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Free Indo-Pacific priority for India, Japan: PM

- Both countries are 'perfectly aligned', Japanese PM says and stresses on 'strategic cooperation'
- Countries seal at least 129 MoUs on technology, investment and AI; Japan may invest $1 trillion
- Modi praises deal over defence tech for maritime security; Takaichi expresses concern over Gulf

Saurabh Trivedi
Kallol Bhattacherjee
NEW DELHI

A "free and rules-based Indo-Pacific" is a common priority for India and Japan, Prime Minister Narendra Modi said on Thursday while welcoming his Japanese counterpart, Sanae Takaichi. Mr. Modi said India and Japan would jointly develop technologies that would help in maintaining maritime security and "regional peace".

"India and Japan are among the biggest economies of the world. A free, prosperous and rules-based Indo-Pacific is our shared priority. We will jointly pave the way for peace, stability and progress for the entire region," Mr. Modi said.

"In the field of defence, India and Japan have done the first agreement for co-development of projects. This agreement on naval radio antenna will open a new chapter of defence technology partnership. Now, we will jointly develop such technologies that will help in maintaining regional peace, maritime security, and strengthen rules-based order," Mr. Modi added.

Maritime security

Ms. Takaichi, who arrived in New Delhi on July 1 for her first visit to India as Prime Minister, renewed her call for an updated free and open Indo-Pacific (FOIP) and emphasised the need for "strategic cooperation". She said that the two countries were "perfectly aligned".

Boosting ties: Prime Minister Narendra Modi with his Japanese counterpart Sanae Takaichi in New Delhi. SHIV KUMAR PUSHPAKAR

Mr. Modi and Ms. Takaichi attended an economic session in which Indian and Japanese companies sealed 129 memoranda of understanding on technology, investment, and artificial intelligence.

According to a document shared by the External Affairs Ministry, Japan is on track to invest $1 trillion across States, including Haryana, Odisha, Maharashtra, Gujarat, and those in the northeastern region.

Ms. Takaichi highlighted the importance of maritime security as the key to maintaining regional stability in the Indo-Pacific.

"Expansion of maritime security is especially important for regional peace and stability," Ms. Takaichi said, highlighting the harmony between Japan's call for FOIP and the Government of India's emphasis on ocean as a "shared space" that can sustain economic growth and safeguard sovereignty.

"In the midst of international affairs in disarray, the establishment of such an inter-complementary cooperative relationship has become ever more important," she stated.

She expressed concern about the situation in the Gulf region, where at least 31 Japanese vessels remain stranded near the Strait of Hormuz.

Defence cooperation

The two sides also announced deepening of bilateral defence cooperation through joint military exercises, particularly naval exercises in the Indian Ocean and expanding Maritime Domain Awareness.

Interacting with the media on Thursday evening, Japanese officials said that bilateral cooperation in defence equipment and technology was progressing through industry agreements. They emphasised that the defence technologies being exported were intended for "defence purposes and not for warfare".

The two sides highlighted the need to collaborate in addressing energy security needs against the backdrop of the disruption in the Persian Gulf region and supported the idea of "strategic stockpiling of crude oil" to serve bilateral requirements. Japan is diversifying energy suppliers in the backdrop of the crisis in West Asia, said Japanese officials.

Modi, Takaichi unveil Maruti Suzuki plant

NEW DELHI

At the India-Japan Joint Economic Forum on Thursday, Narendra Modi and Sanae Takaichi inaugurated Maruti Suzuki's fourth vehicle manufacturing facility at Kharkhoda in Haryana. This plant will be one of the largest, Suzuki Motors head Toshihiro Suzuki said. » PAGE 12

- **Key Terms and Explanations**
- **Free and Open Indo-Pacific (FOIP)**
- This strategic concept views the Indian and Pacific Oceans as a single, contiguous geopolitical and economic space. The framework emphasizes a rules-based maritime order, freedom of navigation, overflight, unhindered lawful commerce, and the peaceful resolution of territorial disputes without coercion.
- **Maritime Domain Awareness (MDA)**
- The effective understanding of anything associated with the maritime environment that could impact the security, safety, economy, or environment of a nation or region. It involves real-time tracking of merchant shipping, monitoring illegal fishing, and identifying asymmetric threats.
- **Strategic Stockpiling**
- The practice of accumulating and maintaining large reserves of critical commodities, particularly crude oil and essential raw materials, to insulate a national economy against sudden geopolitical supply chain shocks, wars, or chokepoint blockades.
- **Defence Technology Co-development**
- A paradigm shift in bilateral military relationships, moving away from a traditional "buyer-seller" dynamic toward joint research, design, engineering, and manufacturing of defense platforms and components.
- **Inter-complementary Cooperative Relationship**
- A strategic partnership where the distinct, structural strengths of two nations are deliberately aligned to compensate for each other's vulnerabilities or to maximize collective efficiency in security and economic development.

- **Main Arguments and Substantive Parts**
- **The Core Thesis**
- The relationship between major Asian democracies has evolved from a foundational economic partnership into a comprehensive strategic and defense alignment. This shift is driven by a shared imperative to secure a rules-based order in the Indo-Pacific, diversify energy supply chains against West Asian vulnerabilities, and pioneer co-development in critical technology sectors.
- **Strategic Convergence in the Indo-Pacific**
- The foreign policies of these partner nations are increasingly synchronized. Security is no longer viewed in isolation; rather, regional stability is explicitly linked to upholding sovereignty and international law amid global geopolitical disarray. The maritime space is treated as a shared commons that must remain unmonopolized to guarantee long-term economic growth.
- **A New Chapter in Defense Industrial Cooperation**
- The transition from joint military exercises to actual technology co-development represents a major milestone. The initiation of projects like joint naval radio antenna development demonstrates a commitment to building hardware together. Importantly, this defense collaboration is explicitly framed as defensive and stabilizing, designed to act as a regional deterrent rather than an instrument for active warfare.
- **Economic De-risking and High-Tech Integration**
- Economic statecraft is being deployed at an unprecedented scale, evidenced by over a hundred bilateral Memoranda of Understanding (MoUs) spanning artificial intelligence, industrial investments, and technological transfers. Substantial investment plans targeting multiple states—including Haryana, Odisha, Maharashtra, Gujarat, and the Northeastern region—show a deliberate strategy to embed advanced foreign capital directly into regional manufacturing corridors, highlighted by major automotive and industrial expansions like the Maruti Suzuki facility in Kharkhoda, Haryana.
- **Mitigation of Energy Vulnerabilities and Chokepoint Risks**
- Geopolitical volatility in critical transit zones, such as the Strait of Hormuz in the Gulf region, directly impacts global trade and strands commercial fleets. In response, these partners are prioritizing collective energy security. The strategy combines the diversification of energy suppliers with institutional support for strategic oil stockpiling to hedge against sudden supply disruptions in West Asia.

- **Historical Evolution of the Issue**
- **The Post-War Foundational Era (1950s–1980s)**
- **1952:** Formal diplomatic relations were established following the post-World War II settlement. Early engagements were built on cultural affinity, rooted in historical Buddhist linkages, and a mutual desire for regional rehabilitation.
- **1958:** The extension of Japan's first Official Development Assistance (ODA) loan to India marked the beginning of a long-term developmental partnership, establishing Japan as a critical pillar in India's early infrastructure efforts.
- **The Post-Cold War and Economic Realignment (1990s–2000s)**
- **1991:** India’s "Look East" policy created new opportunities for deeper integration with East Asian economies, moving bilateral ties beyond simple aid mechanisms to active trade partnerships.
- **1998:** Relations faced temporary friction following India's Pokhran-II nuclear tests, which triggered Japanese sanctions. However, pragmatic geopolitical realities led to a swift restoration of ties.
- **2000:** The establishment of the "Global Partnership" during Prime Minister Yoshiro Mori’s visit to India signaled a mutual understanding that bilateral relations carried global significance.
- **The Strategic Pivot and the Indo-Pacific Blueprint (2006–2014)**
- **2006:** The relationship was upgraded to a "Strategic and Global Partnership," institutionalizing annual Prime Ministerial summits and structured strategic dialogues.
- **2007:** Prime Minister Shinzo Abe delivered his historic "Confluence of the Two Seas" speech to the Indian Parliament. This address laid the intellectual foundation for the contemporary Indo-Pacific concept, linking the security of the Indian and Pacific Oceans.
- **2011:** The implementation of the Comprehensive Economic Partnership Agreement (CEPA) eliminated tariffs on a vast majority of traded goods, accelerating bilateral commercial ties.
- **Deepening Integration and Defense Evolution (2014–Present)**
- **2014:** The relationship was elevated to a "Special Strategic and Global Partnership," reflecting deep alignment across security, economic, and regional governance domains.
- **2017:** Active collaboration commenced on the Asia-Africa Growth Corridor (AAGC) alongside the revival of the Quadrilateral Security Dialogue (Quad), offering a transparent, rules-based alternative for regional infrastructure development.
- **2020s:** Structural cooperation advanced through 2+2 Ministerial Dialogues, joint military exercises across all three armed services, and a shift into co-developing defense technologies (such as naval radio antennas) alongside multi-state industrial investments.

- **Way Forward**
- **Accelerating the Defense Co-development Pipeline**
- The joint agreement on naval radio antennas should serve as a foundational blueprint for broader defense industrial cooperation. Both nations should streamline bureaucratic approvals and align procurement regulations to fast-track joint projects in unmanned underwater vehicles (UUVs), specialized maritime surveillance aircraft, and advanced electronic warfare equipment.
- **Expanding Real-Time Maritime Domain Awareness (MDA)**
- To secure the vast Indo-Pacific shipping lanes, the partnership should link India's Information Fusion Centre for the Indian Ocean Region (IFC-IOR) with Japan's maritime surveillance networks. Creating a continuous data-sharing mesh will improve tracking of both conventional security challenges and non-traditional threats like illegal fishing or piracy.
- **Diversifying Energy Corridors and Safeguarding Strategic Reserves**
- Given the persistent vulnerabilities in the Strait of Hormuz, both nations must actively operationalize their plans for strategic crude oil stockpiling. This includes investing in deep underground storage infrastructure along India's eastern and western coasts and cooperating on alternative energy shipping routes that bypass vulnerable chokepoints.
- **Institutionalizing Supply Chain Resilience in High-Tech Sectors**
- Building on the 129 technology MoUs, the partners should establish formal semiconductor and artificial intelligence research hubs. By combining Japan's precision engineering capability with India's vast software talent pools, they can create secure, redundant technology supply chains less vulnerable to unilateral export controls or regional blockades.
- **Strategic Investment in Sub-Regional Connectivity**
- Special attention must be given to accelerating high-quality infrastructure investments in India's Northeastern states. Connecting these landlocked areas with broader Southeast Asian supply lines offers a transparent, sustainable model for regional growth, helping anchor long-term stability across the broader Indo-Pacific.

- **UPSC CSE Mains Questions**
- **GS Paper 2 (2019)**
- The sea is an important component of the Indo-Pacific region, which is increasingly becoming a geopolitical arena. In this context, discuss India's strategic interests along with the challenges it faces.
- **GS Paper 2 (2017)**
- "The Quadrilateral Security Dialogue (Quad) is transforming itself from a security-centric alignment into an economic and technological collaborative framework in present times." Analyze the statement in light of India's strategic engagements.
- **GS Paper 3 (2016)**
- Evaluate the geopolitical and economic significance of strategic oil reserves for India, keeping in view the persistent volatility in West Asia and the security of maritime chokepoints.

MAJOR ASIAN DEMOCRACIES: EVOLUTION OF SPECIAL STRATEGIC & DEFENSE PARTNERSHIP FOR THE INDO-PACIFIC

AXIA IAS ACADEMY

KEY CONCEPTS IN THE INDO-PACIFIC

FREE & OPEN INDO-PACIFIC (FOIP)

RULES-BASED MARITIME ORDER, FREEDOM OF NAVIGATION, COMMERCE

MARITIME DOMAIN AWARENESS (MDA)

REAL-TIME TRACKING, MONITORING ILLEGAL FISHING & THREATS

STRATEGIC STOCKPILING

ACCUMULATING CRITICAL COMMODITIES (OIL, RAW MATERIALS) AGAINST SHOCKS

DEFENSE TECHNOLOGY CO-DEVELOPMENT

JOGINEERS NOKING TOGETHER ON ADVANCED NAVAL EQUUFACTURING OF DEFENSE PLATFORMS

ALIGNING DITINECKCIEINT STURTACE STRENGTHS, INTENNITED TO GOCFRS, ONTIINSELCEOCIECOAMODIES

JOINT RESEARCH, DESIGN, ENGINEERING & MANUFACTURING OF DEFENSE PLATFORMS

INTER-COMPLEMENTARY COOPERATIVE RELATIONSHIP

ALIGNING DISTINCT STRUCTURAL STRENGTHS TO MAXIMIZE COLLECTIVE EFFICIENCY

HISTORICAL EVOLUTION TIMELINE

MULTIDIMENSIONAL ANALYSIS MATRIX

SOCIAL	POLITICAL	LEGAL
• Skill Dev • People-to-people	• Annual Summits • Quad Diplomatic Positions	• Freedom of Navigation • UNCLOS Alignment
ETHICAL	**INTERNATIONAL**	**ECONOMIC**
• Defensive Deterrence • Sustainable Infrastructure	• Chokepoint Security • Stabilizing Supply Chains	• Industrial Corridors • GDP Growth

CORE PILLARS OF ALIGNMENT

DEFENSE & SECURITY IMPERATIVE

Radar screens, warships, surveillance aircraft

- Enhanced MDA Tracking
- Joint Defense Industrial Projects (e.g., naval naval antennas)
- Regional Stabilization

ECONOMIC & ENERGY COOPERATION

Technology gears, data flows, manufacturing corridors

- Economic De-risking
- Multi-state Industrial Investments (HARYANA, ODISHA, GUJARAT, NORTHEAST)
- High-Tech Integration (AI, Tech Transfers)
- Strategic Energy Resiliency (Stockpiling)

UPSC CSE SYLLABUS LINKAGES

GS-2
Bilateral, Regional & Global Groupings

GS-3
Science & Tech Infrastructure Security Challenges

ESSAY PAPER
Geopolitical Themes Peace & Deterrence

OPTIONAL SUBJECTS
PSIR Geography

WAY FORWARD: FUTURE ROADMAP

Accelerated Defense Co-development Pipeline | Expanded Real-Time MDA Mesh | Diversifying Energy Corridors | Institutionalizing Supply Chain Resilience | Strategic Sub-Regional Connectivity

Chipflation is here and you'll have to pay for it

Asmita Dey@timesofindia.com

Mumbai: If you think the AI boom will only make MacBooks and iPads more expensive, you are wrong. You probably do not realise it, but a host of products you use every day have memory chips in them—this is because devices are getting 'smart' which means they require more memory to process data and run applications.

From your connected speakers, smartphones, TVs to even smaller kitchen appliances, everything has chips. Prices of products such as smart TVs have already been rising and the rush to expand AI infrastructure will only make supplies of chips scarce, driving chipflation. And consumers will have to pay for it.

"Memory component prices continue to remain on an upward trajectory with eMMC prices having gone up by almost 12 times while DDR memory prices have increased by nearly 15 times. Prices across the (smart TV) category have already seen an increase of nearly 30% over the last few months. If price pressures continue, further price revisions may become inevitable," said Arjun Bajaj, director at Videotex which manufactures TVs for brands.

The current chip crunch is heavily driven by semiconductor fabs diverting capacity towards high-bandwidth memory (HBM) for the AI boom. This has sent standard DRAM, NAND and legacy microcontrollers spiking across the board, said Rahul Sharma, co-founder at MiPhi and Bhagwati Products which manufactures smartphones and other electronics for brands such as Oppo, Vivo and Lenovo.

DISCRETIONARY SPENDS TAKE A HIT

- Product prices have already been rising and **rush to expand AI infra will make supplies of chips scarce,** driving chipflation
- **Current chip crunch is heavily driven by semiconductor fabs** diverting capacity towards high-bandwidth memory (HBM) for the AI boom
- Counterpoint Research forecasts **global smartphone shipments to decline to about 1.1 billion units,** the lowest annual volume since 2013

For consumers, this means higher prices for everything from SD cards to smartphones and for brands, it's a race to secure the chips before competitors or further cost escalations, said Nikhil Rajpal, founder & CEO at smart devices firm Qubo. Some small smartphone and PC manufacturers are already facing heat because of their inability to procure chips, said Parv Sharma, senior analyst at Counterpoint Research, projecting demand for smartphones and PCs at the lower and medium end to take a hit. "Consumers with smaller budgets may go slow on upgrades," Sharma said. The research firm forecasts global smartphone shipments to decline to about 1.1 billion units, the lowest annual volume since 2013.

There will be an increase of around 10-15% in chip prices this quarter due to the shift of allocation of chips to AI sector/data centres instead of the low margin consumer electronics market. "We were comfortable with stocks for Q1 but expect limited supply in Q2," said Kamal Nandi, business head at appliances business of Godrej Enterprises Group, expecting a price hike of 1-2%. The broader chipflation has driven up component costs for small kitchen appliances by 15-20% over the past year, said Ravi Saxena, founder & CEO at Wonderchef, adding that the impact has been limited given that chips and electronic modules roughly make up about 5-8% of its component costs.

