

AXIA IAS ACADEMY



**DAILY NEWS
ANALYSIS**



JULY 6



**CONSISTENT
COMPREHENSIVE
AND CREDIBLE**



**UNIQUE AND BEST
IN QUALITY**





AXIA

IAS ACADEMY

RISE ABOVE THE REST



UPSC CSE CLASSES - PRELIMS + MAINS + INTERVIEW GUIDANCE

- EXPERT FACULTY & MENTORSHIP
- COMPREHENSIVE STUDY MATERIAL
- REGULAR TEST SERIES & EVALUATION
- CURRENT AFFAIRS & ANSWER WRITING FOCUS
- SMALL BATCH SIZES FOR PERSONAL ATTENTION

axiaiasacademy.com +91 6002-417488

AI is reshaping warfare: How India can keep pace



EXPERT EXPLAINS

Lt GEN RAJ SHUKLA (RETD)

FORMER ARMY COMMANDER, UPSC MEMBER

THE TRINITY of artificial intelligence (AI), military autonomy and algorithmic warfare is redefining modern-day warfighting and deterrence. The workflows of combat are being infused with AI and driven by autonomy, but what is making them unfailingly lethal is algorithmic precision. Indeed, these three factors are poised to exponentially increase battlefield lethality over the next few years.

The strategic-military establishment in India would do well to take note of this 'Manhattan Project' moment in combat — the deployment of software at unprecedented speed and scale.

Tech in conflict: Ukraine, Venezuela and Iran

Drones are the greatest techno-military revolution since gunpowder and nuclear weapons. Their integration with AI and associated technologies has given birth to the art and science of drone warfare as warcraft, even statecraft.

Their impact has been particularly visible in the Russia-Ukraine war. Ukraine, for instance, uses an AI-enabled data analytics platform called Delta that fuses multiple data inputs (from radar imagery to social media feeds) into one intelligent stream. Delta then plugs into a versatile inventory of drones to form a digital 'kill web' that compresses engagement times (detection to neutralisation) to a couple of minutes.

A 35-km corridor along the Russia-Ukraine frontier is nicknamed the "death zone". In this area, artillery has been pushed back and outranged, tanks don't move, and infantry soldiers are picked up by surveillance drones and neu-



Anduril's YFQ-44A began flight testing for the Collaborative Combat Aircraft Program in October 2025. ANDURIL

• From Ukraine to US: AI on the battlefield

UKRAINE'S DELTA battlefield management system has given it an edge in its grinding war against Russia. The system uses artificial intelligence to help with target selection, faster multi-sensor data analysis about enemy activity, and decision-making, among others.

THE UKRAINIAN defence ministry

has said that Delta enables "real-time battlefield awareness, supports operational planning, and facilitates information sharing within units, brigades, formations, and, when needed, with allies".

ANOTHER EXAMPLE is YFQ-44A Fury, an AI-powered unmanned fighter jet developed by the American

defence tech startup Anduril.

ANDURIL SAYS on its website that integration of autonomy into fighter aircraft is a "step change" in aviation. "We designed YFQ-44A for a specific Air Force mission: to enhance survivability, lethality, and mission effectiveness by teaming with crewed fighter aircraft or operating independently."

tralised by FPV (first-person view) drones in a matter of minutes. Unmanned platforms are taking over functions once performed by humans. This ranges from acquiring information and fixing targets to resupplying ammunition and rations, and evacuating casualties.

This year, Ukraine is buying eight million drones, more than the artillery it fired last year. These platforms provide commanders options ranging from close air support (25 km) to strategic air power (2,500 km).

In Venezuela, the US used Anthropic's Claude in the operation to capture ousted president Nicolas Maduro. AI platforms gave the US top brass insights into Maduro's movements and helped them anticipate what he would do.

Widening use cases

In Venezuela, the US used Anthropic's Claude in the operation to capture Maduro.

AI platforms gave the US top brass insights into Maduro's movements.

Electronic attacks and cyber exploits were then synchronised with the Delta Force's airborne assault to telling effect.

In Iran, we saw the development of targeting packages at machine (not human) speeds, enabling precise strikes that wiped out almost the entire Iranian leadership in minutes on the morning of February 28.

Autonomous control

Military autonomy is making giant strides. Drone warfare is moving from remote to algorithmic control. The captains of naval platforms are increasingly going to be autonomous software systems, not humans. In the aerial domain, the development of the YFQ-44A Fury, an AI-powered autonomous fighter jet, by the defence tech startup Anduril, tells us that the future of airpower will be collaborative. This also shows that the business model is moving

Examples from Iran to Venezuela show that India needs to embrace the trinity of AI, autonomy and algorithmic warfare through sovereign pathways

steadily from traditional defence primes to agile startups.

Lethal technologies are seeing an unprecedented boom. Mythos is a virtual cyber-nuke that can disable any adversary operating system. DeepSeek and Tau's Law of Scaling (Huawei professing to achieve 14 nanometre transistor density by 2031 to challenge the Nvidia Blackwell chips which are in the range of 4 nanometres) are symbols of how Chinese digital innovations are turbo-charging strategic-military competition.

In combat theatres, software innovations are happening every three weeks, while new hardware is being deployed every three months. The Ministry of Defence, which has hitherto been a platform and weapons factory, will have to metamorphose into a software enterprise.

What India can do

The future of defence is also sovereignty. Beginning now, we can embrace the trinity of AI, autonomy and algorithmic warfare through these sovereign pathways:

- Urgently develop an AI-enabled data analytics platform, in the manner of Delta.
- Create software that can autonomously coordinate drones swarms; identify objects of interest; differentiate between birds, civilian aircraft and combat platforms; and direct shooters to destroy targets.

- Set up a diverse inventory of drones, with a target of five million by 2028.

- Deploy an array of counter-drone systems (such as laser and microwave weapons) with drone-hunting teams. This will help to establish drone-driven, AI-enabled "kill webs" along the LoC and LAC.

- Crowd the LEO (low-Earth orbit) space so that we transit from persistent surveillance to offensive ISR (intelligence, surveillance and reconnaissance).

- The 2027 defence budget must reflect the transition. At least 40% of the Rs 2 lakh-odd crore earmarked for modernisation should be spent on technological solutions.

This is a huge challenge that will require a cultural and structural transformation. Successful adoption, however, will be game changing. It will expand options in crisis situations while enabling India to attain "combat overmatch" with Pakistan and "asymmetric deterrence" with China.



A weekly column decoding AI's new frontiers, how they shape the world and our place in it

- **Key Terms and Explanations**
- **The Strategic Trinity (AI, Military Autonomy, and Algorithmic Warfare):** This conceptual framework represents the convergence of three distinct forces. **Artificial Intelligence (AI)** acts as the cognitive brain; **Military Autonomy** provides the physical execution platforms (like unmanned vehicles) that operate without continuous human intervention; and **Algorithmic Warfare** serves as the mathematical precision engine that binds them together.
- **Digital Kill Web:** Unlike the traditional, linear "kill chain" (Find, Fix, Track, Target, Engage, Assess), a kill web is a decentralized, highly interconnected network. It fuses disparate data inputs from radar, satellites, and even open-source social media into a single, intelligent matrix. If one node of the web is destroyed, the network automatically re-routes data to ensure the target is neutralized.
- **Algorithmic Precision and Machine-Speed Execution:** This refers to the capacity of automated software systems to process complex battlefield variables and execute lethal decisions at a velocity that human cognitive bandwidth simply cannot match. It effectively compresses decision-making timelines from hours to mere fractions of a minute.
- **Asymmetric Deterrence:** A strategic posture where a nation utilizes relatively low-cost, high-tech innovations (such as software platforms, algorithmic networks, and dense drone swarms) to neutralize or offset the massive, capital-intensive conventional military superiority (like massive fleets of tanks or aircraft carriers) possessed by an adversary.
- **Software-Defined Defense:** A paradigm shift where a military's combat edge is determined primarily by continuous software updates rather than slow, legacy hardware manufacturing cycles. In this ecosystem, a weapon platform's capabilities can be fundamentally upgraded every few weeks via code modifications, bypassing multi-year industrial overhauls.
- **Low-Earth Orbit (LEO) Offensive ISR:** The deployment of dense networks of small, agile satellites in lower orbits. This transit moves military operations away from periodic, static reconnaissance toward persistent, unblinking, and aggressive Intelligence, Surveillance, and Reconnaissance (ISR) capabilities.

- **Main Arguments and Substantive Parts**

- The analytical core of **image.png** presents a compelling thesis: modern warfare has arrived at its "Manhattan Project" moment. The battlefield is no longer dominated by the sheer mass of industrial iron, but by the agility, speed, and deployment scale of sophisticated software.
- **The Hyper-Transparent Battlefield and the "Death Zone"**
- The nature of physical territory in conflict zones has been radically altered by data-fusion platforms. Using platforms like Ukraine's *Delta*, which aggregates multi-sensor data inputs from radar to real-time intelligence feeds, the modern front line has become entirely transparent. Along conflict frontiers, this has created literal "death zones"—stretches of territory where any conventional movement (whether infantry, artillery, or armored columns) is instantly detected by surveillance networks and systematically neutralized by low-cost first-person view (FPV) drones within minutes.
- **The Shift to Autonomous Control and Decapitation Capability**
- Operational paradigms are transitioning from traditional human-centric command structures to highly automated systems. This is manifested in two major ways:
- **Strategic Precision:** The capability to generate targeting frameworks at machine speeds, enabling rapid, precise strikes that can dismantle an adversary's leadership infrastructure within a compressed window.
- **Collaborative Aviation:** The rise of autonomous platforms, such as Anduril's *YFQ-44A Fury*, designed to operate independently or alongside crewed fighter aircraft. This marks a massive leap forward in battlefield survivability and mission flexibility.
- **The Divergence of Innovation Timelines**
- A fundamental structural friction now exists between legacy defense procurement and the speed of technological evolution. Software innovations are iterating on a three-week cycle, whereas new hardware deployment requires roughly three months. Consequently, traditional, monolithic defense primes are being outpaced by agile, tech-centric startups. For any modern defense establishment to survive, its ministry of defense must fundamentally transform from a traditional weapons factory manager into a dynamic software enterprise.
- **Geopolitical Competition and Technological Sovereignty**
- The global defense arena is witnessing an intense tech-driven race, characterized by massive cyber capabilities (such as virtual cyber-nukes like *Mythos*) and aggressive semiconductor scaling initiatives. The push by global actors to secure ultra-dense transistor architectures (such as efforts to reach 1.4-nanometer densities to challenge leading-edge chips) underscores that strategic-military competition is now entirely anchored in digital sovereignty. For an emerging power, depending on foreign software and hardware architectures is a critical vulnerability.

- **Historical Evolution of the Issue**
- **Pre-Independence to Early Republic (Conventional Mass):** For decades, defense doctrines were defined by legacy colonial structures. Strategy was heavily land-centric, prioritizing conventional infantry maneuvers, static border defense, and armor strength. Warfare was a test of industrial endurance and physical mass.
- **Late 20th Century (The Revolution in Military Affairs - RMA):** The late 20th century introduced early precision-guided munitions, stand-off weapons, and basic electronic warfare frameworks. This period sowed the seeds for "Network-Centric Warfare," where the goal was to link distinct units via radio and basic data links, though human decision-making remained the primary bottleneck.
- **Early 21st Century (The Information Age Integration):** This era saw the introduction of dedicated space-based assets, satellite communication, and the deployment of early-generation unmanned aerial vehicles (UAVs) used primarily for passive reconnaissance. While data collection grew exponentially, processing still relied on manual human analysis, creating significant intelligence backlogs.
- **The Contemporary Era (The Algorithmic Pivot):** As visualized through the contemporary flashpoints analyzed in **image.png**, the world has moved firmly past network-centric warfare into the era of data-centric and software-driven combat. The sensor-to-shooter loop has been completely decentralized. Algorithms now curate, analyze, and distribute target packages autonomously, turning military force into an enterprise driven by continuous software deployment.
- **Way Forward**
- **1. Developing a Sovereign Data Analytics Architecture**
- India must urgently build its own indigenous, secure multi-sensor data fusion platform—tailored specifically to the distinct terrains of its northern and western theaters. This platform should seamlessly integrate inputs from space assets, ground-based radar, signals intelligence, and border surveillance into a unified, intelligent command net to eliminate dependence on foreign software architectures.
- **2. Mass Induction of Autonomous Systems and Counter-Measures**
- The defense establishment needs to systematically scale its autonomous inventory, aiming for a highly diversified fleet of indigenous drones by 2028. This mass deployment must be coupled with the forward deployment of advanced counter-drone systems (C-UAS)—utilizing directed energy weapons like lasers and microwaves—alongside specialized drone-hunting formations. This will establish a resilient, AI-enabled defensive and offensive network along the LoC and LAC.
- **3. Structural Re-engineering of Capital Defense Outlays**
- The fiscal framework must adapt to these new technological realities. Future defense budgets should structurally mandate that a significant portion—at least **40% of the modernization outlays** (from the Rs 2 lakh-odd crore capital budget)—be dedicated exclusively to procurement in software, AI analytics, autonomous platforms, and digital combat solutions.
- **4. Institutional Transformation of the Defense Ecosystem**
- The Ministry of Defence must actively transition away from traditional, slow-moving bureaucratic procurement paradigms. It needs to reorient itself as an agile, software-centric enterprise. This involves creating fast-track procurement pathways specifically for deep-tech startups, bypassing multi-year legacy trial cycles to field software patches and algorithmic upgrades on a multi-week basis.
- **5. Achieving Low-Earth Orbit (LEO) Space Dominance**
- India should accelerate the launch of dense constellations of small, low-cost satellites in Low-Earth Orbit. Transitioning from periodic, static space reconnaissance to a persistent, unblinking LEO satellite architecture will provide the high-bandwidth, low-latency data backbone required to coordinate autonomous swarms and maintain real-time strategic awareness.

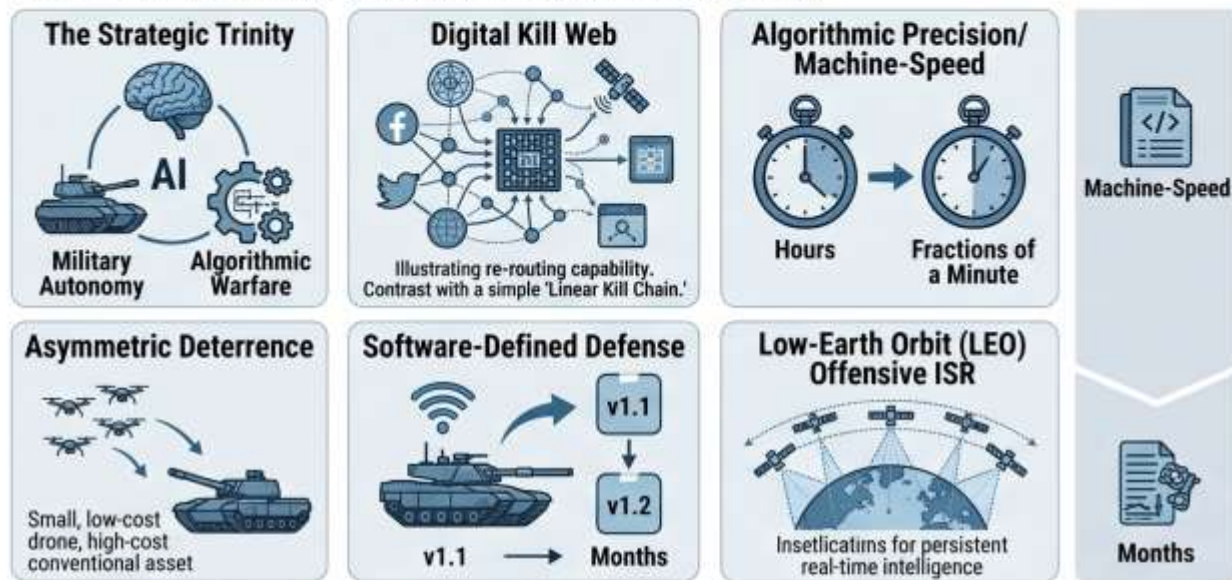
THE ALGORITHMIC WARFARE REVOLUTION: Modern Defense Ecosystems Unpacked

A Strategic Guide for UPSC & APSC Aspirants | AXIA IAS Academy



AXIA
IAS ACADEMY
BUILT ABOVE THE BEST

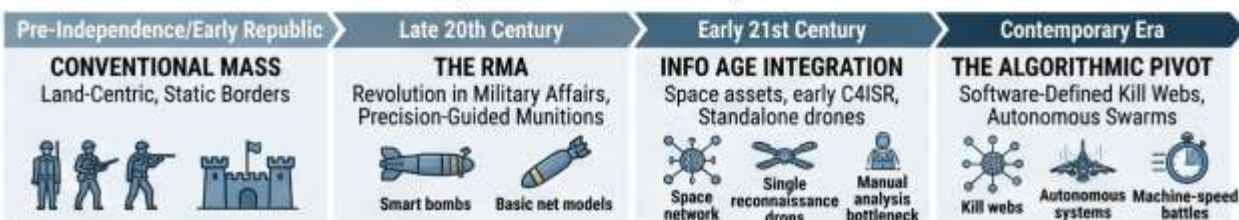
KEY TERMS & EXPLANATIONS (Visual Glossary)



MAIN ARGUMENTS (A Battlefield Evolution Flow)



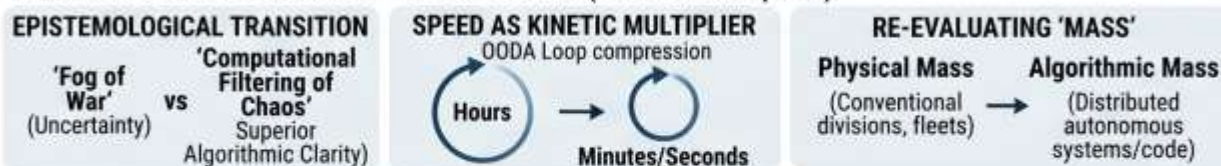
HISTORICAL EVOLUTION (Doctrine Timeline)



LINKAGES (Exam-Ready Connection)



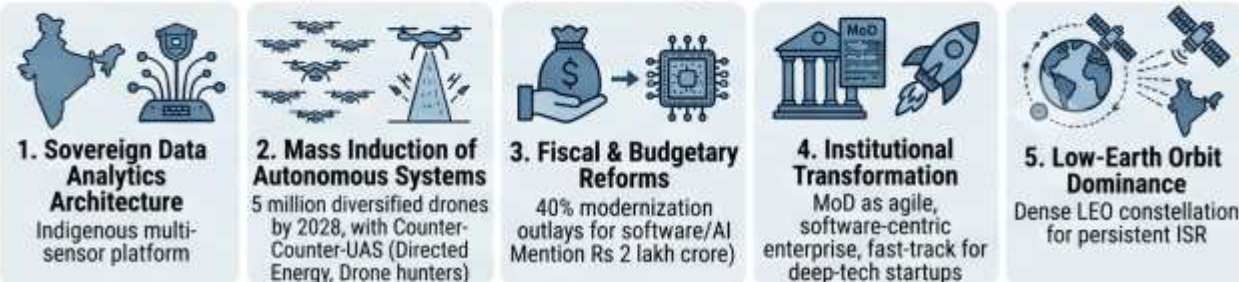
LOGICAL & PHILOSOPHICAL BASE (Core Principles)



MULTIDIMENSIONAL ANALYSIS (Structured Matrix)



WAY FORWARD (India's Sovereign Roadmap)



• LAW

Inside West Bengal laws on property damage, preventive detention

Apurva Vishwanath

New Delhi, July 5

THE WEST Bengal Assembly recently passed two laws that mark the first major legislative move by the state's new BJP government: the West Bengal Public Safety and Control of Anti-social Activities Bill, 2026, and the West Bengal Maintenance of Public Order (Amendment) Bill, 2026.

