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JULY 9



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Trump ends Iran truce; talks to go on

Iran claims it hit back at 85 U.S. military assets after strikes on its southern coast

Washington's 'violation' of MoU has rendered it 'ineffective', says Tehran

U.S. would attack targets in Iran once again, says Trump at NATO summit

Stanly Johnny

The ceasefire between the United States and Iran is "over", U.S. President Donald Trump said on Wednesday, while leaving the door open for more talks, after the two sides exchanged fire amid a dispute over the status of the Strait of Hormuz.

Iran said the U.S. "violations" have rendered parts of the memorandum of understanding (MoU) between the two countries "ineffective".

"As far as I am concerned, it is over," Mr. Trump said at a NATO summit in Ankara, Turkey, when asked about the ceasefire. "It is just a waste of time dealing with them," he added. "I will let our wonderful negotiators keep talking if they want, but I do not see it. I do not like these people." He added that the U.S. would hit Iran again on Wednesday night. "We're gonna hit 'em hard tonight," he said, adding: "They violate the



agreement every day."

His remarks came after Iran claimed that it targeted 85 U.S. military assets in the Persian Gulf following U.S. air strikes on "several monitoring and surveillance centres" on Iran's southern coast.

The U.S. strikes killed eight military personnel, Iranian state television said. "Following the criminal aggression carried out this morning by the U.S. terrorist army against areas in southern Iran, eight courageous members

of the air and naval forces of the Islamic Republic of Iran's military in Bandar Abbas (south) and Bushehr (southwest) fell as martyrs," the state television said, citing a statement from the military.

This is the second time the U.S. and Iran have exchanged fire since they signed the MoU on June 17, promising to extend the ceasefire and begin talks for a final settlement.

At the core of the escalation lies the question of who controls the Strait of

Hormuz. The MoU calls for the safe passage of tankers through the strait. Iran has opened a route along its coast and asked vessels to use a "designated route" along its coast in coordination with local authorities. Over the weekend, three ships passing through an alternative route along the Omani coast – Marshall Islands-flagged *M/T Al Re-kayyat*, Saudi Arabia-flagged *M/T Wedyan*, and Liberian-flagged *M/T Cyprus Prosperity* – were attacked.



Crisis reignited: A screenshot from a social media post shows smoke and flames rising after an explosion in Bandar Abbas, Iran, on Wednesday. REUTERS

Stock indices dip 2% as Iran, U.S. restart clashes

MUMBAI

Benchmark Nifty and Sensex dipped over 2% to 23,882.05 and 76,503.60 points respectively on Wednesday after renewed Iran-U.S. clashes sent global oil prices soaring. The indices opened about 0.6% down from the previous close before tumbling during the day. » PAGE 12

Central Command said in a statement.

"U.S. forces struck Iranian air defense systems, command and control networks, coastal radar sites, anti-ship missile capabilities, and more than 60 Islamic Revolutionary Guard Corps (IRGC) small boats in and near the strait to degrade Iran's ability to continue attacking international commerce flowing through the international trade corridor," it said.

India expresses concern

India on Wednesday voiced deep concern over the fresh targeting of commercial shipping in the Strait of Hormuz and called upon all parties to exercise restraint.

"We urge the parties to return to dialogue and diplomacy to achieve a peaceful and lasting solution to the conflict," the Ministry of External Affairs said in a statement.

(With PTI inputs)

IS THE DEAL FALLING APART?

» PAGE 14

- **Key Terms and Explanations**
- **Strategic Choke Point:** A narrow geographical channel, typically a strait or canal, that connects major maritime bodies and holds vital importance for global trade and military transit.
- **Memorandum of Understanding (MoU):** A formal agreement between two or more parties that outlines a bilateral or multilateral alignment of intent and action. While it signals a serious diplomatic commitment, it is generally less legally binding than a formal international treaty.
- **Sanctions Waiver:** A legal mechanism through which a government or international body temporarily suspends or bypasses specific economic embargoes to permit predefined commerce.
- **Asymmetric Warfare:** A conflict dynamic where the relative military capabilities of the opposing belligerents differ significantly. The less powerful actor utilizes unconventional tactics—such as fast-attack small craft, coastal radar networks, and anti-ship cruise missiles—to exploit the vulnerabilities of a technologically superior adversary.
- **Islamic Revolutionary Guard Corps (IRGC):** A ideologically driven branch of the Iranian Armed Forces established after the 1979 revolution. It operates independently of the traditional regular military, maintaining its own army, navy, and air forces, and commands significant influence over both regional proxy networks and domestic economic assets.
- **Main Arguments and Substantive Parts**
- The structural instability in West Asia highlights a deeper geopolitical reality: tactical, short-lived diplomatic truces cannot act as long-term substitutes for comprehensive conflict resolution when deep-seated structural disputes remain unaddressed.
- **The Collapse of Temporary Truces**
- Temporary diplomatic arrangements, such as the June 17 Memorandum of Understanding, are inherently fragile. When underlying friction points—specifically regarding maritime sovereignty and territorial transit rights—are left unresolved, minor tactical provocations inevitably cause these agreements to collapse.
- **The Escalation Matrix: Precision vs. Asymmetric Retaliation**
- The confrontation operates on two distinct operational levels:
- **The Conventional/Precision Directive:** Major powers, like the United States, utilize overwhelming conventional superiority, deploying precision munitions to degrade defensive infrastructure, anti-ship networks, and command nodes.
- **The Asymmetric Counter-Strategy:** Regional actors leverage geography, targeting commercial shipping lanes and maritime corridors to impose a heavy economic cost on the global trade architecture.
- **The Contested Perspectives**
- **The Hegemonic & Freedom of Navigation Viewpoint:** Western powers and global trade networks view international waters as a universal public good. Any disruption to commercial vessels transiting through alternative or designated routes is interpreted as state-sponsored lawlessness that justifies collective military deterrence.
- **The Regional Sovereignty Viewpoint:** Littoral states often argue that regional security must be managed exclusively by local stakeholders. From this perspective, foreign military deployments and unilateral economic blockades are seen as direct violations of state sovereignty, rendering bilateral agreements ineffective.

- **Historical Evolution of the Issue**
- **The Cold War Matrix and Operation Ajax (1953):** The foundational trauma of modern US-Iran relations trace back to the CIA-backed coup that overthrew Iran's democratically elected Prime Minister, Mohammad Mossadegh, after he nationalized the country's oil industry. This restored the pro-Western Monarchy under the Shah, embedding deep anti-imperialist sentiment into the fabric of Iranian political thought.
- **The 1979 Islamic Revolution:** The overthrow of the Shah and the rise of Ayatollah Khomeini transformed Iran from a foundational pillar of American policy in West Asia into a revisionist state. The subsequent 444-day US Embassy hostage crisis permanently altered bilateral diplomacy, cementing an era of mutual containment.
- **The "Tanker War" Era (1980–1988):** During the brutal Iran-Iraq War, both nations expanded their military actions to target commercial oil tankers in the Persian Gulf. This led to direct US naval intervention (Operation Praying Mantis in 1988), setting an operational precedent where maritime trade routes became active military targets.
- **The Nuclear Age and the JCPOA (2000s–2015):** Geopolitics shifted toward containing Iran's nuclear program. Years of multilateral diplomacy culminated in the 2015 Joint Comprehensive Plan of Action (JCPOA), which offered substantial economic sanctions relief in exchange for verifiable verifications on nuclear enrichment.
- **Unilateralism and the Cycle of Truces (2018–Present):** The unilateral US withdrawal from the JCPOA in 2018 initiated a strategy of "Maximum Pressure." This approach led to a continuous cycle of severe economic sanctions, retaliatory strikes on maritime assets, and short-lived operational truces—such as the recent June MoU—which remain vulnerable to sudden collapse.
- **Way Forward**
- **Establishing a Multilateral Maritime Security Architecture:** Global maritime security should not rely on unilateral enforcement or fragile bilateral MoUs. The international community should work toward a comprehensive, rules-based framework for critical channels like the Strait of Hormuz. This structure should include all littoral states alongside major energy-consuming nations, such as India, Japan, and European partners.
- **De-coupling Maritime Safety from Political Standoffs:** Diplomatic channels for maritime communication should operate independently of broader, complex political or nuclear disputes. Setting up direct communication lifelines and shared transit protocols can help prevent minor miscommunications from escalating into wider conflicts.
- **Enhancing India's Strategic Autonomy and Resilience:** For major energy importers like India, continuing to diversify energy supply sources and expanding Strategic Petroleum Reserves (SPRs) is essential for economic resilience. Concurrently, independent initiatives like the Indian Navy's Operation Sankalp allow India to protect its commercial vessels and diaspora interests while maintaining a neutral, balanced stance focused on regional stability.

UNPACKING WEST ASIAN GEOPOLITICS: The Strait of Hormuz & Structural Security Crises – A UPSC CSE Perspective



- **Strategic Choke Point** - Strategic oil fields; an announcer to men: World's Critical Energy Artery
- **Memorandum of Understanding (MoU)** - Memorandum of understanding (MOU) to actiate
- **Sanctions Waiver** - Sanctions waiver, innocent oil fare, sanctions waiver, soning and eratorial in cterannet

- **Asymmetric Warfare:**



VS

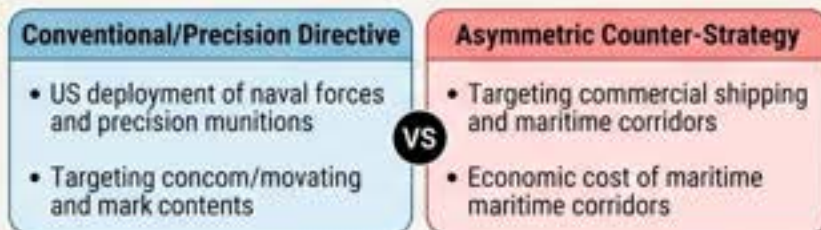


- **Islamic Revolutionary Guard Corps (IRGC)**
Fast-attack craft - tiger converted larger conventional warship;
Islamic Revolutionary Guard Corps (IRGC)

THE COLLAPSE OF TEMPORARY TRUCES



THE ESCALATION MATRIX



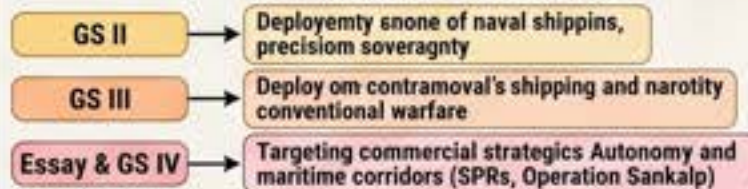
HISTORICAL TIMELINE



MULTIDIMENSIONAL IMPACT MATRIX



UPSC CSE SYLLABUS MAPPING



THE WAY FORWARD



SAMPLE PREVIOUS YEARS' QUESTIONS

UPSC - IIRC: Compical Maritime Securice for the Timiothione Stracott Ceads (SPRs)
2019 - UPSC - Documententoning the Strait of Dimothons
2022 - USC: Research nasir turunny Momornei tation
2015 - USC: Enaming India's Strategic Auncony and Resilists
APSC - IRGC: Cyclical Truces at Escalation

Russian share in India's oil imports rises above 40%

Russian dependence

Moscow's share in New Delhi's oil import bill has continued to grow as India's other sources remain constrained



SOURCE: MINISTRY OF COMMERCE AND INDUSTRY

T.C.A. Sharad Raghavan
NEW DELHI

Russia's share in India's oil imports rose above 40% in May 2026, the highest in nearly two years, according to official government data.