- **Key Terms and Explanations**
- **Chipflation:** A specific form of cost-push inflation where the rising prices of semiconductor components directly elevate the retail prices of final consumer goods.
- **High-Bandwidth Memory (HBM):** An advanced, high-performance 3D-stacked memory architecture designed specifically for AI servers, supercomputers, and high-end graphics cards. HBM stacks memory dies vertically to drastically accelerate data transfer rates.
- **DRAM (Dynamic Random-Access Memory):** The volatile "working memory" of a device that stores data currently being processed by the CPU. It clears entirely when the power is turned off.
- **NAND Flash Memory:** A non-volatile storage technology that retains data even without power. It forms the foundational storage block for smartphones, Solid State Drives (SSDs), and memory cards.
- **eMMC (embedded MultiMediaCard):** An older, highly cost-effective flash memory standard embedded directly onto a device's motherboard. It is widely used in budget smartphones, tablets, and smart home appliances where high-speed NVMe drives are too costly.
- **Legacy Microcontrollers:** Low-power, mature-node integrated circuits (often fabricated on older 28nmto 90nmprocesses) that execute specific, dedicated functions. They act as the "brains" behind everyday non-computing appliances like micro-ovens, washing machines, and connected speakers.
- **Semiconductor Fabrication Plants (Fabs):** Highly specialized, multi-billion-dollar industrial facilities where silicon wafers are chemically processed and photolithographically etched to create integrated circuits.

- **Main Arguments and Substantive Parts**
- The intersection of advanced computing and everyday manufacturing highlights a critical realignment of global production capabilities.
- **The Core Thesis**
- The aggressive global expansion of generative AI infrastructure is triggering a structural supply shock across the electronics ecosystem. Foundries are prioritizing high-margin AI chips over low-margin consumer electronics, causing supply scarcity and localized inflation ("chipflation") for everyday consumer goods.
- **Key Supporting Arguments**
- **The Opportunistic Reallocation of Fab Capacity:** Microchip foundries operate on strict capacity constraints. Capitalizing on the AI boom, they are shifting production lines away from standard memory formats (DRAM, NAND) toward specialized HBM components. This asymmetric allocation starves the consumer electronics market of basic, foundational silicon.
- **The "Smartification" Vulnerability:** Modern consumer items—ranging from televisions to basic kitchen equipment—are increasingly built as connected, "smart" devices. This integration means their production costs are tightly coupled to the volatility of global memory chip markets.
- **Bifurcation of the Hardware Market:** High-volume, premium tech giants possess the financial leverage to secure long-term supply agreements. In contrast, small and medium-scale domestic electronics manufacturers face severe component shortages, leading to production slowdowns.
- **Suppression of Lower-Tier Consumer Demand:** As chip costs elevate retail prices, lower-income consumer segments are delaying technology upgrades. This pattern curtails overall volume growth in entry-level smartphones and PCs, potentially lowering global shipping volumes to decade-low levels.

- **Historical Evolution of the Issue**
- The current supply chain challenges are rooted in structural shifts within the global technology sector over the past half-century.
- **The Rise of the Pure-Play Foundry Model (Late 1980s – 1990s):** Historically, tech firms designed and manufactured their own chips. The establishment of dedicated foundries (like TSMC in Taiwan) decoupled chip design from physical manufacturing. While this lowered the barrier to entry for device designers, it heavily concentrated global manufacturing capacity in a few East Asian nodes.
- **The Internet of Things (IoT) Expansion (2010s):** The push to connect everyday appliances to the internet transformed basic mechanical consumer goods into chip-dependent smart electronics. This change significantly increased global demand for mature fabrication nodes and legacy microcontrollers.
- **The Pandemic Supply Chain Disruption (2020–2022):** Lockdowns, sudden shifts to remote work, and miscalculated automotive demand caused a historic global chip shortage. This period highlighted the extreme vulnerability of "just-in-time" supply chains to abrupt global disruptions.
- **The Generative AI Infrastructure Race (2023–Present):** The rapid adoption of Large Language Models (LLMs) created immense demand for enterprise data centers. This trend shifted foundry priorities from standard consumer computing nodes to cutting-edge AI silicon and stacked memory, leading to the current wave of chipflation.

- **Way Forward**
- Addressing the structural vulnerabilities exposed by chipflation requires a balanced, multi-pronged approach combining domestic policy support and international cooperation.
- **Accelerating Strategic Semiconductor Initiatives:** Programs like the India Semiconductor Mission (ISM) must focus on establishing domestic fabrication facilities for mature, legacy nodes (28nm and higher). These nodes form the backbone of everyday appliances and consumer electronics, helping insulate domestic industries from global high-tech supply shocks.
- **Forming Manufacturer Cooperatives for Small Brands:** Micro, Small, and Medium Enterprises (MSMEs) can form purchasing consortia. By pooling their component## 1. Key Terms and Explanations

CHIPFLATION & AI BOOM: A MULTI-DIMENSIONAL ANALYSIS

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CHIPFLATION & AI BOOM: A MULTI-DIMENSIONAL ANALYSIS

COMPREHENSIVE ANALYSIS: THE CHIPFLATION CRISIS & THE GLOBAL AI INFRASTRUCTURE SHIFT (UPSC/APSC CSE PREPARATION)

THE CHIPFLATION CAUSE-AND-EFFECT CHAIN

1. GLOBAL AI INFRASTRUCTURE RACE (Data Centers, AI Servers)

→ **2. FABS REDIVERT CAPACITY** (HBM Memory prioritized for AI)

→ **3. STARVED STANDARD & LEGACY COMPONENTS** (eMMC, NAND, Microcontrollers **SCARCE**)

→ **4. CHIPFLATION** (Cost-Push Inflation on Consumer Goods)

→ **5. MARKET BIFURCATION** (Premium Secured vs. Smaller SMEs Strapped)

→ **6. DEMAND DESTRUCTION AT LOWER END** (Reduced upgrades)

SMART TV PRICES 30%

PC SHIPPING - lowest since 2013

KEY TERMS

- **HBM (High-Bandwidth Memory):** 3D-stacked AI chips
- **DRAM:** Volatile working memory
- **NAND Flash:** Non-volatile storage
- **eMMC:** Embedded legacy flash
- **Legacy MCUs:** Mature nodes (28nm-90nm+)
- **Fabs:** Chip manufacturing plants

MAIN ARGUMENTS

- Shift of Foundries
- Consumer Good Scarcity
- Market Consolidation

HISTORICAL EVOLUTION

1980s	2010s	2020-22	2023+
Pure-Play Foundries	IoT Smartification	Pandemic Shock	Generative AI Pivot

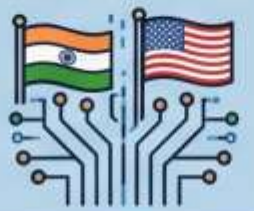
LOGICAL & PHILOSOPHICAL BASE

- Market Determinism & Capital Optimization
- Supply Chain Vulnerability vs. Smart-everything

MULTIDIMENSIONAL ANALYSIS

Social
Widening Digital Divide
Stalled Digital Inclusion

Political
Techno-Nationalism
Sovereign Security



Legal
Anti-Trust Concerns
Supply Chain Transparency

Ethical
Resource Prioritization (Corporate AI vs. Public Tech access)

International
Choke-Point Geopolitics
Regional Reliance

Economic
Cost-Push Inflation
Threat to domestic MSMEs

WAY FORWARD

- Domestic Legacy Node Fabs
- MSME Purchasing Cooperatives
- IP-owned Custom Designs

LINKAGES

- **NCERT:** Class 10/12 Economics (Globalization), Class 10/12 Geography (Manufacturing)
- **UPSC:** GS 2 (IR), GS 3 (S&T, Economy), Essay/Ethics

PYQs

- **Prelims:** Compare HBM vs. DRAM volatility/speed
- **Mains:** Analyze effect of global supply shock on Indian MSMEs

• RAM TEMPLE DONATION ROW

How temples deal with donations

India's biggest temples have similar processes to handle donations. What differs are the institutions governing these systems

DEEPTIMAN TIWARY

• Systems in the states

How Ram Temple stands apart

When systems are tested

The traditional models to manage temples, state's role

SHYAMLAL YADAV

Temples and their assets

Three main traditions of temple management

Government's role in managing temples

- **Key Terms and Explanations**
- **Hundi (Donation Box):** A traditional receptacle placed within religious premises where devotees deposit voluntary offerings including cash, gold, and silver. In large-scale temple economies, these are not merely boxes but primary revenue collection points that require systemic clearing.
- **Parakamani System:** A highly structured, multi-tier system of counting, segregating, and accounting for temple offerings. Used prominently in large institutions like Tirupati, it involves continuous CCTV monitoring, multi-stakeholder presence (including bank officials and state representatives), and rigorous search protocols for personnel to ensure absolute financial transparency.
- **Secular Activity [Article 25(2)(a)]:** Non-religious operations—such as financial management, administrative staffing, property lease, and structural development—that run parallel to religious rituals. The Indian Constitution explicitly permits the state to regulate these secular elements even within religious institutions.
- **Mahant and Akhada Systems:** Traditional governance frameworks rooted in monastic lineages. A *Mahant* is a singular spiritual head with absolute administrative authority, whereas an *Akhada* operates as an autonomous, consensus-based collective of ascetics (*sadhus*), often functioning as a panchayat-style spiritual corporation.
- **Denominational Autonomy:** The legal right granted to a distinct religious sect or group under Article 26 of the Indian Constitution to manage its own affairs, establish institutions, and own property without arbitrary state intervention, provided public order, morality, and health are maintained.

- **Main Arguments and Substantive Parts**
- The governance of religious wealth in India reveals a structural tension between ensuring public accountability and maintaining institutional autonomy. The central arguments revolve around how vast financial inflows are regulated across different management models.
- **The Scale of Revenue and the Necessity of Oversight**
- Public religious institutions act as massive economic entities. Annual collections reach extraordinary heights—Tirupati leads with approximately ₹1,880 crore, followed by Vaishno Devi at ₹230 crore, and the Ram Temple at ₹150 crore. This immense scale of public wealth necessitates robust accounting mechanisms to prevent embezzlement, misdirection of funds, and administrative nepotism.
- **Statutory vs. Non-Statutory Frameworks**
- There is a stark divergence in how accountability is legally enforced. Institutions like the Kashi Vishwanath temple or the Tirumala Tirupati Devasthanams (TTD) operate under dedicated state legislations. These frameworks place government-appointed CEOs, magistrates, and state auditors directly in charge of the secular administration.
- In contrast, newer entities, such as the Shri Ram Janmabhoomi Teerth Kshetra Trust, are governed through independent trust deeds rather than specific state enactments. This grants them higher internal autonomy, relying on private auditing firms rather than statutory state audits, which frequently sparks debate over public accountability vs. community control.
- **Traditional vs. Bureaucratic Systems**
- Beyond state and trust control lie long-standing traditional systems:
- **Family-run/Priest systems (Pandas):** Where hereditary rights govern collections, such as the rotating *Ashta Mathas* of Udupi.
- **Monastic single-head systems:** Controlled entirely by a *Mahant*.
- **Collective Ascetic frameworks:** Managed via *Akhadas*.
- The core debate centers on whether these traditional, lineage-based management styles can meet modern standards of financial compliance without losing their historical character, or if state-driven bureaucratic takeovers are the only way to guarantee transparency.

- **Historical Evolution of the Issue**
- The relationship between the state and temple administration has evolved across three distinct historical phases, shifting from colonial management to post-independence statutory control.
- **The Colonial Precedent (19th Century to 1947)**
- The British East India Company initially managed major temples directly to secure revenue and maintain local stability. However, facing criticism back home for managing "heathen" institutions, the colonial government enacted the **Religious Endowments Act of 1863**, which handed control to local committees.
- When widespread mismanagement and financial leakage persisted, the colonial state intervened again, passing the landmark **Madras Hindu Religious Endowments Act of 1925**. This crucial legislation empowered provincial governments to take over mismanaged religious endowments, establishing a historical precedent for state intervention in secular temple administration.
- **Post-Independence Consolidation (1947–2000s)**
- Following independence, the 1925 Act served as the blueprint for various state governments to pass their own specific legislations, such as the Tamil Nadu Hindu Religious and Charitable Endowments (HR&CE) Act of 1959 and similar laws in Andhra Pradesh and Maharashtra.
- During this era, the judiciary repeatedly affirmed that while the state cannot interfere in essential religious practices (*rituals and doctrines*), it has full constitutional authority to manage secular activities (*finances, administration, and employment*). This led to the institutionalization of bureaucratic control, with IAS officers and state-appointed boards running major temples.
- **The Modern Phase and the Autonomy Debate (2020–2026)**
- The current era is defined by growing friction between state control and calls for privatization. The establishment of the Shri Ram Janmabhoomi Teerth Kshetra Trust in 2020 via an independent trust model marked a significant shift away from direct state-bureaucratic management.
- Concurrently, civil society campaigns demanding that the state "liberate temples" have gained momentum, arguing that state management selectively targets Hindu institutions while minority institutions enjoy greater autonomy under community-run boards.

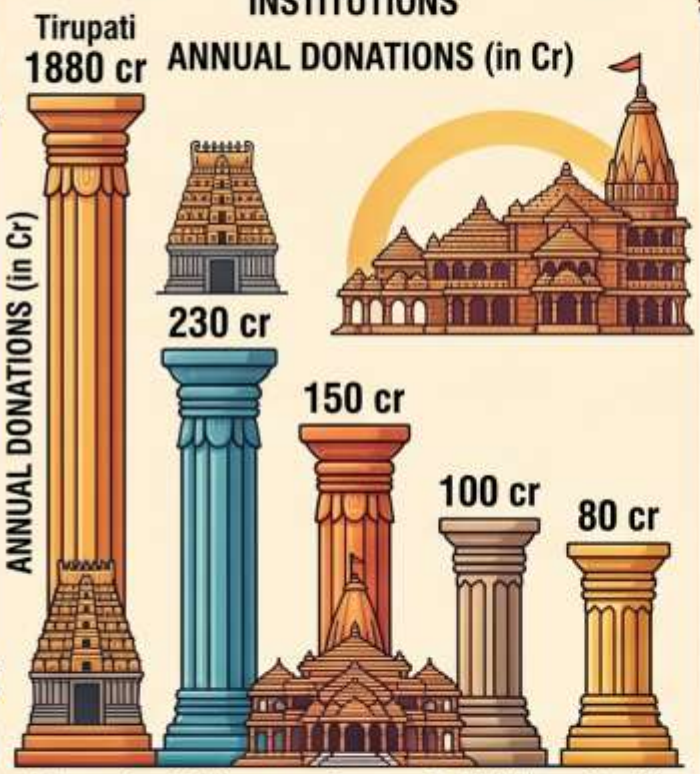
- **Way Forward**
- To resolve the tensions between state control and institutional autonomy, India needs a balanced governance framework that ensures financial transparency while respecting religious sentiment.
- **Standardization of Technology-Driven Accountability Protocols**
- Rather than debating who controls the institutions, the primary focus should be on implementing uniform, high-standard transparency systems across all major shrines. Independent trusts and state boards alike should adopt the multi-stakeholder, CCTV-monitored **Parakamani counting system** seen in Tirupati. Mandatory real-time digital tracking of cash, gold, and silver offerings, along with public financial disclosures, can eliminate opportunities for embezzlement.
- **Transition to Independent Judicial Regulatory Bodies**
- To address concerns over direct political or bureaucratic interference, states should move away from direct executive management. Instead, oversight could be handed to independent, autonomous regulatory authorities led by retired judicial officers, financial experts, and respected community leaders.
- These boards would function similarly to other independent financial regulators—monitoring compliance, conducting statutory audits, and preventing fraud without interfering in daily rituals or theological decisions.
- **Inclusive and Democratic Governance Frameworks**
- Temple management boards should be structured to reflect both professional expertise and community diversity. Trust deeds and statutory boards must mandate the inclusion of certified financial auditors, legal experts, and representatives from diverse social backgrounds, including historically marginalized communities. This ensures that temple governance combines modern administrative efficiency with the broad public interest it is meant to serve.

COMPREHENSIVE ANALYSIS: HOW TEMPLES DEAL WITH DONATIONS & STATE'S ROLE

FOR UPSC CSE PREPARATION

I. INTRODUCTION: DONATION HANDLING SYSTEMS

INDIA'S BIGGEST TEMPLES: COMPARING PROCESSES VS. GOVERNING INSTITUTIONS



II. MANAGEMENT SYSTEMS ACROSS MAJOR TEMPLES

RAM TEMPLE (Ayodhya)

NON-STATUTORY TRUST → Less Direct State Oversight → PRIVATE AUDITS

TIRUPATI (TTD) & VAISHNO DEVI

STATE-RUN CORPORATE-STYLE MANAGEMENT → Specialized Security & Finance Depts → CCTV, Secure Transport

Strict Statutory Audits

SIDDHIVINAYAK

WEEKLY AUDITS WITH TRUSTEES → CCTV Surveillance → STAKEHOLDER REPRESENTATION

III. TRADITIONAL MODELS vs. GOVT INVOLVEMENT

Traditional Models

FAMILY/PRIEST (Pandas)
E.g., Udupi Math

MAHANT SYSTEM
Single Spiritual Head

AKHADA (PANCHAYATI)
Collective sadhu groups

STATE'S AUTHORITY & PURPOSE

British Acts (1863, 1925)

ARTICLE 25(2): STATE CAN REGULATE SECULAR ACTIVITIES

PURPOSE OF FUNDS USE:
Staff Salaries, Smaller Temple Upkeep, Social Welfare, Infrastructure

Govt may use ammonia from coal gasification to produce urea

SANJEEB MUKHERJEE
New Delhi, 2 July

The government is exploring the possibility of using ammonia derived from coal gasification as the key feedstock instead of conventional imported liquefied natural gas for seven planned urea plants.