Both cleared the House after a stormy debate, with the Public Safety Bill passing by 176 votes to 41. Chief Minister Suwendu Adhikari, the state's first BJP Chief Minister who also holds the Home portfolio, defended them as a solution to what he called the "goonda-neeti" and "jungle raj" of 15 years of Trinamool rule.

The two laws follow a familiar template, which began in Uttar Pradesh and is now common in several BJP-ruled states: stringent laws and unusual state powers to recover damage to public property.

What is the new recovery law?

The West Bengal Maintenance of Public Order (Amendment) Bill, 2026 establishes a legal framework for claiming compensation for damage caused to public and private property during incidents like riots or anti-social activities. The proposed law seeks to amend the West Bengal Maintenance of Public Order Act, 1972 to create a money recovery mechanism for property destroyed during riots, arson, vandalism and protests.

How does the law operate?

The Bill follows the Uttar Pradesh format, where a 2020 order by district magistrates issued notices to individuals to recover the entire cost of damage to public property as assessed by the state government.

West Bengal's proposed law sets up a "Claims Commission" headed by a bureaucrat, an officer of at least Additional District Magistrate rank and armed with the powers of a civil court. After damage occurs, the District Magistrate or Police Commissioner must file a claim petition for losses to public property, while owners of damaged private property may file their own.

The Commission applies strict liability once a link between the incident and the damage is shown, can fix liability not only on those who caused the damage but on those who instigated, financed or harboured them, and may award "exemplary damages" of up to twice the compensation.

Compensation cannot fall below the property's market value, and unpaid amounts are recovered as arrears of land revenue, meaning property can be attached and auctioned. Crucially, every award is final, with no appeal to any court, and civil courts are barred from the subject matter.

After a Supreme Court rap, the UP government withdrew the Uttar Pradesh Recovery of Damages to Public and Private Property Act, 2020. In 2022, it enacted a new law, bringing in some independent

Stringent provisions

- After damage occurs, the District Magistrate or Police Commissioner must file a claim petition for losses to public property, while owners of damaged private property may file their own.

- The Commission applies strict liability once a link between the incident and the damage is shown, and can fix liability not only on those who caused the damage but on those who instigated, financed or harboured them.

- The proposed preventive detention law allows detention that cannot exceed 12 months, and also externment for up to a year.

former judges in the Claims Commission. Under the current law in UP, the tribunal is headed by a retired district judge. The new law is also under challenge before the SC.

The UP law grew directly out of the anti-CAA protests of December 2019.

The Yogi Adityanath government put up roadside hoardings naming and shaming those it accused of vandalism; the Allahabad High Court ordered the posters removed, and the Supreme Court observed that there was then no law to support the action. UP responded by promulgating an ordinance, later passed as an Act, setting up claims tribunals whose decisions could not be challenged in court.

In February 2022, the Supreme Court forced UP to withdraw 274 recovery notices and refund the money, holding that the State had acted as "complainant, adjudicator and prosecutor" in attaching the accused's properties, though it left the government free to start afresh through the statutory tribunal.

What is West Bengal's new preventive-detention law?

The Public Safety Bill is a standalone preventive detention statute aimed at "goondas" and "anti-social activities." Both terms are defined expansively: a *goonda* is defined as a person who is "generally reputed to be desperate and dangerous to the community" or is a "Habitual Offender."

An "anti-social activity" covers conduct that directly or indirectly causes "alarm or

insecurity among the public, danger to life or property, disturbance of public order, unlawful dispossession, or illegal mining, quarrying, sand or forest activity that drains the public exchequer."

West Bengal already has a preventive detention law dating back to 1970s. The present one is wider in its ambit.

Goonda laws exist in several states, most notably in Gujarat, as the Prevention of Anti-Social Activities Act, 1985. The Bharatiya Nyaya Sanhita also has provisions to deal with organised crime. Preventive detention is permitted under Article 22 of the Constitution with certain safeguards. Such issues are legislated under "public order," which is a state subject.

How does the preventive detention law operate?

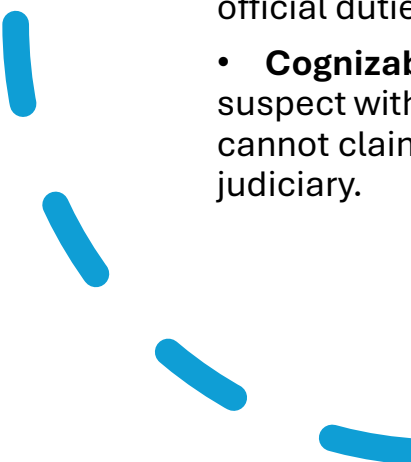
The state government, or a district magistrate or police commissioner, once notified, may order a person detained to prevent such anti-social activity. Ordinarily, the person must have a conviction in the preceding seven years, or at least three separate charge-sheets.

Apart from a detention that cannot exceed 12 months, the proposed law allows externment, which entails removing a person from an area for up to a year.

It also allows for search and seizure, punishes the harbouring of a detained or externed person, grants officials good-faith immunity, and makes offences cognizable and non-bailable.



• **Key Terms and Explanations**

- **Preventive Detention:** The incarceration of an individual without a formal trial or conviction, based purely on the executive's apprehension that the person may commit an offense or disrupt public order in the future.
 - **Strict Liability:** A legal doctrine under which a person or entity is held legally responsible for the consequences of an action, regardless of their fault, negligence, or criminal intent. Once the causal link between the person's association and the damage is established, liability is absolute.
 - **Claims Commission:** A quasi-judicial administrative body established by the executive to assess financial losses caused during instances of public disorder, riots, or vandalism. It acts as the primary authority to determine the quantum of compensation and fix liability on individuals.
 - **Externment:** A legal mechanism that permits law enforcement authorities to banish or remove an individual from a specific geographic area (such as a district or state) for a specified duration to maintain public peace.
 - **Arrears of Land Revenue:** A stringent recovery mechanism where outstanding debts owed to the government are recovered using the same aggressive legal powers applied to tax defaulters. This grants the state the immediate power to attach (seize) and auction the debtor's movable and immovable properties without traditional civil court litigation.
 - **Good-Faith Immunity (Sovereign Immunity Clauses):** Statutory protection embedded within legislation that shields public officials and law enforcement personnel from civil or criminal lawsuits for actions taken during the execution of their official duties, provided the actions were done in "good faith."
 - **Cognizable and Non-Bailable Offences:** A category of serious crimes where police officers have the authority to arrest a suspect without a warrant from a magistrate and start an investigation immediately. "Non-bailable" signifies that the accused cannot claim bail as a matter of right from the police station; instead, the granting of bail is at the absolute discretion of the judiciary.
- 

- **Main Arguments and Substantive Parts**
 - The core theme centers on state governments passing increasingly stringent laws to curb public disorder, protect state property, and neutralize perceived anti-social elements. This creates a structural conflict between administrative efficacy and constitutional due process.
- **Mechanisms of the Asset Recovery Framework**
 - The statutory architecture governing property damage shifts the burden of restitution directly onto citizens through executive-led processes:
 - **Executive Concentration of Adjudication:** The framework mandates the creation of an executive-led Claims Commission, often headed by administrative bureaucrats (such as Additional District Magistrates), bypassing traditional civil courts.
 - **Bar on Judicial Remedy:** A critical feature of these state-level legislations is the complete bar on the jurisdiction of civil courts. The administrative awards are deemed final, significantly restricting the immediate avenues for judicial review available to affected citizens.
 - **Vicarious and Financial Penalization:** The law expands the net of liability beyond the actual perpetrators of vandalism to encompass those who instigated, financed, or harboured them. Furthermore, it introduces punitive measures by allowing "exemplary damages" that can reach up to twice the actual value of the property destroyed.
- **The Expansion of Preventive Detention and Externment**
 - The legal architecture introduces standalone statutes aimed at neutralizing "goondas" and "anti-social activities" with wide discretionary remits:
 - **Expansive Definitions:** The statutes define a "goonda" through subjective reputation, identifying them as someone "generally reputed to be desperate and dangerous to the community." Anti-social activities are expanded beyond physical violence to include environmental and economic offenses, such as illegal sand mining, quarrying, and logging that drain the public exchequer.
 - **Enhanced Executive Discretion:** The state allows District Magistrates and Police Commissioners to order preventive detention for up to 12 months, alongside provisions for externment for an equal duration, based on subjective administrative satisfaction rather than judicial conviction.
- **Structural Fault Lines and Counterarguments**
 - The primary critique against this model focuses on the dilution of institutional checks and balances:
 - **Violation of Natural Justice:** When a bureaucrat serves as the head of the Claims Commission, the state effectively assumes the roles of the complainant, the investigator, and the adjudicator simultaneously. This runs contrary to the foundational legal maxim *Nemo iudex in causa sua* (no one should be a judge in their own cause).
 - **Deviation from Supreme Court Precedents:** In 2022, the Supreme Court directed states like Uttar Pradesh to withdraw arbitrary recovery notices that lacked independent judicial oversight. While some states responded by involving retired judges, newer legislative templates that place bureaucrats at the helm of these commissions risk repeating these structural flaws.

- **Historical Evolution of the Issue**
- **The Colonial Precedent (Pre-1947)**
 - The structural roots of preventive detention and administrative penalties trace back to British rule. Statutes like the **Bengal Suppression of Terrorist Outrages Act** and the **Rowlatt Act of 1919** sought to bypass ordinary criminal courts to suppress nationalist dissent. The colonial administration prioritized public order over individual civil liberties, creating a precedent of empowering executive magistrates with sweeping detention and property containment capabilities.
- **The Constituent Assembly and Early Independence (1947–1950s)**
 - During the framing of the Constitution, the inclusion of preventive detention generated intense debate. Many members argued that detention without trial was an insult to the freedom struggle. However, Dr. B.R. Ambedkar defended it as a "necessary evil" required to safeguard the infant republic against subversion, communal riots, and initial insurgencies. This pragmatism led to the inclusion of **Article 22**, which constitutionally permitted preventive detention while embedding specific procedural safeguards. The **Preventive Detention Act of 1950** became one of the earliest pieces of legislation passed by independent India's Parliament.
- **The Era of Draconian Central Statutes (1970s–1980s)**
 - As internal security challenges grew, the state introduced more stringent laws. The **Maintenance of Internal Security Act (MISA) of 1971** became a symbol of state overreach during the Emergency. Following its repeal, the **National Security Act (NSA) of 1980** re-established a central preventive detention framework. To combat widespread infrastructure damage during public agitations, Parliament enacted the **Prevention of Damage to Public Property Act, 1984**. However, this federal law relied on ordinary criminal courts, which often faced long delays in securing convictions or restitution.
- **The Judicial Blueprint for Damage Recovery (2009)**
 - Frustrated by the weakness of the 1984 Act, the Supreme Court took suo motu cognisance in ***Destruction of Public and Private Properties v. State of Andhra Pradesh (2009)***. The apex court appointed two high-level committees:
 - **The K.T. Thomas Committee:** Recommended shifting the burden of proof onto the accused to demonstrate they did not destroy property during a protest.
 - **The Fali Nariman Committee:** Formulated principles of strict liability, asserting that protest organizers must be held financially accountable for resultant damages.
 - These guidelines served as the judicial foundation that states later used to draft their own explicit legislation.
- **The Rise of Executive-Led State Models (2020–2026)**
 - Following the anti-CAA protests of December 2019, the Uttar Pradesh government issued administrative orders, followed by the **Uttar Pradesh Recovery of Damages to Public and Private Property Act, 2020**. This shifted the recovery process away from slow-moving criminal courts toward fast-track, executive-run Claims Commissions. Despite a Supreme Court reprimand in 2022 regarding the lack of judicial neutrality, this model expanded. By 2026, states across different political administrations adopted similar templates, combining strict property recovery mechanisms with expanded, state-level "Goonda Acts."

- **Way Forward**
- **1. Restoring Judicial Independence in Claims Tribunals**
 - State governments should align their recovery frameworks with the Supreme Court's directives by ensuring that Claims Commissions are headed by sitting or retired judicial officers (such as retired District Judges or High Court Justices) rather than active executive bureaucrats. This structural separation maintains the neutrality of the tribunal, ensuring that the body determining financial liability is independent of the executive branch that filed the complaint.
- **2. Standardizing Definitions and Reducing Broad Ambiguity**
 - To prevent potential misuse, statutory terms like "goonda," "anti-social element," or "instigator" must be clearly defined using objective, evidence-based legal criteria rather than subjective reputations. Economic and environmental offenses, such as illegal sand mining, should be prosecuted through specialized environmental laws (like the Mines and Minerals Development and Regulation Act) rather than being bundled into broad public order statutes that allow preventive detention without trial.
- **3. Guaranteeing Proportionality and a Clear Right to Appeal**
 - Asset recovery laws should include a clear, statutory process for appeals within the formal judicial system. Before the state attaches a citizen's property as land revenue arrears, the affected individual should have a guaranteed right to seek a stay and a full review before a designated judicial body or the High Court. Punitive or "exemplary" damages should be used cautiously, ensuring the fine matches the verified financial loss caused directly by the individual's actions.
- **4. Modernizing Law Enforcement and Crowd Management**
 - Instead of relying heavily on broad strict liability laws that penalize entire groups, state police forces should improve their tactical capabilities. Investing in high-definition drone surveillance, body-worn cameras, and advanced forensic video analysis allows law enforcement to identify and prosecute actual vandals. This reduces the need for sweeping administrative measures and ensures that punishments target the specific perpetrators of crime.
- **UPSC CSE Mains Questions**
- **GS Paper 2 (2022)**
 - "Discuss the constitutional safeguards available to a person preventively detained under the law in India. To what extent have these safeguards been effective in checking the arbitrary use of such laws?"
- **GS Paper 2 (2021)**
 - "The right to peaceful protest is an integral part of democratic governance, but it cannot degenerate into vandalism and destruction of public property. Analyze the legal mechanisms required to balance these competing interests in India."