Further, the data shows that Russia charged India a premium for its oil, while other sources such as the U.S. and even the UAE sold India oil at lower-than-average prices.

Russia had been providing India a discount on its oil as recently as February.

Notably, an analysis by *The Hindu* of the data released by the Ministry of Commerce and Industry shows that India is trying to diversify its sources of oil, including once again importing oil from Iran and Venezuela in April and continuing to do so in May 2026.

The U.S. had, in February, started allowing Venezuela to export oil.

India's total oil imports stood at 21.82 million tonnes in May 2026, the highest since January and about 12% higher than what it imported in April. This was, however, about 2.6% lower than what it imported in May last year.

Despite this, the higher oil prices meant that India's oil import bill still rose significantly in May 2026 – by 23.5% compared to April, and by a sizable 66% over May of last year.

This is because the price of oil that India imported stood at \$106 per barrel in May 2026 as compared to \$64 a barrel in May 2025, according to data from the Ministry of Petroleum and Natural Gas.

This price effect is visi-

ble in India's oil imports from Russia as well. While the value of oil imports from Russia grew 83% in May 2026 over its level in May last year, the actual volume of oil imported from Russia fell by 2% over this period.

That said, the share of Russian oil in India's total oil imports stood at 40.5% in terms of volume and 42.6% in terms of value in May 2026.

A simple calculation based on the volume and value of oil imports from Russia shows that the total price paid by Indian importers stood at \$916 per tonne of Russian oil in May 2026, as compared to the average price of \$870 per tonne that India paid for all its oil imports. This works out to a premium of about \$46 per tonne.

According to Purna Prabhakar, fellow at the Centre for Social and Economic Progress (CSEP), the premium charged by Russia is likely a result of the dependence India and China have on it for oil.

Sanctioned sources

The Commerce Ministry data also shows that India has been sourcing some of its oil from countries that were previously restricted from selling their oil.

India imported \$605 million worth of oil from Venezuela in April 2026, which rose to \$984 million in May. Notably, the data shows that India imported \$430.5 million worth of oil from Iran in April 2026, which fell to \$277 million in May. However, it was only in late June that the U.S. had given Iran a 60-day waiver to export oil, which it rescinded on Tuesday.

- **Key Terms and Explanations**
- **Crude Oil Premium vs. Discount:**
 - *Explanation:* Crude oil is traded globally against benchmark rates like Brent or West Texas Intermediate (WTI). A **discount** occurs when a seller prices their oil below the benchmark to attract buyers, often due to high risk or political isolation. Conversely, a **premium** is charged when demand becomes highly inelastic, allowing the seller to price their product above market averages.
- **Strategic Autonomy:**
 - *Explanation:* A doctrine in foreign policy where a nation-state makes decisions based strictly on its own national interests, sovereign priorities, and security needs, without being compromised by external pressures or formal alliance obligations.
- **Price Effect vs. Volume Effect:**
 - *Explanation:* In macroeconomics, a **price effect** occurs when total expenditure changes primarily due to shifts in the unit price of a commodity. A **volume effect** happens when expenditure shifts because the physical quantity imported changes.
- **Secondary Sanctions and Sanction Waivers:**
 - *Explanation:* **Secondary sanctions** are legal and economic penalties imposed by a nation (often the U.S.) against foreign entities that engage in economic transactions with a primary sanctioned target. **Sanction waivers** are temporary legal exemptions granted by the sanctioning authority, allowing specific nations to trade with the restricted country for a limited window.
- **Main Arguments and Substantive Parts**
- The structural dynamics of energy security are undergoing a major transition, characterized by moving from short-term fiscal relief to long-term structural challenges.
- **The Paradox of High Outlays and Inelastic Demand**
 - A critical challenge in current energy economics is the decoupling of import value from physical volume. Even when structural consumption stabilizes or slightly dips, a volatile international pricing environment can cause a country's national import bill to swell dramatically. This vulnerability highlights the fact that as long as a developing economy is fundamentally dependent on imported fossil fuels, it remains exposed to imported inflation, regardless of internal demand-management efforts.
- **The Evolution from Discounts to Structural Premiums**
 - The commercial terms of major energy partnerships have fundamentally shifted. The early phase of diversifying toward alternative suppliers was driven by substantial fiscal discounts, which shielded domestic consumers from global price spikes. Over time, however, these discounts have been replaced by premiums.
 - This pricing shift suggests that when a buyer creates a deep structural dependence on a specific supplier, the bargaining leverage shifts back to the seller. Once national supply lines and refining infrastructures are locked in, the exporter can demand a premium, exploiting the buyer's limited immediate alternatives.
- **The Geopolitical High-Wire Act of Diversification**
 - In response to tightening margins with primary suppliers, nations often look to reopen trade channels with heavily sanctioned states like Iran or Venezuela. However, this strategy introduces its own structural vulnerabilities:
- **Regulatory Instability:** Trade flows become entirely dependent on the cyclical issuance and revocation of Western sanction waivers.
- **Logistical Interruptions:** The sudden lifting or reinstatement of restrictions disrupts supply chain planning, forcing public and private refiners into a state of perpetual uncertainty.

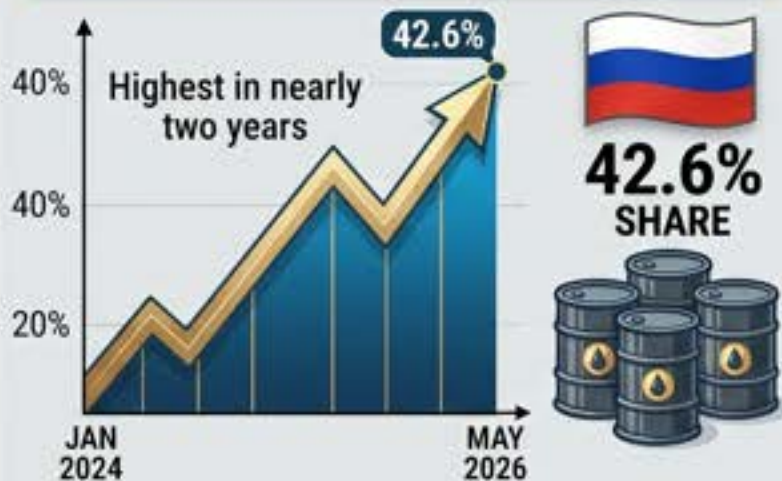
- **Historical Evolution of the Issue**
- **Pre-Independence to the 1970s: The Era of Corporate Cartels**
 - During the mid-20th century, domestic energy distribution was dominated by foreign multinational corporations (such as Burmah Shell and Caltex). Sourcing was heavily aligned with Western supply lines. The systemic shock of the 1973 OPEC oil embargo exposed this vulnerability, prompting a major shift toward nationalization, the creation of public sector undertakings (PSUs) like IOCL and BPCL, and an urgent push for domestic exploration through projects like Bombay High.
- **The 1980s to 2021: The West Asian Monopolization**
 - For nearly four decades, sourcing patterns stabilized into an entrenched reliance on the West Asian OPEC bloc—primarily Iraq, Saudi Arabia, and the UAE. Logistics were optimized for these relatively short maritime routes. Sourcing from Eurasian markets like Russia remained economically unviable, consistently accounting for less than 2% of the total import basket due to high freight costs and complex transport routes through the Baltic or Black Seas.
- **2022 to 2025: The Geopolitical Pivot and Discount Era**
 - The outbreak of the Russia-Ukraine conflict in 2022 changed global energy flows. As Western nations implemented SWIFT bans, insurance restrictions, and G7 price caps on Russian crude, Moscow offered steep discounts to major Asian economies. Seizing a strategic window, major refiners re-routed trade flows, rapidly elevating Russia to a leading supplier and pushing its market share past 30-40%. This move helped insulate domestic economies from massive inflationary shocks.
- **2026 and Beyond: The Structural Lock-In Phase**
 - The relationship has evolved past simple opportunistic buying into a deeper structural dependence. Exporters have begun rolling back discounts and imposing premiums, confident that buyers cannot easily walk away from established supply lines. This has forced consuming nations back into a complex diplomatic balancing act—re-engaging with volatile suppliers like Venezuela and Iran under temporary waiver systems to maintain leverage and ensure long-term energy security.