The government is looking to boost domestic urea production through the commissioning of seven plants — both greenfield and brownfield — as part of its new investment policy. The old policy expired in December 2025.

Sources said the government in recent meetings with industry players raised the issue of using domestic ammonia produced from coal gasification as feedstock for running these new setups. The framework for this could be on the lines of the current mechanism through which fertiliser plants use imported LNG for making urea.

The move to opt for ammonia produced from coal gasification has gathered added urgency after the West Asia crisis exposed India's urea sector steep price hikes and supply shocks. The sector suffered similar shocks during the Russia-Ukraine war in 2022. Almost 95 per cent of India's domestic urea production capacity depends on natural gas, with a significant portion sourced through imported LNG. Sources said although coal-based urea projects require higher capital expenditure than conventional gas-based plants, they offer some significant advantages. These include lower operating costs; complete feedstock security; insulation from international LNG price volatility; lower carbon capture costs due to concentrated carbon dioxide streams and substantial long-term foreign exchange savings.

According to industry assessments, coal-based urea can reduce production costs by $50–75 per tonne compared with LNG-linked facilities under prevailing market conditions. "After capital recovery, production costs could potentially fall to $300–350 per tonne, making Indian coal-based urea globally competitive," an industry official said.

Key advantages and targets for coal-based urea

- Lower operating costs than LNG-linked facilities
- Complete feedstock security from domestic coal
- Reduces production costs by $50 to $75 per tonne
- Supporting 10-15 fertiliser projects could save India tens of thousands of crores annually in import bills and subsidy outgo, according to industry assessments
- Industry seeks dedicated coal-to-urea investment policy

The fact that the government has announced coal gasification support programmes worth over ₹37,500 crore, including the ₹8,500 crore exclusively for urea, can further help in synergising the two.

According to industry estimates, supporting 10-15 coal-based fertiliser projects today could save India tens of thousands of crores annually in import bills and subsidy outgo. Sources said the industry is seeking government support in the form of a dedicated coal-to-urea investment policy; parity support with gas-based fertiliser projects; infrastructure status for coal gasification plants; tax and customs incentives for capital-intensive projects; and long-term offtake assurance mechanisms.

On the new investment policy on urea, the sources said the policy which is in the works is aimed at raising India's urea production by almost 9-10 mt over the next eight years.

- **Key Terms and Explanations**
- **Coal Gasification:** This thermo-chemical process converts solid coal into a gaseous mixture rather than burning it directly. Under high pressure and temperature, coal reacts with oxygen and steam. The primary chemical reaction can be represented as:
- $C + H_2O \rightarrow CO + H_2$
- This process yields a synthetic gas mixture rather than simple ash and smoke.
- **Syngas (Synthesis Gas):** The immediate product of coal gasification, primarily composed of carbon monoxide (CO), hydrogen (H_2), and carbon dioxide (CO_2). In fertilizer production, the hydrogen from syngas is separated and reacted with atmospheric nitrogen (N_2) to synthesize ammonia (NH_3), which serves as the core building block for urea:
- $2NH_3 + CO_2 \rightarrow NH_2CONH_2 + H_2O$
- **Feedstock:** The raw material used to fuel an industrial manufacturing process. In traditional Indian urea plants, Liquefied Natural Gas (LNG) serves as the primary feedstock. The current strategy aims to replace this expensive, imported gas with domestic coal-derived syngas.
- **Greenfield vs. Brownfield Projects: Greenfield projects** are entirely new industrial setups built from scratch on previously undeveloped land, requiring high initial capital. **Brownfield projects** involve modifying, expanding, or upgrading existing operational facilities, which allows for faster commissioning by leveraging existing infrastructure.
- **Offtake Assurance Mechanism:** A structural contractual guarantee where the government or a designated public entity commits to purchasing a specific volume of the manufactured product at a predetermined price. This insulates capital-intensive projects from sudden market collapses and ensures steady revenue for investors.

- **Main Arguments and Substantive Parts**
- The core theme centers on a major strategic pivot: reducing India's heavy reliance on imported LNG by utilizing its abundant domestic coal reserves to manufacture urea. This strategy aims to insulate the agricultural sector from volatile global energy markets.
- **Vulnerability to Geopolitical Shocks:** Nearly 95% of India's current domestic urea production depends heavily on natural gas, much of it sourced via imported LNG. Recent geopolitical disruptions, such as the West Asia crisis and the 2022 Russia-Ukraine war, triggered severe price spikes and supply chain vulnerabilities, highlighting the need for structural change.
- **The Capital vs. Operational Cost Trade-off:** Transitioning to coal gasification plants requires significantly higher initial capital expenditure (CapEx) compared to conventional gas-based units. However, they offer much lower long-term operational costs (OpEx). Production costs could potentially drop by $50 to $75 per tonne, eventually stabilizing between $300 and $350 per tonne after capital recovery.
- **Fiscal and Subsidy Relief:** The central government heavily subsidizes fertilizer prices to protect farmers. By scaling up 10 to 15 domestic coal-to-urea projects, the country could substantially reduce its import bills and ease the multi-billion-dollar annual subsidy burden on the exchequer.
- **Strategic Targets and Policy Push:** To drive this transition, the government has earmarked a ₹37,500 crore support program for coal gasification, allocating ₹8,500 crore specifically for urea production. The long-term goal under this evolving investment framework is to expand domestic urea capacity by 9 to 10 million tonnes over the next eight years.

- **Historical Evolution of the Issue**
- India's fertilizer policy has historically balanced the need for agricultural self-sufficiency with the realities of domestic resource availability.
- **The Green Revolution Paradigm (1960s–1980s):** The introduction of High-Yielding Variety (HYV) seeds created a massive surge in demand for chemical fertilizers, particularly nitrogenous ones like urea. To ensure domestic supply, the government introduced the Retention Price Scheme (RPS) in 1977, incentivizing domestic manufacturers by insulating them from international cost variations.
- **The Shift to Natural Gas (1990s–2000s):** As domestic coal processing faced technological constraints and environmental criticism, the industry shifted toward natural gas as a cleaner, more efficient feedstock. However, stagnant domestic gas production led to a heavy reliance on imported Liquefied Natural Gas (LNG), tying India's food security to global energy markets.
- **The New Investment Policy Era (2012–2025):** The government implemented the New Investment Policy (NIP) in 2012 to invite fresh capital, promote brownfield expansions, and revive defunct fertilizer units (such as those in Gorakhpur, Sindri, and Ramagundam). This policy framework concluded in December 2025, clearing the way for a new approach centered on resource independence.
- **The Modern Pivot to Coal Gasification (Present Day):** Driven by severe supply shocks from the Russia-Ukraine war and West Asian conflicts, the current strategy focuses on utilizing India's extensive domestic coal reserves. The emphasis is now on self-reliance, backed by targeted financial allocations and clean coal technologies.

- **Way Forward**
- **Enacting a Dedicated Coal-to-Urea Policy Framework:** The government should establish a clear, long-term regulatory framework that provides infrastructure status to gasification plants. This should be supported by long-term offtake assurances and tax incentives to reduce risks for private investors facing high upfront capital requirements.
- **Deploying Viability Gap Funding (VGF):** To offset high initial capital costs, the government could utilize a portion of its ₹37,500 crore gasification fund for direct Viability Gap Funding. Providing concessional credit lines and sovereign backed risk guarantees can help attract private sector capital.
- **Mandating Carbon Capture, Utilization, and Storage (CCUS):** Since coal gasification produces highly concentrated streams of carbon dioxide (CO_2), the policy should require integrated CCUS facilities. The captured CO_2 can be reused within the urea synthesis loop or sequestered geologically, helping align the project with national emissions reduction goals.
- **Promoting Balanced Fertilizer Use:** Expanding domestic urea production should be paired with agricultural extension programs like the Soil Health Card Scheme. Promoting precision farming and nano-urea can prevent over-application, ensuring that increased domestic supply supports sustainable agricultural practices rather than leading to soil degradation.

AXIA IAS ACADEMY ANALYSIS: INDIA'S STRATEGIC SHIFT TO DOMESTIC COAL-BASED UREA.

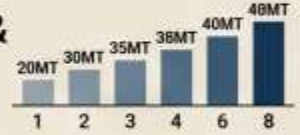
DRIVERS & CONTEXT.

- **Geopolitical Shocks** (West Asia crisis, Russia-Ukraine war)
- **95% Domestic Urea Depends on Imported LNG**

- **Need for Atmanirbhar Bharat**

PRODUCTION TARGET & TIMELINE.

Greenfield & Brownfield Units



9-10 MT Capacity Addition

Imported LNG Path (Old/Current)

LNG Tanker Ship → Conventional Gas Reformer → Ammonia/Urea Plant

Vulnerable to Geopolitical Shocks & Price Volatility

KEY ADVANTAGES & ECONOMICS.

- **Complete Feedstock Security**
- **Reduced OpEx** (Lower long-term operating costs)
- **Cost Reduction of $50-75/Tonne**

- **Lower Carbon Capture Costs** (Concentrated CO_2)
- **Foreign Exchange & Subsidy Savings**

Domestic Coal Gasification Path (New/Target)

INSULATION FROM GLOBAL LNG MARKET

GOVT. PUSH & POLICY TARGETS.

- **₹37,500 Cr** Gasification Fund
  ₹8,500 Cr Urea-Dedicated
- **Desired policy reforms:**
  - Infrastructure Status
  - Tax & Customs Incentives
  - Offtake Assurance

Not having a policy is a policy: RBI on crypto

Tells House panel it's not in favour of VDAs as currency

ASIT RANJAN MISHRA
New Delhi, 2 July

The Reserve Bank of India (RBI) on Thursday told the Parliamentary Standing Committee on Finance that it is not in favour of treating virtual digital assets (VDAs) as currency, but did not immediately clarify whether they could be treated as securities.

"The Securities and Exchange Board of India (Sebi) has made comments earlier that if it is treated as securities, they can play the regulator's role. However, when asked by members, RBI officials didn't respond immediately and said they will get back in writing on the matter later," a member of the committee said requesting anonymity as the deliberations are confidential.

The Parliamentary panel is preparing a report on "A Study on Virtual Digital Assets (VDAs) and Way Forward" that it plans to submit to Parliament in the upcoming monsoon session. "We already have had seven rounds of discussion including with the Department of Economic Affairs, the Central Board of Direct Taxes, Department of Commerce, other government organisations and registered VDAs. We will have another round of discussion with DEA on July 15 before finalising our recommendations," the member said.

The Parliamentary panel is preparing a report on "A Study on VDAs and Way Forward" that it plans to submit to Parliament in the upcoming monsoon session

When the members enquired the RBI officials that how can India have an "ostrich-like approach" when there is flight of capital and other Asian territories including Indonesia, Hong Kong, and United Arab Emirates are regulating VDAs, the RBI officials suggested that "not having a policy is also a policy".

RBI officials reiterated their longstanding opposition to regulating VDAs, arguing that they pose risks of illicit financing, including for drug trafficking and terrorist activities.

"Some members were of the view that India can have its own methodology of regulating VDAs. If not the US way of regulating crypto, we can look at EU regulations," the member said.

The EU regulates crypto through a single, comprehensive law — the Markets in Crypto-Assets Regulation (MiCA). In contrast, the United States takes a fragmented, case-by-case approach, relying on existing laws and overlapping authorities like the Securities and Exchange Commission and Commodity Futures Trading Commission. The Panel also met representatives from Institute of Chartered Accountants of India (ICAI) on the subject who told the members that conducting forensic audit of VDAs is possible.

- **Key Terms and Explanations**
- **Virtual Digital Assets (VDAs):** This is a broad legal and regulatory catch-all term used to describe any information, code, number, or token generated through cryptographic means or otherwise. It provides a digital representation of value that can be interchanged or traded.
- **Currency vs. Security:** A **Currency** is an official medium of exchange authorized by a sovereign state (legal tender) to settle debts and value goods. A **Security**, on the other hand, represents a financial instrument that holds monetary value, typically signifying an ownership position in a corporation (like stocks) or a creditor relationship (like bonds).
    - *Conceptual Distinction:* If an asset is treated as a currency, it challenges the central bank's monopoly over money creation. If treated as a security, it falls under market watchdogs like the Securities and Exchange Commission (SEC) in the US or SEBI in India for investor protection and trading regulations.
- **Markets in Crypto-Assets (MiCA) Regulation:** A pioneering, comprehensive regulatory framework enacted by the European Union. Unlike fragmented national rules, MiCA establishes a unified, single rulebook for VDA issuers and service providers across all EU member states, focusing heavily on consumer protection, market integrity, and financial stability.
- **Forensic Audit of Digital Assets:** The application of specialized accounting, investigative, and technological techniques to track, trace, and analyze transactions on a blockchain network.
    - *Practical Application:* As highlighted by institutions like the Institute of Chartered Accountants of India (ICAI), forensic audits use advanced data analytics to unmask pseudonymous wallet addresses, making it possible to trace the flow of illicit funds despite the decentralized nature of the technology.
- **Capital Flight:** The rapid movement of large sums of money or financial assets out of a country. In the context of VDAs, strict domestic restrictions or regulatory ambiguity can cause local entrepreneurs, developers, and investor capital to migrate to friendlier jurisdictions with clear rulebooks, such as Dubai (UAE), Hong Kong, or Singapore.

- **Main Arguments and Substantive Parts**
- The ongoing governance debate around crypto-assets centers on a classic regulatory dilemma: maintaining macroeconomic stability versus fostering financial innovation and preventing capital flight.
- **The Central Bank’s Stance: Macroeconomic Caution and Sovereign Risks**
- The core thesis of the Reserve Bank of India (RBI) rests on absolute risk aversion regarding the financial system's integrity. The central bank argues that private digital assets cannot and should not be treated as sovereign currency.
- **Monetary Sovereignty:** If private digital tokens are allowed to function as alternative currencies, the central bank loses its ability to regulate money supply, manage inflation, and conduct effective monetary policy.
- **Financial Instability and Illicit Financing:** Because these assets operate on decentralized, often pseudonymous networks, they pose systemic threats including terrorist financing, drug trafficking money laundering, and tax evasion.
- **The Philosophy of "Strategic Inaction":** The stance that *"not having a policy is also a policy"* suggests that leaving VDAs outside the formal financial perimeter—rather than granting them legitimacy through a tailored regulatory framework—is a deliberate choice to safeguard the economy from systemic shocks.
- **The Parliamentary and Stakeholder Perspective: Proactive Governance**
- Conversely, members of the Parliamentary Standing Committee on Finance and various industry bodies push for a more defined, proactive approach.
- **Preventing the "Ostrich Effect":** Lawmakers express concern that ignoring or completely banning the sector leads to an "ostrich-like approach." While India maintains a cautious distance, capital and talent are migrating to proactive Asian hubs like Indonesia, Hong Kong, and the UAE.
- **The Case for Structural Taxonomy:** Industry experts and legislative members suggest that if India does not wish to adopt the fragmented, litigation-heavy approach seen in the United States, it should look toward structured frameworks like the EU's MiCA regulation to extract economic value while managing risk.
- **Feasibility of Enforcement:** The testimony from accounting bodies like the ICAI indicates that modern financial tech can effectively counter the central bank's fears; forensic auditing is advanced enough to track blockchain transactions, suggesting that a total policy vacuum may no longer be justified.

- **Historical Evolution of the Issue**
- **The Era of Caution and the 2018 Banking Ban:** In April 2018, the RBI issued a decisive circular prohibiting all commercial and cooperative banks, NBFCs, and payment system providers from facilitating any transactions related to virtual currencies. This effectively cut off the fiat currency on-ramps and off-ramps for domestic crypto exchanges, bringing the formal industry to a near standstill.
- **The 2020 Judicial Reset (Internet and Mobile Association of India v. RBI):** In March 2020, the Supreme Court of India delivered a landmark judgment quashing the RBI's 2018 circular. Applying the constitutional **Doctrine of Proportionality**, the apex court ruled that while the RBI had the structural power to regulate, the total banking ban was an excessive measure that unnecessarily infringed upon the citizens' fundamental right to carry on any trade or profession under Article $19(1)(g)$.
- **The 2022 Fiscal Framework (Taxation as de-facto recognition):** The Union Budget 2022 introduced a formal tax structure for VDAs under Section 115BBH of the Income Tax Act. A flat **30% tax** was levied on income derived from VDA transfers, along with a **1% Tax Deducted at Source (TDS)** under Section 194S to trace the trail of transactions. While this brought transparency, it also led to sharp declines in domestic trading volumes.
- **The 2023 Anti-Money Laundering Realignment:** In March 2023, the Ministry of Finance extended the provisions of the Prevention of Money Laundering Act (PMLA), 2002, to the crypto sector. VDA service providers were mandated to register with the Financial Intelligence Unit-India (FIU-IND) and implement strict Know Your Customer (KYC) norms, bringing the sector under a compliance net even in the absence of a comprehensive sector-specific law.
- **The Current Phase of Institutional Assessment:** As documented in parliamentary proceedings, the Parliamentary Standing Committee on Finance is actively drafting its comprehensive report titled *"A Study on Virtual Digital Assets (VDAs) and Way Forward"*. This reflects deep, multi-departmental consultations involving the Department of Economic Affairs (DEA) and the Central Board of Direct Taxes (CBDT) to finalize India's long-term legislative stance.

