents of mob violence when the Trinamool Congress was in power, particularly the killings of Haregobinda Das and Chandan Das in April 2025.

"We will not misuse this law. This law will not be used against anyone for the purpose of political vendetta," he said, amidst

concern from the Opposition.

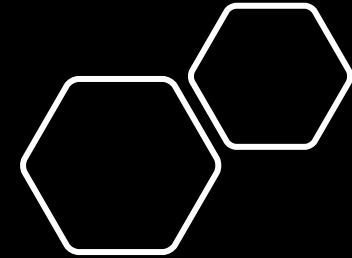
Trinamool MLA from Chanchal and former IPS officer Prasun Banerjee described certain provisions of the Bill as "scary" and said the law will not stand judicial scrutiny. He said by empowering the administration, the BJP government is creating a "Frankenstein" with sweeping powers. He said that by allowing District Magistrates to issue warrants, the Bill is trying to create a "State within the State".

'Anarchy is prevailing'

The State's Parliamentary Affairs Minister Sankar Ghosh said that "anarchy" was prevailing in society because of the Trinamool's 15-year rule and those opposing the Bill want the anarchy to stay. "Right to protest can be a fundamental right but right to destroy public property cannot be a right," he said.

Minister Agnimitra Paul said the Trinamool government was run by "goons" and the new law is an attempt at course correction.

Several Opposition MLAs said the Bill will curb peaceful protests and students' movements.



- **Key Terms and Explanations**
 - **Preventive Detention:** This refers to the preemptive confinement of an individual without a formal trial or conviction by a court of law. Unlike punitive detention, which punishes a person for a crime already committed, preventive detention is enacted based on executive apprehension that the individual might commit an act prejudicial to the security of the state or public order. For instance, detaining a known history-sheeter right before a highly sensitive local election to prevent communal flare-ups is an act of preventive detention.
 - **Public Order vs. Law and Order:** This is a vital distinction established by the Supreme Court of India. **Law and Order** is a narrow concept dealing with individual crimes (e.g., a case of domestic theft or a localized brawl). **Public Order**, however, has a much wider ambit; it refers to situations where the even tempo of community life is deeply jeopardized (e.g., widespread rioting, targeted subversion, or organized mob violence).
 - **Advisory Board:** A specialized statutory oversight mechanism mandated under Article 22 of the Indian Constitution. It acts as an institutional check on executive overreach, usually headed by a sitting or retired High Court judge, tasked with reviewing detention orders within a stipulated time frame to decide if sufficient cause exists for continued confinement.
 - **Principles of Natural Justice (*Audi Alteram Partem*):** This legal doctrine dictates that "no person shall be condemned unheard." In the context of draconian security laws, provisions that restrict a detainee's access to a legal practitioner before administrative reviews directly challenge this foundational principle.
 - **Strict Financial Liability for Property Damage:** A legal framework that shifts the financial burden of vandalism from the taxpayer to the perpetrators. It empowers authorities to assess and recover damages directly from individuals or organizers found responsible for destroying public infrastructure or private property during civil agitations.
- **Main Arguments and Substantive Parts**
 - The ongoing debate surrounding the introduction of stringent public safety bills, revolves around the classic democratic dilemma: balancing collective security with individual liberty.
 - **The Case for State Empowerment and Stringent Laws**
 - **Curbing Chronic Criminality:** Proponents argue that ordinary criminal laws are often insufficient to deal with hardened, desperate individuals who exploit procedural delays in the judiciary. Preventive measures act as an immediate circuit breaker to isolate dangerous elements.
 - **Economic Accountability:** Peaceful protest is a constitutional right, but the destruction of public transport, government offices, and private shops is an economic offense against society. Introducing mechanisms to recover monetary compensation serves as a powerful financial deterrent against mob violence.
 - **Maintaining Administrative Equilibrium:** State governments emphasize that ensuring an atmosphere free of fear is essential for governance, development, and attracting investment. Mirroring laws implemented across states like Maharashtra, Uttar Pradesh, and Madhya Pradesh provides the executive with uniform operational teeth.
 - **The Case Against Sweeping Executive Powers**
 - **Erosion of Procedural Safeguards:** Legal experts express profound concern over provisions that deny detainees ordinary representation by legal counsel before review boards. It severely compromises the ability of an individual to mount a meaningful defense against state machinery.
 - **Vagueness and Scope for Misuse:** Broadly defined criteria such as targeting those "generally reputed to be desperate and dangerous" invite immense subjectivity. This vagueness can be weaponized by the ruling administration for political vendetta, chilling legitimate political dissent, student movements, and civil activism.
 - **Creation of a Parallel Authority:** Vesting District Magistrates and police executives with sweeping powers to issue warrants and enforce long-term detentions alters the delicate system of checks and balances, potentially turning the bureaucratic apparatus into an unrestrained force.