COMPREHENSIVE ANALYSIS: WEST BENGAL'S NEW PUBLIC ORDER & PREVENTIVE DETENTION LAWS (UPSC/APSC EXAM PREPARATION)

AXIA
IAS ACADEMY

Preventive Detention
Goondas, Organized Crime, Sand, Mining

Strict Liability
Claims form magnement, orquasi-judicial hanbouress

KEY TERMS DEFINED

Claims Commission
Quasi-Judicial Body to neese assessment

Externment
Externment or Arrears of Land Revenue

Sovereign Immunity
Sovereign tomonornoty or honor confidence

HISTORICAL EVOLUTION



MULTIDIMENSIONAL ANALYSIS

Social
Chilling effect on protest, impact on marginalized

Political
Use against opposition, Competitive Populism

International
ICCPR Standards

Legal/Constitutional
Article 14, 21, 22 violations, separation of powers

Ethical
Collective vs. individual justice, administrative administral punishment

Economic
Protecting infrastructure, investor confidence

NEW WEST BENGAL LEGAL FRAMEWORK (2026)

PROPERTY DAMAGE RECOVERY

Maintenance of Public Order (Amendment) Bill, 2026



- **Strict Liability:** Liability on instigators, financiers, harbourers
- **Executive-led inuloned process**
- **Bar on Civil Soucers**
- **Finality of Award**
- **Executive-led process**
- **Bar on Civil Courts**
- **Finality of Award**

PREVENTIVE DETENTION

Public Safety and Control of Anti-Social Activities Bill, 2026



- **Expansive Definition of "Goonda"** (Repin-based)
- **Anti-social Activity** (broadly defined)
- **Externment from areas**
- **Search & Seizure**
- **Good-faith immunity for officials**

MULTIDIMENSIONAL ANALYSIS

Social
Chilling effect on protest, impact on marginalized

Legal/Constitutional
Article 14, 21, 22 violations, and separation of powers

International
ICCPR Standards

Political
Use against opposition, Competitive Populism

Ethical
Collective vs. individual justice, administrative punishment

Economic
Protecting infrastructure, investor confidence

UPSC & APSC SYLLABUS LINKAGES

- GS 2** Polity & Constitution, Statutory Bodies, separation of powers
Judicial Review, Due Process
- GS 3** Internal Security, organized crime, Comrotten government, coonsel of gartaway, Trial, Judicial famunr, Due Process
- GS 4** Ethics in governance
Ethics in s. Governance

WAY FORWARD & REFORMS Solutions

- **Balanced approach**
- **Judicial oversight in Claim Commissions**
- **Defined statutory terms**
- **Right to Appeal**
- **Preventive Policing, etc.**

SAMPLE PYQs

(Previous Years' Questions)

“Evaluate the constitutional safeguards for persons preventively detained in India.”
(UPSC Mains GS2, 2022)

Discuss the legal mechanisms to balance the right to protest and prevention of vandalism.
(UPSC Mains GS2, 2021)

• SPORT

Cape Verde: The tiny African nation that scripted 2026 WC's underdog story

Abhinav Chakraborty
New Delhi, July 5

"SIZE DEFINES nothing in football," Argentina's talisman and arguably the greatest footballer on the planet, Lionel Messi, would probably agree with this assessment by Pedro "Bubista" Brito, the head coach of what has become the 2026 FIFA World Cup's most celebrated underdog.

When Cape Verde managed to hold Argentina to a 1-1 scoreline at the end of 90 minutes in their Round of 32 knockout match late Friday, there was a real possibility that the tiny African island nation could prevail, having already denied victory to two former world champions — Spain and Uruguay — in the group stage.

That was not to be, but the result ensured that the Blue Sharks — the nickname

Cape Verde's football team goes by — had etched its place on the world football map.

Archipelago in the Atlantic

The Cape Verde Islands, officially the Republic of Cabo Verde, is an archipelago of 10 islands — nine of them inhabited — and various islets located some 450 km off the west coast of Africa in the Atlantic Ocean.

The islands were uninhabited until the Portuguese discovered them in 1456. Over the next few years, Portuguese settlers arrived and brought African slaves with them to work on plantations. By the 16th century, it became a hub for the transatlantic slave trade. This history meant that Cape Verdeans are of mixed African and European origin. It shows in the languages spoken there: while Portuguese is the official language, most local people also speak Crioulo,



a Creole dialect based on archaic Portuguese but influenced by other languages. The rise of anti-colonialist nationalism



Argentina's Lionel Messi (R) with Cape Verde goalkeeper Vozinha after the World Cup match on Friday. *AP*

across Asia and Africa in the 20th century did not bypass the island nation. To suppress calls for independence, Portugal

changed Cape Verde's status to an overseas province in 1951. That failed to quell growing unrest, and on July 5, 1975, Cape Verde's newly elected National Assembly received the instruments of independence from Portugal. After almost a decade-and-a-half of one-party rule, the country conducted a multi-party general election in 1991.

Since then, Cape Verde has been a stable electoral democracy.

World Cup exploits

The Blue Sharks joined FIFA only in 1965. But that they managed to qualify for the 2026 World Cup with a stellar record (7 wins, 2 draws and 1 loss in 10 games) and their subsequent performance in the tournament seem to have vindicated FIFA's decision to go in for an expanded 48-team format and enable smaller countries to

shine on the global stage.

Cape Verde are only the third smallest nation (by population) in the history of the World Cup — after Iceland (which played in 2018) and fellow 2026 debutants Curacao. The team derives strength from its compact organisation and tactical discipline.

That a country with a resident population of just over 500,000 has managed such a feat is down to history: unfavourable climate and few natural resources forced natives to emigrate abroad over the years, with over one million people of Cape Verdean ancestry presently living in the US, Europe, and even African countries such as Senegal. This diaspora came to Cape Verde's service: more than half (14) of the 26-member squad came from these communities, with those selected hailing from France, Portugal, the Netherlands, and Ireland.

- **Key Terms and Explanations**

- **Archipelago:** A geographical term denoting a chain, cluster, or collection of islands scattered across a large body of water. In a geopolitical context, archipelagic states face unique governance, connectivity, and resource distribution challenges. For instance, Cabo Verde operates as a 10-island Atlantic archipelago, similar to India's Andaman and Nicobar or Lakshadweep islands, where maritime boundaries define national identity.
- **Transatlantic Slave Trade:** A historical global trade network spanning from the 16th to the 19th centuries. It involved the forced migration of millions of Africans across the Atlantic Ocean to European colonies. Islands located off the African coast frequently served as strategic maritime provisioning hubs and human entrepôts, fundamentally altering local demographics and ancestral lineages.
- **Creole Culture and Crioulo Dialect:** A linguistic and sociological phenomenon where distinct cultures and languages blend to create entirely new systems. It typically emerges from prolonged colonial contact between European settlers and African populations. The resulting syncretic identity manifests in local dialects that fuse archaic European structures with African linguistic influences.
- **Diaspora Diplomacy and Transnationalism:** The strategic engagement of a country's overseas population to advance its domestic development, cultural footprint, and foreign policy objectives. When a nation's external population exceeds its domestic registry, the diaspora functions as a borderless extension of the state, transferring remittance capital, elite skills, and global prestige back home.
- **Small Island Developing States (SIDS):** A distinct group of developing countries facing specific social, economic, and environmental vulnerabilities. These include narrow resource bases, small domestic markets, high costs for public infrastructure, and extreme susceptibility to climate change and natural disasters, necessitating unique models of socio-economic resilience.
- **Soft Power:** A concept coined by Joseph Nye, defining a nation's capacity to influence global actors and shape international preferences through cultural appeal, political values, and foreign policies, rather than the coercive military or economic might associated with "hard power."

- **Main Arguments and Substantive Parts**

- The phenomenon of a demographically small, resource-constrained nation competing equitably on the global stage highlights several critical insights into how globalization, institutional design, and human mobility are reshaping traditional geopolitical hierarchies.

- **The Illusion of Size and Geopolitical Determinism**

- A central premise of international relations has long been that a state's capacity, influence, and global footprint are directly proportional to its landmass, population, and material wealth. However, modern global dynamics demonstrate that structural size does not strictly dictate capability. Through institutional discipline, compact organization, and tactical precision, micro-states can neutralize the sheer scale advantage held by larger global powers, effectively challenging the realist notion of structural determinism.

- **Institutional Expansion as a Tool for Global Democratization**

- The democratization of international platforms—whether political, economic, or cultural—is heavily dependent on the structural architecture of global governing bodies. When international institutions expand their operational formats to include a wider array of participants, it actively breaks down historical monopolies. This systemic inclusivity provides subaltern and historically marginalized actors with a rare structural window to perform, validate their sovereignty, and achieve visibility on a truly global scale.

- **The Diaspora as a Strategic Factor of Production**

- For nations severely constrained by unfavorable climates, persistent droughts, and an absence of natural resources, outward migration has historically served as a vital demographic safety valve. However, this historical liability can be transformed into a modern asset. A well-integrated, transnational diaspora community represents a vital reservoir of human capital, international exposure, and specialized skills that can be systematically mobilized to substitute for domestic resource deficits.

- **Historical Evolution of the Issue**
- **1456: The Era of Maritime Discovery:** Portuguese navigators chart the completely uninhabited Atlantic archipelago. This initial phase marks the entry of these isolated islands into the expanding web of early European maritime exploration and colonial settlement.
- **16th to 19th Century: The Slave Trade Hub:** The islands are rapidly transformed into a vital clearinghouse and logistical node for the transatlantic slave trade. Portuguese settlers introduce enslaved labor to work on plantations, initiating a profound, centuries-long demographic and cultural synthesis between European and African populations.
- **1951: Administrative Maneuvering:** As anti-colonial nationalisms gain momentum across Asia and Africa in the mid-20th century, the colonial power unilaterally reclassifies the islands' status to an "overseas province." This legal maneuvering is an attempt to suppress growing local demands for self-determination and preserve imperial control.
- **July 5, 1975: Liberation and Sovereign Statehood:** Following protracted political and armed anti-colonial resistance across Portuguese Africa, the newly elected National Assembly receives formal instruments of independence. This ends over five centuries of colonial administration and establishes a sovereign republic.
- **1975–1991: Post-Colonial Consolidation:** Reflecting broader continental trends, the young nation navigates its initial fifteen years of independence under a centralized, single-party governance model, focusing primarily on basic state-building and national integration amid severe economic scarcity.
- **1991 to Present: Democratic Institutionalization:** The country transitions smoothly to a multi-party general election system, initiating an era of stable electoral democracy. Over the subsequent decades, this political stability allows the state to focus on international integration, joining global organizations, and leveraging transnational networks to project soft power.
- **Way Forward**
- **Institutional Expansion and Continued Democratization**
- Global governing bodies across political, economic, and cultural spheres must resist the temptation to contract or consolidate power within an exclusive oligarchy of nations. Maintaining and expanding inclusive operational formats is essential. True merit and global diversity can only emerge when structural barriers are lowered, ensuring that historical status does not dictate future opportunities.
- **Institutionalizing "Brain Gain" Frameworks**
- Developing countries and resource-constrained states should transition from viewing migration through the negative lens of "brain drain" to a proactive framework of "brain circulation." Governments must establish formal, legally secure pathways—such as dual-citizenship provisions, diaspora investment bonds, and specialized talent-return programs—to systematically channel the expertise and capital of their overseas populations into domestic institutional growth.

UNDERSTANDING SMALL-NATION DYNAMICS: LEVERAGING AGILITY & SOFT POWER (CASE STUDY: CABO VERDE)

KEY CONCEPTS & DEFINITIONS



Archipelago

Cluster of islands with maritime lanes to strategic air corridors



Creole Culture

Blending cultural symbols, music, food dishes, and food dishes, syncretic identity



Diaspora Diplomacy

Smaller landmass with a global network of people and capital flow, strategic engagement



SIDS

Small Island Developing States, Rising island with a vulnerable anchor, narrow resources & climate exposure



Soft Power

Not a tank or money, but cultural appeal + cultural appeal and values

LINKAGES: NCERT & UPSC SYLLABUS



NCERT Politics

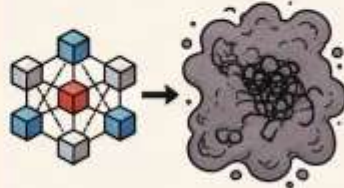
- Chapter Politics
- Chapter Geography
- Chapter 1
- Chapter History
- Chapter 2

UPSC

- GS-1
- GS-1
- GS-2
- GS-4
- Essay/Optional

MAIN ARGUMENTS: RETHINKING GEOPOLITICAL POWER

The Illusion of Size



Institutional discipline and compact organization

Institutional Expansion



Global democratization and lower barriers

The Diaspora as a Strategic Factor of Production



Converting demographic liability into a modern asset

HISTORICAL EVOLUTION OF THE ISSUE



1456

Caravelle sailing to a bare island

16th-19th C

Slave Trade Hub
fortress breaking

1951

Overseas Province
Colonial official

July 5, 1975

Liberation Assembly
Independence

1975-1991

Post-Colonial Consolidation
Single party

1991 to Present

Democratic Institutionalization
Stable governance
international integration

MULTIDIMENSIONAL ANALYSIS

SOCIAL



POLITICAL



LEGAL



ETHICAL



ETHICAL



Monument of remembrance

INTERNATIONAL



Football turning into a flourishing tree

ECONOMIC



Remittances
Developmental matrix

WAY FORWARD: BUILDING NICHE EXCELLENCE

Brain Gain



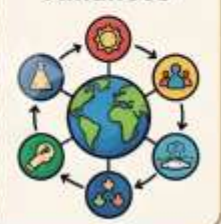
Sports

Niche Soft Power (Targeted areas like targeted in areas)



Ecotourism
Digital Governance

Collective SIDS Alliances



Meta told to disable 'child sex abuse' content

Instagram asked to provide explanation in seven days; 'action' to be decided after reviewing reply

IT Act, 2000, penalises obscene material; the IT Rules, 2021, enforce obligations on social media

Social media firms in breach may lose exemption under the law for third-party information or data

The Hindu Bureau
NEW DELHI

The Ministry of Electronics and Information Technology has directed Meta, the parent body of several social media platforms, to disable advertisements and content promoting and facilitating access to child sexual exploitative and abuse material (CSEAM) on Instagram, according to government sources.

It has also sought an explanation on the issue.

"The Ministry has ordered Instagram to disable such advertisements. The government has also demanded a detailed explanation on the action taken and other relevant information within seven days. A notice in this regard was

issued on Saturday," said a source.

It is learnt that the notice was sent following a directive from IT Minister Ashwini Vaishnaw to senior Ministry officials. Further course of action will be decided after reviewing the reply, said the source.

Policy and standards

The move came a day after the BBC Eye published its investigation revealing that Instagram had allegedly been running "paid adverts promoting child sexual abuse material in India" and that such advertisements linked users to channels on Telegram, where they could buy the material.

Meta's policy on advertisements, meanwhile,



The government has demanded a detailed explanation from the corporation on actions taken against the advertisements and other relevant information within seven days

Instagram is alleged to have shown paid advertisements with child sexual abuse material which directed users to Telegram channels where such content was reportedly on sale



Meta's advertisement policy prohibits content with sexually suggestive activities

Meta is in a 'constant battle with criminals who hide among our 3.5 billion users and try to evade detection', a spokesperson said

The notice comes amid allegations that Meta's algorithm had been promoting videos with child sexual abuse material on its platforms

stipulate that their content must comply with community standards and must not have imagery depicting nudity and activities that are sexual or sexually suggestive.

In response to a query on the notice, a Meta spo-

kesperson pointed to an earlier statement shared after the BBC report came out, where Meta said it had a "zero tolerance policy for soliciting or sharing CSEAM" and added that while the company deployed technology to de-

tect such advertisements, it was in a "constant battle with criminals who hide among 3.5 billion users and try to evade our detection".

According to Meta's policy, advertisements must "comply with the community standards on adult nudity and sexual activity. Ads must not contain imagery depicting nudity, sexual activity, depictions of people in explicit or sexually suggestive positions, or activities that are sexually suggestive".

Rules and punishments

The policy sets additional restrictions beyond the Community Standard on Adult Nudity and Sexual Activity, says its sub-site.

According to a written reply by Mr. Vaishnaw to

the Lok Sabha last year, the IT Act, 2000 provides punishment for publishing or transmitting obscene material and material containing sexually explicit acts in electronic form.

The Act also provides for stringent punishment for publishing or transmitting material depicting children in sexually explicit acts in electronic form.

Besides, the IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 enforces obligations on the intermediaries, including social media intermediaries, to observe due diligence.

If they fail to observe it, they lose the exemption under law for third-party information or data or communication links hosted by them. The intermedi-

aries are required to remove any such content within 24 hours.

The Ministry of Home Affairs operates the National Cyber Crime Reporting Portal to receive complaints against cybercrimes, with special focus on cybercrimes against children.

It has also set up the Indian Cyber Crime Coordination Centre (I4C) for such crimes.

The government has, from time to time, blocked websites containing CSAM, based on lists from Interpol received through the Central Bureau of Investigation. It has issued an order to Internet Service Providers (ISPs), directing them to block access to such web pages or websites, said the reply.

- **Key Terms and Explanations**

- **Child Sexual Exploitative and Abuse Material (CSEAM):** This refers to any digital content—including images, videos, audio clips, or text—that depicts, facilitates, or promotes the sexual exploitation or abuse of a minor. Unlike generalized adult content, the creation, possession, and transmission of CSEAM is universally recognized as a severe criminal offense rather than a freedom of expression issue.

- **Safe Harbor Protection (Section 79 of the IT Act, 2000):** A legal immunity granted to digital intermediaries (like social media platforms, internet service providers, and search engines). It dictates that these platforms cannot be held criminally or civilly liable for third-party data or communication hosted by them, provided they act merely as conduits and comply with state-mandated due diligence.

- **Social Media Intermediaries (SMIs) & Significant Social Media Intermediaries (SSMIs):** Under Indian law, an intermediary is an entity that receives, stores, or transmits electronic records on behalf of others. Under the IT Rules 2021, platforms with a user base crossing a specific threshold (5 million users) are classified as SSMIs and are subjected to far more stringent compliance structures, such as appointing statutory resident grievance officers.

- **Due Diligence Obligations:** The mandatory legal and operational protocols that digital platforms must execute to retain their Safe Harbor status. This includes proactively monitoring prohibited content, publishing clear terms of service, setting up grievance redressal mechanisms, and adhering to strict timelines for content takedowns.