- Way Forward
- **Establishing a Clear Statutory Taxonomy:** India should move away from an all-encompassing VDA label and introduce specific legal definitions. Assets meant to fund decentralized technology projects can be classified as *Commodities/Utilities* and regulated by SEBI, while any token attempting to act as a medium of exchange should remain strictly under the RBI's purview.
- **Adopting an Agile, Tiered Regulatory Model:** Instead of a rigid policy vacuum, India could adopt parts of the EU's MiCA framework. This involves setting strict capitalization, transparent asset-backing, and consumer disclosure rules for stablecoins and exchange platforms, while leaving the underlying technology open for innovation.

AXIA IAS ACADEMY: UNRAVELING THE CRYPTO REGULATORY DEBATE

NOT HAVING A POLICY IS A POLICY: RBI'S STANCE, RISKS, & GLOBAL MODELS

RBI'S FIRM STAND: VDA'S & RISKS

> "NOT HAVING A POLICY IS ALSO A POLICY"
>
> Told Parliamentary Panel: Not in favour of VDAs as currency.

- **Told Parliamentary Panel:** Not in favour of VDAs as currency.

✕ Illicit Financing

✕ Macroeconomic Risk

Critics OSTRICH-LIKE APPROACH

COMPARING GLOBAL REGULATORY MODELS

US APPROACH
Fragmented, fragmene, case-by-case, overlapping authorities

EU's MiCA
(Markets in Crypto-Assets)

CAPITAL FLIGHT TO ASIA

FORENSIC AUDIT OF VDAs: POSSIBLE & FEASIBLE?

CONDUCTING FORENSIC AUDIT IS POSSIBLE.
(Testimony by ICAI members)

CONDUCTING FORENSIC AUDIT IS POSSIBLE.
(Testimony by ICAI members)

PARLIAMENTARY PANEL (STANDING COMMITTEE) FOCUS

- Preparing Report: "A Study on Virtual Digital Assets (VDAs) and Way Forward".
- Scheduled submission in the upcoming Monsoon Session.

CBDT — Department of Commerce

1th 2023	28th 2024	20tlh 2024
Seven rounds of discussion	DEA finalizing recommendations	Report finalization

Submarine cable project linking India, Malaysia, Singapore unveiled

The Hindu Bureau
HYDERABAD

A consortium comprising Microsoft, Singtel, Tata Communications and AI connectivity platform Lightstorm will build a submarine cable system connecting India, Malaysia and Singapore.

"The facility is designed to cater to the rapidly-growing demand from hyperscalers, GPU infrastructure providers and enterprises running AI training and inference workloads across the India-Southeast Asia corridor," Lightstorm said announcing signing of contracts to launch the building of the cable system. No details of the proposed investment on the project were shared.

Dual landings

I-2SEA, the cable system, would link India's east coast, home to the fastest-growing AI and hyperscaler data centre clusters in Hyderabad and Chennai, directly to Singapore, the region's cloud interconnect and AI hub as well as Malaysia's emerging data centre corridor in Kuala Lumpur. It would have dual landings in India, with the one at Machilipatnam providing shortest subsea access to Hyderabad and the other at a new diverse landing location in South Chennai.

Picture for representational purpose only.

"The I-2SEA consortium will operate under a joint build agreement. NEC Corporation has been appointed as system supplier and ASEAN Cableship (ACPL) as marine installation partner. The system is now open for capacity commitments," Lightstorm said.

I-2SEA is targeted to be ready-for-service in Q4 2029 and estimated length of the high-capacity cable is 3,600 km from Singapore to Machilipatnam with onward connectivity to Hyderabad.

"It is expected to deliver the fastest transmission on the Singapore/Malaysia-Hyderabad corridor, which is the most strategically critical city pair for AI workloads in the region," the company said.

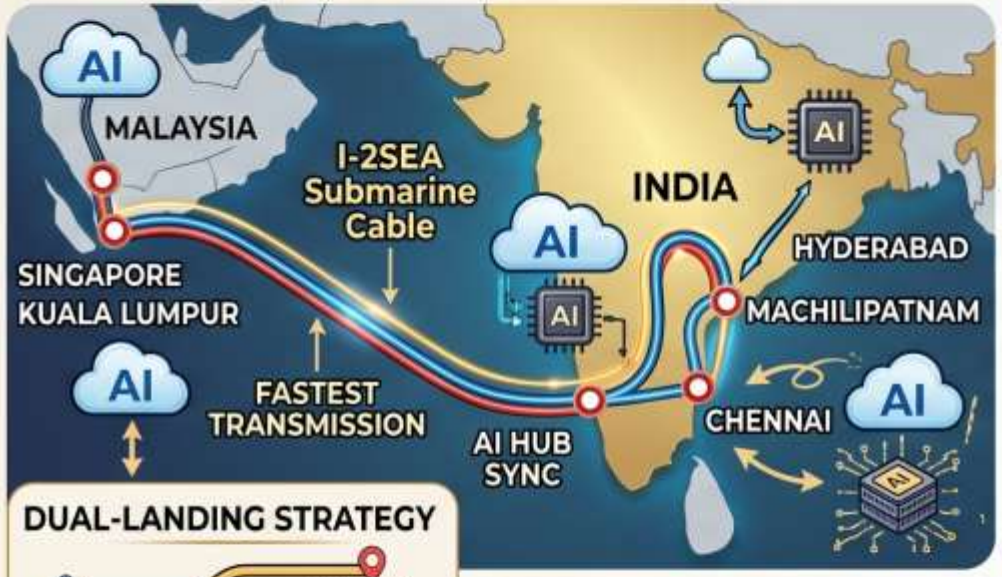
- **Key Terms and Explanations**
- **Submarine Fiber-Optic Cables:** These are deep-ocean cables laid on the sea floor between land-based stations to transmit telecommunication signals across great expanses of water. They use fiber-optic technology, where data is converted into pulses of light and transmitted through thin strands of glass.
- **Hyperscalers:** These are massive companies that provide cloud service, data storage, and enterprise computing infrastructure at an extreme scale. They dominate the global data landscape due to their vast arrays of data centers.
- **GPU Infrastructure (Graphics Processing Units):** Unlike traditional CPUs (Central Processing Units) that handle tasks sequentially, GPUs are specialized electronic circuits designed to process multiple pieces of data simultaneously. They are the foundational hardware driving modern artificial intelligence.
- **AI Workloads (Training vs. Inference):** This refers to the computational processes involved in running artificial intelligence systems. **Training** is the phase where an AI model learns from a massive dataset (requiring immense computing power and data transfer). **Inference** is the phase where the trained model applies what it has learned to answer real-world user queries in real time.
- **Dual-Landing Strategy:** A network architecture approach where an undersea cable terminates at two separate, geographically distinct coastal stations within the same country rather than just one.
- **Consortium Model:** A collaborative business structure where multiple distinct enterprises—ranging from telecom operators and big tech giants to infrastructure platforms—pool their financial and technical resources to build and operate a shared asset.

- **Main Arguments and Substantive Parts**
- The global technology paradigm is shifting from traditional cloud computing to intensive, real-time Artificial Intelligence ecosystems. The core arguments and structural framework surrounding this digital evolution focus on the following core areas:
- **The Core Thesis**
- Physical infrastructure must evolve ahead of computational capacity. The explosion of AI workloads across the India-Southeast Asia corridor cannot rely on legacy internet infrastructure. To unlock the full economic potential of AI, cross-border physical conduits must be built with ultra-low latency and massive throughput capacity, linking high-growth data centers directly across maritime boundaries.
- **Strategic Regional Clusters**
- The geography of data has concentrated into specific regional hubs. In India, the east coast—specifically the Hyderabad and Chennai cluster—has emerged as the fastest-growing hub for hyperscalers and GPU infrastructure. Across the Bay of Bengal, Singapore stands as the established regional cloud interconnect, while Kuala Lumpur in Malaysia is rapidly scaling as a premier data center corridor. Connecting these specific nodes forms a highly strategic digital triangle.
- **Technical Contours of the Solution**
- Addressing this demand requires major structural features exemplified by projects like the I-2SEA submarine cable system, shown conceptually in **image_c141bf.jpg**. The core attributes include:
- **Massive Geographic Reach:** The high-capacity cable spans roughly 3,600 kilometers across the sea floor, stretching from Singapore to Machilipatnam, with integrated terrestrial onward connectivity directly into the heart of Hyderabad.
- **Built-in Redundancy:** The deployment utilizes a dual-landing strategy on India's eastern seaboard, anchoring at both Machilipatnam and a diverse new location in South Chennai to safeguard against network dropouts.
- **Consortium Efficiency:** By combining the strengths of global big tech (Microsoft), major telecommunications (Singtel, Tata Communications), and specialized digital infrastructure platforms (Lightstorm), the infrastructure bridges the gap between public internet delivery and enterprise AI demands.
- **Targeted Deployment:** With system supplier NEC Corporation and marine installation partner ASEAN Cableship (ACPL) handling execution, the timeline targets full service readiness by the fourth quarter of 2029 (Q4 2029).
- **The Micro-Latency Advantage**
- In traditional data transmission, a delay of a few milliseconds was acceptable for loading web pages or sending emails. However, for distributed AI training—where clusters of GPUs in Hyderabad and Singapore need to sync parameters continuously—even minor latency causes computational bottlenecks. Establishing the fastest transmission line along the Singapore-Malaysia-Hyderabad corridor solves this structural limitation, creating a highly efficient city-pair alignment for regional AI workloads.

- **Historical Evolution of the Issue**
- **Pre-Independence Era: The Era of Imperial Telegraphy**
- The history of submarine cables in India dates back to the late 19th century under British rule. The primary driver was imperial administrative and military control. In the 1870s, the first functional undersea telegraph cables connected Mumbai (then Bombay) to London via Aden and the Red Sea. These early cables carried words, not data, and were designed to ensure that the colonial capital could rapidly issue commands to the Indian subcontinent during times of crisis.
- **Post-Independence to the 1990s: State Monopolies and Voice Communication**
- Following independence, international communications remained a tightly controlled state monopoly under the Overseas Communications Service, which later became Videsh Sanchar Nigam Limited (VSNL). Throughout the 1970s and 1980s, India participated in early international submarine cable consortia, such as the SEA-ME-WE (South East Asia-Middle East-Western Europe) systems. However, these systems primarily carried analog voice traffic. Bandwidth was highly constrained, expensive, and heavily regulated.
- **The Liberalization and Dot-Com Boom (Late 1990s - 2000s)**
- The 1991 economic reforms and the subsequent privatization of VSNL in the early 2000s completely transformed the sector. Private telecom operators entered the market, investing heavily in international fiber-optic consortia. The rapid expansion of cables landing in Mumbai and Chennai formed the structural backbone of India's IT-BPO revolution. Suddenly, India had the high-speed data pipelines necessary to export software services to North America and Europe in real time.
- **The Domestic and Regional Consolidation Era (2010s - 2020s)**
- With the launch of the Digital India initiative, the focus expanded from merely exporting IT services to bridging the internal digital divide and securing regional strategic interests. The government commissioned major domestic undersea cable projects, such as the Chennai-Andaman and Nicobar Islands (CANI) cable and the Kochi-Lakshadweep Islands (KLI) cable, bringing high-speed broadband to remote territories. Simultaneously, geopolitical shifts made direct, secure connections to Southeast Asia a top priority, moving reliance away from congested choke points.
- **The Contemporary Era: AI-Centric Pipelines (Target 2029)**
- Today, the paradigm has shifted from basic internet access and video streaming to the highly demanding requirements of the AI era. Legacy cables are becoming bottlenecked by the sheer volume of data generated by machine learning models. The current phase is characterized by the rise of hyper-capacity, application-specific subsea links like the I-2SEA system. These networks bypass traditional multi-stop transit routes to connect specialized AI data centers directly across regions.

I-2SEA: GLOBAL AI DATA HIGHWAY LINKING INDIA & SE ASIA. A COMPREHENSIVE ANALYSIS FOR UPSC/APSC

CONCEPTUAL STRATEGIC MAP



HYPERSCALERS
AI modens station combined digital Hypersacalers

HYPERSCALERS
Hyperscalers, zon loads and en area structers

GPU INFRASTRUCTURE
AI infrnisstructure, spreachror, anithronniond Iterontions

AI WORKLOADS
AI workloads reateding data, securtes, indemaments, and performances

MICRO-LATENCY ADVANTAGE
Micro-latency advantage mentes cheap transmations

SOCIAL
- Bridge Digital Divide
- Telehealth
- Human Capital Upskilling

POLITICAL
- Strengthen Act East Policy
- Regional Tech Prestige
- Data Sovereignty

LEGAL
- DPDP Compliance
- UNCLOS Navigation
- Cross-Border Laws

ETHICAL
- Prevent Tech Colonization
- Marine Ecosystem Conservation

INTERNATIONAL
- Strategic Balancing
- Joint Cybersecurity Defense
- Indo-Pacific Stability

ECONOMIC
- FDI Attraction
- Digital GDP Multiplier
- Data Center Boom

WAY FORWARD
- Streamline Approvals
- Protection Zones
- Unified Cybersecurity Protocol
- Foster Domestic Mfg.
- Eco Standards

UPSC/APSC SYLLABUS MAPPING
- **GS-II** (Int. Groupings)
- **GS-III** (S&T, Infra, Sec)
- **ESSAY** (Tech, Geo-Pol)
- **Optionals** (GEOG, PSIR)
- **KEY PRELIMS CONCEPTS**

Why is the chargesheet in the Sarla Bhat case a milestone?

The killing of the 27-year-old was among the first targeted attacks on Kashmiri Pandits after the 1989 insurgency; the filing of the chargesheet is seen by her family and the entire community as a step towards justice

Peerzada Ashiq

The story so far:

After a gap of 36 years, the J&K Police's special cell State Investigation Agency (SIA) filed a chargesheet in the killing of Kashmiri Pandit Sarla Bhat, who worked as a nurse at Srinagar's Sher-i-Kashmir Institute of Medical Sciences (SKIMS). The chargesheet named Jammu Kashmir Liberation Front (JKLF) chief Yasin Malik among five accused, only two of whom are alive.

The SIA, which started re-investigation in 2020, decided to initiate proclamation proceedings against the absconding terrorist, Khurshid Ahmad Chalkoo, "the man who pulled the trigger".

He is believed to have exfiltrated to Pakistan Occupied Kashmir (POK). Meanwhile, the SIA chargesheet does not mention any rape.

What is the significance of this case?

The killing of the 27-year-old nurse was among the first cases of targeted killing of Kashmiri Pandits in the valley following the armed insurrection in 1989. According to official listing, the first such killing took place on September 14, 1989 of Pandit Tika Lal Taploo, an advocate and senior BJP leader and then Pandit Neelkanth Ganjoo, a former judge who had sentenced JKLF founder Maqbool Bhat to death in a murder case.

These targeted killings eventually led to mass migration of Kashmiri Pandits outside Kashmir valley. The SIA said Sarla Bhat was abducted from the vicinity of SKIMS on April 18, 1990, subjected to brutal torture and physical assault, and horrendously killed by automatic rifle fire at Omer Colony, Malbagh, Srinagar. The filing of the chargesheet is seen by the family and the entire Pandit community as a step towards justice. The magnitude of the migration, the militant violence triggered, can be gauged from the fact that over 60,452 Pandits registered themselves as migrants by 2014, as the community was displaced to different parts of the country, including Jammu.

Why the delay?

Kashmir witnessed targeted killings of both Muslims, mostly affiliated to the National Conference (NC), and Pandits in the 1990s as hundreds of youths joined militant groups and attacked security forces.

Violence by the JKLF declined after Yasin Malik announced a unilateral ceasefire in 1994. An unwritten understanding with the Union government meant that cases against him were largely not pursued, with a Terrorist and Disruptive Activities Prevention Act (TADA) court in 2009 keeping proceedings in abeyance in key cases, including the Rawalpora killings and the 1989 kidnapping of Mufti Mohammad Sayeed's daughter. Reopening the Sarla Bhat case, the SIA said the investigation had stalled due to the climate of fear and intimidation during the peak years of militancy, which prevented witnesses from coming forward. It described the case as a symbol of one of Kashmir's darkest chapters of terrorism.

What does it mean for Yasin Malik?

The 59-year-old separatist is currently in the Tihar Jail. He faces sentence on two counts of life imprisonment and five 10-year prison sentences in a terror funding case in 2022. However, the National Investigation Agency (NIA) has sought the death penalty in the case. Besides, Malik also faces fresh trials in two other major cases, including the kidnapping and the Indian Air Force attack. His outfit was also banned in 2019 under provisions of Unlawful Activities Prevention Act (UAPA).