- **Way Forward**
- **1. Expanding and Accelerating Strategic Petroleum Reserves (SPRs)**
 - India must accelerate Phase II of its SPR program, focusing on expanded underground storage facilities in locations like Chandikhol and Padur. Expanding national storage capacity from the current limited window to at least 30–45 days of emergency consumption would provide a vital buffer against sudden geopolitical supply disruptions or artificial price spikes, strengthening our national bargaining position.
- **2. Implementing a Dynamic, Multi-Regional Sourcing Matrix**
 - Refiners should avoid over-relying on any single geographical bloc. This can be achieved by diversifying long-term supply contracts across a wider range of producers in Africa (e.g., Nigeria, Angola), Latin America (e.g., Guyana, Brazil), and North America. This diversification helps prevent structural lock-in and forces major suppliers to compete on pricing terms.
- **3. Upgrading Refining Capabilities for High-Flexibility Processing**
 - Public sector refineries require targeted capital investment to upgrade their secondary processing units. Enhancing refineries to seamlessly switch between different crude weights (heavy, sour, light, sweet) allows public utilities to alter procurement plans on short notice based on spot-market advantages, rather than being restricted to a specific exporter's grade.
- **4. Accelerating the Transition to Alternative Energy Carrier Systems**
 - The most effective way to address import vulnerability is to reduce the economy's overall import elasticity. This requires accelerating the adoption of the National Green Hydrogen Mission, expanding the electric vehicle (EV) public charging network, and scaling up utility-scale solar and wind storage grids. Systematically replacing liquid hydrocarbons in transport and industry reduces structural exposure to international energy markets.
- **Civil Services Prelims Exam (Conceptual & Thematic Frameworks)**
- **Which one of the following statement(s) best describes the term 'Current Account Deficit' often seen in economic reviews?**
 - (A) It is a situation where a nation's total value of imported goods and services exceeds the total value of exported goods and services.
 - (B) It refers to the gap between total government expenditure and total revenue receipts.
 - (C) It is the net metric of short-term capital flight from domestic equity markets to foreign safe havens.
 - (D) It is the structural drop in domestic manufacturing capacity due to rising input cost inflation.
 - *Answer Hint: (A)* A primary driver of a wider CAD is a sharp increase in the national crude oil import bill.

INDIA'S CHANGING OIL IMPORT DYNAMICS: A COMPREHENSIVE ANALYSIS

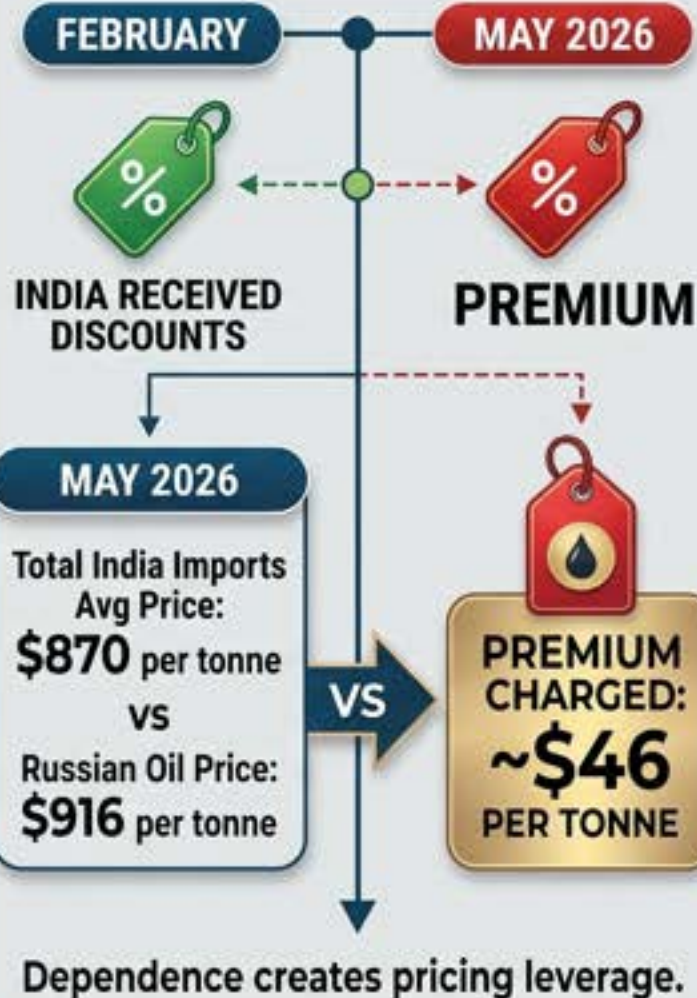
The Shift from Discounts to Premiums and Reliance on Key Sources

THE TREND: SURGING RUSSIAN SHARE



Moscow's share in New Delhi's oil import bill continues to grow.

THE ECONOMIC SHIFT: DISCOUNT TO PREMIUM



VULNERABILITIES & DIVERSIFICATION



UPSC CSE RELEVANCE: KEY TAKEAWAYS

I. GEOPOLITICS & ENERGY SECURITY (GS-2):

- Strategic Autonomy vs. Economic Necessity.
- Impact of Sanctions and Waivers.
- Power of Supplier-Buyer Dependence.

II. INDIAN ECONOMY (GS-3):

- Imported Inflation and Current Account Deficit.
- Fuel Pricing's Impact on Domestic Economy.

III. INTERNATIONAL RELATIONS (GS-2):

- Dynamic Strategic Partnerships and Choke Points.

AXIA IAS ACADEMY
RISE ABOVE THE REST

India and Indonesia launch joint restoration project at iconic Prambanan Temple

Press Trust of India
JAKARTA

Prime Minister Narendra Modi, along with Indonesian President Prabowo Subianto, on Wednesday visited the centuries-old iconic Prambanan Temple complex in Yogyakarta, marking the inauguration of a joint conservation project for this UNESCO World Heritage Site.

Mr. Modi described the initiative as a “shining example of the enduring civilisational bonds” between India and Indonesia, rooted in a shared heritage that has connected the people of the two countries for centuries.

The Archaeological Survey of India (ASI) will be



Prime Minister Narendra Modi and devotees visiting the Prambanan Temple in Indonesia on Wednesday. AFP/PIB

the lead agency from the Indian side for the joint restoration project.

Later in the day, Mr. Modi reached Australia on the second leg of his three-nation tour during which he will hold talks with his Aus-

tralian counterpart Anthony Albanese. “Landed in Melbourne, Australia. This visit will add vigour to the India-Australia Comprehensive Strategic Partnership,” Mr. Modi said in a post on X.

- **Key Terms and Explanations**
- **Prambanan Temple Complex**
 - The largest Hindu temple site in Indonesia and one of the biggest in Southeast Asia, located in Yogyakarta, Central Java. Built during the 9th century CE by the Sanjaya Dynasty, it is dedicated to the *Trimurti*—the three primary expressions of God in Hinduism: Brahma (the Creator), Vishnu (the Preserver), and Shiva (the Destroyer). Architecturally, it is characterized by its tall, pointed structures, typical of classical Hindu temple design, representing Mount Meru.
- **Cultural Diplomacy and Soft Power**
 - Cultural diplomacy is a specialized field of foreign policy that involves the exchange of ideas, information, art, and language to foster mutual understanding. It forms the bedrock of a nation's "soft power"—a concept coined by Joseph Nye, which refers to the ability to co-opt and attract rather than coerce (hard power) through cultural, ideological, and civilizational appeal.
- **Archaeological Survey of India (ASI)**
 - An attached agency of the Ministry of Culture, Government of India, responsible for archaeological research, conservation, and preservation of cultural monuments. While primarily focused domestically, the ASI has a legacy of conducting high-profile international restoration projects, acting as an institutional ambassador for India's technical expertise in heritage management.
- **Act East Policy (AEP)**
 - Launched in 2014 as an upgrade to the 1991 'Look East Policy,' the Act East Policy focuses on the extended neighborhood in the Indo-Pacific region. Its core pillars are the "4 Cs": Culture, Commerce, Connectivity, and Capacity Building, aimed at deepening strategic, institutional, and economic integration with ASEAN nations.
- **Main Arguments and Substantive Parts**
- **Core Thesis**
 - Civilizational ties and shared cultural heritage are not merely historical footnotes; they serve as active, foundational pillars that legitimize and accelerate contemporary strategic, maritime, and economic partnerships. Cultural diplomacy acts as an enabler for hard security and trade cooperation in the strategically vital Indo-Pacific region.
- **Key Substantive Points**
 - **Institutionalization of Soft Power:** Moving beyond symbolic diplomatic rhetoric, the active deployment of agencies like the ASI to execute multi-year conservation projects represents a structural institutionalization of India's soft power.
 - **Bilateral Synergy at the Highest Level:** Joint visits and project inaugurations by top leaders—such as the Indian Prime Minister and the Indonesian President—elevate cultural initiatives to the level of core national interests, cementing mutual political trust.
 - **Geopolitical Balancing:** In an era defined by intense infrastructural and economic competition in Southeast Asia, organic civilizational diplomacy highlights India's status as a benign, historically integrated partner whose presence is rooted in mutual respect rather than economic dependency.
- **Potential Challenges and Counterarguments**
 - **The "Deliverable" Gap:** Critics often argue that soft power initiatives lack immediate, quantifiable outcomes. While cultural preservation builds long-term goodwill, it cannot substitute for deep trade pacts, tariff reductions, or concrete maritime defense agreements.
 - **The Danger of Asymmetry:** Care must be taken to ensure that projecting historical Indian cultural influences does not inadvertently trigger regional anxieties regarding cultural paternalism. The relationship must be consistently framed as a two-way, shared heritage rather than a unilateral cultural export.