- **Indian Cyber Crime Coordination Centre (I4C):** Established under the Ministry of Home Affairs (MHA), this nodal agency provides a comprehensive framework for law enforcement agencies to combat cybercrimes in a coordinated manner. It houses specialized units for cyber forensics, research, and tracking ecosystem threats, with a dedicated focus on cybercrimes targeting women and children.

- **National Cyber Crime Reporting Portal:** A citizen-centric online initiative by the Government of India that enables victims and whistleblowers to report cybercrimes centrally. It acts as a critical clearinghouse, automatically routing complaints to the relevant State or Union Territory law enforcement agencies for immediate penal action.



- **Main Arguments and Substantive Parts**

- The intersection of big tech algorithms and child safety brings to light critical systemic vulnerabilities and regulatory friction. The core arguments surrounding this issue highlight a deep systemic conflict:

- **The Algorithmic Escalation and Weaponization**

- The primary challenge rests on the realization that corporate advertising algorithms are being actively weaponized by criminal networks. Investigations reveal that systemic loopholes permit the placement of paid advertisements that act as gateways, directing users to encrypted third-party platforms like Telegram where illicit networks operate. This shifts the debate from passive hosting to active algorithmic facilitation, challenging the traditional definition of an intermediary as a neutral conduit.

- **The Limits of Corporate Self-Regulation**

- Tech conglomerates consistently advocate for the defense of operational scale, maintaining that monitoring billions of global users involves a constant technological battle against sophisticated criminals who constantly adapt their tactics to evade detection systems. However, regulatory bodies argue that corporate community standards and "zero-tolerance" statements are insufficient when automated systems fail to intercept paid, monetized promotions of explicit content.

- **The Regulatory Ultimatum and Sovereign Intervention**

- The state's perspective emphasizes that national sovereignty and human rights take absolute precedence over corporate operational challenges. The core argument here is that the state cannot remain a passive spectator when child safety is compromised. Consequently, regulatory interventions rely on statutory ultimatums: digital intermediaries must either enforce flawless, proactive due diligence or face the immediate revocation of their Safe Harbor exemptions. By threatening to hold corporate executives criminally liable for third-party data under the IT Rules 2021, the state aims to compel technology firms to shift their priorities from maximizing user engagement to ensuring absolute platform safety.

- **Historical Evolution of the Issue**
- **Phase 1: The Pre-2000 Regulatory Vacuum**
 - Before the turn of the century, India lacked a specialized legislative framework for the digital ecosystem. Cybercrimes and the dissemination of obscene material were awkwardly prosecuted under the traditional Indian Penal Code (IPC), specifically Section 292, which was fundamentally designed for physical print media and proved grossly inadequate for the borderless, rapid nature of the internet.
- **Phase 2: The Enactment of the Information Technology Act, 2000**
 - The dawn of the internet era led to the promulgation of the IT Act, 2000. While it laid the bedrock for e-commerce and digital signatures, it initially adopted a highly liberal approach toward intermediaries. Section 79 introduced the concept of "Safe Harbor," heavily echoing western regulatory philosophies like Section 230 of the US Communications Decency Act, which shielded platforms from liability to foster digital innovation.
- **Phase 3: The 2008 Legislative Tightening**
 - Recognizing the rapid proliferation of cybercrimes, the Parliament passed the IT (Amendment) Act, 2008. This milestone introduced specific punitive sections: Section 67A (penalizing the transmission of sexually explicit content) and Section 67B. Section 67B explicitly criminalized the publishing, transmission, or browsing of material depicting children in sexually explicit acts in electronic form, establishing stringent imprisonment and financial penalties for first and subsequent offenses.
- **Phase 4: Integration with the POCSO Act, 2012**
 - With the enactment of the Protection of Children from Sexual Offences (POCSO) Act in 2012, India's criminal justice system adopted a child-centric approach. The legal framework began recognizing that digital exploitation had direct, severe real-world impacts on children, forcing cyber laws to align with the stringent evidentiary and reporting mandates of the POCSO ecosystem.
- **Phase 5: The Shift to Active Compliance via IT Rules, 2021**
 - The turning point in intermediary liability arrived with the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021. This framework fundamentally shifted the safe harbor doctrine from an unconditional right to a conditional privilege. It mandated a strict 24-hour takedown window for explicit content and child abuse material upon receiving a complaint, stripping platforms of immunity if they failed to maintain robust due diligence.
- **Phase 6: The Modern Era of Algorithmic Accountability**
 - Today, the regulatory landscape faces a complex challenge: the weaponization of automated recommendation systems and paid advertising networks. The state has moved past mere post-facto content removal, actively issuing immediate directives to major technology firms, demanding comprehensive algorithmic transparency and imposing strict accountability measures.

COMPREHENSIVE ANALYSIS: INTERMEDIARY LIABILITY & CHILD SAFETY REGULATION IN INDIA

1 KEY CONCEPTS & DEFINITIONS



2 GOVERNMENT RESPONSE & MANDATES



3 LEGAL FRAMEWORK EVOLUTION



4 ANALYSIS & WAY FORWARD



Modi hails Syama Prasad Mookerjee as 'champion of national unity'

The Hindu Bureau
NEW DELHI

Prime Minister Narendra Modi on Monday said the life of Syama Prasad Mookerjee, founder of the Bharatiya Jana Sangh, exemplified unwavering nationalism, public service, and dedication to the country's unity and development, adding that his ideals remain relevant even today.

Paying tribute to Mookerjee on his 125th birth anniversary in an op-ed article titled "A life devoted to India's unity and progress", Mr. Modi lauded him as a leader who combined intellectual achievement and integrity.

Quoting Mookerjee's call to the youth to do every task thoroughly and to the best of their ability, Mr. Modi said that as India moves towards the goal of Viksit Bharat, the greatest tribute to him would be to

strive continuously to build a strong, united, self-confident, and compassionate India. "And knowing today's youth, I am certain they will rise to the occasion and do exactly that," he said.

A life of sacrifice

Despite coming from a privileged background – his father was among the foremost educationists and intellectuals of his time – Mookerjee's conscience led him towards a life of sacrifice, public service, and national causes, Mr. Modi said. He could not remain a mute spectator to the turbulence of his times, be it "fighting colonialism, communalism, humanitarian challenges and more".

"Along this journey, he endured profound personal tragedies, including the loss of an infant child and, later, his wife... Yet, these tragedies only deepened his resolve and streng-



An artist giving final touches to a bust of Bharatiya Jana Sangh founder Syama Prasad Mookerjee, in Kolkata on Sunday. ANI

thened his unwavering commitment to serve," the Prime Minister said.

A champion of national unity, Mookerjee stood firm during the Partition to ensure that West Bengal remained an integral part of India, Mr. Modi said. "A few years later, that very conviction drew him to Jammu and Kashmir. Imprisonment did not deter him and isolation did not

diminish him. His life came to an abrupt end in detention, far from the countless people whose cause he had made his own," he added.

"Acharya Vinoba Bhave said that Dr. Mookerjee sacrificed himself for a cause in which he had faith. Years later, the revocation of Articles 370 and 35A in 2019 was the most fitting tribute to his martyrdom,"

the Prime Minister said.

As the youngest Vice-Chancellor of the University of Calcutta, Mookerjee brought a range of "patriotic and futuristic" changes, in the spirit of "India First".

'Alternative voice'

At a time when the Congress was "omnipresent", Mr. Modi said, Mookerjee founded the Bharatiya Jana Sangh in 1951 as "an alternative voice to speak up for India's progress while staying attached to our cultural roots".

His tenure as India's first Minister for Industry and Supply displayed his conception of comprehensive and humane development. He viewed industry as a means of restoring dignity, opportunity, and confidence to a newly independent country, and respected wealth creation and value addition, Mr. Modi said.

While laying the foundations of modern industrial India via initiatives such as the Damodar Valley Corporation and the Sindri Fertilizer Plant, he ensured that the country's traditional strengths such as handlooms, cottage industries, artisans, and textile workers were given equal importance.

"The Sindri plant, which Dr. Mookerjee worked to establish with a clear vision of self-reliance, was ignored by those who ran the nation for several decades. I feel honoured that our government had the opportunity to contribute to its revival," he said.

He said Mookerjee embodied India's civilizational tradition, the democratic spirit of dialogue and discussions.

"He joined Pandit Nehru's Cabinet, believing that the task of nation-building in the early years transcended political differences...

But when he felt that questions of national importance demanded a different course, he relinquished office with dignity and devoted himself wholeheartedly to the political work he believed the nation required," he said.

Staunch critic

Terming the First Amendment brought by Nehru as a "direct assault on free speech", the Prime Minister said Mookerjee was among its "staunchest critics".

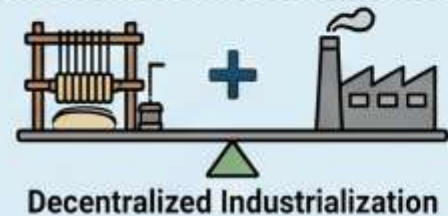
"He understood fully what the Congress was capable of doing. And he was proven right. Those who brought the First Amendment 75 years ago imposed the Emergency in 1975 and 50 years ago, brought in the 42nd Amendment Act, which again struck at the core of liberal democratic values," Mr. Modi said.

- **Key Terms and Explanations**
- **Asymmetrical Federalism:** A constitutional arrangement where different constituent states possess varying degrees of autonomy or special powers within a single federation.
- **Constitutional Monism vs. Pluralism:** In the context of national integration, monism advocates for a uniform legal and constitutional framework across the entire geography ("One Nation, One Constitution"). Constitutional pluralism, conversely, accommodates special provisions and distinct legal exceptions for specific regions to address historical or cultural anxieties.
- **The First Constitutional Amendment (1951):** Passed by the Provisional Parliament, this amendment introduced pivotal changes, most notably amending **Article 19(2)** to impose "reasonable restrictions" on the freedom of speech and expression on grounds of public order, friendly relations with foreign states, and incitement to an offense. It also introduced the **Ninth Schedule** to protect land reform laws from judicial review.
- **Alternative Voice / Loyal Opposition:** A democratic principle where the political opposition acts not to disrupt the state, but to provide a constructive, alternative vision for governance. This was vital in the early 1950s when the political landscape was dominated entirely by a single omnipresent party.
- **Decentralized Industrialization:** An economic model that rejects total reliance on large-scale, capital-intensive urban industries. Instead, it balances heavy public sector infrastructure with the promotion of rural, labor-intensive cottage industries and traditional artisans to prevent wealth concentration.

- **Main Arguments and Substantive Parts**
- The early years of Indian independence were not a period of passive consensus; they were an arena of intense intellectual friction regarding the soul and direction of the republic.
- **The Core Thesis**
- The foundational phase of Indian nation-building was defined by a profound ideological dualism. While the ruling dispensation favored a centralized, incrementally adaptive approach to integration and state-managed heavy economic planning, alternative perspectives championed absolute constitutional uniformity, uncompromised civil liberties, and an economic model deeply anchored in indigenous cultural roots.
- **Key Supporting Arguments**
- **Uncompromised National Territorial Integration:** A primary argument of the alternative nationalist school was that post-partition India could not afford any form of internal legal exceptionalism. The existence of separate constitutions, flags, or permit systems for regional units was viewed as a seed for permanent balkanization. Total constitutional assimilation was deemed the only true tribute to national unity.
- **The Sanctity of Civil Liberties:** The introduction of the First Amendment sparked a fierce philosophical battle. Critics argued that curtailing free speech so early in the republic's life under the guise of "public order" was an executive overreach that mirrored colonial-era suppression, effectively choking the democratic spirit of open dialogue.
- **The Dual-Engine Economic Vision:** Early alternative economic visions did not oppose modernization—in fact, they championed massive public utilities like the **Damodar Valley Corporation** and the **Sindri Fertilizer Plant** to ensure self-reliance. However, they argued fiercely against the marginalization of traditional sectors. The core argument was that India's economic dignity lay in giving equal policy weight to handlooms, village artisans, and textile workers to maintain social equilibrium.
- **Counterarguments and Contextual Challenges**
- Pragmatists of the era argued that India's post-partition volatility required immediate compromises. Asymmetrical federalism was seen as a necessary psychological bridge to win the trust of border states, while restrictions on free speech were defended as vital safeguards against communal inflammatory rhetoric that could destabilize a fragile, newborn nation.

- **Historical Evolution of the Issue**
- **The Chronological Journey**
- **Pre-Independence Crucible (1930s–1947):** Intellectuals like Dr. Syama Prasad Mookerjee navigated academia as the youngest Vice-Chancellor of Calcutta University, infusing a patriotic and futuristic outlook into higher education. As the dark clouds of Partition loomed, this school of thought fought decisively to ensure that when the division became inevitable, West Bengal was salvaged and retained as an integral part of the Indian Union, securing a homeland for minorities fleeing western areas of the province.
- **The Brief Consensus & Cabinet Synergy (1947–1950):** Immediately after independence, Prime Minister Nehru formed a broad-based, ideologically diverse Cabinet. Serving as the first Minister for Industry and Supply, Mookerjee laid the bedrock of India's heavy industrial blueprint. This period proved that nation-building initially transcended narrow party politics, focusing squarely on wealth creation and value addition.
- **The Ideological Rupture & Birth of Opposition (1950–1951):** Deep disagreements over the state's handling of minority securities post-partition (culminating in the Nehru-Liaquat Pact) led to Mookerjee's historic resignation from the Cabinet. In October 1951, he founded the **Bharatiya Jana Sangh (BJS)**. This marked the birth of a formalized, alternative right-wing opposition voice in Indian politics, standing against the near-monopoly of the Congress party.
- **The Battle for Free Speech and Kashmir (1951–1953):** The BJS emerged as a fierce critic of the First Amendment's restrictions on liberty. Simultaneously, the focus shifted to Jammu & Kashmir. Opposing the separate citizenship and permit laws, the movement raised the historic battle cry: *"Ek desh mein do vidhan, do pradhan aur do nishan nahi challenge"* (One nation cannot have two constitutions, two prime ministers, and two flags). This agitation led to Mookerjee's arrest and subsequent tragic demise in detention in June 1953.
- **Contemporary Realization (2019–Present):** Decades later, the geopolitical and constitutional landscape came full circle. The abrogation of **Articles 370 and 35A** in August 2019, alongside the modern policy push toward *Atmanirbhar Bharat* (Self-reliant India) and *Viksit Bharat*, represents the direct institutional realization of the foundational goals set by early alternative nationalists.
- **Way Forward**
- **Harmonizing Heavy Industry with the Grassroots Economy:** Modern economic governance should emulate the foundational vision of dual-engine growth. While aggressively expanding state-of-the-art tech manufacturing, electronics, and heavy green infrastructure, equal policy capital must be funneled into protecting and branding India's decentralized traditional sectors—transforming local handlooms, artisans, and MSMEs into global players through digital ecosystems like ONDC.
- **Deepening Emotional National Integration:** Now that legal and constitutional monism has been largely achieved via the abrogation of Article 370, the focus must shift from territorial integration to comprehensive economic and emotional integration. This requires closing regional developmental gaps, boosting infrastructure connectivity in border areas, and celebrating regional cultural histories within the broader national narrative.
- **Reviving the Spirit of Constructive Parliamentary Dialogue:** In an increasingly polarized political climate, the state and the opposition should look back to the early 1950s. Political parties must treat nation-building as a collective, trans-party mission. The executive should view constructive dissent not as an obstruction, but as a vital corrective mechanism, preserving the sanctity of absolute civil liberties while maintaining national security.

KEY CONCEPTS (FOUNDATIONAL MATRIX)



HISTORICAL EVOLUTION (Timeline/Flowchart)



MAIN ARGUMENTS (The Ideological Dualism)

STATE-LED PRAGMATISM

Ruling Dispensation



INTEGRAL INDIGENOUS VISION

Alternative Voices



VS

NCERT LINKAGES (Study Foundations)

	Chapter Topics
Class XII Pol Sci	Chapter Topics, Saivag, West Bengal
Class XII Hist	Chapter Soviet Chapter Topics
Class XII XI	Chapter Restrictions & Economics

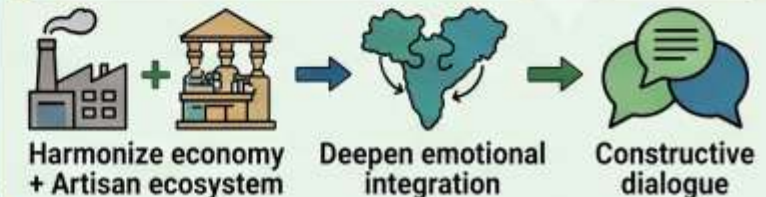
UPSC CSE SYLLABUS MAPPING MATRIX

GS 1	GS 2	GS 3	GS 4
Tiorou Reading	BHJ Landers BJS	BHJ Related Topics	
Artisan Box & Butvers	-	-	
Topics Topics	Village Topics	-	

MULTIDIMENSIONAL IMPACT ANALYSIS



WAY FORWARD: ACTIONABLE POLICY RECOMMADATIONS



ISRO conducts test of key component for Gaganyaan mission

The solid motor-based platform SOLVE will be used for parachute tests of the crew module; it has been derived from the PSLV strap-on motor

The Hindu Bureau
BENGALURU

The Indian Space Research Organisation (ISRO) has successfully carried out the first ground test of the solid motor-based Sub-Orbital Launch Vehicle for Experiments (SOLVE) at its Static Test Facility at the Satish Dhawan Space Centre in Sriharikota.