The JKLF has distanced itself from the murder of Bhat. According to the banned JKLF, Malik on April 8, 1990, just 10 days before the gruesome murder of Bhat, jumped from a five-storey building in Narwara, Srinagar, to evade his arrest during a BSF raid.

The JKLF claimed that Malik suffered a head injury, which caused his facial paralysis, in the incident.

It claimed that the organisation had launched its own investigations into the killing "but could not carry it forward due to the continued raids by security forces on JKLF leadership". The fact remains that it will be the third major case of terror from the 1990s against Malik and he could face the death penalty if the charges are proven in the court.

Why is it tipped as a landmark development by police?

The police's SIA termed the chargesheet as a landmark development and a defining moment in J&K's fight against terrorism. The 737-page chargesheet was compiled after an "exhaustive investigation, bringing together a formidable body of oral, documentary, forensic, ballistic, medical and electronic evidence accumulated over decades and meticulously analysed".

The SIA says the chargesheet marks a historic milestone in the pursuit of justice for victims of terrorism and stands as one of the most significant breakthroughs in the investigation of legacy terror crimes in Jammu and Kashmir. The chargesheet, the SIA said, sends a powerful and unequivocal message that time can never become a shield for terrorism.

- **Key Terms and Explanations**
- **State Investigation Agency (SIA):** This is a specialized, state-level investigative body set up in Jammu and Kashmir to investigate and prosecute offenses related to terrorism, secessionism, and wage-war offenses. It acts as the nodal agency to coordinate with the National Investigation Agency (NIA).
- **Legacy Terror Crimes:** These refer to complex, unresolved acts of terrorism and targeted violence committed during the peak periods of insurgency (specifically the late 1980s and 1990s in J&K) that remained dormant due to systemic breakdown, witness intimidation, or political compromises.
- **Abeyance of Legal Proceedings:** A formal suspension or temporary postponement of judicial proceedings. In highly volatile security environments, courts sometimes keep trials in abeyance when witnesses face existential threats or when key perpetrators abscond across borders.
- **Unlawful Activities Prevention Act (UAPA):** India's primary anti-terror legislation designed to prevent unlawful activities associations inside India. It grants the state extraordinary powers to designate both organizations (e.g., the Jammu Kashmir Liberation Front) and individuals as terrorists.
- **Transitional Justice:** A judicial and non-judicial framework adopted by societies transitioning from periods of conflict, mass violence, or systemic human rights violations to ensure accountability, serve justice to victims, and restore the rule of law.

- **Main Arguments and Substantive Parts**
- The core thesis revolving around the revival of decades-old legacy cases centers on the idea that sustainable peace cannot be built on the foundation of unpunished historical trauma. The legal actions detailed in image_c13e99.jpg present a profound shift in the state's security and judicial doctrine.
- **The Central Thesis**
- The pursuit of justice must be uncompromised by the passage of time. The filing of exhaustive, multi-page chargesheets in decades-old cases serves notice that time can never become a shield for terrorism, nor can political expedience erase criminal accountability.
- **Key Supporting Arguments**
- **Dismantling the Culture of Impunity:** For decades, a tacit "unwritten understanding" between separatist leadership and state apparatuses allowed high-profile terror accused to evade prosecution under the guise of maintaining local political stability. Reopening these trials shatters this cycle.
- **Empirical and Forensic Substantiation:** Modern counter-terror investigations do not rely solely on volatile oral testimonies. As seen in recent developments, compiling thousands of pages of ballistic, forensic, digital, and medical evidence creates an airtight judicial record that survives the decay of human memory.
- **Validation of Vulnerable Communities:** The mass displacement of minorities, such as the Kashmiri Pandits, remains a deep societal wound. Tangible legal actions—like pinning accountability for the earliest targeted hits of 1989–1990—offer institutional validation to the historical trauma of over 60,000 displaced families.
- **Counterarguments and Structural Challenges**
- **The Alibi of Time and Human Decay:** Defense counsels frequently argue that a gap extending over three decades severely compromises the right to a speedy trial. Over time, memories fade, original witnesses pass away, and physical evidence can deteriorate.
- **Accusations of Political Motive:** Critics often contend that reviving dormant cases is selectively timed to achieve specific political narratives, rather than serving pure judicial ends. Balancing rigorous legal neutrality against the backdrop of shifting geopolitical dynamics remains a tightrope walk for special agencies.

- **Historical Evolution of the Issue**
- **Phase 1: The Late 1980s (The Genesis of Armed Insurgency):** Following systemic political friction and cross-border instigation, radical outfits like the JKLF initiated targeted assassinations of prominent minority leaders, judicial officers, and state machinery in 1989 to collapse the local administrative morale.
- **Phase 2: 1990–1994 (The Peak Terror and Mass Exodus):** The year 1990 marked the absolute breakdown of law and order. Targeted killings of minority community members, state officials, and security personnel triggered the mass exodus of Kashmiri Pandits from the valley. A climate of intense fear paralyzed local courts, making witness testimonies impossible.
- **Phase 3: 1994–2019 (Strategic Inertia and Unwritten Understandings):** In 1994, key separatist factions declared a unilateral ceasefire. To foster a political channel, successive central and state governments adopted a policy of strategic patience. Major terror trials were kept in abeyance by TADA courts, and high-profile separatists operated with relative political freedom.
- **Phase 4: 2019–Present (The Doctrine of Zero-Tolerance):** The structural changes of 2019 altered the security landscape. Terror organizations were strictly banned under UAPA, specialized state agencies like the SIA were raised, and a systemic cleanup was initiated to prosecute legacy terror crimes, emphasizing that the rule of law outlives the shelf-life of insurgencies.

- **Way Forward**
- **Strengthening Digital and Forensic Infrastructure:** Special investigation wings like the SIA must be insulated from infrastructural gaps. The state should invest heavily in advanced forensic laboratories, AI-driven cross-referencing of historic records, and digital archiving to preserve fragile, decades-old evidence.
- **Codification of a Robust Witness Protection Framework:** Legacy cases routinely collapse because surviving witnesses face intense psychological and physical intimidation. Implementing a rigorous witness identity-protection protocol, including closed-door testimonies and relocation assistance, is vital.
- **Establishment of Dedicated Fast-Track Terror Courts:** To prevent these newly filed chargesheets from getting trapped in standard judicial backlogs, the government must set up dedicated, fast-track special courts under the UAPA/TADA frameworks to ensure daily hearings and time-bound adjudications.
- **Comprehensive Rehabilitation and Documentation:** True transitional justice extends beyond the courtroom. The state should simultaneously launch a comprehensive digital archive documenting the oral histories of all victims of the insurgency, paired with robust economic policies to restore alienated properties to displaced families.

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LEGACY TERROR CRIMES & TRANSITIONAL JUSTICE: A COMPREHENSIVE UPSC ANALYSIS

I. KEY TERMS & FRAMEWORK

STATE INVESTIGATION AGENCY (SIA)

LEGACY TERROR CRIMES

SYSTEM BREAKDOWN → LEGACY CRIMES

UNLAWFUL ACTIVITIES (PREVENTION) ACT (UAPA)

TRANSITIONAL JUSTICE

SIA ACTION → JUST JUSTICE

II. HISTORICAL EVOLUTION & PARADIGM SHIFT

- **LATE 1980s:** Outbreak
- **1990:** PEAK TERROR & EXODUS
- **1994:** CEASEFIRE & ABEYANCE
- **2019-PRESENT:** ZERO-TOLERANCE & SIA ACTION

TIME IS NOT A SHIELD

PRE-2019/20: SYSTEMIC INERTIA & ABEYANCE

POST-2019/20: PARADIGM SHIFT (ZERO-TOLERANCE)

TIME IS NOT A SHIELD

III. MULTIDIMENSIONAL IMPACT

SOCIAL

SOCIAL

- Collective Healing
- Validation of Victims
- Community Resilience

POLITICAL

POLITICAL

- Rule of Law Re-established
- End of Separatist Veto
- State Sovereignty

LEGAL/ETHICAL

ETERNAL CLOCK

- Evidentiary Integrity
- Nullum Tempus Doctrine (Time Does Not Run Against the State)
- Moral Correction

INTERNATIONAL/ ECONOMIC

- Countering Safe Havens
- FATF Alignment
- Investor Confidence & Stability

IV. EXAM PERSPECTIVE & WAY FORWARD

UPSC SYLLABUS

GS 1: Regional Aspirations	GS 2: Governance & Polity	GS 3: Internal Security
GS 4: Ethics & Constitutional Morality	Essay	PSIR/Soc.

UPSC & APSC PREVIOUS YEARS' QUESTIONS (PYQs)

- 2014: What is the exampe queries m the first terroor crimes?
- 2016: What is the cosif separatist hws to mitesis of regonal crimes?
- 2021: What's the commoonics for legacy terror to Transitional Justiceis?

THE WAY FORWARD

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Welfare promises and fiscal constraints

The West Bengal government's strategy relies on higher central transfers and a sharp rise in tax collections; if these projections fail to materialise, both its fiscal targets and political commitments could come under pressure

ECONOMIC NOTES

Subhanil Chowdhury

Riding on a historic mandate, the first BJP government of West Bengal presented its Budget on June 22. The BJP's election manifesto promised to provide ₹3000 per month to women, increase the Dearness Allowance for the State government employees to bridge the gap between the salaries at the Centre and State governments along with other commitments. The first Budget of the BJP government has tried to accommodate these pre-poll promises of the party, while simultaneously trying to reduce the fiscal deficit. The question is whether the expenditure and revenue allocations in the Budget will be able to do justice to the promises made by the government.

The government has budgeted a total expenditure of ₹4,28,557 crore in 2026-27 which is ₹82,083 crore more than the Revised Estimate (RE) of 2025-26. This huge expenditure is accompanied by a reduction in both fiscal deficit (from ₹67,774 crore in RE 2025-26 to ₹62,421 crore in Budget Estimate 2026-27) and revenue deficit (from ₹41,164 crore to ₹21,984 crore). How could the government increase its expenditure substantially, while reducing both the fiscal and revenue deficits? The answer lies in the so called "double engine sarkar".

If we look at the revenue receipts of the government, an increase of ₹75,618 crore is projected in 2026-27, as compared with RE 2025-26. This huge increase in revenue receipts is largely explained by a projected increase of ₹49,324 crore in the Centre's grant-in-aid to the State government, mainly via Centrally Sponsored Schemes. This bonanza of around ₹50,000 crore is the revenue impact of the so called 'double engine sarkar'. The government also projects an increase in the State taxes to the tune of ₹18,933 crore, non-tax revenue to increase by ₹4,508 crore and State's share of central taxes to increase by ₹2,853 crore in 2026-27 as compared with RE 2025-26. While the total increase in revenue receipts is to the tune of ₹75,618 crore, the total increase in revenue expenditure is ₹56,438 crore. This shows that the government is more concerned with closing the deficit than passing the benefit of the windfall to the people. This deficit figure is based on receipt projections which can also go awry. In that case, it may be politically difficult for the government to rein in the deficit and stick to its political promises simultaneously.

Bengal Chief Minister Suvendu Adhikari, State Finance Minister Swapan Dasgupta (right) and BJP MLA Anandamay Barman hold the Budget book at the State Legislative Assembly House, in Kolkata. ANI

The expectation of the government regarding an increase in State taxes amounting to ₹18,933 crore seems difficult to attain. This is because according to the Medium Term Fiscal Policy Statement of the government, the Gross State Domestic Product (GSDP) of West Bengal is projected to rise from ₹19,90,896 crore in 2025-26 to ₹21,48,244 crore in 2026-27. This entails a nominal growth rate of only 7.9%. In the year 2025-26, the growth rate of nominal GSDP in Bengal was 9.85%. In other words, the government is projecting a 2 percentage points drop in the nominal GSDP growth of the State but assuming an increase in tax collections of around ₹19,000 crore. Even with 9.85% nominal GSDP growth in the State in 2025-26, the increase in State's tax collection was around ₹13,744 crore as compared with 2024-25. The projected increase in tax collection appears difficult to achieve since the government has not announced any major policy to raise taxes or improve tax compliance. The government may be relying on closing the tax leakage due to corruption. Whatever may be the case, a slowdown in GSDP and a huge increase in tax collection is difficult to materialise simultaneously. Given that it has already committed to a reduction in fiscal and revenue deficits, any shortfall in tax revenue will be met by a cut back on expenditure. This can make the government's political promise to various sections of the people difficult to maintain. On the capital expenditure side, the government is proposing to increase the capital expenditure by around ₹15,000 crore as compared with RE 2025-26. The government has announced a number of infrastructure projects, new colleges and universities in the State. The additional capital expenditure is welcome. However, here too, the government could have spent more if it did not adhere to a policy of cutting back the deficit.

Laxmir Bhandar vs Annapurna Yojana

The Trinamool government's Laxmir Bhandar scheme covered around 2.4 crore women with a monthly transfer of ₹1,500. The BJP had promised to upgrade beneficiaries to the Annapurna Yojana, offering ₹3,000 per month. However, the ₹36,000-crore allocation announced for the scheme would cover only about 1.3 crore women, as announced by the government. The government has not clearly explained the basis for excluding the remaining beneficiaries. It was announced that individuals whose names were removed during the SIR process would not be eligible for benefits under the scheme. In the absence of transparent criteria, crores of women risk losing access to benefits that were promised without such restrictions. However, the number of women who will lose access to the scheme as compared to Laxmi'r Bhandar turns out to be more than a crore. BJP did not announce any targeting of the scheme in their election manifesto.

The government has raised Dearness Allowance by 20%, announced the 7th Pay Commission and promised one lakh new jobs. However, the higher DA will be paid only from October 2026, while DA arrears also remain to be settled. Given these commitments, it is unclear whether the ₹10,000-crore increase in salary and pension allocations will be sufficient.

The government has sought to balance fiscal prudence with its promises of expanded welfare and higher pay for employees. Its strategy relies on higher central transfers and a projected sharp rise in tax collections. If these projections fail to materialise, both its fiscal targets and political commitments could come under pressure. The coming year will test how successfully it can reconcile political promises with fiscal realities.

The author is Professor of Economics, Presidency University, Kolkata.

THE GIST

- The first Budget of the BJP government has tried to accommodate these pre-poll promises of the party, while simultaneously trying to reduce the fiscal deficit.
- The expectation of the government regarding an increase in State taxes amounting to ₹18,933 crore seems difficult to attain.
- On the capital expenditure side, the government is proposing to increase the capital expenditure by around ₹15,000 crore as compared with RE 2025-26

- **Key Terms and Explanations**
- **Fiscal Deficit:** The difference between the government's total expenditure and its total non-borrowed receipts (revenue receipts plus non-debt capital receipts). It indicates the total borrowing requirements of the government.
- **Revenue Deficit:** This occurs when the government's revenue expenditure exceeds its revenue receipts. It signifies that the government is borrowing money to meet its day-to-day operational expenses rather than creating productive assets.
- **Budget Estimates (BE) vs. Revised Estimates (RE):**
    - **Budget Estimates (BE)** are the allocations and revenue projections calculated at the start of a financial year.
    - **Revised Estimates (RE)** are mid-year corrections that reflect the actual performance and realistic expenditure capabilities based on the trend of the ongoing year.
- **Double Engine Sarkar (Political-Economic Concept):** A term used to describe a governance alignment where the same political party holds power at both the central and state levels. In fiscal terms, it is assumed to facilitate smoother cooperation, faster clearance of projects, and optimized flow of Centrally Sponsored Schemes (CSS) and grants.
- **Gross State Domestic Product (GSDP):** The aggregate value of all goods and services produced within the geographical boundaries of a state during a financial year. It serves as the primary barometer of a state's economic size and health.
- **Tax Buoyancy:** An economic metric measuring the responsiveness of tax revenue growth to changes in the Gross Domestic Product (GDP/GSDP). If tax revenue increases by more than the proportionate growth in GSDP without raising tax rates, tax buoyancy is high, indicating better compliance or reduced tax leakages.

- **Main Arguments and Substantive Parts**
- The core thesis focuses on the delicate balancing act between fulfilling expansive populist welfare electoral promises and maintaining macroeconomic stability under strict fiscal constraints.
- **The Deficit Reduction Paradox**
- The state budget outlines a major increase in total expenditure, projecting a jump of ₹82,083 crore over the Revised Estimates of the previous fiscal year to reach a total of ₹4,28,557 crore. Despite this massive spending increase, the blueprint projects a simultaneous reduction in both the fiscal deficit (down to ₹62,421 crore) and the revenue deficit (halved to ₹21,984 crore). This creates an ambitious mathematical paradox that depends entirely on achieving historically high revenue collections.
- **Heavy Reliance on Central Windfalls**
- The primary financial cushion enabling this massive expansion is a projected surge of ₹49,324 crore in grants-in-aid from the Central government, largely driven by Centrally Sponsored Schemes. This transfer constitutes the bulk of the state's total revenue receipt increase of ₹75,618 crore, demonstrating how the operational logic of the "double engine" governance model is being leveraged to substitute state-level resource mobilization with central funds.
- **The Tax Projection Contradiction**
- A major vulnerability in this fiscal strategy is the projected domestic tax collection target. The budget projects an increase in state taxes by ₹18,933 crore. However, the Medium-Term Fiscal Policy Statement forecasts that the state's nominal GSDP growth will slow down by 2 percentage points—dropping from 9.85% to 7.9%. Projecting a sharp rise in tax revenue alongside a decelerating nominal economic growth rate, without announcing significant new tax measures, introduces substantial risk to the budget's feasibility.
- **Welfare Truncation: Universality vs. Targeted Delivery**
- The practical trade-offs of fiscal constraints are most evident in the restructuring of social safety nets. The commitment to upgrade the cash transfer scheme into the *Annapurna Yojana*—doubling the monthly payout from ₹1,500 to ₹3,000—is constrained by a capped allocation of ₹36,000 crore. As a result, the beneficiary base must be trimmed from the previous 2.4 crore women down to approximately 1.3 crore. This exclusion of over a crore previous recipients through administrative screening processes highlights the hard limits that fiscal realities impose on broad political commitments.