- **Historical Evolution of the Issue**
- **Ancient and Medieval Maritime Confluence (2nd Century BCE – 15th Century CE)**
- **The Monsoon Trade Matrix:** Indian merchants, priests, and mariners from the Kalinga (modern Odisha), Pallava, and Chola kingdoms utilized the seasonal monsoon winds to cross the Bay of Bengal, initiating centuries of cultural exchange.
- **The Syncretic Kingdoms of Southeast Asia:** This interaction led to the rise of localized Hindu-Buddhist empires in Indonesia, such as the Srivijaya Empire in Sumatra and the Majapahit and Sanjaya Dynasties in Java.
- **Cultural Transmission:** Epics like the *Ramayana* (known locally as *Kakawin Ramayana*) and the *Mahabharata* became deeply embedded in Javanese performing arts, dance, and shadow puppetry (*Wayang Kulit*), adapting to local cultural contexts.
- **The Colonial Interregnum and Nationalist Awakening (19th Century – Mid-20th Century)**
- **Cultural Re-discovery:** In 1927, Rabindranath Tagore toured Java and Bali, conceptualizing a shared Asian consciousness and reviving intellectual interest in India's historic ties with Southeast Asia.
- **Decolonization and Solidarity:** Post-independence leaders Jawaharlal Nehru and Indonesian President Sukarno recognized the strategic imperative of solidarity. This culminated in the **Bandung Conference of 1955**, which laid the groundwork for the Non-Aligned Movement (NAM) based on mutual anti-colonial histories.
- **Post-Cold War Realignment to the Present Day**
- **Look East Policy (1991):** Initiated under Prime Minister P.V. Narasimha Rao, this policy sought to re-engage Southeast Asia after decades of Cold War estrangement, focusing primarily on economic integration.
- **Act East Policy (2014):** Upgraded to encompass strategic and security dimensions, placing culture at the absolute forefront. The joint restoration of the Prambanan Temple complex marks a modern milestone, transforming historical affinities into structured institutional partnerships.
- **Way Forward**
- **Institutionalizing an "International Heritage Wing" within the ASI**
- The Archaeological Survey of India should establish a permanent, well-funded external division—an **ASI-International (ASI-I)**—modeled after international development agencies. This wing would benefit from a dedicated budget and a specialized corps of conservationists, reducing bureaucratic delays and allowing India to swiftly undertake multi-country restoration initiatives.
- **Developing Integrated Transnational Cultural Tourism Circuits**
- India and ASEAN nations should collaborate to create institutionalized tourist pathways, such as a **"Joint Ramayana and Buddhist Heritage Circuit."** By streamlining visa processes, launching direct flights between cultural hubs like Varanasi/Bhubaneswar and Yogyakarta/Siem Reap, and promoting academic exchanges, both regions can translate shared history into direct economic returns.



AXIA IAS ACADEMY PRESENTS:

INDIA-INDONESIA CIVILIZATIONAL & STRATEGIC BONDS: PRAMBANAN TEMPLE JOINT RESTORATION & BEYOND.



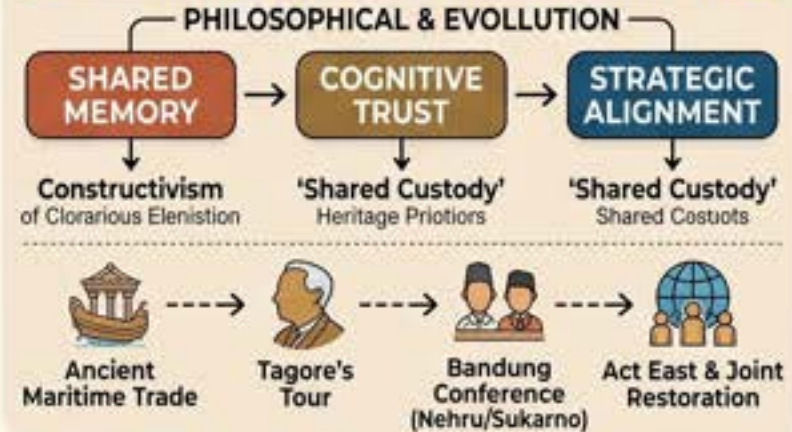
KEY TERMS & DEFINITIONS



MULTIDIMENSIONAL IMPACT ANALYSIS.



PHILOSOPHICAL FOUNDATIONS & EVOLUTION



WAY FORWARD & POLICY RECOMMENDATIONS

- ESTABLISH ASI-INTERNATIONAL WING**
Establish Asis-international csikt and rate or mmics
- DEVELOP TRANSNATIONAL CULTURAL CIRCUITS**
Develop transnational comtines of cultural circuits
- EMPLOY ADVANCED CONSERVATION TECH (AI, 3D Laser)**
Employ advanced conservation tech+ (AI, 3D Laser)
- DEEPEN MARITIME SECURITY CONVERGENCE**
Deepen maritime security city convergence
- PROMOTE SYNCRETISM & PLURALISM**
Promote syncretism and pluralism an pluralism



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Over 42% rise in female enrolment in higher education since 2014: report

The Hindu Bureau
NEW DELHI

India's higher education sector has recorded significant growth over the past decade, with total student enrolment rising to 4.5 crore in the 2023-24 academic year.

According to the latest reports of the All India Survey on Higher Education (AISHE) for 2022-23 and 2023-24, released by the Education Ministry, this marks a 31.5% rise from 3.42 crore recorded in 2014-15. The multi-year survey data reflect an institutional participation rate of over 90%, drawing metrics from 59,533 higher education institutions across the country to outline major strides in inclusivity, female participation, and STEM (Science, Technology, Engineering, and Mathematics) adoption.

Steady progress

Women, STEM learners and marginalised communities drive sustained growth in higher education



	2014-2015	2022-2023	2023-2024	Growth since 2014-15
Total enrolment	3.42 cr.	4.46 cr.	4.50 cr.	+ 31.5%
Female enrolment	1.57 cr.	2.18 cr.	2.24 cr.	+ 42.2%
Overall GER	23.7	29.5	30.0	—
Female GER	22.9	30.2	31.2	—
STEM enrolment	91.5 lakh	—	1.02 cr.	+ 11.4%

The data are self-reported voluntarily by registered institutions via a web-based portal utilising a data capture format. While the Education Ministry executes built-in validations and scrutiny checks, primary data quality remains the responsibility of the respective institutions.

The enrolment of female students in higher educational institutions rose from 1.57 crore in

2014-15 to 2.18 crore in 2022-23 and 2.24 crore in 2023-24, marking a 42.2% increase since 2014-15.

The Gender Parity Index (GPI) stands at 1.08 for 2023-24, remaining consistently above 1.0 for seven consecutive years. This underlines a trend where female participation systematically outpaces male participation.

Also, India's gross enrolment ratio (calculated for

the 18-23 age bracket) reached 30 in 2023-24. Notably, the female GER scaled to 31.2, distinctly higher than the national baseline. For the Scheduled Castes, the enrolment jumped 51.4% since 2014-15, reaching 69.72 lakh. The GER for SC students grew from 18.9 to 27.8. For the Scheduled Tribes, enrolment witnessed a 75.7% rise, climbing to 28.83 lakh, with the GER up from 13.5 to 22.8. With regard to the Other Backward Classes, student numbers grew 60.2%, from 1.13 crore to 1.80 crore over 10 years.

Enrolment in STEM fields climbed to 1.02 crore in 2023-24. "Mirroring the overall demographic shift, the female share in STEM programmes climbed steadily to 44%, up from 38.4% a decade ago," the report said.

- **Key Terms and Explanations**
 - **Gross Enrolment Ratio (GER) in Higher Education:** This is a vital statistical measure used to determine the percentage of the population in a specific age cohort—traditionally the 18–23 age bracket for higher education in India—that is actively enrolled in tertiary institutions.
 - **Gender Parity Index (GPI):** A socioeconomic metric designed to measure the relative access to education of males and females. It is calculated by dividing the female GER by the male GER.
 - A GPI of 1 indicates perfect equality between genders.
 - A GPI greater than 1 implies that female participation systematically outpaces male participation. India's current score of 1.08 underscores a sustained female-led growth trajectory over seven consecutive years.
 - **STEM Disciplines:** An acronym standing for Science, Technology, Engineering, and Mathematics. These fields are universally recognized as the engines of innovation, economic competitiveness, and the transition toward a high-value knowledge economy.
 - **All India Survey on Higher Education (AISHE):** An annual, web-based pan-India survey conducted by the Ministry of Education. It institutionalizes a robust data capture format, drawing self-reported, voluntary metrics from nearly 60,000 higher education institutions to guide macro-level policy interventions and validation checks.
 - **Socio-Educational Inclusivity:** The structural integration and equitable representation of historically marginalized and vulnerable demographic segments—specifically Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Classes (OBC)—into institutional mainstream pipelines.
- **Main Arguments and Substantive Parts**
 - The core thesis of this data-driven landscape points to a fundamental democratic expansion of India's higher education sector over the past decade. It marks a transition from an elite-centric preserve to an inclusive, mass-participation arena.
- **The Female-Led Growth Narrative**
 - The defining vector of expansion is driven by women learners. Female enrolment has experienced a massive 42.2% surge since 2014–15, reaching 2.24 crore students. This outpaces the overall national enrolment growth rate of 31.5%. Crucially, the female GER of 31.2 has distinctively scaled past the national average, proving that women are prioritizing tertiary education as an indispensable path for self-actualization.
- **Deepening of Social Justice and Equity**
 - The data reveals a phenomenal catch-up effect among historically marginalized sections. Over a ten-year horizon, student numbers for OBCs grew by 60.2%, Scheduled Castes witnessed a 51.4% jump, and Scheduled Tribes recorded a staggering 75.7% climb in institutional representation. This demonstrates that welfare architectures and reservation policies are successfully mitigating historical socio-economic handicaps.
- **Breaking Stereotypes in STEM Fields**
 - The technical domain, long perceived as a male bastion, is undergoing a quiet revolution. Out of a total pool of 1.02 crore STEM learners, the female share has climbed steadily to 44%. This structural shift places India among the top nations globally regarding female representation in tech-oriented classrooms, shattering long-standing cultural glass ceilings.
- **Methodological Credibility and Nuance**
 - While the data reflects an institutional participation rate of over 90% across 59,533 institutions, an analytical counter-perspective must account for its self-reported nature. The Ministry of Education executes built-in validations, yet primary data quality remains the responsibility of individual institutions, leaving room for marginal variances in local reporting standards.