The SOLVE solid motor is a key component for conducting Gaganyaan test missions and the first ground test was carried out on July 3.

The ISRO is developing a solid motor-based SOLVE as a test platform to carry out Integrated Parachute Tests for validation of deceleration system of Gaganyaan's crew module under various test conditions.

During these test missions, the crew module will be carried to an altitude of 10 km to 17 km and separated from the vehicle.

A series of 10 parachutes will be deployed to reduce the velocity of the crew module before splashdown in the sea.



The ground test of the SOLVE solid motor being conducted at the Satish Dhawan Space Centre in Sriharikota. SPECIAL ARRANGEMENT

The solid stage of SOLVE is derived from the Polar Satellite Launch Vehicle (PSLV) Strap-on Motor with a few modifications to meet the Gaganyaan test requirements, including development of slow burn rate propellant and straight nozzle with secondary injection thrust vector control.

The ISRO said that during the test motor performance parameters were as expected. "The development of the SOLVE vehicle provides flexibility in conducting Gaganyaan test missions simulating va-

rious conditions in the actual mission," the space agency said.

Over the past few months, the ISRO has carried out key tests related to the Gaganyaan mission, which include the second Integrated Air Drop Test (IADT-02) and a behavioural study Mission MITRA (Mapping of Interoperable Traits and Response Assessment) in Leh, during which the four Indian astronauts selected for the mission along with scientists, engineers and medical teams were subjected to a week-long study.

- **Key Terms and Explanations**

- **Sub-Orbital Launch Vehicle for Experiments (SOLVE):** A specialized, cost-effective test vehicle designed to reach a specific altitude before falling back to Earth without completing a full orbital rotation. Unlike full-scale orbital rockets, its purpose is purely experimental validation.
- **Deceleration System (Multi-Parachute Architecture):** A complex engineering framework designed to progressively reduce the velocity of a spacecraft re-entering the atmosphere to ensure a safe landing. In advanced crew modules, this involves a sequential deployment of multiple parachutes (such as a matrix of 10 parachutes) to transition the module from supersonic or high subsonic speeds to a safe terminal velocity before splashdown.
- **Secondary Injection Thrust Vector Control (SITVC):** A sophisticated propulsion steering mechanism where a fluid or gas is injected into the divergent nozzle of a solid rocket motor. This injection alters the symmetrical flow of exhaust gases, creating an asymmetrical thrust that changes the rocket's trajectory.
- **Slow Burn Rate Propellant:** A specially formulated chemical solid fuel engineered to combust at a controlled, protracted pace rather than detonating or burning out rapidly. This ensures sustained, lower-intensity thrust over a longer operational window, which is ideal for sub-orbital test vehicles that need to simulate specific altitude conditions over extended durations.
- **Mission MITRA (Mapping of Interoperable Traits and Response Assessment):** A comprehensive physiological and psychological evaluation paradigm conducted in extreme environmental conditions (such as high-altitude, low-oxygen terrains like Leh). It measures team dynamics, stress tolerance, cognitive agility, and interpersonal compatibility among astronauts subjected to isolated, high-stress simulations.

- **Main Arguments and Substantive Parts**

- The technological blueprint under review establishes that the path to a mature human spaceflight program is built upon structural redundancy, incremental testing, and human-centric synchronization.
 - **The Philosophy of Incremental Ground and Flight Validation**
 - A core thesis emerges: achieving absolute safety in crewed space missions requires isolating and testing individual critical subsystems before full-scale integration. The deployment of the SOLVE platform represents an incremental engineering philosophy. Rather than risking a full launch vehicle, a modified, solid-motor-based test platform is utilized to transport the crew module to an altitude of 10 km to 17 km. This precise isolation allows engineers to validate the deceleration system under simulated, real-world atmospheric stresses, ensuring the core safety apparatus works under pressure.
 - **Redundancy Architecture as a Non-Negotiable Safeguard**
 - The operational details reveal a strict commitment to engineering redundancy. The integration of a 10-parachute sequence is designed to mitigate systemic failures. In aerospace engineering, individual components can experience localized anomalies; thus, a multi-parachute matrix ensures that even if primary deployment mechanisms face friction or structural delays, secondary and tertiary backups will successfully execute the deceleration profile, securing a safe maritime splashdown.
 - **The Interplay of Human Factors and Machine Design**
 - A highly substantive aspect of modern space systems design is the acknowledgment that technological perfection must be matched by human resilience. The inclusion of protocols like Mission MITRA shifts the focus from purely metallurgical and chemical engineering to aerospace medicine and behavioral psychology. By subjecting the four selected astronauts, engineers, and medical teams to a week-long study in the harsh terrain of Leh, the program addresses the vulnerabilities of human cognitive function under hypoxia, isolation, and physical exhaustion, closing the gap between human capacity and machine capability.
-

- **Historical Evolution of the Issue**

- **The Foundational Phase (1960s):** The establishment of the Indian National Committee for Space Research (INCOSPAR) in 1962 under Dr. Vikram Sarabhai, followed by the launch of sounding rockets from the Thumba Equatorial Rocket Launching Station (TERLS). The focus during this era was entirely primitive, aimed at understanding the ionosphere and building basic upper-atmospheric competencies.
- **The Operational & Launch Vehicle Competence (1970s–1980s):** The transition from relying on foreign launch assistance (for satellites like Aryabhata in 1975) to developing indigenous capabilities. The successful launch of the Satellite Launch Vehicle-3 (SLV-3) in 1980, followed by the Augmented Satellite Launch Vehicle (ASLV), established India's capacity to place light payloads into Low Earth Orbit (LEO).
- **The Workhorse Era and Heavy Lift Paradigms (1990s–2010s):** The operationalization of the Polar Satellite Launch Vehicle (PSLV) in the 1990s turned India into a reliable global launch hub. This was followed by the challenging development of the Geosynchronous Satellite Launch Vehicle (GSLV) and the indigenization of cryogenic rocket stages, which unlocked deep-space capabilities, culminating in the Chandrayaan and Mangalyaan planetary missions.
- **The Paradigm Shift to Human Spaceflight (2018–Present):** The formal declaration of the Gaganyaan mission marked a critical shift from unmanned robotic and communication satellites to crewed space exploration. As seen in the operationalization of the SOLVE platform, the present era is defined by extreme high-reliability engineering, sub-orbital abort tests, and dedicated aerospace medicine frameworks designed to secure human lives in space.

- **Way Forward**

- **Standardizing Modular Test Frameworks:** The success of the SOLVE platform highlights the value of utilizing cost-effective, sub-orbital platforms. ISRO should institutionalize this modular testing philosophy across all future deep-space and planetary exploration programs to thoroughly validate components before full mission integration.
- **Expanding Aerospace Medical Infrastructure:** Building on the insights gained from simulated stress tests like Mission MITRA in Leh, India should establish a permanent, state-of-the-art Institute of Aerospace Medicine and Extreme Environment Physiology. This center would specialize in training long-duration spacefarers and developing indigenous counter-hypoxia and stress-mitigation systems.
- **Deepening Private Sector Integration via IN-SPACE:** The technological breakthroughs achieved during these tests—such as slow-burn propellants and advanced deceleration systems—should be shared with domestic private space startups and MSMEs. This spin-off process will help build a commercial aerospace ecosystem capable of global export.
- **Formulating an Adaptable Space Liability Framework:** As the country approaches the operational phase of crewed flights, Parliament should accelerate the passage of a comprehensive Comprehensive Space Act. This legislation must clearly define financial liability, third-party insurance mandates, and safety certifications, ensuring alignment with international space treaties while protecting domestic public funds.



AXIA IAS ACADEMY PRESENTS:

COMPREHENSIVE ANALYSIS OF ISRO'S GAGANYAAN MISSION & KEY TESTS



1 KEY TERMS & CONCEPTS

SOLVE
(Sub-Orbital Launch Vehicle for Experiments)

- Solid-motor base Derived from one from PSLV

Slow Burn Rate Propellant



SITVC

(Secondary Injection Thrust Vector Control)

Fluid injection paddles
Vector Control

Deceleration System

Sequential deployment



MULTIDIMENSIONAL ANALYSIS



Socio-Geopolitical

- Globe: Inspire youth
- Elite space tier
- Global south leader



Ethical-Legal

- Scale of Justice: Risk vs. progress
- Space law creation
- Liability framework



Economic-Industrial

- Factory: Commercial spillovers
- MSME upgrades



MAIN ARGUMENTS & SUBSTANTIVE PARTS

Incremental Testing Strategy

- Isolate variables



Redundancy Architecture



1 fail = backup deploy



Human-Centric System Design

- Astronaut helmet
- Psychological and physiological sensors : ensors

3 HISTORICAL EVOLUTION OF THE ISSUE

- 1962 **Thumba Sounding Rockets**
Thumba sounding rockets
- 1980 **SLV-3**
Repurposing invertare for SLV-3
- 1990s **PSLV Era**
Repuposing PSIV PSLV for PSLVE
- 2000s **GSLV & Deep Space**
Comitciiv & Deep Space
- 2018+ **Crewed Spaceflight**
Crewed Spaceflight & Labort tests
- Abort Tests & Current tests**
(SOLVE, MITRA)



4 LOGICAL & PHILOSOPHICAL BASE



Precautionary Principle in Extreme Risk Engineering

- Safety first

Frugal Innovation

- Technological inheritance
- Repurposing PSLV for SOLVE



Scientific Temper

- Inspiring precision



WAY FORWARD

Modular Test Institutionalization

- Standardize test platforms like SOLVE, diagram diagram

Aero-Medical Infrastructure

- Specialized training
- Indigenous medical systems (Heart rate, brain sensors)

Private Sector Integration

- Share technology
- Build ecosystem
- Handshake with startup icons

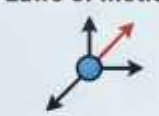
Space Liability Law

- Pass Comprehensive Space Act



LINKAGES WITH NCERTS

Class 11 Physics
Laws of Motion



Laws of Motion,
Gravitation



Force vecton,
gravitation

Class 12 Chemistry



Chemical
Kinetics



Terminal
velocity

Class 9 Science
Force of Motion



Force and
Laws of Motion



Terminal velocity
concept

7 LINKAGES WITH UPSC CSE SYLLABUS

GS Paper 3

Science & Tech

Science & Tech

- Indigenization, achievements
- Indigenization, achievements
- Points in all achievements

GS Paper 2

Governance

Governance

- Regulations, global policy
- Regulations, regulations
- Points in chemical reaccions

GS Paper 4

Ethics

Ethics: public safety

- Example of achievements
- Example xommissions echics public safety



axiaiasacademy.com



+91 6002-417488

Milk production in Gangetic plains has nosedived due to climate change

A new study has found that global warming acutely affects dairy production across the Global South, especially the high milk production tract of Haryana as lactating animals are more prone to heat stress, hence, they divert energy from milk production to regulate body temperature, resulting in a 20-30% decline in milk yield

Shreya Ganshili
DEHRA DUN

A massive decline in bovine milk production in India, especially among buffaloes in the trans-Gangetic plains of northwestern India – one of the country's biggest sources of milk – has now been attributed to climate change. The phenomenon has a profound impact on the milk industry that caters to consumers every day.

While climate change significantly undermines livestock productivity worldwide, a new study published in *Scientific Reports* has found that global warming acutely affects dairy production across the Global South, especially "the high milk production tract of Haryana."

India is the world's largest milk producer. Scientists studied data to assess the impact of climate variables – including yearly minimum, maximum, and mean temperatures, heavy rainfall, temperature-humidity index – and evaporative cooling on milk yield and production in buffaloes, indigenous cattle, and crossbred cattle in Haryana, spanning over a decade, from 2004 to 2019.

They studied livestock populations across 144 villages, which included 6.66 million cross-bred cattle, 2.86 million indigenous cattle and 35.36 million buffaloes.

The study documented milk yield in these three bovine categories and found that high temperatures (over 36 degrees Celsius), in combination with high humidity (over 70%) during July and August (summer and monsoon when humidity peaks) "significantly reduces milk production." Interestingly, temperatures in winters had a negligible effect.

Adaptive strategies

Critically, overexposure in Haryana and Jharkhand was an important factor, as was the temperature-humidity index and heatwaves. Solar radiation, ambient temperature, and vapour pressure were part of the climate impact assessment. In light of the fact that agrarian livelihood is likely to be affected profoundly with global warming, "these results underscore [governments'] role in shaping adaptive strategies for sustainable livestock production," the paper said.

Buffaloes, with their darker skin and bare skin are particularly vulnerable to absorb solar radiation. They also have fewer sweat glands than cattle, so, a unit increase in potential evaporative cooling (sweat) reduces milk yield by around 1.4 litres per buffalo per day, the paper says.

Likewise, cross-bred cattle showed a significant decline in productivity during heatwaves too, but not indigenous cattle breeds such as Sahiwal and Tharparkar, perhaps because of their adaptation, such as loose skin, efficient sweating and lower metabolic heat production.

The higher the temperature humidity



Beyond the direct impact of climate change on the health of the cattle, increasing temperatures are also affecting the broader dairy production system, the related production and availability of fodder and feed, increasing water scarcity and rising instances of pest and disease attacks, too (see inset image)

index the greater is the impact on livestock physiology and productivity: they eat less, and the heat triggers homeostatic responses "in the form of panting, sweating and reduced activity," the paper said.

The event hastens and raises critical levels "impairs milk ejection and thereby causes a drop in milk yield and, in severe cases, livestock mortality," says the paper.

Indigenous cattle

Fodder also becomes a casualty of rising surface temperature, affecting the livestock production system: changes are triggered in the quantity, quality and seasonal availability of feed and fodder. The paper estimates that such stresses in India lead to a loss of 1.2 million tonnes of milk, which is worth \$2.62 crore in monetary losses that could rise to \$1 million more by 2050.

Atul Kumar, lead advisor for sustainable dairy at Environment and Development Fund India, a Delhi-based non-profit, told *The Hindu* that heat stress has a significant impact on the milk productivity, health, and well-being of cattle and buffaloes.

"During the intense summer months, the lactating animals are more vulnerable to heat stress, given that animals divert energy from milk production to regulate body temperature, resulting in a 20-30% decline in milk yield."

Beyond the direct impact of climate change on animals' health, production and well-being, increasing temperatures and prolonged summers are also affecting the broader dairy production system, like as fodder and feed, increasing water scarcity, rising instances of pest and



Given that India is the largest milk producer and consumer of the world, these production losses will put the livelihoods and nutrition of millions at risk

ANURAG GAURIA
Lead Advisor at Environment and Development Fund India

disease attacks and compromised animal immune system.

Dr. Gauria quoted a report in *The Lancet* that estimates that climate change-induced temperature rise can reduce Indian milk production by 28% by 2050.

"Given that India is the largest milk producer and consumer of the world, these production losses will put the livelihoods and nutrition of millions at risk, especially the 80 million smallholder dairy farmers who contribute 85% of the total milk production," he said.

Haryana's farmers, interestingly, "were not only well aware of... technologies and practices but implemented them in the summer season (prevalent milking ponds to buffalo, agroforestry, keeping livestock in shade, alteration of microclimate via sprinklers, foggers, mist, etc., breeding management), and reduced the negative effects of the extremes (of) summer months," the paper, which was authored by researchers from the ICAR-National Dairy Research Institute and other collaborating institutions, concluded.

Farms to tolerate heat
Indigenous cattle are more tolerant to heat stress, and maintain homeostasis

(that is, they are better at regulating their internal environments, with more advanced evaporative cooling compared to buffaloes). Besides, "indigenous breeds show stronger immunity against local parasites and pathogens. This resilience indirectly supports climate tolerance, since heat stress often compromises immune function," the authors wrote.

The National Bureau of Animal Genetic Resources has identified heat tolerance traits in cattle, such as heat shock proteins, coat colour, and hair characteristics, said Dr. Gauria.

And the research showed that the natural breed of cattle is significantly more heat tolerant than exotic breeds with comparable milk productivity.

"The findings underscore the need for a strategic shift toward resilience-oriented livestock management. We recommend the integration of potential evaporative cooling and temperature-humidity index... into regional early warning systems to allow for proactive management," it added. "Furthermore, long-term climate resilience should prioritise thermo-tolerant breeding programs that leverage the indigenous traits."

The text concluded that indigenous breeds should be conserved as "reservoirs of climate-resilient traits," and policies must prioritise in-situ conservation and farmer-led breed improvement programmes.