- **Historical Evolution of the Issue**
- **The Constitutional Design of Asymmetric Federalism (1950)**
- The historical roots of subnational fiscal stress date back to the drafting of the Indian Constitution. The Seventh Schedule deliberately created an asymmetrical distribution of powers: states were assigned highly elastic, resource-intensive responsibilities (such as public health, education, police, and agriculture), while the most lucrative and elastic revenue sources (like income tax and customs duties) were centralized. This design made states structurally dependent on central transfers through Article 275 (Grants-in-aid) and Article 280 (Finance Commission recommendations).
- **The Era of Planned Development and Competitive Populism (1951–1990s)**
- During the command economy era, state expenditure was heavily guided by the central Planning Commission. However, by the late 1960s and 1970s, regional political dynamics led states to introduce localized welfare interventions (such as regional food security initiatives and subnational subsidy networks). This period marked the beginning of competitive welfarism, where political legitimacy became closely tied to direct state assistance, often resulting in rising subnational revenue deficits.
- **The FRBM Era and Legal Discipline (2003–2010s)**
- Persistent fiscal deficits across both central and state levels in the 1990s led to the enactment of the Fiscal Responsibility and Budget Management (FRBM) Act in 2003. States were required to pass their own state-level Fiscal Responsibility Legislations (FRLs), which legally mandated them to cap their fiscal deficits at 3% of their GSDP. This institutional milestone changed subnational public finance, forcing states to balance political promises against legally binding fiscal targets.
- **The Structural Shift under the GST Regime (2017–2026)**
- The launch of the Goods and Services Tax (GST) fundamentally reshaped state finances by absorbing major local taxes like VAT, entry tax, and luxury tax into a unified tax structure. While this simplified the national tax system, it limited the independent tax-raising powers of state governments, leaving them primarily with fuel, alcohol, and property stamp duties. As a result, states now rely more heavily on central devolution and efficient internal tax administration to fund their expanding welfare budgets.

- **Way Forward**
- **1. Re-engineering Revenue Projections**
- Governments should transition toward more conservative, data-driven revenue forecasting models. Relying on optimistic tax collection targets during periods of decelerating nominal economic growth introduces significant structural risk. Base calculations should rely on verified historic tax buoyancy rates rather than projected windfalls, protecting the budget from sudden mid-year revenue shortfalls.
- **2. Diversifying and Expanding Non-Tax Revenue Streams**
- Given that the GST framework limits independent state tax adjustments, states need to optimize their non-tax revenue sources. This includes:
- Updating long-neglected user fees for public utilities and administrative services.
- Improving the operational efficiency and dividend yields of State Public Sector Undertakings (SPSUs).
- Implementing transparent asset monetization strategies for underutilized state assets.

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KEY TERMS IN PUBLIC FINANCE

FISCAL DEFICIT
Expenditures → Borrowing needs
(Total Exp - Non-Borrowed Receipts)

REVENUE DEFICIT
(Rev Exp > Rev Receipts for daily ops)

DOUBLE ENGINE SARKAR
CENTRE → STATE

GSDP
(Economic Size)

TAX BUOYANCY
Elastic Spring

BE vs. RE

BE	RE
Total Exp	Borrowing
Rev⇘Exp	Rev Defict
GSDP	Halved
GSDP	Rev Exp
RE	Intecreal

UPSC CSE SYLLABUS & PREVIOUS YEAR LINKS

GS-3 – Indian Economy, Budgeting
GS-2 – Federalism, schemes, (Indian coommation)
GS-4 – Ethics

THE FISCAL STRATEGY: PARADOX & REALITIES

THE PROMISE
(Welfare Commitments)

THE TARGET
(Fiscal Discipline)

HEAVY RELIANCE ON CENTRAL GRANTS
(₹49,324 Cr. surge, mostly CSS)

PARADOX

MASSIVE EXPENDITURE INCREASE
(₹82,083 Cr. jump to ₹4,28,557 Cr.)

PROJECTED REDUCTIONS:
Fiscal Deficit ↓,
Rev Deficit Halved

TAX PROJECTION CONTRADICTION
(Faster state tax growth vs. Slower GSDP growth)

WELFARE RESTRUCTURING: UNIVERSAL → TARGETED

INITIAL PLAN

Universal
(ununmesed, large pool,
~2.4 Cr women

FISCAL CONSTRAINTS & ALLOCATION CAP

MODIFIED DELIVERY

Targeted
(Targett, smaller pool,
~1.3 Cr women

EXCLUSION
1+ crores people people)

Mains | **Examples of Mains Topics:**
- Indian Economy, Budgeting
- Parneting topics

Prelims | **Examples of Mains questions:**
- Fücal-ácormom, schemes
- Federalism topics

MULTIDIMENSIONAL POLICY LENSES

SOCIAL
Targeted risks, women's empowerment

POLITICAL
Competitive welfarism vs governance cost

INTERNATIONAL
Credit ratings, Investment-led development

LEGAL/CONST
FRBM limits, Pay commitments

ETHICAL
Intergenerational equity equity vs poverty relief

ECONOMIC
Consumption-led vs Investment-led development

THE WAY FORWARD: SUSTAINABLE FINANCES

- **Data-Driven Revenue Projections**
- **Diversified Non-Tax Revenue**
- **Ring-Fencing CAPEX**

- **Bavnɑied Rev Enuns**
- **Transparent, Merit-Based Targeting**
- **Ring-Fencing CAPEX** (over infrastructure)
- **Enhanced State State Tax Compliance** (conto or manatied with AI and data)

Prelims:
- Ennononem tax compliance
- Previous concepts

SC quashes NCLT order for using AI-generated case law

Aaratrika Bhaumik
NEW DELHI

Observing that the use of non-existent or AI-generated hallucinated judicial precedents is "catastrophic" to the judicial process, the Supreme Court on Thursday set aside an order of the National Company Law Tribunal (NCLT) after finding that it had relied on fictitious AI-generated case laws.

A Bench comprising Justices P.S. Narasimha and Alok Aradhe underscored that courts must adopt a "zero-tolerance" approach towards the reliance on AI-generated precedents without independent verification as it "contaminates" the very "lifeblood of judicial determination".

"Even if an iota of fake or hallucinated material enters the decision-making process, it would violate the sanctity of adjudication. It is absolutely necessary to maintain integrity in decision-making, and we reiterate and declare zero tolerance for the Bar as well as the Bench to cite, refer to, or rely on such material," the Bench said.

Cautioning against AI-generated hallucinations quietly permeating legal practice, it warned that reliance on fictitious precedents "subverts the rule of law".

> Even if an iota of fake or hallucinated material enters the decision-making process, it would violate the sanctity of adjudication. It is absolutely necessary to maintain integrity in decision-making, and we reiterate and declare zero tolerance for the Bar as well as the Bench to cite, refer to, or rely on such material
> SUPREME COURT BENCH

'Frame norms'

While acknowledging that "increased workloads of modern life" have compelled lawyers and judges to adapt to AI to improve efficiency, it underlined that meaningful human oversight must remain integral to every stage of the adjudicatory process.

"For us, i.e., for those in the province of adjudication and determination of disputes, this by-product of AI, i.e., the production of fake, non-existent, and hallucinated material and its utilisation as precedents in law, is like the release of methyl isocyanate in the province of law and justice: invisible, insidious, and catastrophic by the time anyone notices," the Bench said.

The top court called for a "deeper collaboration" between the Bar and the Bench on AI and urged the Bar Council of India to frame norms to address the issue of AI-generated precedents.

It noted that the process had already begun with the court publishing the Draft Regulations for Use of Artificial Intelligence in Courts, 2026, for public consultation.

The draft regulations provide that AI systems may function only in an assistive capacity and cannot supplant the role of judges. They also require disclosure of AI-assisted filings and prohibit the use of AI in judicial decision-making.

To address the growing instances of AI-generated hallucinated precedents being cited before courts, the Bench directed the (BCI), the apex statutory body regulating the legal profession, to constitute a committee to examine the issue and formulate appropriate norms.

The top court was hearing an appeal filed by Pooja Ramesh Singh, a suspended director of Essel Infraprojects Ltd., challenging the NCLT decision to admit the company into the corporate insolvency resolution process on an application filed by Jammu and Kashmir Bank under Section 7 of the Insolvency and Bankruptcy Code. The insolvency proceedings arose out of an alleged default in relation to a ₹200-crore credit facility extended by Jammu and Kashmir Bank to Pan India Utilities Distribution Company Ltd.

The Mumbai Bench of the NCLT admitted the insolvency application in August after recording a claimed default of ₹87.43 crore.

The order was subsequently affirmed by the National Company Law Appellate Tribunal (NCLAT).

Integrity of process

The apex court expressed surprise that the NCLAT had failed to notice that the NCLT's order relied on fictitious judicial precedents. It also cautioned that courts and tribunals should not "implicitly trust lawyers" with regard to authorities cited before them without independently verifying them.

The apex court held that the source of the lapse did not diminish its adverse impact on the integrity of the judicial process.

The court set aside the orders of both the NCLT and the NCLAT and remitted the matter to the tribunal for fresh consideration in accordance with law.

- **Key Terms and Explanations**
- **AI Hallucination**
- **Definition and Context:** AI hallucination refers to a phenomenon where a Generative Artificial Intelligence model (such as a Large Language Model) confidently generates outputs that are factually incorrect, fabricated, or entirely disconnected from real-world data.
- **Judicial Application:** In the context of the legal framework, this manifests as the generation of fictitious judicial precedents—complete with fabricated case names, fake citations, and non-existent judicial quotes—which are then inadvertently cited by legal practitioners as valid law.
- **Stare Decisis and Judicial Precedent**
- **Definition and Context:** A foundational legal principle meaning "to stand by things decided." It dictates that high court rulings are legally binding on subordinate courts and tribunals handling similar matters.
- **Judicial Application:** This hierarchy ensures predictability and uniformity in law. When an AI-generated "hallucinated" case is injected into this system, it subverts the doctrine of *stare decisis* by binding a court to a non-existent legal principle, rendering the final judgment inherently flawed.
- **Corporate Insolvency Resolution Process (CIRP)**
- **Definition and Context:** A structured, time-bound recovery mechanism established under Section 7 of the Insolvency and Bankruptcy Code (IBC). It allows financial creditors to initiate insolvency proceedings against a corporate debtor in the event of a default.
- **Judicial Application:** Thespecific dispute involving the admission of Essel Infraprojects Ltd. over an alleged default to the Jammu and Kashmir Bank underscores how high-stakes corporate adjudications can be derailed if the technical orders admitting companies into CIRP are compromised by fabricated legal authorities.
- **Adjudication and Judicial Determination**
- **Definition and Context:** The formal legal process by which a judge or arbiter reviews evidence and legal arguments presented by opposing parties to come to a reasoned, binding decision.
- **Judicial Application:** Adjudication is not merely data processing; it requires a conscious evaluation of equity, public policy, and legislative intent. The reliance on unverified algorithmic outputs threatens the "lifeblood" of this human-centric determination.

- **Main Arguments and Substantive Parts**
- **The Doctrine of Zero-Tolerance Against Algorithmic Contamination**
- The core legal thesis established in the judicial determination revolves around the absolute preservation of the decision-making process. The judiciary asserts that the introduction of even an "iota" of fake or hallucinated material violates the very sanctity of adjudication. Unlike human errors—which are typically traceable, open to adversarial challenge, and corrected through traditional appellate review—AI-generated fabrications act as a form of "cognitive contamination." Because these fabrications mimic genuine legal language, they subtly erode the structural truth upon which a decree rests, making a zero-tolerance policy essential to maintaining institutional integrity.
- **The "Methyl Isocyanate" Analogy in Jurisprudence**
- A compelling substantive argument raised by the Bench is the metaphorical comparison of AI hallucinations to the release of methyl isocyanate gas within the legal system. This analogy emphasizes that unverified AI outputs are:
- **Invisible:** They appear perfectly formatted, persuasive, and authentic on the surface.
- **Insidious:** They quietly seep into the arguments of counsel and the subsequent reasoning of tribunals without raising immediate red flags.
- **Catastrophic:** By the time the fiction is discovered, the legal system may have already divested property, altered corporate structures, or restricted personal liberties based on a lie.
- **Assistive Coexistence versus Algorithmic Supplantation**
- The substantive framework distinguishes clearly between utilizing AI for administrative efficiency and allowing it to usurp judicial reasoning. While recognizing the immense workloads of modern legal practice, the judiciary establishes a strict boundary: AI may function exclusively in an *assistive* capacity (e.g., text translation, document indexing, or basic case-law sorting). It cannot *supplant* the human judge. The cognitive core of justice—which includes assessing credibility, balancing competing equities, and applying moral judgment—must remain entirely under human oversight at every stage of the adjudicatory process.
- **Historical Evolution of the Issue**
- **The Era of Physical Print and Human Gatekeeping (Pre-Independence – Late 20th Century)**
- For over a century, the Indian legal system relied on manual documentation. Precedents were sourced from printed law reports such as the *All India Reporter (AIR)* or *Supreme Court Cases (SCC)*. The structural safeguard of this era was the intensive human curation performed by expert editorial boards. Before a judgment was published or cited, it passed through multiple layers of human verification, leaving virtually no room for completely fabricated citations or non-existent laws.
- **The Digital Transformation and Search Engine Boom (Late 1990s – 2010s)**
- The introduction of digital legal databases revolutionized legal research by replacing heavy physical volumes with CD-ROMs and web-based portals. During this phase, technology acted as a retrieval mechanism. Lawyers used boolean operators and keyword searches to scan millions of pages of genuine text. While this era drastically increased the speed of legal research, the technology remained passive; it did not generate new content, meaning the risk of encountering fabricated case laws remained non-existent.
- **The Rise of Assistive AI and Sandboxed Portals (Early 2020s)**
- Recognizing the burden of mounting case pendency, the Indian Supreme Court proactively introduced specialized AI tools. This saw the launch of *SUVAS* (Supreme Court Vidhik Anuvaad Software) for translating judgments into vernacular languages, and *SUPACE* (Supreme Court Portal for Assistance in Court's Efficiency), designed to process facts and manage data. These tools were heavily sandboxed, meaning they operated within closed data parameters controlled directly by the judiciary to prevent external manipulation or data drift.
- **The Generative AI Crisis and Regulatory Frameworks (Present Day, 2026)**
- The widespread availability of commercial, open-domain Generative AI tools transformed legal research from a search-and-retrieval process into a content-generation process. Untrained practitioners began using LLMs to draft briefs, leading to the introduction of unverified, hallucinated case laws into active tribunal proceedings.

- **Way Forward**
- **Institutionalizing the 2026 Draft Regulations**
- The *Draft Regulations for Use of Artificial Intelligence in Courts, 2026* must be formalized and strictly enforced across all levels of the judiciary. This framework should mandate that:
- Every petition submitted by counsel must include a formal AI-disclosure statement, explicitly detailing whether generative tools were used during research or drafting.
- Clear penalties must be established for non-disclosure, treating the submission of unverified AI-generated content as a serious breach of professional conduct.
- **Mandating a "Human-in-the-Loop" Verification Protocol**
- Subordinate courts and tribunals must build mandatory independent verification steps into their daily workflows. Judges and research assistants should run citations through trusted, closed legal databases before finalizing any order. Legal arguments must not be accepted on face value or trusted blindly based on counsel's submissions; every referenced case law must be verified against an official, certified repository.
- **Specialized Capacity Building by the Bar Council of India**
- The Bar Council of India needs to quickly roll out mandatory legal technology courses across state bar councils and law schools. These programs should focus on building practical AI literacy, teaching lawyers how to identify AI hallucinations, write effective prompts, and understand the ethical risks of relying on commercial LLMs. Technology training must become a core part of professional legal development rather than an optional skill.

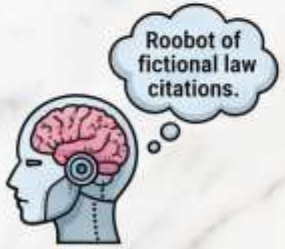
COMPREHENSIVE ANALYSIS: SUPREME COURT ON AI-GENERATED CASE LAW

A Critical Study for UPSC CSE

IAS ACADEMY
RISE ABOVE THE REST

KEY DOCTRINES & CONCEPTS

AI HALLUCINATION



AI hallucination: Confidently false legal precedents.