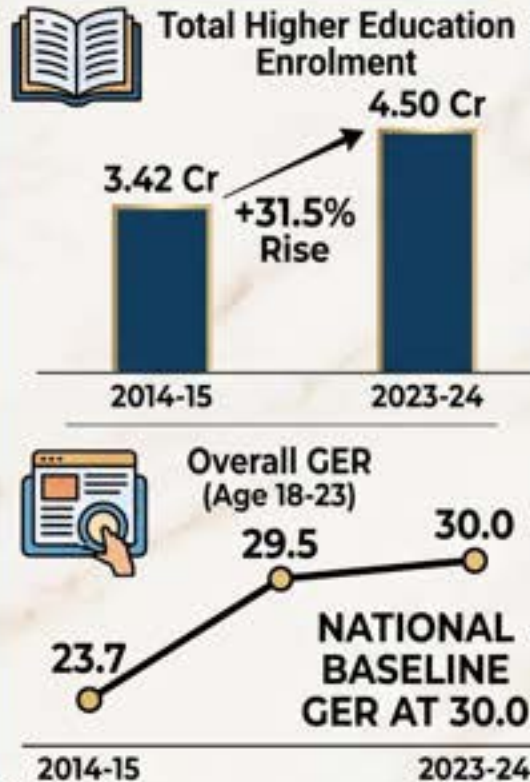
- **Historical Evolution of the Issue**
- **Pre-Independence Era (Colonial Legacy)**
 - Higher education was highly exclusionary, urban-centric, and tailored primarily to generate administrative cogs for the colonial state. Female education was largely neglected due to deep-seated socio-cultural orthodoxy, barring exceptional, pioneering interventions by social reformers like Savitribai Phule and Jyotirao Phule.
- **Post-Independence Nation Building (1947–1980s)**
 - The focus was on establishing institutional excellence and state-funded infrastructure. Anchored by the Radhakrishnan Commission (1948–49) and the seminal Kothari Commission (1964–66), India built its premier research and university networks. However, due to limited fiscal space, overall Gross Enrolment remained in the single digits, and the gender gap stayed wide.
- **The Liberalization and Privatization Wave (1990s–2010s)**
 - The opening of the economy triggered an exponential demand for skilled human capital, particularly in engineering and management. This period saw a massive expansion of private educational institutions. While this phase dramatically boosted overall seats, it also raised concerns regarding commercialization, variable quality, and regional imbalances in access for marginalized groups.
- **The Inclusive, Policy-Driven Era (2014–Present)**
 - This contemporary decade focuses on balancing expansion with equity and quality. Guided by systemic mapping tools like the annual AISHE framework and the vision of the National Education Policy (NEP) 2020, India has successfully catalyzed the massive enrolment surges. This has shifted the policy focus from mere institutional availability to targeted, equitable access.
- **Way Forward**
- **Fixing the "Leaking Pipeline" through Industry Integration**
 - We need to introduce targeted placement programs, apprenticeship mandates, and public-private partnerships specifically designed for female STEM graduates. Normalizing flexible work hours, remote opportunities, and career-return frameworks will help ensure that these investments in higher education lead to formal employment and boost the FLFPR.
- **Moving from Quantitative Access to Qualitative Excellence**
 - As institutional capacity reaches 4.50 crore students across nearly 60,000 campuses, policy priorities must shift from simple enrolment to improving educational quality. This requires updating outdated curricula, investing in faculty training, and modernizing research laboratories. These steps will help ensure that a higher GER translates directly into real-world employability.
- **Upgrading Safety Infrastructure and Supportive Ecosystems**
 - To protect and build on the positive Gender Parity Index of 1.08, colleges and universities need to invest heavily in student support systems. This includes ensuring safe public transport options, building secure on-campus housing, and establishing active, transparent Internal Complaints Committees (ICCs) to address harassment effectively.
- **Strengthening Data Validation Systems**
 - To maintain the high quality of national planning data, self-reported institutional inputs should be paired with independent, random data audits and third-party verifications. This will help maintain the accuracy and credibility of tracking systems like the AISHE platform.

EMPOWERING FUTURE LEADERS: A DECADE OF GROWTH IN INDIA'S HIGHER EDUCATION (2014-2024)

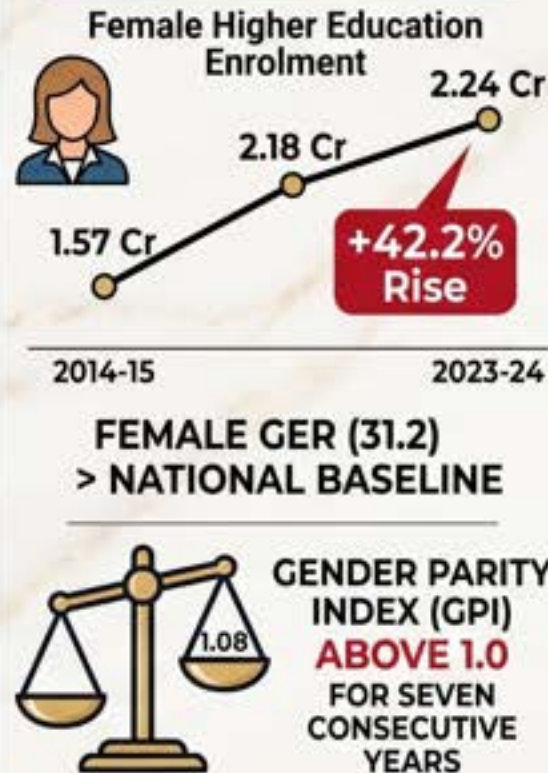


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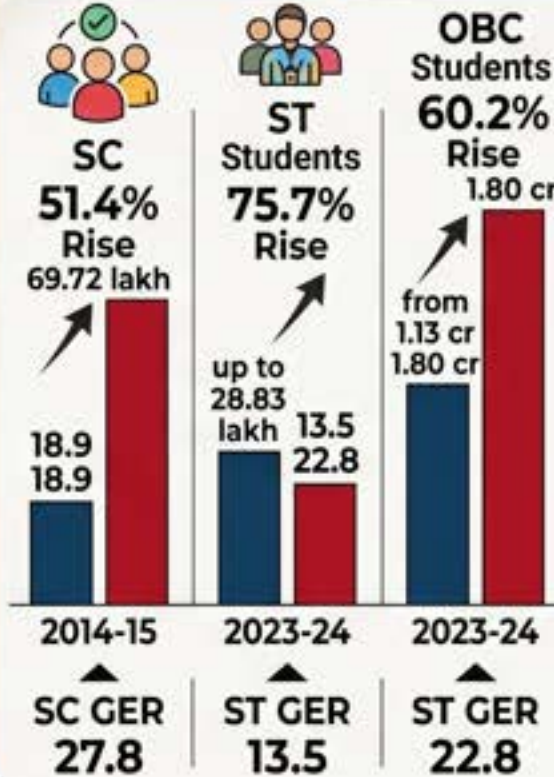
TOTAL ENROLMENT & GER TRENDS



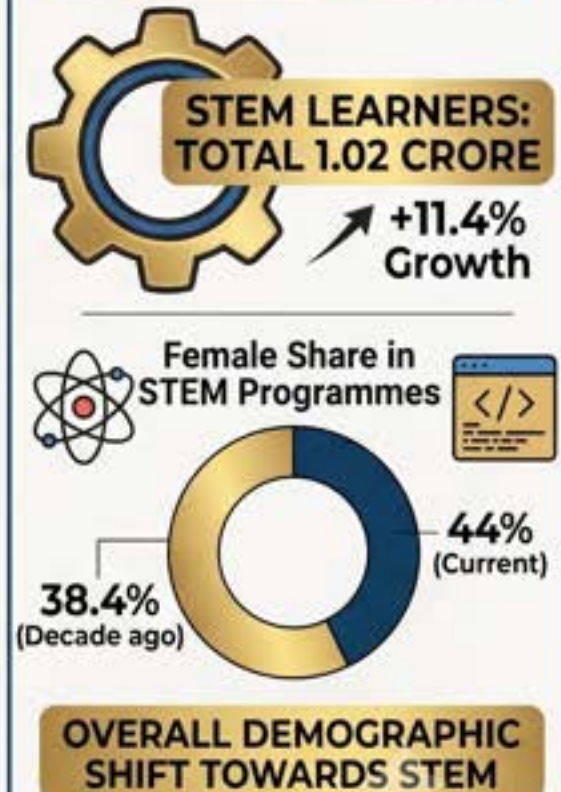
FEMALE PARTICIPATION SURGE



INCLUSIVE GROWTH: COMMUNITY BREAKTHROUGHS



THE STEM EVOLUTION



DATA-DRIVEN POLICY & DEMOCRATIC EXPANSION: AISHE REPORT ANALYSIS

Source: AISHE Report

WHO flags growing inequities in access to cancer treatment

Bindu Shajan Perappadan
NEW DELHI

With an estimated 20.6 million new cases and close to 10 million deaths annually, cancer remains the second leading cause of death globally after cardiovascular disease, the World Health Organization's (WHO) first ever survey of people affected by cancer, released on Wednesday, said.

Beyond its impact on health, cancer remains one of the most financially and socially devastating challenges a household can face, the report said. The WHO survey found that at least 45% of affected people experience financial hardship, more than half report mental health challenges, and nearly all caregivers report strain, including unpaid services and social isolation.

The Global Status Re-

port on Cancer, 2026, released by the WHO and the International Agency for Research on Cancer, warns that, without action, annual cases of cancer are projected to rise to nearly 35 million by 2050.

The report also indicates persistent and widening inequities in access to prevention, diagnosis, treatment, and supportive care, leaving millions of people without the services they need. Its analysis shows that while 87% of women with breast cancer survive at five years after their diagnosis in high-income countries, only about 42% do so in low-income countries. Fewer than one in three countries currently include cancer care in their universal health coverage packages.

"Cancer is a deeply personal disease that touches nearly all of us. But whether a person survives cancer

should never depend on where they were born or what they earn," WHO Director-General Tedros Adhanom Ghebreyesus said, adding, "The inequities documented in this report are not inevitable; they are the consequence of choices, and they can be reversed through stronger and unified action."

The burden of cancer varies across regions. In 2024, Asia accounted for the largest share, with more than half of all cancer cases (50.7%) and deaths (56.5%) reflecting its large population. Europe carried a disproportionately high burden, contributing 21% of global cases and 20% of deaths despite having only about 9% of the world's population. In contrast, many countries in Africa and parts of Asia experience lower incidence but disproportionately high mortality.