The larger challenge now lies in scaling these solutions for millions of smallholder farmers, who often have limited resources, inadequate financial resources, and the absence of a coordinated national climate-smart dairy strategy," Dr. Gauria said.
shreya.ganshili@thehindu.co.in

THE GIST

• The study documented milk yield in three bovine categories and found that high temperatures, in combination with high humidity during July and August, "significantly reduced milk production"

• It found that indigenous cattle were more tolerant to heat stress, and maintained homeostasis, with more advanced evaporative cooling compared to buffaloes

• The text concluded that indigenous breeds should be conserved as "reservoirs of climate-resilient traits," and policies must prioritise in-situ conservation and farmer-led breed improvement programmes

- **Key Terms and Explanations**
- **Temperature-Humidity Index (THI):** A single value that combines ambient air temperature and relative humidity to quantify the total heat stress loaded onto an animal.
- *Conceptual representation: $THI = f(\text{Temperature, Relative Humidity})$.* When temperatures cross 38°C and relative humidity exceeds 70%, the THI breaches critical thresholds, severely disrupting livestock comfort.
- **Potential Evapotranspiration (PET):** The maximum amount of water that could evaporate from the soil and transpire from vegetation under given climatic conditions. In livestock geography, escalating PET rates signify intense ambient drying and atmospheric heat demand, which directly accelerates thermal stress in farm animals.
- **Homeostasis:** The self-regulating physiological process by which biological systems maintain internal stability while adjusting to changing external conditions. For instance, when an animal faces extreme heat, it must divert metabolic energy away from milk synthesis toward cooling mechanisms like panting and sweating to restore its baseline internal temperature.
- **Thermo-Tolerant Genetic Traits:** Evolutionary adaptations embedded in specific indigenous breeds that grant resilience against extreme heat. These include the presence of specialized heat shock proteins at a cellular level, light coat colors that reflect solar radiation, loose skin that increases surface area for cooling, and highly efficient sweat glands.
- **Smallholder Dairy Ecosystem:** An agrarian structure where the vast majority of milk production is driven by small and marginal farmers owning fewer than five livestock heads. In the Indian context, these smallholders constitute nearly 85% of the total dairy workforce, making the sector highly democratic but economically sensitive to climate shocks.

- **Main Arguments and Substantive Parts**

- The nexus between accelerating global temperatures and the vulnerability of primary sector livelihoods reveals deep structural risks. The core thesis posits that climate change is no longer a distant environmental threat but an immediate economic stressor altering livestock physiology and collapsing milk yields across primary dairy tracts.

- **The Physiological Trade-off**

- Rising ambient temperatures alter the basic metabolic priorities of lactating bovines. When animals face severe thermal stress, their systems experience a spike in cortisol and other stress hormones. This hormonal imbalance impairs milk ejection and forces the animal to reallocate its energetic resources. Instead of converting feed into milk, the animal expends its energy on homeostatic survival mechanisms like evaporative cooling, sweating, and panting. The direct consequence is a verified 20% to 30% drop in milk yields during peak summer and monsoon months.

- **Differential Species Vulnerability**

- The impact of climate stress is not uniform across livestock populations, revealing a stark divide between native and introduced or cross-bred species:

- **Buffaloes:** Exhibiting extreme vulnerability, their dark skin hue and bare hides absorb high levels of solar radiation. Compounded by fewer sweat glands compared to cattle, buffaloes experience a production decline of approximately 1.4 liters per animal per day for every unit increase in evapotranspiration stress.

- **Cross-bred Cattle:** Introduced during intensifying production eras to maximize volumes, these breeds lack climatic resilience and experience severe health setbacks during prolonged heatwaves.

- **Indigenous Breeds:** Conversely, native strains such as the *Sahiwal* and *Haryana* remain largely insulated from these shocks. Their evolutionary history provides them with superior homeostatic regulation, efficient sweating mechanisms, and lower metabolic heat production.

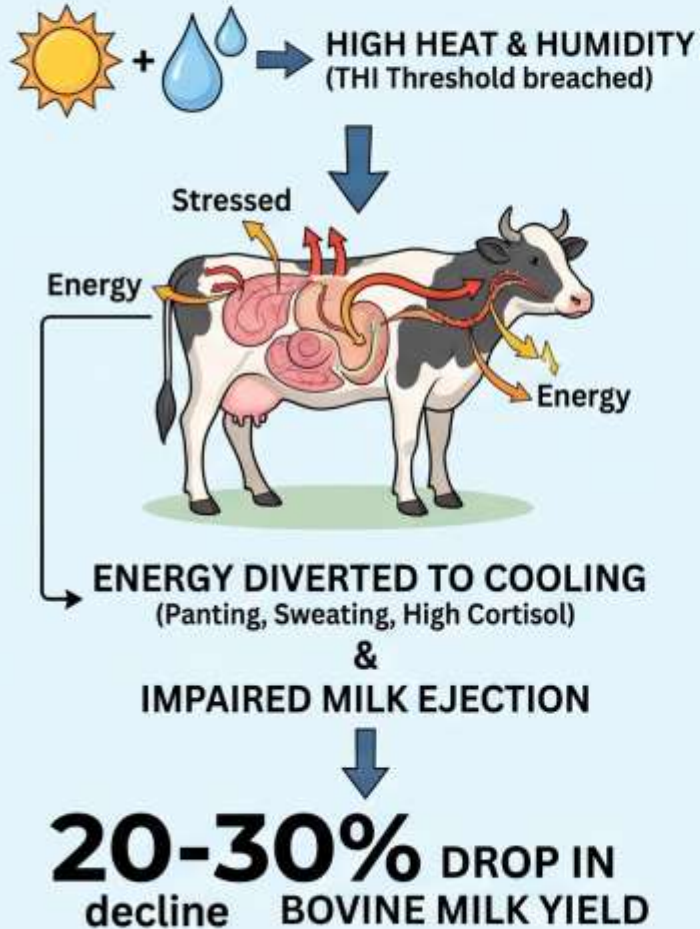
- **The Cascading Multiplier Effect**

- The crisis extends far beyond direct physiological distress. Rising surface temperatures trigger a multi-pronged assault on the entire dairy supply chain. Locally, it severely reduces the quantity, quality, and seasonal availability of green fodder and feed. Mechanistically, thermal stress compromises the immune systems of these animals, leaving herds highly susceptible to local parasites, vector-borne pathogens, and epidemic disease outbreaks.

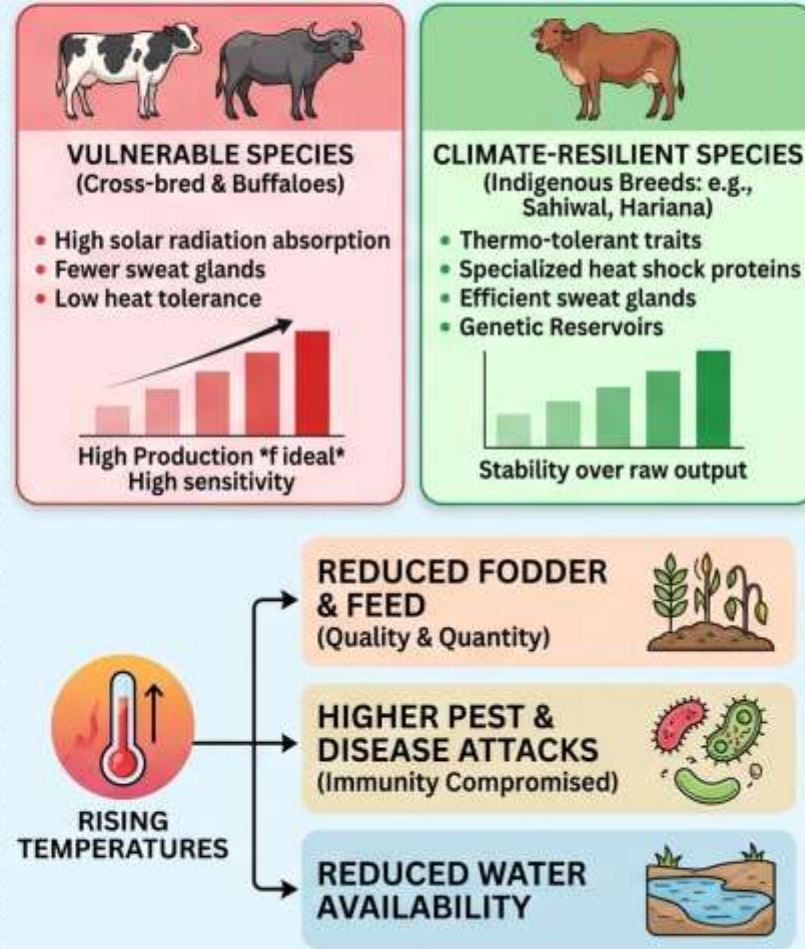
- **Historical Evolution of the Issue**
- **Pre-Independence to Early Post-Independence Era**
 - For centuries, Indian animal husbandry relied almost exclusively on localized, indigenous breeds (*Bos indicus*). While these animals produced lower absolute volumes of milk, they possessed deep evolutionary resilience against tropical pathogens, droughts, and extreme heatwaves. The system prioritized risk aversion and ecological harmony over raw volumetric output.
- **The White Revolution and the Cross-Breeding Pivot (1970s–1990s)**
 - The launch of **Operation Flood** transformed India from a milk-deficient nation into a global dairy leader. To rapidly boost yields, national policies aggressively promoted cross-breeding programs. Local cows were cross-bred with exotic European varieties like Holstein-Friesian and Jersey (*Bos taurus*). While this succeeded in raising production volumes, it systematically diluted the native climate-resilient gene pool, creating a livestock population highly sensitive to thermal variations.
- **The Onset of Climate Realism (2000s–2020s)**
 - Over the last two decades, the compounding effects of global warming have exposed the vulnerabilities of this cross-bred model. High-intensity dairy zones, particularly in the trans-Gangetic plains, began documenting unprecedented production drops during summers. Scientific evaluations over this period confirmed that the combination of high temperatures and humidity was directly undermining livestock productivity, sparking an urgent need to re-evaluate national breeding policies.
- **Way Forward**
- **Strategic Genetic Realignment**
 - National livestock breeding policies must prioritize climate resilience over short-term production volume. This requires scaling up *in-situ* conservation and farmer-led breed improvement programs focused on native strains like *Sahiwal*, *Gir*, and *Tharparkar*. Selecting for thermo-tolerant traits—such as advanced heat shock proteins and efficient sweat gland profiles—will help build a national herd capable of withstanding rising temperatures.
- **Decentralized Microclimate Management**
 - To protect animals from immediate thermal stress, smallholders need access to affordable cooling solutions. Governments should subsidize and promote local adaptation techniques:
 - Installing energy-efficient misting systems, fans, and roof sprinklers in livestock sheds.
 - Revitalizing village community ponds to allow regular wallowing for buffaloes.
 - Using thatch and heat-reflective materials for cattle shed roofs to reduce thermal absorption.
- **Technology and Early Warning Integration**
 - Agricultural extension networks must integrate the Temperature-Humidity Index (THI) into their regional agromet advisory systems. Providing village cooperatives with real-time, hyper-local weather alerts will allow farmers to take preventive action—such as adjusting feeding schedules, increasing hydration, or moving livestock to shaded areas—before a heatwave begins.
- **Comprehensive Institutional Support**
 - India needs a dedicated **National Climate-Smart Dairy Strategy**. This policy framework should ensure regular supplies of green fodder during droughts through grass banks, offer technical training on climate-resilient animal husbandry, and introduce targeted climate-risk insurance policies to shield smallholders from sudden losses in milk yield.

CLIMATE CHANGE & MILK PRODUCTION: A COMPREHENSIVE UPSC CSE ANALYSIS

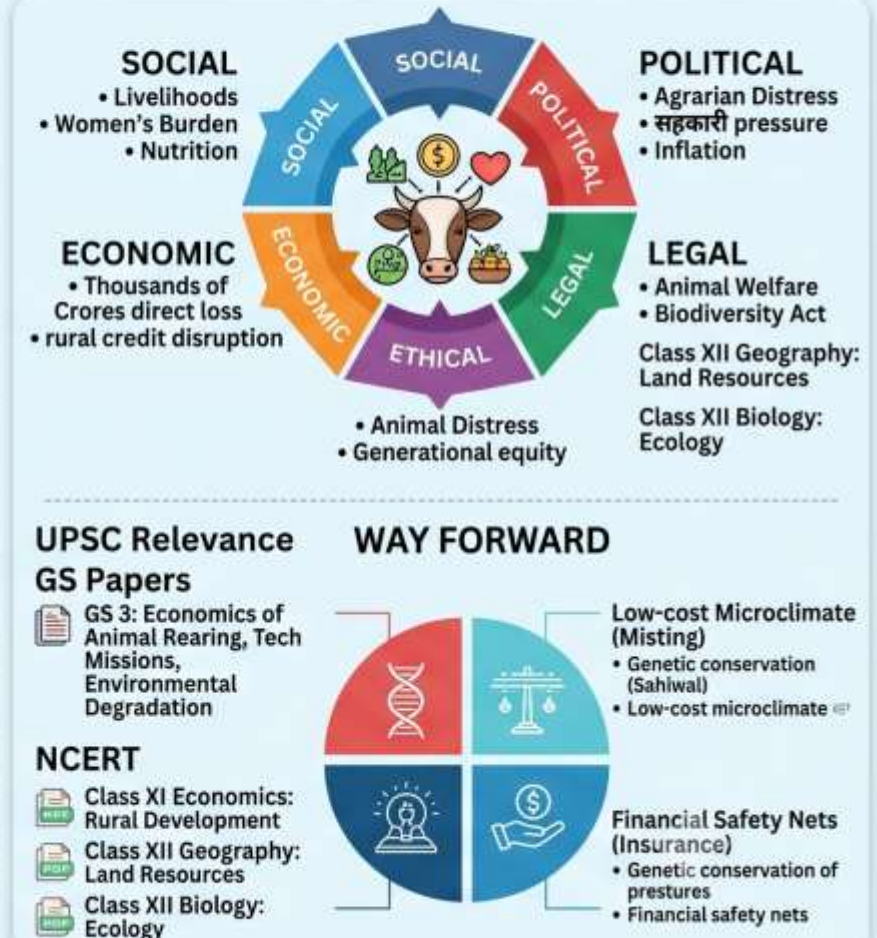
MECHANISMS OF DECLINE & PHYSIOLOGICAL TRADE-OFFS



DIFFERENTIAL VULNERABILITY & CASCADING EFFECTS



IMPACT, RELEVANCE, & THE WAY FORWARD



The real crisis in India's fisheries

Official claims that most of India's marine fish stocks are sustainable should not distract from the continuing degradation of the country's inshore fishing grounds, stronger governance of coastal waters and better management of mechanised trawling are essential for truly sustainable fisheries

FULL CONTEXT

Maarten Buijsink

India has a very large and old marine fishing population. Every day, both small-scale and mechanised trawl fishers go out to earn a living and provide the nation with food.

The Government of India recently released its latest prognosis of the country's ocean fisheries (February 11, 2020). Its gross release announcement that Indian marine fisheries are largely sustainable, suggesting the country has avoided the fate of international fishing, namely overfishing.

Official claims

Citing an agency compiled by the Central Marine Fisheries Research Institute (CMFRI), the government said that most commercial fish stocks "are in good health". Furthermore, it stated that "80.1% of the 135 fish stocks evaluated in different regions during 2012 were found sustainable." If this assessment is accurate, it would be good news.

However, there are good reasons to doubt whether it is indeed correct.

For one, the Food and Agriculture Organisation (FAO) is far more reserved in its assessment of the condition of Indian marine fisheries than the Indian government seems to be. India's country profile argues that "India's marine fisheries production reached a plateau as most major stocks are fully exploited. [...] Unregulated access to these fisheries resulted in significant overcapacity, especially of medium and small trawlers that comprise over 90% of the Indian fleet." It also states that "the Indian government seems to be, India's country profile argues that "India's marine fisheries production reached a plateau as most major stocks are fully exploited. [...] Unregulated access to these fisheries resulted in significant overcapacity, especially of medium and small trawlers that comprise over 90% of the Indian fleet."

I will not dispute CMFRI's conclusions or its methodology for calculating sustainability. After all, most of its procedures are well in excess. What is known, however, is that compared with many other fishing nations, CMFRI continues to rely primarily on landing data rather than stock assessments.

In other words, it calculates the availability of fish stocks in India's Exclusive Economic Zone (EEZ) - which includes up to 200 nautical miles (370 km) of sea area around the country - based on what fishermen catch. Even a layperson can understand that landing a certain number of shells on the beach does not necessarily predict the quantity of shells in the sea.

Other nations, therefore, make use of stock assessments at sea itself, thereby calculating how much aquatic life is available in certain waters. This is obviously the more reliable method to determine the health of fish stocks.

The Government of India cannot be blamed for not yet adopting this more costly form of stock assessment. But it does raise suspicion that the race to catch up with China, which is also subjecting the fisheries sector, may also be including a hidden bias in the figures.

The decline of inshore ecosystems

Among the fisheries I have spoken to over thirty years along the Tamil Nadu coast, the commonest is that catches have consistently gone down and that many species that were formerly abundant have disappeared. The government, however, seems to continue on the path of amplifying fish production figures from one year to the next.



AP/PTI/REUTERS

Overfishing, however, is not the central issue here. The more pressing concern is the decline, if not the destruction, of the inshore benthic environment. Over the past years, numerous fisheries scientists and policymakers have described the inshore fishing environment as "destroyed". What exactly do they mean?

India is surrounded by a relatively narrow continental shelf, where fishing is always the most productive. This continental shelf is broadest in Odisha and a part of Maharashtra, but remains quite narrow along the rest of the subcontinent.

Generally speaking, one can assume that the territorial sea - a legal category referring to waters that lie within 12 nautical miles (22 km) from shore - largely overlap with the continental shelf. These waters provide favourable ecological conditions for commercially valuable species such as shrimp to breed, breed and grow.

But why do senior experts conclude this is no longer the case?

This is a complex question with many answers. One can point to the construction of dams in major rivers, which displace land-based nutrients from entering the sea. One can also point to the ongoing destruction of mangroves, where fish breed, and to pollution that is entering the sea from various industrial, agricultural, and urban sources. Many scientists, and fishers too, point to such changes to explain the decline of fisheries. These factors obviously affect the inshore fishing zone more than they do distant waters.