STARE DECISIS

Lower courts are bound by higher court rulings.

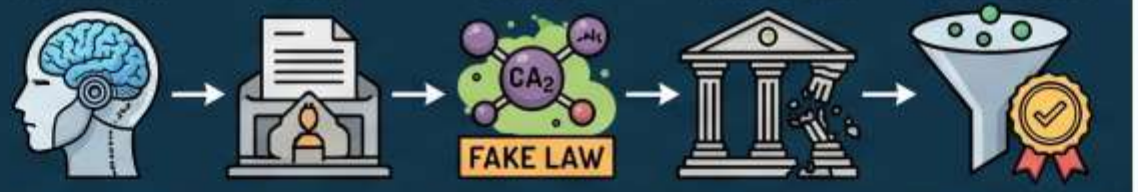
ZERO-TOLERANCE

Absolute exclusion of fabricated material to maintain integrity.

THE SC RULING vs. NCLT ORDER

- SC Quashes NCLT Order
- Reliance on Fabricated Case Law
- Catastrophic to Adjudication Process

THE CRISIS: AI HALLUCINATION & INSTITUTIONAL SUBVERSION (THE METHYL ISOCYANATE ANALOGY)



MULTIDIMENSIONAL IMPACTS (UPSC GS FOCUS)

Social (Public Trust Erosion)

Political (Judicial integrity, separation of powers)

Legal (Procedural Due Process, audi alteram partem)

Ethical (Moral Accountability, Bias)

International (Global Regulations, Tech Standards)

Economic (Market predictability, Corporate insolvency)

WAY FORWARD & INSTITUTIONAL RESPONSE

INSTITUTIONAL RESPONSE

Draft Regulations for AI in Courts, 2026 — Assistive Only Deployment — BCI Committee Formation

SAFEGUARDS

PROFESSIONAL CONDUCT

Code of ethics for legal practitioners

Can space oncology revolutionise cancer treatment?

Even as the burden of cancer is rising in India, space oncology is a rapidly emerging field, investigating how microgravity and cosmic radiation impact cancer progression and treatment

S. Ganapathy

Cancer is a group of diseases where abnormal cells grow uncontrollably, invading nearby tissues and sometimes spreading to distant organs of the body. In India, an estimated 1.07 million new cases are likely to be diagnosed in 2026, which means 1 in 9 Indians reading this article are at a lifetime risk of developing cancer.

Damage wreaked on the body apart, cancer is one of the most economically disruptive illnesses for families. Every year, ₹1,400 crores is spent on direct and indirect medical costs for cancer: this, however, excludes income loss, debt, asset depletion and caregiver burden.

It is no wonder then, that with the burdens of cancer rising in India and globally, that it is one of the most widely-studied diseases in the world. And it is this research that has led to the emergence of what could perhaps become a new frontier in cancer treatment: space oncology.

Latest advances: Cancer is biologically diverse. Understanding divergent mechanobiological responses helps identify signalling pathways fundamental to metastasis, tissue invasion and treatment resistance. GETTY IMAGES

What is space oncology?

Space oncology is a rapidly emerging field, investigating how microgravity and cosmic radiation impact cancer progression and treatment. Space is a natural laboratory for studying cancer biology. Space-based environments are studied to accelerate tumour modelling and drug discovery.

Space oncology has already produced useful, conceptual and technological spin-offs, ranging from 3D cell culture systems to protein crystal studies for cancer drug development. This is in addition to refined thinking about radiation risk, tissue response and biomarker discovery.

Why this is useful?

Cancer is biologically diverse. Understanding divergent mechanobiological responses helps identify signalling pathways fundamental to metastasis, tissue invasion and treatment resistance.

Some cell changes that have been identified as a result of microgravity are cytoskeletal reorganisation, altered focal-adhesion signalling, changes in extracellular-matrix interactions and spontaneous formation of multicellular spheroids. Each is relevant to tumour spread and therapeutic response.

When it comes to drugs, researchers have found that microgravity changes the cytoskeleton and spheroid formation of cells, which can help hasten drug discovery and also lead to reduced animal testing for drugs.

As microgravity also allows for more uniform protein crystals and lower-viscosity biologics, this could help develop more stable formulations.

Microgravity also changes the tumour cell biology that drugs act on, and improves performance of delivery systems such as nanoparticles and 3D formulations. The effects of microgravity on cancer cells, cancer stem cells, and drug response therefore, could help future therapeutic strategies.

International Space Station (ISS) studies have covered real-space and simulated-microgravity experiments across breast, lung, thyroid, prostate, melanoma, glioblastoma and hematologic cancer models. Cancer cells studied in microgravity and exposed to unique radiation environment of space behave differently than in conventional laboratory systems. These differences reveal mechanisms that are otherwise difficult to understand.

Reviews of real-space and simulated microgravity experiments show effects on cell adhesion, migration, proliferation, gene expression and formation of multicellular spheroids.

On microgravity

Microgravity also changes how tiny drug packages (nanoparticles) form. These particles carry chemotherapy directly into the tumours and release it slowly. Microgravity reorganises cancer cell shapes, membrane behaviour and gene expression. This alters how cells take up drugs. Remove or reduce gravity, and cells experience major changes in fluid behaviour, mechanical loading and cell-to-cell interaction.

For cancer cells, these changes are not trivial. In microgravity, protein crystals and complex biologics form more slowly and uniformly without gravitational sedimentation. Microgravity, therefore, helps produce drug crystals and biologic formulations that are harder to make on Earth.

Breast & GI cancer in outer space

Breast cancer cells show changes in gene expression, morphology, signal transduction and invasive behaviour under microgravity. In a microgravity environment of space, breast cancer cells generally shift toward a less malignant and less aggressive phenotype. Under normal gravity, breast cancer cells attach strongly to their surrounding matrix using focal adhesions. In space, these adhesion points fail to mature, reducing the cells' ability to crawl, migrate, and metastasise. Key proteins that regulate cell cycle checkpoints, specifically cyclin D1 and cyclin B1, are heavily downregulated, pausing the division process and stopping the rapid colony-forming ability of the tumour. Breast cancer spheroids grown in space are more susceptible to specialised therapies.

Gastrointestinal and colorectal cancers, however, react to microgravity by accelerating their disease trajectory and become more aggressive. Reduced expression of drug-resistance genes, increased DNA/RNA damage markers, and reorganisation of the protein, F-actin, make gastric cancer cells more sensitive to the chemotherapy drug, doxorubicin.

Regulations and investments

In 2020, the United States' Food and Drug Administration (FDA) approved a subcutaneous form of an immunotherapy drug, pembrolizumab.

The U.S. space agency, NASA, had developed this through protein crystal growth research performed on the ISS, targeting the AMG01 gene. These crystals were more uniform and better suited to supporting formulations work for this route of delivery.

Similarly, rebecsinib, became the first space-tested cancer drug to enter clinical trials. Following successful ISS-linked testing it received the FDA 'Investigational New Drug' status. Microgravity-grown tumour organoids helped demonstrate antitumour activity strong enough to support further regulatory progression.

These cases show that space-based research is now a legitimate pathway for drug development, not just a novelty.

This year, United Kingdom regulators and the U.S. Space Agency publicly backed the development of a regulatory pathway to outer space.

The Medicines and Healthcare Products Regulatory Agency (MHRA), the Civil Aviation Authority (CAA), and the Regulatory Innovation Office have streamlined inter-agency bureaucracy. The specific 'dual-regulation' hurdles that previously made space-based pharmacology legally risky for heavy corporate investment were addressed.

This has enabled startups to engineer highly stable, concentrated cancer therapies that patients can self-inject at home instead of hours-long IV infusions. For companies, the costs of setting up a factory are removed, instead they may be able to deploy compact units that operate independently in orbit.

The Indian Space Research Organisation (ISRO), in spite of a modest $10 billion space economy, is the third- largest space-tech power globally and fifth among major government space agencies. Falling launch costs and new commercial platforms are making space oncology and space pharmaceutical manufacturing more realistic. With successful space startups in India the prices may fall further.

Space manufacturing is no longer about research. The picture is clear: the industry is moving from proof-of-concept to commercial production.

The microgravity pharmaceutical manufacturing market valued at $1.1 billion in 2025 is projected to reach $6.8 billion by 2034. Commercial space stations and nanosatellites (CubeSats) are now essential platforms for experiments. Small, frequent launches are becoming viable for pharmaceutical payloads.

What the future holds

Over 300 peer-reviewed papers, 40 chapters and 12 monographs have already been published in the area of space oncology. At present, space oncology can be encapsulated by the well known saying 'A journey of a thousand miles begins with the first step.' There is no doubt that humans will exploit outer space in the perpetual quest to solve the cancer conundrum on planet Earth.

(Dr. S. Ganapathy is past president of the Neurological Society of India and the Telemedicine Society of India. A former distinguished visiting professor at IIT, Kanpur he is currently a honorary distinguished professor at BM, Jammu. drsganapathy@gmail.com)

THE GIST

- Space oncology is a rapidly emerging field, investigating how microgravity and cosmic radiation impact cancer progression and treatment. Space is a natural laboratory for studying cancer biology. Space-based environments are studied to accelerate tumour modelling and drug discovery.
- Microgravity changes how tiny drug packages (nanoparticles) form. For cancer cells, these changes are not trivial. In microgravity, protein crystals and complex biologics form more slowly and uniformly without gravitational sedimentation. Microgravity, therefore, helps produce drug crystals and biologic formulations that are harder to make on Earth.
- The microgravity pharmaceutical manufacturing market valued at $1.1 billion in 2025 is projected to reach $6.8 billion by 2034. Commercial space stations and nanosatellites (CubeSats) are now essential platforms for experiments. Small, frequent launches are becoming viable for pharmaceutical payloads.

- **Key Terms and Explanations**
- **Space Oncology**: A highly specialized branch of medicine and space biology that investigates how the unique environmental conditions of outer space—specifically microgravity and cosmic radiation—affect cancer cell progression, molecular signaling, and the development of therapeutic drugs.
- **Microgravity**: A state of apparent weightlessness where the net acceleration due to gravitational forces is near zero compared to Earth's surface.
- **Cosmic Radiation**: High-energy particles, including protons and heavy atomic nuclei, originating outside our solar system. In cellular research, cosmic radiation serves as a tool or a variable to study DNA damage, genetic mutations, and cellular repair mechanisms in real-time.
- **3D Multicellular Spheroids**: Three-dimensional aggregates of cells grown in a laboratory environment. Unlike traditional flat (2D) petri dish cultures, these spheroids closely mimic the actual spatial architecture, cell-to-cell interactions, and microenvironment of tumors inside the human body.
- **Protein Crystallization**: The process of arranging highly complex protein molecules into a structured, repetitive lattice. In microgravity, the absence of buoyancy and fluid convection allows proteins to form near-flawless, uniform crystals, which are crucial for mapping molecular structures and designing targeted therapies.
- **Biologics**: Complex medical products derived from living organisms, such as monoclonal antibodies. Microgravity allows scientists to formulate low-viscosity, highly concentrated versions of these biologics, making them easier to administer.
- **Nanoparticles for Drug Delivery**: Microscopic structures engineered to encapsulate active pharmaceutical agents. These particles act as specialized delivery vehicles that can travel through the bloodstream, targeting cancer cells directly while releasing the drug at a controlled, gradual rate.

- **Main Arguments and Substantive Parts**
- The analytical foundation of this domain rests on a clear core thesis: the extreme physical environment of space is no longer just a frontier for exploration, but a transformative laboratory capable of unlocking deep biological secrets and reshaping terrestrial medicine.
- **Core Thesis**
- Removing Earth's gravitational constraint exposes hidden cellular mechanics, allowing researchers to accelerate tumor modeling, grow higher-quality crystals for drug development, and synthesize novel therapeutic delivery mechanisms that are physically impossible to create on Earth.
- **Key Arguments and Supporting Evidence**
- **Disruption of Cancer Mechanics**: Gravity dictates how cells structurally organize themselves. In microgravity, the cellular cytoskeleton reorganizes, and extracellular-matrix signaling is profoundly altered. Data from **image_c13e38.jpg** indicates that breast cancer cells exposed to microgravity downregulate critical cell-cycle checkpoints (specifically cyclin D1 and cyclin B1), which halts rapid cell division and shifts the cells toward a less malignant phenotype.
- **Differential and Tissue-Specific Behaviors**: Research shows that different cancers react uniquely to space environments. While breast cancer progression slows down, gastrointestinal and colorectal cancers can exhibit accelerated trajectories and heightened aggressiveness. However, this environment concurrently increases the sensitivity of gastric cancer cells to existing chemotherapies like doxorubicin, presenting a dual opportunity for targeted treatment strategies.
- **Revolutionizing Drug Formulations**: Terrestrial manufacturing often suffers from sedimentation, leading to uneven mixtures. The weightless environment of space enables the production of highly stable, uniform protein crystals. This structural perfection led to the regulatory approval of a subcutaneous form of the prominent immunotherapy drug, pembrolizumab, turning long, exhausting hospital IV infusions into quick, at-home self-injections.

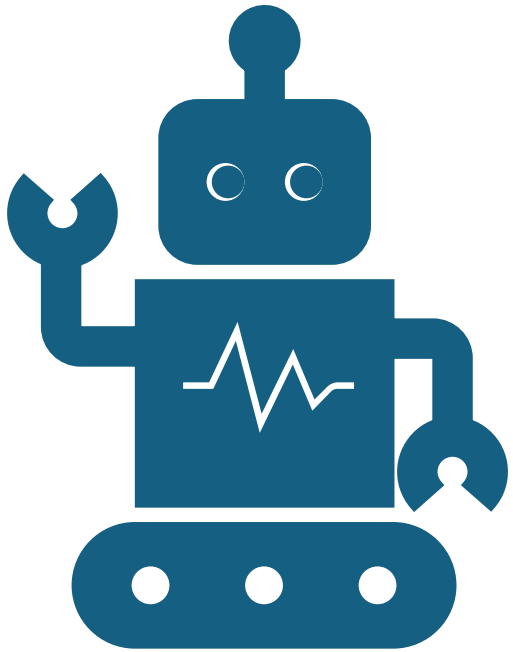
- **Historical Evolution of the Issue**

- **Pre-1960s (The Dawn of the Space Age)**: Early biological payloads consisted of simple organisms (fruit flies, seeds, and small animals) sent into orbit. The primary objective was purely survival-oriented: understanding if living matter could withstand intense cosmic radiation and extreme launch acceleration.

- **1970s–1990s (The Space Station Era)**: With the deployment of American Skylab and the Soviet Mir station, scientists gained the ability to observe cells over extended periods. Researchers noticed unexpected changes in cell shapes and fluid movements, sparking early theories that gravity plays a fundamental role in structural biology.

- **2000s–2020s (The International Space Station Era)**: The ISS evolved into a state-of-the-art laboratory for biotechnology. The focus shifted from macro-survival to micro-engineering, resulting in major breakthroughs in growing 3D cellular spheroids and analyzing high-purity protein structures without gravitational distortion.

- **Mid-2020s to Present (The Commercialization and Regulation Wave)**: Space oncology has transitioned from theoretical proof-of-concept to active commercial manufacturing. Leading regulators in the US and UK have begun establishing dedicated regulatory pathways to handle space-manufactured drugs, while the global microgravity pharmaceutical market is projected to skyrocket from $1.5 billion in 2025 to $9.8 billion by 2034.



- **Way Forward**

- **Establishing Single-Window Regulatory Pathways**: To eliminate the current dual-regulation bottleneck, nations should create unified regulatory task forces. Bringing space agencies (like the FAA or CAA) and healthcare authorities (like the FDA or MHRA) together under a streamlined, single-window clearance system will drastically reduce bureaucratic delays for biomedical space payloads.

- **Expanding Public-Private Partnerships (PPP)**: Leveraging established space agencies is vital. By utilizing ISRO's robust space infrastructure and low launch costs, the government can create dedicated incubation programs. These programs will allow domestic biotech startups and research universities to utilize commercial space flights and CubeSats for affordable biomedical testing.

- **Implementing Targeted Fiscal Incentives**: Governments should offer strategic financial support, such as R&D tax credits, research grants, and subsidized launch access, to pharmaceutical firms investing in microgravity research. This will lower the initial capital risks and accelerate the transition of space-based innovations from the lab to the pharmacy.

- **Ensuring Globally Equitable Access**: To prevent these advanced therapies from becoming exclusive luxury treatments, international bodies must establish frameworks that guarantee affordable distribution. Developing nations should advocate for technology transfers and collaborative global research initiatives, ensuring that life-saving space innovations remain accessible to patients worldwide.

COMPREHENSIVE ANALYSIS: SPACE ONCOLOGY AND CANCER TREATMENT

FOR UPSC & APSC ASPIRANTS

UNDERSTANDING SPACE ONCOLOGY

- **Space Oncology** - Define the mc of space oncology and and cancer
- **Microgravity** (g~0) symbol, compreneuraones to microgravity
- **Cosmic Radiation** (HZE particles) products ante and cancer
- **Natural lab concept** - micrrograviity oovence neu:oor imoatment

BURDEN OF CANCER

1.87 million new cases in India by 2026

1 in 9 Indians lifetime risk

KEY SCIENTIFIC ADVANTAGES (MICROGRAVITY)

PERFECT vs. IMPERFECT PROTEIN CRYSTALS

VS.