- **Key Terms and Explanations**

- **Epidemiological Transition:** This refers to a long-term shift in the health and disease patterns of a population. As a society modernizes and improves basic sanitation and infectious disease control, its primary disease burden shifts from communicable diseases (like cholera or tuberculosis) to non-communicable, chronic diseases (like cancer and cardiovascular ailments).
- **Universal Health Coverage (UHC):** A global health target ensuring that all individuals have access to the full spectrum of essential, quality health services—from prevention to palliative care—without suffering financial hardship. As indicated by the global health data, fewer than one in three countries currently integrate comprehensive oncology care into their UHC frameworks.
- **Out-of-Pocket Expenditure (OOPE) & Catastrophic Health Expenditure:** OOPE is the direct payment made by patients to healthcare providers at the time of service, uncovered by insurance. When these medical expenses equal or exceed 40% of a household's capacity to pay (income minus basic subsistence needs), it crosses into *Catastrophic Health Expenditure*, forcing families into absolute poverty.
- **Incidence vs. Mortality Rate Disparity:** *Incidence* measures the number of new disease cases diagnosed within a specific timeframe, while *Mortality* reflects the number of deaths. A stark divergence between low incidence and high mortality highlights critical system failures in early screening, diagnostic accuracy, and timely treatment.
- **Palliative and Supportive Care:** Specialized medical and emotional care tailored for individuals living with serious, life-threatening illnesses. Rather than focusing strictly on a cure, it targets symptom management, pain relief, and mental health stabilization.
- **Financial Toxicity:** A term used in modern oncology to describe the severe emotional, psychological, and physical distress caused by a patient's struggle to pay for cancer treatments, which frequently forces them to ration or abandon life-saving therapies entirely.

- **Main Arguments and Substantive Parts**

- The structural core of global oncology challenges revolves around a singular, troubling thesis: cancer has evolved into an escalating global crisis where survival is dictated by socioeconomic privilege and geographic lottery rather than medical possibility.
- **The Escalating Global Burden**
 - The statistical reality of looming public health emergency. With an annual toll of approximately 20.6 million new cases and nearly 10 million deaths, cancer stands as the second leading cause of mortality worldwide. If immediate, systemic interventions are not implemented, these numbers are on a trajectory to skyrocket to 35 million new annual cases by the year 2050. This surge threatens to overwhelm health infrastructures across both developing and developed nations.
- **The Geography of Inequity**
 - The crisis is defined by severe regional imbalances:
 - **The Global South (Asia and Africa):** Asia bears the heaviest absolute burden, commanding 50.7% of global cancer cases and a disproportionate 56.5% of worldwide deaths. Conversely, parts of Africa and specific Asian sub-regions present a highly concerning paradox: they exhibit lower overall disease incidence but suffer from disproportionately high mortality rates, exposing a critical lack of diagnostic and treatment infrastructure.
 - **The Global North (Europe):** Europe presents a different structural imbalance, carrying 21% of global cases and 20% of deaths despite housing a mere 9% of the global population. This reflects an aging demographic coupled with highly advanced diagnostic tracking systems.
- **The Survival Gap and Socio-Emotional Fallout**
 - The divide between high-income and low-income nations is starkly illustrated by five-year breast cancer survival rates: an 87% survival rate in wealthy nations drops to a dismal 42% in low-income territories.
 - This health gap creates profound economic and domestic damage. According to data from image_65377a.png, at least 45% of families confronting a cancer diagnosis experience severe financial hardship. Furthermore, over 50% report significant mental health challenges, while caregivers face immense emotional strain, social isolation, and long hours of unpaid, unassisted labor.

- **Historical Evolution of the Issue**
- **Pre-Independence to Early Post-Independence (Focus on Communicable Threats)**
 - During the colonial era and the initial decades following independence, national health systems were heavily consumed by infectious diseases, high maternal mortality, and nutritional deficiencies. Chronic, non-communicable conditions like cancer were largely perceived as lifestyle issues of affluent populations or problems reserved for advanced Western nations, resulting in minimal public infrastructure investment.
- **The 1970s and 80s: Institutional Genesis**
 - The mid-1970s marked a turning point with the launch of specialized frameworks like India's National Cancer Control Programme (NCCP) in 1975. The policy priority during this era was the establishment of Regional Cancer Centres (RCCs) across various states to centralize oncology expertise. While this created essential hubs of clinical excellence, it inadvertently widened the rural-urban healthcare divide, forcing rural citizens to travel long distances to major metropolitan centers for basic chemotherapy or radiation.
- **The 2000s to 2010s: The Paradigm Shift to Decentralization**
 - By the turn of the century, policymakers recognized that centralized tertiary care was insufficient to handle the growing volume of cases. In 2010, the integration of cancer care into broader chronic disease initiatives—such as the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)—shifted the focus toward the district and sub-district levels. This era emphasized early detection via community health workers and sought to manage lifestyle risk factors like tobacco use and dietary shifts.
- **The Present Era: Financial Protection and Structural Scaling**
 - Today, the primary policy objective has shifted toward mitigating the catastrophic out-of-pocket expenses that ruin vulnerable families. Modern initiatives, such as India's Ayushman Bharat (PM-JAY), aim to provide substantial health covers for tertiary and quaternary hospitalizations. Despite these advancements, the systemic gaps persist: oncology care is still not universally integrated into basic health coverage packages worldwide, leaving a significant portion of the global population exposed to medical debt.
- **Way Forward**
- **Decentralization of Oncology Infrastructure**
 - Governments must break away from the model of establishing massive, centralized tertiary cancer centers located exclusively in metropolitan cities. Oncology infrastructure needs to be distributed across a tiered network.
 - While advanced surgeries can remain at regional hubs, basic services like chemotherapy, routine blood work, and early diagnostic screenings should be integrated into district-level hospitals and primary health centers. This shift would reduce travel times, eliminate lost wages for patients, and prevent the severe disruption families face when seeking urban medical care.
- **Mandatory Integration into Universal Health Coverage (UHC)**
 - Following the recommendations of global health bodies, it is critical to mandate the inclusion of full-spectrum oncology care into all national public health insurance matrices. This means expanding coverage beyond short-term surgical hospitalizations to include long-term oral chemotherapies, radiation cycles, diagnostic PET scans, and follow-up treatments.
 - To fund this expansion without bankrupting public health budgets, states should aggressively utilize TRIPS flexibilities, such as compulsory licensing, and implement strict price caps on essential oncology drugs.



GLOBAL CANCER INEQUITIES: ANALYSIS & IMPACT (FOR UPSC CSE PREPARATION)

GLOBAL BURDEN



20.6M New Cases / **10M** Deaths (Annually)
Projected: nearly 35M Cases by 2050



CONSEQUENCES

ECONOMIC

At least **45%** FINANCIAL HARDSHIP



CATASTROPHIC OOP
(Out-of-Pocket Expenditure)



SOCIAL/EMOTIONAL

> 50% MENTAL HEALTH CHALLENGES



Caregiver Burnout

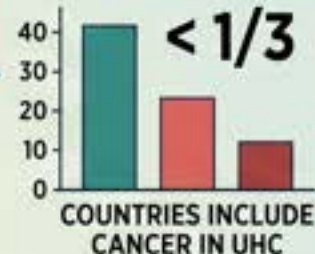


Caregiver Burnout

5-YEAR BREAST CANCER SURVIVAL
High-Income: 87% vs. Low-Income: 42%



KEY DRIVERS



UPSC CSE SYLLABUS LINKAGES

GS 2	GS 3	GS 4	Essay
- Welfare Schemes - Social Sector Governance - Human Resource	- Inclusive Growth - Science & Technology - IPR/TRIPS	- Bioethics - Human Values - Compassion	- Social inequality - Economic Development themes

WAY FORWARD

1 DECENTRALIZE INFRASTRUCTURE



Small district clinic vs. city hospital

2 SUBSIDIZE TREATMENTS & EXPAND UHC



Government seals, full insurance cover

3 EARLY DETECTION



Frontline worker and simple diagnostics

4 SUPPORT CAREGIVERS



Counseling hands, family icons

- **Key Terms and Explanations**
- **Qubit (Quantum Bit):** This is the fundamental unit of information in quantum computing, contrasting sharply with the binary bits (0 or 1) utilized by classical microprocessors. While a classical bit can be thought of as a light switch that is either strictly ON or OFF, a qubit represents a far more dynamic state.
- **Superposition:** A foundational principle of quantum mechanics that allows a system to exist in multiple states or configurations at the same time. In computing, this enables a processor to evaluate an astronomical number of possibilities concurrently rather than processing them in a rigid, sequential order.
- **Quantum Entanglement:** A unique quantum phenomenon where two or more particles become deeply interconnected. Once entangled, the physical state of one particle instantaneously dictates the state of its partner, regardless of whether they are separated by millimeters or light-years. In quantum computing, this allows qubits to share information instantly, creating a system of massive parallelism.
- **Quantum Decoherence:** The premature loss of a qubit's delicate quantum state (such as its superposition or entanglement) due to environmental interference. Qubits are extraordinarily sensitive; any exposure to external thermal fluctuations, electromagnetic waves, or subtle physical vibrations causes them to leak information and revert to random classical behavior.
- **Logical vs. Physical Qubits:** A physical qubit is the actual, tangible hardware component (like a superconducting loop or a trapped ion) built on a chip. Because physical qubits are highly volatile and error-prone, scientists bundle hundreds or thousands of them together using error-correcting code to act as a single, stable, and highly reliable **Logical Qubit**.
- **Deutsch-Jozsa Problem:** A historic mathematical benchmark designed in the early 1990s to prove quantum superiority. It requires a computer to determine if a hidden function is "constant" (yielding the same output for all inputs) or "balanced" (yielding opposite outputs for half the inputs). While a classical computer requires multiple steps to solve this, a quantum computer can solve it in a single operation.
- **Main Arguments and Substantive Parts**
- The global discourse around quantum computing is moving away from speculative hype toward hard engineering realities. The core thesis centers on a vital realization: the true quantum revolution will not be achieved simply by scaling up raw numbers, but by mastering hardware stability and error control.
- **The Chasm Between Hype and Commercial Utility:** There is a distinct gap between experimental milestones achieved in research labs and actual commercial viability. While quantum processors can theoretically optimize global logistics or simulate complex molecular behaviors, they have yet to solve a real-world commercial problem that a modern classical supercomputer cannot already handle. Classical supercomputers remain highly efficient and are not going away anytime soon.
- **The Core Hardware Bottleneck:** The primary roadblock slowing down the quantum age is not a lack of sophisticated algorithms, but severe hardware limitations. Classical computers rely on stable silicon transistors that process billions of operations flawlessly. Quantum computers, by contrast, must manipulate highly volatile subatomic elements that break down at the slightest environmental disturbance.
- **The Paradox of High Error Rates:** Contemporary quantum processors operate under highly flawed conditions, with error rates ranging between 1% and 0.1% (meaning 1 out of every 100 to 1,000 operations results in a glitch). In stark contrast, classical processors commit errors at a near-invisible rate of roughly 1 in 10 quintillion (10^{19}) operations. Simply adding more raw physical qubits to an inherently noisy system actually amplifies the chaos rather than solving it.
- **The Shift to Fault-Tolerant Architecture:** The definitive path forward relies on quantum error correction. Recent experimental breakthroughs—such as scaling physical qubit arrangements from a 3×3 lattice to a 5×5 and eventually a 7×7 grid—have successfully demonstrated that expanding the physical qubit base can suppress error rates by a factor of two. This proves that building a "perfect machine out of imperfect parts" is an achievable engineering goal.