Mechanised trawling and its cost

One of the main factors contributing to this decline is the dramatic and largely uncontrolled expansion of mechanised trawling.

It is hard to remind ourselves that it all started with industrial trawling is not an Indian fishing method. It was introduced from abroad around 1900 and has since

expanded to gigantic proportions.

According to the same government press release, India now has 64,464 mechanised fishing vessels. These numbers are growing day by day as there are practically no restrictions on new entries. Moreover, existing vessels are continuously being extended and fitted with more powerful Chinese engines, enabling them to catch even more fish.

This oversized fleet of mechanised trawlers ploughs the inshore seabed in a continuous fashion. In heavily trawled areas, this results in a decline of all animal and plant life. It has also resulted in major conflicts with the massive population of small-scale fishers who use their livelihoods to support their families.

The problem is that regulations to protect the inshore fishing zone are almost non-existent. Yes, mechanised boat fishing is closed for ten months every year, so as to allow for the regeneration of fish stocks, but the main goal to prevent uncontrolled trawling - the prohibition for mechanised boat fishing to operate within a geographic zone of 5 NM - lacks teeth.

There are two main reasons for this. First, coastal states lack sufficient staff or staff to guard the inshore waters. Second, governments have prohibited fishers from playing a helpful role in management. The result is that the ecology of the inshore fishing zone is continuously being degraded, and all fishers - small-scale and mechanised - are being pushed out to the offshore and the deep-sea fishing zones.

Rethinking fisheries policy

The Indian government is optimistic about the potential of deep-sea fishing and is encouraging fishers to take a shift. But the question is whether that potential, which is also being tapped by other fishing nations, is as healthy as expected. The FAO estimates that, at best, only a marginal increase can be realised through exploitation of deep-sea resources.

More fundamentally, India's current fisheries policy is wasting the enormous potential of inshore waters. For one thing, it imposes extra expenses for fuel and technology on fishers so that they can actually travel to more distant waters. At the same time, it is closing its eyes to the clear need for proper management of inshore waters. Aside from addressing the problems of marine pollution, it also seems to be, if not reducing, mechanised boat fishing. This is more than a technical issue. Mechanised boat fishing, by way of their numbers and their political influence, now often stand in the way of proper management. This is obvious, for example, in the case of the Palk Bay, which is located between India and Sri Lanka. There, the Indian fleet of mechanised boat fishers now ignores Sri Lankan waters to the detriment of small-scale fishers on the other side of the international border. Ownership of the island Katchatheevu does not make any difference in this respect.

The way forward

While the government's assessment paints an encouraging picture of Indian fish stocks, a more in-depth concern remains. The larger issue is that fishers, scientists and policymakers continue to deny the degradation of the inshore fishing grounds. A viable and truly sustainable fishery can only be realised if governance of the inshore inshore waters improves. For this, the government must adjust its perspective. This is in line with FAO's view that "intensive efforts are needed at federal and state levels to upgrade the country's capacity to manage its marine fisheries." In this context, CMFRI might also want to devote effort to studying what the condition of the benthic environment is actually like. This would provide a basis for deliberating on the best way forward. (Maarten Buijsink is visiting professor of coastal resource governance, University of Amsterdam)

THE GIST

Food and Agriculture Organisation presents a more cautious assessment of India's marine fisheries than official claims, warning that many major fish stocks are already fully exploited.

India's fish stock estimates rely largely on landing data rather than direct stock assessments, raising questions about how sustainability is measured.

Expanding mechanised trawling and weak enforcement of coastal fishing regulations are placing increasing pressure on inshore ecosystems and small-scale fishers.

- **Key Terms and Explanations**
- **Inshore Fishing Grounds and Territorial Seas:** This refers to the marine zone extending up to 12 nautical miles (approximately 22 km) from the coastal baseline. It is legally classified as the territorial sea over which the coastal state exercises full sovereignty. Ecologically, it is the most fertile zone because it directly overlaps with the shallow continental shelf where sunlight penetrates, fostering rich marine life.
- **Exclusive Economic Zone (EEZ):** A maritime zone prescribed by the United Nations Convention on the Law of the Sea (UNCLOS) over which a sovereign state has special rights regarding the exploration and use of marine resources. It extends up to 200 nautical miles (371 km) from the coast.
- **Benthic Environment:** This is the ecological region at the absolute lowest level of a body of water, including the sediment surface and sub-surface layers of the seabed. Organisms living here (benthos), such as crustaceans, worms, and sea grass, form the foundational matrix of the marine food web. As seen in the contextual breakdown of **image.png**, the health of this zone dictates the sustainability of the entire fishery sector.
- **Mechanised Trawling:** A commercial fishing method involving large boats pulling heavy, industrial-sized nets along the ocean floor. Bottom trawling, a subset of this, acts like an underwater bulldozer, indiscriminately capturing target species while obliterating the benthic ecosystem and scraping away coral reefs and marine vegetation.
- **Landing Data vs. Direct Stock Assessment:**
 - *Landing Data* is an indirect metric that measures the volume of fish brought to the shore and sold at ports.
 - *Direct Stock Assessment* involves independent scientific at-sea surveys (using acoustics and swept-area methods) to map the actual living biomass in the water.
 - *Example:* Relying solely on landing data is like counting the number of dead shells washed up on a beach to estimate the living population of clams in the deep ocean—it tells you what was taken, not what remains.
- **Overcapacity:** A structural economic condition where the number of fishing vessels and their collective catching power (engine horsepower, net size) vastly exceeds the level required to harvest a sustainable yield of fish, leading to systemic overfishing.

- **Main Arguments and Substantive Parts**

- The core debate centers around a profound disconnect between official governance narratives and ecological ground realities regarding India's marine wealth.

- **The Sustainability Paradox**

- National research bodies, such as the Central Marine Fisheries Research Institute (CMFRI), present an optimistic view, stating that over 91% of evaluated fish stocks are in "good health" and sustainably harvested. However, global bodies like the Food and Agriculture Organization (FAO) present a far more cautious counter-narrative. The FAO argues that India's marine fisheries production has reached a critical plateau, with the majority of major stocks already fully exploited or suffering from severe overcapacity.

- **Methodological Vulnerabilities**

- A substantive critique lies in *how* sustainability is measured. Domestic metrics rely overwhelmingly on landing data. This approach possesses a major blind spot: a steady volume of fish landings at ports can mask the localized extinction of high-value species, as trawlers simply shift their target to lower-value species or travel further out to maintain volume, creating a false illusion of abundance.

- **The Ecological Crisis of the Inshore Benthic Zone**

- The real crisis is not occurring in distant international waters, but within the narrow, highly productive continental shelf of India. This zone is being systematically degraded by an oversized fleet of over 64,000 mechanised trawlers. These vessels continuously plow the shallow seabed, destroying the benthic environment. Compounding this ecological damage are land-based anthropogenic stressors, including:

- The damming of major rivers (which halts the flow of vital land-based nutrients into the sea),
- The systemic destruction of coastal mangroves that serve as critical fish nurseries, and
- Escalating industrial, agricultural, and urban pollution.

- **The Fallacy of the Deep-Sea Panacea**

- In response to inshore depletion, policy frameworks increasingly champion a shift toward deep-sea fishing. This strategy assumes that the deep ocean holds vast, untapped reserves. However, scientific assessments warn that these resources are biologically limited and fiercely contested by global fishing superpowers like China. Forcing small and medium-scale fishers into the deep sea imposes prohibitive fuel and technology costs, wasting the immense natural potential of properly managed inshore waters.

- **Historical Evolution of the Issue**

- Understanding the transition of Indian fisheries from subsistence to capital-intensive industrialization explains the roots of the current ecological crisis.

- **Pre-Independence to the 1950s (The Artisanal Era):** Fishing was traditionally a low-impact, subsistence-driven livelihood activity. Coastal communities relied on non-mechanised country crafts (such as catamarans and canoes) and traditional gears. The ecological footprint was minimal, and fishing was confined strictly to near-shore waters.

- **The 1960s (The Genesis of Modernization):** The introduction of the Indo-Norwegian Project marked a structural shift. Semi-industrial trawling technologies were introduced to maximize the harvest of export-oriented marine products, particularly pink gold (shrimp). This era laid the foundation for mechanisation.

- **The 1970s and 1980s (The Blue Revolution and Spatial Conflicts):** The rapid expansion of mechanised fleets led to severe spatial friction between traditional artisanal fishers and trawler operators in the narrow continental shelf. In response, various maritime states enacted Marine Fishing Regulation Acts (MFRAs) to create zoning boundaries, theoretically reserving the first 3 to 5 nautical miles exclusively for traditional fishers.

- **The 1990s to 2010s (Unregulated Overcapacity and Subsidies):** Despite zoning laws, weak enforcement led to an explosion in the number and engine capacity of mechanised vessels. State policies heavily subsidized fuel and boat building, driving the fleet far beyond ecological carrying capacities. The period also witnessed escalating transboundary conflicts, notably in the Palk Bay zone between India and Sri Lanka.

- **The Present Era (The Crisis of Sustainability):** Today, the sector faces a structural plateau. As highlighted in the visual data of **image.png**, despite high-tech gear and massive fleets, catch-per-unit-effort is declining, forcing policy-makers to grapple with the failures of inshore governance while searching for alternatives in contested deep-sea waters



THE REAL CRISIS IN INDIA'S FISHERIES: A MULTIDIMENSIONAL ANALYSIS

THE SUSTAINABILITY PARADOX

STATE VIEW (CMFRI)

Port count



CLAIM: 91% Sustainable
Methodology: Overwhelming reliance on landing data

VS

GLOBAL VIEW (FAO)

Scientific sea survey



REALITY: MAJOR STOCKS FULLY EXPLOITED
Warning of profound ecosystem degradation

METHODOLOGICAL VULNERABILITIES



THE DEEP-SEA FALLACY & CAPITAL WASTE

LIMITED DEEP-SEA RESOURCES: Biological limits vs. industrial push. Contested international waters.



CAPITAL WASTE: Excessive fuel and tech costs. Diminishing CPUE.



WASTED NATURAL POTENTIAL: Better manage highly productive inshore waters.

TRANSBOUNDARY CONFLICT: PALK BAY DISPUTE



MULTIDIMENSIONAL ANALYSIS

1. (Social) INTRA-SECTORAL INEQUALITY trawler vs. artisanal conflict, livelihood loss	2. (Political) LOBBY POWER organized interest groups pressure govts, diesel concessions	3. (Legal) ENFORCEMENT DEFICIT lack of manpower/vessels, State vs. Center jurisdictional gaps	4. (Ethical) BY-CATCH & ECOLOGICAL INJUSTICE Indiscriminate capture, Intergenerational Inequity	5. (International) GEOPOLITICAL COMPETITION match China's footprint, potential data bias, Palk Bay dispute	6. (Economic) DIMINISHING RETURNS declining CPUE, higher operational costs
---	---	---	---	--	--

WAY FORWARD: PRACTICAL SOLUTIONS

- At-Sea Scientific Assessments
- Democratic Co-Management
- Fleet Rationalization/Buy-Backs
- Habitat Restoration

UPSC CSE/APSC LINKAGES

- GS Paper 1 (Geography: marine resources)
- GS Paper 2 (Polity/IR: policy interventions, Palk Bay)
- GS Paper 3 (Economy/Env: trawling, ecosystems, Blue Economy)
- GS Paper 4 (Ethics: environmental ethics, tragedy of the commons)
- APSC CCE (inland fisheries conceptual shift)



AXIA IAS ACADEMY

axiaiasacademy.com | +91 6002-417488

Childcare, housework keep 69% urban women out of work: NSO

Shiva.Rajora@timesofindia.com

New Delhi: Childcare and household chores keep around 69% women out of the labour force in India's top 46 cities with million-plus population, highlighting the gender-bias in nature of care work even among the more affluent areas of the country, a new National Statistics Office survey has shown.

The survey on labour market indicators for the large cities, first reported by **TOI** on Tuesday, showed that just 1% of the women cited "social reasons" for being out of the labour force, although the report did not elaborate on it.

In contrast, 1% of men ci-

PRAYAGRAJ TOPS IN WOMEN'S PAY

Highs & Lows In Women's Salaries

Prayagraj	₹/month	42,254
Gr Mumbai		35,788
Srinagar		33,869
Lucknow		31,744
Delhi		31,644

Raipur	12,464
Ludhiana	12,792
Indore	13,557
Gwalior	13,568
Kolkata	13,784



Sectors With Highest Share (%) Of Women

Services **50.9**

Manufacturing **20.3**

Trade, hotel & restaurant **15.1**

Transport, storage & communications **8.8**

ted childcare and household work as the reason for being out of the labour force.

India has among the lowest female labour force participation rates among the

world's major economies, estimated at 30.7% in 2025, although it has shown an upward trend in recent years.

► **Women earn less, P 12**

- **Key Terms and Explanations**
- **Labour Force Participation Rate (LFPR):** This metric represents the percentage of the working-age population (typically aged 15 years and older) that is either actively employed or seeking employment. It is a critical indicator of an economy's capacity to utilize its human resources. For example, if a city has 100 working-age women and only 31 are working or looking for a job, the female LFPR is 31%.
- **The Care Economy / Unpaid Care Work:** This encompasses all non-market, unpaid services provided within households and communities, including childcare, eldercare, cooking, cleaning, and household management. Because these services are not monetized, they are traditionally excluded from Gross Domestic Product (GDP) calculations, masking their immense economic value.
- **Gender Wage Gap:** The systematic difference between the average remuneration received by male and female working professionals. It is expressed as a percentage of male earnings. For instance, if a male salaried worker earns ₹30,700 per month and a female counterpart earns ₹23,700 for similar work profile structures, the resulting 23% deficit highlights structural pay inequity.
- **Million-Plus Cities (Urban Agglomerations):** Large metropolitan centers with a population exceeding one million people. These urban hubs are typically characterized by advanced infrastructure, a higher concentration of white-collar corporate jobs, and a noticeable wage premium compared to smaller towns or rural areas.
- **Income Effect vs. Substitution Effect:** In economic sociology, the income effect suggests that as a household's total income rises, the economic compulsion for women to work decreases, often leading to their withdrawal from the labor force to manage the home—a trend highly visible in developing societies. Conversely, the substitution effect occurs when rising wages make entering the workforce more financially lucrative than staying at home.

Main Arguments and Substantive Parts

Socio-economic data from India's largest metropolitan centers challenges the conventional assumption that urbanization and financial affluence automatically lead to gender equality. The structural barriers keeping women out of the workforce remain deeply entrenched, even within highly modernized environments.

The Domestic Care Trap

A disproportionately high share of urban women—averaging nearly 69% across major cities—remain completely outside the formal workforce due to the burden of childcare and domestic responsibilities. In sharp contrast, only 1% of men cite these factors as reasons for economic inactivity. This stark divergence highlights a persistent gender bias regarding domestic labor, where the responsibility for maintaining a household falls squarely on women, irrespective of the family's geographic location or economic standing.

Significant Spatial Disparities

The structural barriers preventing women from working vary greatly from city to city, reflecting regional differences in culture, economics, and infrastructure:

High Exclusion Zones: In industrial and traditional hubs like Howrah (83%), Surat (81%), Pimpri Chinchwad (78%), and Bhopal (78%), domestic care duties keep the vast majority of non-working women at home.

Low Exclusion Zones: In southern and select northern cities like Coimbatore (38%) and Agra (41%), the domestic burden is significantly less likely to prevent women from entering the workforce. This points to variations in local social norms, service-sector job availability, and family support systems.

The Paradox of Quality vs. Inequity

While metropolitan areas offer better employment options—65% of working urban women secure salaried positions compared to 51% in smaller urban centers—they also feature stark wage disparities. Women in salaried roles earn roughly 23% less than men. In specific cities like Kalyan-Dombivli, Navi Mumbai, and Nagpur, women earn nearly half as much as their male colleagues.

The gap is even wider in self-employment, where men earn more than twice as much as women (₹33,880 vs. ₹16,160). This indicates that women face major obstacles when trying to scale businesses, access credit, or enter high-margin industries.

Extended Working Hours

Working professionals in million-plus cities face demanding schedules, averaging 49.5 hours per week. Salaried women in hubs like Rajkot and Faridabad log between 50 and 51.5 hours weekly at the workplace. When these long shifts are combined with heavy domestic responsibilities, urban women face a grueling "double burden" that often leads to burnout and forces them to leave the corporate workforce early.

- **Historical Evolution of the Issue**

- **Pre-Independence Era**

- In the traditional agrarian economy, women's work was highly integrated into family-based farming and cottage industries. However, industrialization and urbanization under British colonial rule began separating the workplace from the home. This shift marginalized women's economic contributions, confining them to the domestic sphere while formal factory jobs were largely reserved for men. Early social reform movements focused heavily on women's literacy and basic education, but paid little attention to their financial independence or career opportunities.

- **Post-Independence and the Welfare Approach (1950s–1970s)**

- Following independence, the Indian Constitution guaranteed complete gender equality under Articles 14 and 15. Despite these constitutional protections, early Five-Year Plans treated women primarily as passive recipients of social welfare rather than active economic contributors. State policy focused on maternal health, nutrition, and domestic skills, which unintentionally reinforced the idea that a woman's primary role was within the household. The turning point came with the publication of the **"Towards Equality" Report (1974)**, which exposed declining female employment trends and forced policymakers to shift their focus from welfare to active economic development.