Flawless structured space crystal

Flawed terrestrial crystal

- Accelerated tumor modeling
- Faster drug discovery
- Reduced animal testing

TUMOR MODELING BREAKTHROUGHS

3D MULTICELLULAR SPHEROIDS

VS.

3D multicel grown in microgravity

Traditional 2D petri dish cultures

- Spheroids mimic the tumor microenvironment to tumor nlimpatent onfoix culture
- Spheroids mimics. nanopasutlating tumor and frouren microenvironment

NANOPARTICLE DRUG DELIVERY

UPSC SYLLABUS & NCERT LINKAGES

STRONG LINKAGES TO:

GS Paper 3 (S&T, Biotech)
GS Paper 2 (Health)
GS Paper 4 (Ethics)
Essay
Optionals (Bio, Medicine)

NCERTs

Class 12 Bio

Class 12 Bio
Class 11 Phys

PREVIOUS YEARS QUESTIONS (PYQs) – KEY THEMES

- Space technology and socio-economic development
- Biotechnology achievements
- Non-communicable diseases

MULTIDIMENSIONAL IMPACT ANALYSIS (UPSC PERSPECTIVE)

Social
Reduce medical debt

Economic
$9.8 Billion market projected

Political
National prestige

Legal
Double-regulation, jurisdiction

Ethical
Less animal testing

International
Scientific diplomacy vs. tech competition

WAY FORWARD

- Streamlined regulatory pathways, contant as studenis, economes and nonuaomiments
- Public-private partnerships, competiting, in conmerdro and emergase
- Equitable access to mente writi snd: pouitable from nutzus parthwars

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Navy foils piracy attempt in Gulf of Aden; three vessels still in captivity, IMO warns

INS Trikand intercepts and secures Thoothukudi-bound bulk carrier *Golden Arsenal*; International Maritime Organization says 3 other ships are held by pirates, with a critical situation aboard one of them, which has an Indian crew member; five Indians among crews of two of the three ships

Saurabh Trivedi
M. Kalyanaraman
NEW DELHI/CHENNAI

The Indian Navy successfully responded to a piracy attempt on the merchant vessel *MV Golden Arsenal* in the Gulf of Aden, with stealth frigate *INS Trikand* swiftly intercepting and securing the ship after the attack.

The operation comes even as the International Maritime Organization (IMO) issued an urgent appeal for the release of the crews of three other vessels still held by Somali pirates, warning that the humanitarian situation aboard one of them, which has one Indian crew member, had turned critical. Five Indian nationals are among the crews of two of those three vessels.

The Navy on Thursday informed that the *Golden Arsenal*, a St. Vincent and the Grenadines-flagged bulk carrier, reported an attempted pirate attack on July 1 while transiting from Aden, Yemen, approximately 300 nautical miles east-northeast of Djibouti. The vessel, en route to Thoothukudi, was carrying 21 crew members – 20 Syrian nationals and one Indian.

The incident was reported through the Information Fusion Centre-Indian Ocean Region (IFC-IOR), following which *INS Trikand*, then about 80 nautical miles away, altered course to close in on the vessel. As it approached, the frigate launched a helicopter to sanitise the area.

Indian Navy personnel with seafarers on board Thoothukudi-bound *MV Golden Arsenal* after an anti-piracy operation. PTI

Fortified refuge

On establishing communication with the vessel, naval personnel ascertained that the crew had taken shelter in the ship's citadel – a fortified refuge built to withstand forced entry, equipped with independent power, ventilation, satellite communication and supplies – and remained safe throughout the incident, with pirates suspected to be still onboard. *Golden Arsenal* had been stopped roughly 110 nautical miles northeast of Somalia's Boosaaso, with *INS Trikand* maintaining a close watch within 1.5 nautical miles of the vessel through the night.

On Thursday, a team from *INS Trikand* boarded *Golden Arsenal* to sanitise the vessel and assess the situation. After a comprehensive search, no suspicious personnel were found onboard. The crew then safely emerged from the citadel and, along with Indian Navy personnel, began assessing the damage to the vessel. To strengthen the operation, the Indian Navy also deployed a P-8I long-range maritime patrol aircraft for aerial surveillance.

The merchant ship had sustained damage to its bridge superstructure and adjoining compartments during the pirate attack.

With the vessel declared secure and the immediate threat neutralised, *INS Trikand* concluded its anti-piracy operation. The *Golden Arsenal* has since resumed its onward voyage. The Navy said it remains committed to safeguarding merchant shipping, countering piracy and ensuring the safety of all seafarers in the Indian Ocean Region, irrespective of nationality.

Ships held hostage

Meanwhile, the IMO has expressed particular concern over the Palau-flagged tanker *MT Honour 25*, whose 17 crew members – including one Indian national – have now been held for more than two months since the vessel was hijacked on April 24. Citing the latest communication from the ship's Master, the IMO statement said five crew members, including the Master, were now unwell, with food supplies reportedly down to rice alone and the available drinking water unfit to drink.

It also said armed pirates guarding the vessel had recently exchanged fire with a rival pirate group that tried to approach the ship, leaving the crew caught between competing armed factions.

The Master was quoted appealing to the international community to help secure the crew's release.

The IMO said the crews of two other vessels – *Sward* and *MV Eureka* – also continue to be held under similarly difficult conditions. *MV Eureka*'s 12-member crew includes four Indian nationals, while there are no Indians among those held aboard *Sward*, according to officials.

The IMO called for urgent, coordinated international intervention to secure the immediate and unconditional release of all three crews, urging Somalia's federal government, flag states, shipowners, insurers and regional partners to intensify diplomatic and operational efforts.

The *Golden Arsenal* operation is the latest in a series of anti-piracy patrols the Indian Navy has sustained in the Gulf of Aden and the wider Western Indian Ocean amid what the IMO has described as a resurgence of piracy and armed robbery against ships in the region.

- **Key Terms and Explanations**
- **Gulf of Aden and Strategic Choke Points**
- The Gulf of Aden is a critical deep-water basin located between the Horn of Africa (Somalia) and the southern coast of the Arabian Peninsula (Yemen). It forms a vital node of the global maritime energy and trade highway, connecting the Arabian Sea to the Red Sea via the Bab-el-Mandeb strait, and onward to the Mediterranean Sea through the Suez Canal. Because huge volumes of global commerce pass through this narrow corridor daily, any disruption here sends immediate shockwaves through international supply chains.
- **Information Fusion Centre–Indian Ocean Region (IFC-IOR)**
- Hosted by the Indian Navy at Gurugram, the IFC-IOR is a premier regional maritime security hub established to promote collaborative maritime safety. It acts as a nerve center by collating, analyzing, and sharing real-time information on non-traditional security threats—such as piracy, armed robbery, smuggling, and illegal fishing—among partner nations. The seamless tracking and eventual neutralization of threats, as illustrated by the rapid tracking of hijacked merchant vessels, highlights the practical utility of this center.
- **Vessel Citadel (Maritime Fortified Safe Room)**
- A citadel is a pre-designated, highly secure, and fortified compartment inside a merchant ship where the crew can seek refuge if pirates successfully board the vessel. To be effective, a citadel must feature reinforced, blast-resistant entry points, an independent propulsion control override or communications system, its own ventilation apparatus, satellite communication tools, and emergency rations. The structure allows the crew to deny operational control of the ship to attackers while waiting for naval forces to arrive.
- **International Maritime Organization (IMO)**
- As a specialized agency of the United Nations, the IMO is the global standard-setting authority for the safety, security, and environmental performance of international shipping. Its primary role is to create a regulatory framework for the shipping industry that is fair, effective, and universally adopted. When maritime crises escalate, the IMO coordinates diplomatic pressures, issues global security alerts, and urges member states to step up anti-piracy patrols.
- **Flags of Convenience (FoC)**
- This refers to a business practice where a ship's owners register their merchant vessel in a country other than their own. Countries like St. Vincent and the Grenadines or Palau frequently serve as open registries, offering lower registration fees, minimal taxes, and more lenient labor regulations. While legally permissible, this practice complicates security operations, as a vessel might fly the flag of an island nation, carry cargo for a European corporation, and be manned by a multinational crew of Syrian or Indian nationals.

- **Main Arguments and Substantive Parts**
- **The Resurgence of Somali Piracy**
- A central argument emerging from recent security developments is the worrying revival of piracy and armed robbery in the Western Indian Ocean. After nearly a decade of relative dormancy, criminal syndicates operating from the Somali coast have seized upon regional security vulnerabilities. This resurgence proves that the underlying socio-economic drivers of piracy—such as state fragility, lack of law enforcement on land, and economic desperation—were never fully eradicated, but merely suppressed by international naval patrols.
- **India’s Posture as a Net Security Provider**
- Recent maritime interdictions reinforce India's strategic intent and operational capability to act as the primary stabilizing power in the Indian Ocean Region. The rapid response of the stealth frigate *INS Trikand*, supported by long-range maritime patrol aircraft like the P-8I, demonstrates the Indian Navy's ability to project hard power far from its home waters. Crucially, India’s operational doctrine emphasizes safeguarding merchant shipping and rescuing seafarers irrespective of their nationality or the vessel's flag, cementing its status as a responsible global actor.
- **The Interplay of Passive Defense and Active Interdiction**
- The resolution of modern piracy attempts reveals that maritime security relies on a two-pronged strategy: passive onboard defenses working in tandem with active naval intervention. The use of fortified citadels by merchant crews buys critical time, preventing pirates from taking hostages or steering the ship into territorial waters where international law limits naval action. However, passive defense is only a delaying tactic; it requires a swift, decisive response from nearby naval assets to neutralize the threat and secure the vessel.
- **The Escalating Humanitarian Crisis at Sea**
- Beyond the macroeconomics of trade disruptions, recent hijackings highlight a severe and worsening humanitarian crisis for international seafarers. When vessels like *MT Honour 25* or *MV Eureka* are held hostage for months, crews face extreme physical deprivation, including dwindling food supplies and contaminated drinking water. This vulnerability is compounded when captive crews are caught in the crossfire of rival regional militias, turning commercial seafarers into collateral damage in local proxy conflicts.

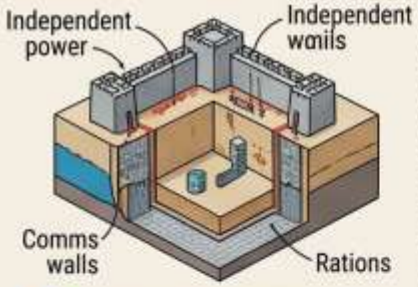
AXIA IAS ACADEMY | RESURGENT MARITIME PIRACY IN THE GULF OF ADEN & INDIA'S STRATEGIC RESPONSE (A Comprehensive UPSC CSE Analysis)

1. Key Terms & Concepts (A Glossary)

GULF OF ADEN
Strategic chokepoint status to sc strategic communtichostinpoint (Bab-el-Mandeb connectivity) of the Rew)

IFC-IOR
Piracy (registereed in registering ands country on the United a IFC-IOR

VESSEL CITADEL



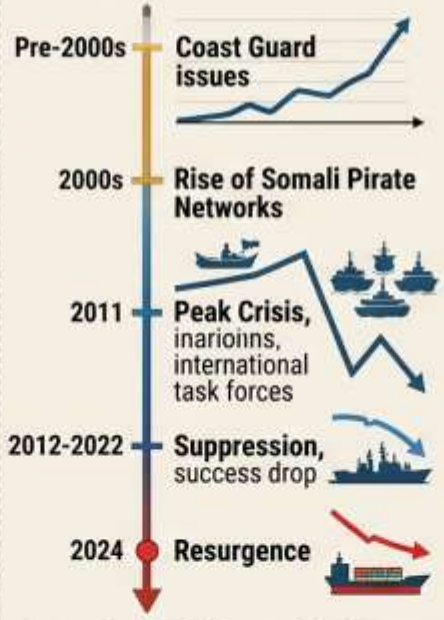
IMO (International Maritime Organization)
A specialized UN agency orieic mime actions and confirments.

FLAGS OF CONVENIENCE (FoC)
Registering ships outside ouside ownership country country (e.g., *Golden Arsenal* Isaval is Grenadines-flagged).

2. Main Arguments

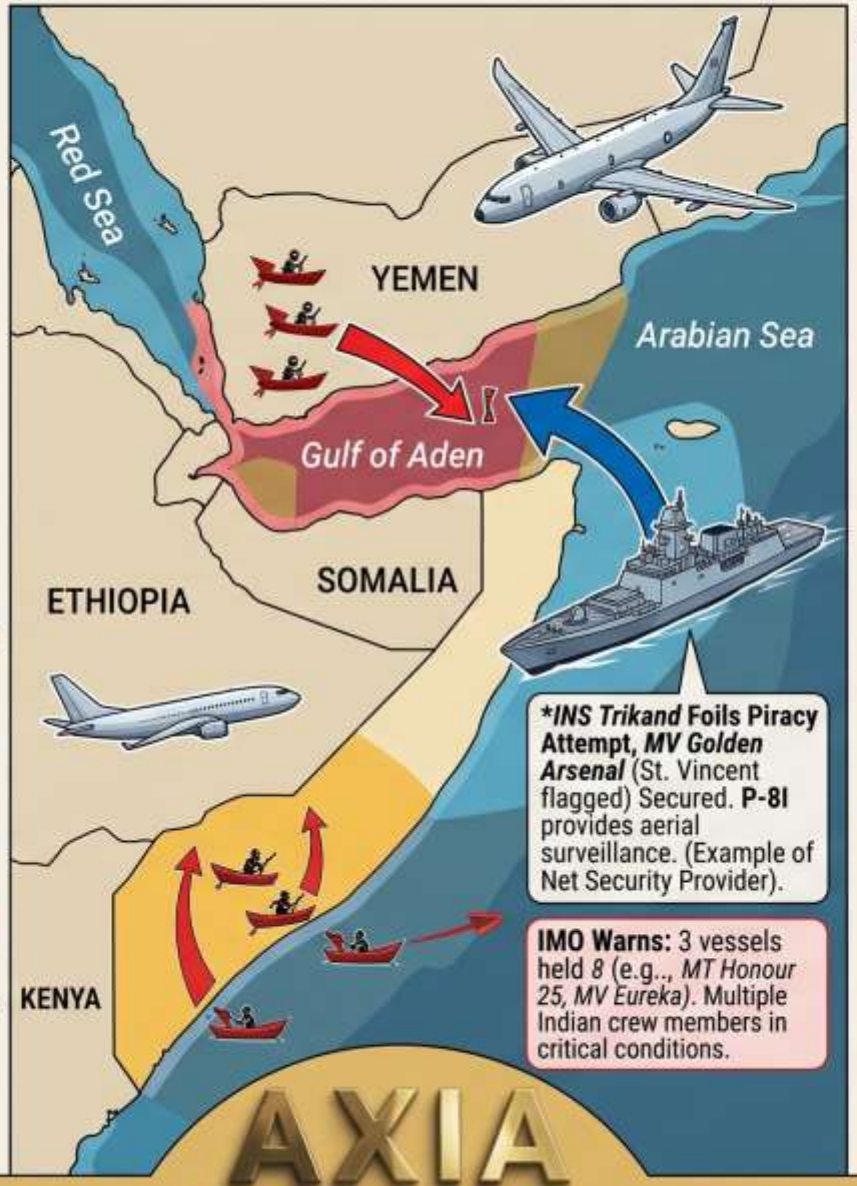
- Piracy resurgence due to diverted focus
- India's swift action as a **Net Security Provider.** (Grenadhensial Sounn/Arena)
- Humanitarian plight of crews

3. Historical Evolution



4. Logical/Philosophical Base

- ***Mare Liberum*** (Freedom of Seas)
- ***Hostis humani generis*** (Enemy of mankind), universal jurisdiction



5. Multidimensional Analysis

POLITICAL
Governance vacuum in Somalia/Yemen, geopolitical rivalry

LEGAL
IMO, UNCLOS, Universal enforcement challenge

ECONOMIC
Trade cost rise (insurance, war risk premiums, rerouting)

SOCIAL/ETHICAL
Humanitarian crisis for crews, moral hazard of ransoms, moral ronnunity. state responsibility

INTERNATIONAL
Shifting power dynamics, smaller nations' reliance

TECHNOLOGICAL
Satellite comms, UAVs, sophisticated naval tech

6. Linkages with NCERTs

Class 11 Geography: Physical Env., Location (India's position)

Class 12 PolSci: Contemporary World Pol., Securing the World Ch.7

Class 10/12 Econ: Global Trade

7. Linkages with UPSC CSE Syllabus (Paper Mapping)

GS 2 (IR: Strategic locations, global bodies)
GS 3 (Security: Maritime Security Architecture, IFC-IOR
GS 4 (Ethics: Humanitarian duty
Essay, Optionals

8. Way Forward

9. Previous Years' Questions (Prelims & Mains)

Prelims: Consider IFC-IOR, Conoden ocation social toolies, IMO and UNCLOS roles, ancept analysis.
Analyze Bab-el-Mandeb to analyze of ethemmeats (2022 GS3)

Mains: Analyze the maritime security challenges in India in the IRS challenges... (2022 GS3)
Examine India's role as a net security provider in the IOR... (2014 GS3)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