- **Historical Evolution of the Issue**

- **1980s: The Theoretical Genesis:** The conceptual foundation was laid in 1980 when physicist Paul Benioff described a computer operating under the laws of quantum mechanics, introducing the concept of the Quantum Turing Machine. This theoretical spark was rapidly expanded upon by visionaries like Richard Feynman, David Deutsch, and Peter Shor, who mathematically demonstrated that quantum systems could crack cryptographic codes and simulate nature far more efficiently than classical architectures.
- **1998: The First Physical Proof:** A pivotal milestone occurred when research teams from Oxford, IBM, Stanford, MIT, and UC Berkeley successfully unveiled the world's first functioning two-qubit Nuclear Magnetic Resonance (NMR) quantum computer. By executing the Deutsch-Jozsa algorithm, they provided empirical proof that quantum computing was not merely a mathematical abstraction but a physical reality.
- **2010s to Early 2020s: The NISQ Era:** The industry entered the "Noisy Intermediate-Scale Quantum" (NISQ) era. Global technology conglomerates and elite research laboratories raced to develop diverse physical qubit platforms, including superconducting circuits (such as Google's early architectures) and semiconductor quantum dots. While processors scaled past the 1,000-physical-qubit threshold, they remained heavily bottlenecked by brief coherence windows and severe noise interference.
- **2023–2026+: National Frameworks and Scalability Milestones:** Realizing the strategic importance of this technology, governments institutionalized their support. India launched its ambitious **National Quantum Mission (NQM)** in April 2023 with a budget allocation of over ₹6,000 crore, aiming to develop intermediate-scale quantum computers by 2031. This was accompanied by breakthroughs in late 2024, such as Google's Willow processor, which experimentally validated physical lattice scaling to suppress error rates. Major global players are now aggressively targeting the launch of fully fault-tolerant logical qubits by 2029.

- **Way Forward**

- **Prioritizing Quantum Error Correction (QEC) Over Raw Scaling:** Research funding and scientific focus should shift away from simply maximizing raw physical qubit counts. Priority must be given to perfecting fault-tolerant logical qubit architectures, implementing advanced lattice arrangements, and developing better materials to systematically suppress baseline error rates.
- **Optimizing the National Quantum Mission (NQM) Ecosystem:** India should fully leverage its ₹6,000+ crore NQM allocation by fostering a collaborative "Triple Helix" model that binds academia (such as the IITs and IISc), private tech enterprises, and defense laboratories. A key priority should be the indigenization of critical hardware components, particularly specialized cryogenic cooling systems and quantum-grade semiconductors, to ensure supply chain resilience.



AXIA
IAS ACADEMY
RISE ABOVE THE REST

QUANTUM COMPUTING: HARNESSING THE PROMISE, SILENCING THE NOISE

A COMPREHENSIVE UPSC CSE PREPARATION GUIDE

CLASSICAL COMPUTING

VS

QUANTUM COMPUTING



Bits

Deterministic processing

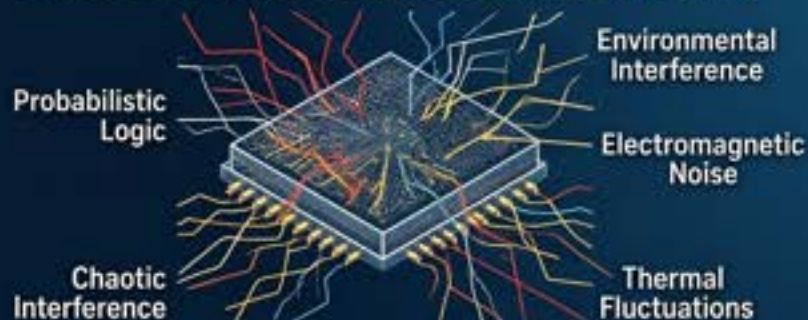


QUBIT

Massive Parallelism

INSTANTANEOUS ENTANGLEMENT

THE HARDWARE BOTTLENECK: PARADOX OF HIGH ERROR RATES (1-0.1%)



NISQ Era

(Noisy Intermediate-Scale Quantum)

INDIA'S STRATEGIC ROADMAP: NATIONAL QUANTUM MISSION (NQM)

- April 2023 Start
- Budget: ₹6,000+ Crore
- Goal: Intermediate-scale Quantum Computers (by 2031)
- Indigenization of Core Components



THE PATH TO STABILITY: ERROR CORRECTION & LOGICAL QUBITS

MANY NOISY PHYSICAL QUBITS

ERROR CORRECTION ALGORITHMS

SINGLE STABLE LOGICAL QUBIT



MANY NOISY PHYSICAL QUBITS (Lots of small, volatile points)

ERROR CORRECTION ALGORITHMS

SINGLE STABLE LOGICAL QUBIT

Scaling
2023 2031

MULTIDIMENSIONAL ANALYSIS & UPSC RELEVANCE

SOCIAL
Drug Discovery, Precise Climate Modeling

SOCIAL
Supply Chain Optimization, Upfront CapEx

ETHICAL
'Quantum Apocalypse', Post-Quantum Cryptography (PQC)

POLITICAL
Tech Sovereignty, Global Deep-Tech Race

LEGAL
Data Privacy, Patents & Regulatory Updates

INTERNATIONAL
Export Controls on Critical Components

RELEVANCE TO UPSC SYLLABUS:



GS Paper 3
(Science & Tech)



GS Paper 3
(Internal Security)



GS Paper 4
(Ethics)



Essay

WAY FORWARD:

1. Prioritize Error Correction over scaling
2. Optimize NQM Ecosystem (Indigenization)
3. Implement PQC early

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What is the right to be forgotten?

How does the ruling balance privacy with open justice and free speech? What challenges remain in enforcing the right to be forgotten? What role does the DPDP Act play? Who should decide requests for erasure or de-indexing?

EXPLAINER

G.S. Bajpai

The story so far:

The Delhi High Court, in its recent ruling, has laid down the principles governing the right to be forgotten. The court has evolved a new jurisprudence to protect the privacy of those who continue to be victimised on account of their digital footprints on social media and elsewhere, despite having those matters settled in their favour.

What is the 'right to be forgotten'?

The "right to be forgotten" is the right to have information erased or de-indexed from the public digital environment when its continued accessibility is harmful and serves no public interest.

The concept came to the fore in 2014, when a Spanish citizen, Mario Costeja González, complained to the European Court of Justice that Google continued to display an old newspaper notice about the auction of his repossessed house even though the debt had been settled. The court ruled in his favour, laying the groundwork for the right to erasure, which was later incorporated into Article 17 of the European Union's General Data Protection Regulation (GDPR).

How has the idea of the right to be forgotten evolved in Indian law?

The Supreme Court's judgment in *K.S. Puttaswamy v. Union of India* (2017) held that privacy is a fundamental right under Article 21, including the right to informational privacy. In the years that followed, however, High Courts adopted divergent approaches.

While some permitted anonymisation in limited cases, such as the Delhi High Court ordering the masking of names in certain matrimonial and criminal matters, others rejected similar requests on



GETTY IMAGES

grounds of open justice.

The real challenge was the lack of a coherent framework to balance these competing interests, which the May 2026 Delhi High Court judgment sought to address.

What did the Delhi High Court decide?

On May 29, the Delhi High Court ruled in a batch of over 30 consolidated petitions, led by Laksh Vir Singh Yadav v. Union of India. The core issue was whether informational privacy could justify the de-indexing or masking of judicial records in a system committed to open justice. The court held that the right to be forgotten flows from Article 21's guarantee of dignity and informational privacy. The structured proportionality test is that retention must have a legitimate purpose, that the harm to privacy must be balanced against the public interest, and that the least intrusive means, typically by masking names instead of deleting the entire judgment, should be preferred. The court also prescribed a two-week

deadline for legal databases to comply and explained that only the parties' names should be redacted, not the facts of the case.

How does the right to be forgotten interact with constitutional values?

This is not a stand-alone right. It frequently conflicts with freedom of speech and press under Article 19(1)(a), the principle of open justice, and the public's right to know. A right to privacy must be sacrificed when the public interest is of a high order, particularly in serious cases of crime, but the digital presence should not destroy a person's life long after the trial ends. The judgments are still publicly accessible by case number or a keyword search; only name-based searches are restricted.

What are the practical challenges?

The toughest aspect is enforcement. An acquittal judgment may still appear highly in name-based searches even after a court has ordered the removal of the search results. Search engines are designed so

that the original accusation, or the "shadow of crime," is often the first thing the user sees. De-indexing can benefit at the search level, but it won't prevent mirrors, archive copies, or social media sharing. Without effective technical compliance and coordination among platforms, the right may remain largely symbolic.

What is the relationship between the right to be forgotten and DPDP Act?

As of now, the Digital Personal Data Protection Act, 2023, offers a limited statutory right to erasure in section 12. It is primarily based on consent and does not explicitly address judicial records and public archives, where the right to be forgotten is most needed. The Act is deficient because rules have not been notified and the data protection board has not been completely effective.

Who should decide requests for erasure or de-indexing?

The challenge lies in balancing efficiency with accountability. Requiring every request to be decided by a court would create significant bottlenecks, while leaving such decisions entirely to technology companies raises concerns about due process and transparency. A more sensible approach would be a tiered system, where cases could be heard by platforms, contested ones by the data protection board, and judicial cases by courts.

The Delhi High Court has established an important framework, but until the Supreme Court rules on the matter, establishes a data protection board, and platforms comply with it, this ruling will be mostly declaratory. The conflict over freedom of expression and open justice is a reality. The task ahead is now to establish the institutions that facilitate it. (G. S. Bajpai is Vice Chancellor at National Law University Delhi. He acknowledges the assistance of Vibhuti Sharma, Academic fellow, NLU Delhi. Views are personal.)