- **The Liberalization Era and the Care Crisis (1990s–2000s)**

- The 1991 economic reforms accelerated urbanization and sparked rapid growth in the services sector, creating new corporate opportunities for educated urban women. However, this period also triggered a counter-trend known as the **"Income Effect."** As household incomes rose in rapidly developing cities, many families pulled women out of manual or informal work to signal higher social status. Meanwhile, the lack of institutional childcare facilities meant that middle-class professional women had to rely entirely on informal support from grandparents or domestic workers to sustain their careers.

- **Contemporary Institutional Pivot (2010s–2026)**

- In recent decades, the government has introduced targeted legal and policy interventions to address low female labor force participation. The launch of the Periodic Labour Force Survey (PLFS) provided more frequent, accurate tracking of employment trends. Legislative updates like the **Maternity Benefit Amendment Act (2017)** increased paid leave to 26 weeks and made workplace crèches mandatory for larger companies. However, enforcement remains uneven across sectors, and the challenge of balancing long urban working hours with domestic care continues to limit progress.

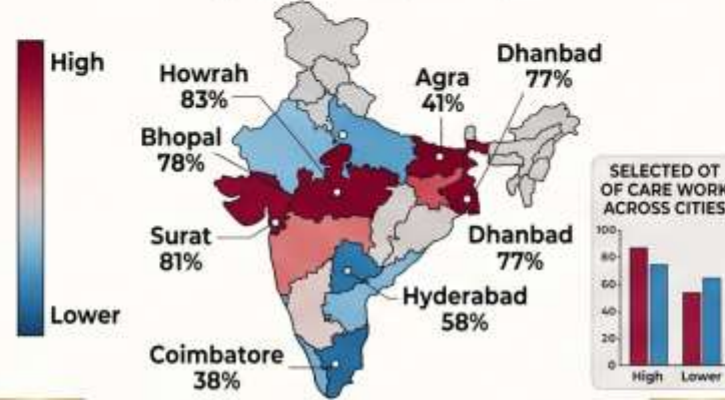
- **Way Forward**
 - **Institutionalizing the Care Infrastructure**
 - Cities must treat childcare facilities as essential public infrastructure, just like water, electricity, or public transport.
 - **Public-Private Crèche Networks:** High-density commercial districts and corporate parks should set up subsidized, high-quality daycares through public-private partnerships.
 - **Integrated Urban Planning:** Municipalities can mandate that new residential complexes include dedicated spaces for early childhood care and senior day centers, reducing the time women spend commuting for care duties.
 - **Gender-Responsive Urban Planning**
 - Improving safety and mobility in cities directly increases women's access to formal jobs.
 - **Secure Public Transportation:** Cities need to expand reliable public transit, improve street lighting, and guarantee safe last-mile connectivity to lower the risks and anxieties of commuting.
 - **Flexible and Hybrid Work Models:** State policies should encourage businesses to adopt flexible hours and hybrid working arrangements, making it easier for professionals to balance their career goals with family life.
 - **Legislative and Fiscal Reforms**
 - Policy shifts can help level the playing field by reducing the financial penalties associated with hiring women and encouraging shared household duties.
 - **Mandatory Paternity Leave:** Introducing non-transferable paid paternity leave helps normalize the male role in childcare, shifting the perception that parenting is exclusively a woman's job.
 - **Corporate Subsidies and Tax Incentives:** The government could offer tax breaks or partial wage subsidies to small and medium enterprises (SMEs) to help cover maternity benefit costs, preventing hiring discrimination against young women.
 - **Equal Pay Enforcement:** Strengthening corporate reporting requirements by mandating annual, transparent audits of gender wage gaps helps ensure compliance with equal pay laws.
-

UPSC CIVIL SERVICES EXAMINATION PREPARATION: UNPACKING GENDER & LABOUR MARKET DYNAMICS IN INDIA'S MAJOR CITIES

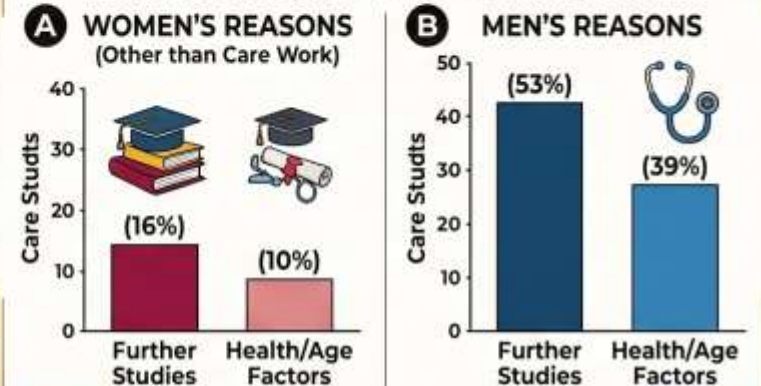
THE GENDER BIAS IN CARE WORK: A BARRIER TO LFPR



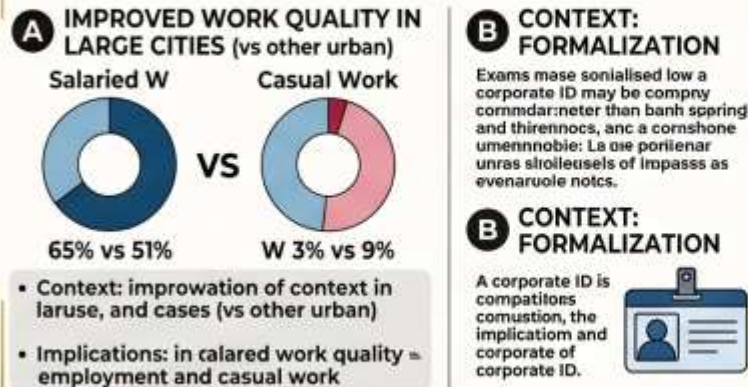
VARIED IMPACT OF CARE WORK ACROSS CITIES (Regional Disparities)



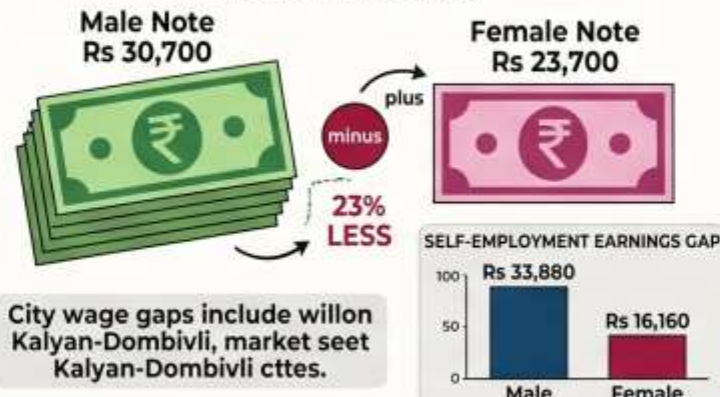
BEYOND CARE WORK: EDUCATIONAL & HEALTH DRIVERS



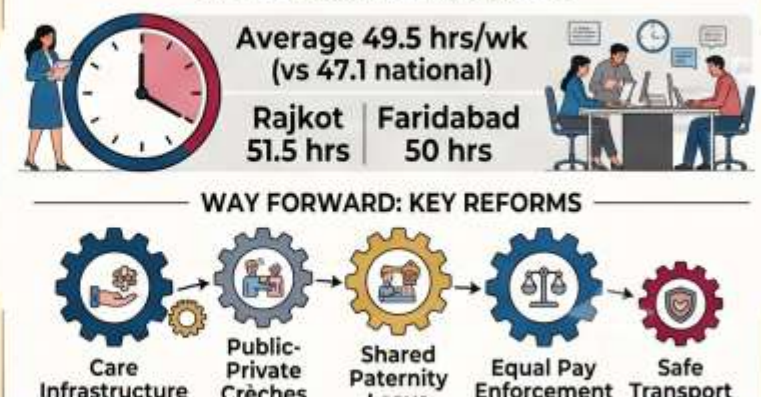
STRUCTURAL INEQUALITY IN EMPLOYMENT TYPE & QUALITY



THE GENDER WAGE GAP (Million-Plus Cities)



EXTENDED WORK HOURS & THE DOUBLE BURDEN



India, Australia Set to Seal Uranium Supply Pact During PM Modi's Visit

Dipanjan Roy Chaudhury

New Delhi: A uranium supply pact will be the big-ticket item from PM Narendra Modi's Australia trip this week amid New Delhi's efforts to expand nuclear power generation.

Australia, which holds a third of the world's known uranium reserves, entered into a framework pact with India more than a decade ago. Modi's visit to Melbourne could result in a deal enabling Australia to supply uranium to India, said people familiar with the developments.

India and Australia are also expected to conclude or firm up pacts covering critical minerals, cybersecurity, emerging technologies, clean energy, and supply-chain resilience following the annual Summit between Modi and Australian PM Anthony Albanese in Melbourne this week, the people said.

Modi will also participate in the India-Australia CEOs Forum, where business leaders are expected to explore investment opportu-



Modi and Australian Prime Minister Anthony Albanese

BOOSTING ECONOMIC TIES



Modi's Australia visit next week to deepen trade ties; bilateral trade touched \$54.4 billion in FY25

nities across manufacturing, technology, and clean energy sectors.

Economic ties between the two countries have expanded sharply in recent years. Canberra launched "A New Roadmap for Australia's Economic Engagement with India" in February 2025 to bolster partnership with New Delhi.

The India-Australia Economic Cooperation and Trade Agreement (ECTA), which entered into force on December 29, 2022, is a landmark bilateral trade pact. It provides immediate zero-duty access for 98.3% of Australian goods to India and locks in 100% duty-

free access for Indian exports to Australia. India is Australia's fifth largest trading partner with \$54.4 billion worth of bilateral trade in goods and services in FY25.

Sectoral gains under the ECTA have become more broad-based, with notable growth in exports across textiles, pharmaceuticals, chemicals, and agricultural products. On the import side, the agreement continues to facilitate

access to essential raw materials such as base metals, raw cotton, chemicals and fertilisers, and pulses—critical for India's manufacturing and industrial sectors. This complementary trade structure has strengthened supply chain resilience and supported domestic value addition, according to an official familiar with ECTA.



Delhi, Canberra to advance cooperation in critical minerals, cybersecurity, emerging technologies, clean energy and supply-chain resilience

- **Key Terms and Explanations**

- **Civil Nuclear Cooperation / Uranium Supply Pact:** A bilateral agreement that allows for the transfer of nuclear fuel (uranium) and technology between countries for peaceful, civilian energy generation rather than military purposes.
- **Economic Cooperation and Trade Agreement (ECTA):** A preferential trade pact that reduces or eliminates tariffs on a wide range of goods and services between two nations, acting as a stepping stone toward a full Free Trade Agreement (FTA).
- **Critical Minerals:** Mineral commodities that are vital to modern technology, national security, and green energy transitions, but are vulnerable to supply chain disruptions. These include lithium, cobalt, nickel, and rare earth elements.
- **Supply Chain Resilience:** The capability of a supply chain to anticipate, absorb, adapt to, and recover from unexpected disruptions (such as geopolitical tensions or pandemics) by diversifying sourcing and manufacturing destinations.
- **Dual-Use Technology / Emerging Technologies:** Technological innovations that can be applied to both commercial/civilian and military fields, such as artificial intelligence, quantum computing, and secure cybersecurity frameworks.

- **Main Arguments and Substantive Parts**

- The core thesis of current bilateral relations is that India and Australia are rapidly converting their shared geopolitical anxieties in the Indo-Pacific into a tangible, resource-backed economic partnership. The relationship is driven by structural complementarities: India's massive scale of consumption and manufacturing ambitions matches Australia's immense natural resource wealth.

- **Key Contentions & Supporting Evidence**

- **Energy Security as a Strategic Pillar:** India's ambitious transition toward clean energy requires a reliable, base-load power source alongside renewables. Expanding nuclear energy capacity is central to this plan. Since Australia holds roughly one-third of the world's known uranium reserves, a functional supply deal directly addresses India's chronic domestic uranium shortages.
- **Trade Liberalization and Institutionalization:** The bilateral economic relationship is no longer transactional; it is institutionalized. The ECTA provides immediate zero-duty access for 98.3% of Australian goods entering India and locks in 100% duty-free access for Indian exports to Australia. This structural alignment propelled bilateral trade to **\$54.4 billion** in FY25, making India Australia's fifth-largest trading partner.
- **Strategic Diversification:** Beyond traditional sectors, both nations are diversifying into critical minerals, cybersecurity, and clean energy. Canberra's release of "*A New Roadmap for Australia's Economic Engagement with India*" underscores a deliberate policy shift to anchor Australia's long-term commercial future in the Indian market.

- **Historical Evolution of the Issue**

- **The Cold War Era (1947–1991):** Relations were historically frosty and limited. India's policy of Non-Alignment and proximity to the Soviet Union clashed with Australia's position as a core Western ally via the ANZUS treaty. Trade was minimal, focused mostly on agricultural commodities.
- **The 1998 Pokhran-II Low Point:** Following India's strategic nuclear tests in 1998, Australia took a hardline stance. It recalled its High Commissioner, suspended defense ties, and vehemently opposed India's nuclear program, refusing to sell uranium to a non-signatory of the Nuclear Non-Proliferation Treaty (NPT).
- **The Nuclear Turnaround (2008–2014):** The breakthrough came in 2008 when the Nuclear Suppliers Group (NSG) granted India a clean waiver for civil nuclear trade. Recognizing India's impeccable non-proliferation record, Australia's Labor Party reversed its policy ban in 2011. This culminated in the signing of the **Bilateral Civil Nuclear Cooperation Framework Agreement** in 2014, fundamentally altering the strategic trust between the two countries.
- **The Modern Era of Integration (2020–2026):** Relations were elevated to a *Comprehensive Strategic Partnership (CSP)* in 2020. This diplomatic momentum directly led to the signing and operationalization of the landmark ECTA, alongside deeper defense and security coordination via the Quad framework.

- **Way Forward**

- **Elevate ECTA to CECA:** The interim trade agreement should be upgraded into a full **Comprehensive Economic Cooperation Agreement (CECA)**. This expansion should focus on lowering non-tariff barriers, relaxing visa regimes for working professionals, and protecting cross-border investments.
- **Operationalize Critical Mineral Supply Lines:** India's joint venture entity, **KABIL** (Khanij Bidesh India Limited), should establish more co-investment funds with Australian mining companies. This partnership must focus on building direct refining pipelines for lithium and cobalt within India to fuel the domestic electronics and EV manufacturing sectors.
- **Streamline Civil Nuclear Deliveries:** Both sides need to create predictable, long-term shipping schedules for uranium pellets. Ensuring smooth regulatory clearances will help Indian nuclear power stations maintain stable, uninterrupted base-load operations.
- **Expand Clean Energy Technology Exchanges:** Beyond uranium, cooperation should actively include ultra-low-cost solar manufacturing, rooftop solar integration grids, and green hydrogen technology, leveraging Australia's vast R&D experience in renewable energy systems.

DECODING INDIA-AUSTRALIA STRATEGIC & ECONOMIC PARTNERSHIP

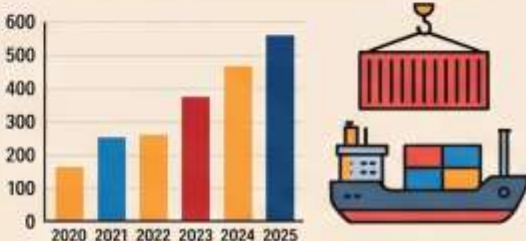


THE URANIUM & NUCLEAR PACT



- **AUSTRALIA:** Holds 1/3 world uranium reserves. (Framework pact over a decade old).
- **INDIA:** Clean energy expansion, fuel for PHWRs. Under IAEA safeguards.
- **RESULT:** Functional deal for uranium supply. Strategic base-load power.

ECTA ENFORCEMENT & TRADE



- **ENTERED FORCE:** Dec 29, 2022.
- **BILATERAL TRADE:** \$54.4B in FY25 (India is Aus' 5th partner).
- **DUTY-FREE ACCESS:** 98.3% Australian goods to India, 100% 100% Indian goods to Australia. Broad-based growth in textiles, pharma, ag-products, and metals.

FUTURE HORIZONS & DIVERSIFICATION



- **CRITICAL MINERALS:** Sourcing lithium, cobalt for EV and battery manufacturing. Supply chain resilience.
- **OTHER PACTS:** Cybersecurity, Emerging technologies (AI, Quantum), Clean energy systems.
- **INDIA-AUSTRALIA CEOS FORUM:** To explore investments in manufacturing and technology.

GEOPOLITICAL RELATIONS & ROADMAP



- **GEOPOLITICAL CONTEXT:** Shared Indo-Pacific interests, Quad leadership. Focus on free trade routes.
- **AUSTRALIA'S NEW ROADMAP:** Launched Feb 2025 to bolster partnership.
- **ANNUAL SUMMIT:** Deepens Comprehensive Strategic Partnership.



STRATEGIC AUTONOMY



MUTUAL TRUST



AXIA
IAS ACADEMY
RISE ABOVE THE REST



UPSC CSE CLASSES - PRELIMS + MAINS + INTERVIEW GUIDANCE

- **EXPERT FACULTY & MENTORSHIP**
- **COMPREHENSIVE STUDY MATERIAL**
- **REGULAR TEST SERIES & EVALUATION**
- **CURRENT AFFAIRS & ANSWER WRITING FOCUS**
- **SMALL BATCH SIZES FOR PERSONAL ATTENTION**

axiaiasacademy.com +91 6002-417488