- **Historical Evolution of the Issue**

- **The Colonial Era:** The British Raj extensively used preventive detention via instruments like the **Rowlatt Act (1919)** to suppress the freedom struggle without trial. This established a deep-seated suspicion of such laws among Indian nationalists.
- **The Constituent Assembly Dilemma:** During the drafting of the Constitution, giants like Dr. B.R. Ambedkar reluctantly incorporated preventive detention into Article 22. It was viewed as a "necessary evil" required to safeguard a nascent republic grappling with the horrific trauma of Partition, communal riots, and internal insurgencies.
- **Post-Independence Central Enactments:** The Parliament enacted the **Preventive Detention Act (1950)**, followed by the highly controversial **Maintenance of Internal Security Act (MISA, 1971)**, which was widely misused during the 1975 Emergency to detain political rivals. Later came the **National Security Act (NSA, 1980)**, alongside anti-terror frameworks like TADA and POTA.
- **The Shift to State-Level Legislations:** Over the last few decades, states have increasingly carved out localized security regimes. Examples include Maharashtra's MCOCA, various state-level "Goonda Acts," and recent legislative trends across northern and eastern states aimed at linking public security with the aggressive recovery of costs for damaged property.

- **Way Forward**

- **Narrowing Statutory Definitions:** Terms like "desperate," "dangerous," or "anti-social" must be replaced with precise, legally unambiguous criteria. Vague phrasing must not be left open to the subjective interpretation of local police officers or administrators.
- **Preserving the Right to Counsel:** The exclusion of legal practitioners from Advisory Boards should be reconsidered. Legal defense is a cornerstone of a fair hearing; ensuring access to legal aid or representation protects vulnerable citizens from groundless detentions.
- **Strengthening Judicial and Advisory Oversight:** Advisory Boards must operate with complete institutional independence from executive influence. They should be granted the resources to conduct thorough, independent fact-finding reviews within tight timelines, rather than acting as a rubber stamp for administrative orders.
- **Adhering to Supreme Court Benchmarks:** In a series of rulings, including ***Rekha v. State of Tamil Nadu***, the Supreme Court has emphasized that preventive detention is an exceptional measure. It must never be used as a shortcut to bypass standard criminal investigation and prosecution channels.
- **Establishing Independent Tribunals for Damage Assessment:** To prevent the weaponization of property damage recovery laws, the assessment of vandalism and liability should not be left solely to the executive or District Magistrates. Instead, independent judicial tribunals—as recommended by the **Justice K.T. Thomas Committee**—should oversee claims to ensure transparency and objectivity.

COMPREHENSIVE ANALYSIS: STATE-LEVEL PREVENTIVE DETENTION & PUBLIC ORDER ENFORCEMENT

1. KEY TERMS & CONSTITUTIONAL FRAMEWORK

- **Preventive Detention** (No Trial, & Executive action) **vs** **Punitive Detention** (After Crime, Gavel, Court)
- **Public Order** (Wide ambit, community tempo)

- **Advisory Board** (Consti. check, Art 22) 
- **Principles of Natural Justice**
 **⚠ Restricted Access to Legal Counsel** (Challenging Audi Alteram Partem)
- **Strict Financial Liability**
 **Broken public assets** → **Vandalism Cost Recovery Bills** (Recent State-Level Trends exemplified by legislation)

2. PHILOSOPHICAL BASE & HISTORICAL EVOLUTION

-  **Hobbesian Social Contract:** Order over freedom
-  **Utilitarianism vs. Deontology** 
-  **Principle of Proportionality**
 - A precise scale
 - Coaleuated criteria
 - Prinntie of opponenity
 - Principle of:ard arenat criteria

Evolution of Preventive Detention in India

- Eras** **Pre-Independence** (Colonial tools, Rowlatt Act)
- Eras** **Constituent Assembly** (Necessary Evil, Art 22)
- Post** **Post-Independence Central** (PDA, MISA, NSA, TADA/POTA)
- Eras** **Modern State-Level** (Goonda Acts, Property Damage Bills)

TRENDS CAPTURED IN RECENT LEGISLATIONS:
[Goonda Acts]
[Property Damage Recovery]
[Erosion of Safeguards]

3. MULTIDIMENSIONAL ANALYSIS (TENSION POINT: SECURITY vs. LIBERTY)

Social Dimension

Safety vs. Alienation, trust deficit

Political Dimension

Power vs. Opposition, self-censorship

Legal Dimension

CONSTITUTIONAL FRICTION

ART 21 & 22

STATE POWER

Ethical Dimension

Punishment before crime, 'Innocent until proven guilty'

International Dimension

ICCPR
Soft Power global scrutiny

Economic Dimension

Wealth protection vs. Arbitrary application
Investor confidence

4. WAY FORWARD & KEY TAKEAWAYS

-  **Narrow Statutory Definitions** (Replace vague terms)
-  **Preserve Right to Counsel** (Cornerstone of fairness)
-  **Strengthen Oversight** (Independent Advisory Boards)
-  **Adhere to SC Benchmarks** (Rekha v. State TN - exceptional measure)
-  **Independent Tribunals for Damage Assessment** (Justice K.T. Thomas Comm.)

MUST KNOW FOR UPSC SYLLABUS:
GS II (Consti, Exec/Judiciary Friction)
GS III (Internal Security)
GS IV (Ethics, Preventive Justice)





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