THE GIST

The Delhi High Court has recognised the right to be forgotten as part of the fundamental right to privacy under Article 21, laying down a framework that balances informational privacy with open justice and freedom of speech by favouring name-masking over deletion of judgments.

While the ruling provides a legal framework for de-indexing and erasure requests, its effectiveness depends on enforcement by platforms, the operationalisation of the DPDP Act, and the establishment of institutions such as the data protection board.

- **Key Terms and Explanations**
- .
- **Right to be Forgotten (RTBF):** This is the right of an individual to demand the removal, erasure, or de-indexing of their personal data from public digital platforms when such information is no longer necessary, is inaccurate, or causes unwarranted harm without serving any overriding public interest.
- **De-indexing vs. Erasure:** These are two distinct digital remedies. **De-indexing** means a search engine (like Google) removes a specific webpage from its search results when someone searches for a particular name, though the original page still exists on the host website. **Erasure** means completely wiping the data from the source database itself.
- **Informational Privacy:** A critical subset of the Right to Privacy, it refers to an individual's right to control the dissemination, retention, and processing of their personal data. It asserts that a person, not the tech platform, should be the ultimate custodian of their digital footprint.
- **Principle of Open Justice:** This traditional legal principle mandates that judicial proceedings and records must be transparent, public, and accessible to ensure accountability, prevent judicial bias, and maintain public trust in the legal system.
- **Structured Proportionality Test:** A judicial balancing tool used by courts to determine if a restriction on a fundamental right is constitutionally valid. It checks four things: whether the measure has a legitimate goal, whether the means are suited to achieve that goal, whether a less restrictive alternative exists, and whether the benefit balances out the harm caused.
- **Name-Masking (Anonymization):** The process of redacting or scrubbing personal identifiers (like names, addresses, or specific locations) from public documents, such as court judgments, while keeping the legal arguments and facts intact for public research.
- **Main Arguments and Substantive Parts**
- The core debate centers on an existential struggle in the digital age: how do we balance an individual's right to a dignified life with society's right to know? The evolving jurisprudence seeks to carve out a balanced path between these competing values.
- **The Central Thesis**
- The core argument is that informational privacy is an inseparable component of human dignity under the Indian Constitution. However, it cannot operate as an absolute right. Instead of completely erasing public history, the legal system must adopt a nuanced, proportionate approach—such as name-masking—to protect individuals from being perpetually haunted by their digital past, especially when they have been exonerated or when matters are legally settled.
- **Supporting Arguments for the Right to be Forgotten**
- **The Inescapable "Shadow of Crime":** In the pre-internet era, practical obscurity protected people; old court records gathered dust in physical archives. Today, the internet creates a permanent digital scar. A person who has moved past a legal dispute or matrimonial trauma remains perpetually victimized by social media and search engines.
- **Preservation of Dignity:** True rehabilitation is impossible if the digital universe refuses to forgive. Allowing individuals to request de-indexing gives them a second chance at a normal life, free from continuous public scrutiny and stigma.
- **The Flaw in the Current Statutory Framework:** Statutory measures like Section 12 of the Digital Personal Data Protection (DPDP) Act, 2023, provide a limited right to erasure based on consent, but they fail to adequately address public archives, news media, and judicial records where the right is most critically needed.
- **Counterarguments and Challenges**
- **The Conflict with Open Justice:** Erasing or modifying court records threatens the integrity of legal archives. Public access to judgments ensures that the judiciary remains accountable and that the law remains accessible for research.
- **Infringement on Free Speech:** Forcing platforms or media houses to pull down information can amount to digital censorship, directly clashing with the Freedom of Speech and Press under Article 19(1)(a).
- **Enforcement Bottlenecks:** Leaving these decisions entirely to private tech corporations undermines due process and transparency. Conversely, forcing courts to decide every single de-indexing request will completely overwhelm an already burdened judicial system.

- **Historical Evolution of the Issue**

- The journey of the Right to be Forgotten shows a fascinating shift from a foreign data protection concept to a deeply rooted Indian constitutional principle.
- **2014 (The Global Genesis):** The concept gained global prominence when the European Court of Justice ruled in the landmark *Google Spain v. Mario Costeja González* case. The court held that search engines must remove links to personal data that are inadequate, irrelevant, or excessive. This principle was later solidified in Article 17 of the EU's General Data Protection Regulation (GDPR).
- **2017 (The Constitutional Bedrock in India):** The Supreme Court of India delivered the historic *K.S. Puttaswamy v. Union of India* judgment. The apex court unanimously declared privacy a fundamental right under Article 21, explicitly recognizing that informational privacy—and by extension, the right to control one's digital narrative—is central to human dignity.
- **Post-2017 (The Phase of Judicial Divergence):** Following *Puttaswamy*, various High Courts across India faced a wave of petitions from citizens seeking the removal of their names from online judgments. The responses were fragmented. Some High Courts permitted anonymization in sensitive matrimonial or criminal acquittals, while others flatly rejected requests, citing the sanctity of open justice and public records.
- **May 2026 (The Era of Structural Harmonization):** The Delhi High Court delivered a monumental ruling in a batch of over 30 consolidated petitions, led by *Laksh Vir Singh Yadav v. Union of India*. The court systematically resolved the divergence by laying down a clear framework: it prioritized **name-masking** over the outright deletion of judgments, giving legal databases a strict two-week deadline to comply, thereby establishing a structured blueprint for the entire country.

- **Way Forward**

- **Systemic Implementation of Name-Masking:** The judiciary should integrate automated name-masking software into the e-Courts project. For sensitive categories like family disputes, non-heinous crimes leading to acquittal, or juvenile cases, anonymization should happen automatically before the judgment is published online.
- **Refining the DPDP Act Framework:** The government must swiftly notify the rules for the DPDP Act, 2023, and clearly outline how Section 12 (Right to Erasure) applies to public archives, journalistic pieces, and online legal databases.
- **Clear Public Interest Guidelines:** The Supreme Court should establish definitive criteria for what constitutes "overriding public interest." For example, public figures, individuals convicted of heinous crimes, or corporate fraudsters should not be allowed to use the RTBF to hide information that remains critical for public awareness and institutional accountability.

THE RIGHT TO BE FORGOTTEN: AN EDUCATOR'S DEEP DIVE FOR UPSC & APSC

A Balanced Framework: Balancing Privacy, Dignity, Open Justice, & Free Speech



AXIA
IAS ACADEMY
WISDOM ABOVE THE REST

KEY TERMS & EXPLANATIONS

RTBF



Simple exonerated but arrests ruins jobs

De-indexing vs. Erasure



VS.



Google search into vs database being wiped

Informational Privacy



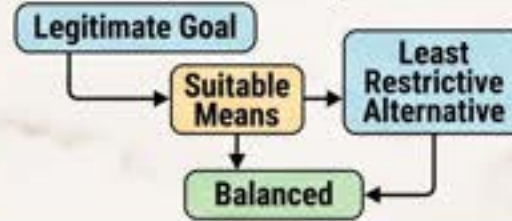
Digital personal data
frannormation

Open Justice



Courthouse with open
and public gallery

Proportionality Test



Name-Masking



Redacting in personal
personal identifiers

PHILOSOPHICAL & LOGICAL BASE

Theme is **redemption**.



Panopticon
of Unlimited
Digital Memory



FALLACY OF
UNLIMITED
memory
(public interest)

Kantian Duty vs. Utilitarian Good

HISTORICAL EVOLUTION



2014

EU
(Google
Spain
case)



2017

India
"Fundamental
Right to
Privacy",
Puttaswamy)



Post-2017
Divergent
High Courts
(varying
courts)

MAIN ARGUMENTS

(Nuanced Pros & Cons on
a large scale)

Pros

• **PERPETUAL VICTIMIZATION:**
digital scarred shadow



• **Cones**



• **REHABILITATION
& DIGNITY:**
second chance

Cons

• **OPEN JUSTICE THREATENED:**
dark courthouse with
obscured records



• **FREE SPEECH IMPACT:**
a 'CENSORED' stamp
on media content



MULTIDIMENSIONAL ANALYSIS



Social

• Reputation
• Postnomination vs.
reputability and passion



Political

• Public Accountability
- no misuse



Legal

• DPDP Act
• Renovation/renovation



Ethical

• Compassion vs. Profit
• Value compassion



International

• EU GDPR vs. 
• US First Amendment
• Compassation



Economic

• Platform Costs
• Platform costs (camnal
or costs)

EDUCATIONAL LINKAGES



NCERT: Class 11 Pol Sci
Class 1 (Rights, Theory)
Class 12 Sociology (Media)



Syllabus Mapping

GS II (Polity, Judgments)
GS III (Data, Cyber Security)
GS IV (Ethics, Case Studies)
Essay

PYQs

PRELIMS

• RTBF explicit vs. derivative
• Proportionality test
• Proportionality test
• DPDP erasure purpose

MAINS

• GS II 2018 scope of privacy
• GS II 2018 scope of privacy
• GS III 2017 data protection
protection law)

WAY FORWARD

TIERED MECHANISM



SYSTEMIC NAME-MASKING



Automated
algorithm flow-chart

DPDP ACT REFORMS

• Rules for public interest

PUBLIC INTEREST GUIDELINES

• Clear criteria, e.g., no
for public figures/
heinous crimes

What is the 'Hummus trail' and why is it under scrutiny?

Can India arrest foreign nationals accused of grave breaches under the Geneva Conventions?

Nivedita S.

The story so far:

In June 2, 2026, the Hind Rajab Foundation (HRF), a Palestinian rights organisation based in Brussels, filed a complaint with the Union Ministry of Home Affairs, the Bureau of Immigration and the police to arrest Eitan Gilboa, an Israeli soldier, who was found to be vacationing in Himachal Pradesh. Gilboa, a member of the 271st Combat Engineering Battalion, was accused by the organisation of committing "war crimes in Gaza" in 2024. The organisation submitted evidence that involves specific instances in which he participated in the destruction of residential buildings and civilian infrastructure in Khan Yunis and Rafah. He filmed videos of himself celebrating the execution of these activities, which were later posted on social media by his mother. The HRF provided geo-located videos, social media videos and chain-of-command documentation along with the complaint.

How does Indian law apply to alleged war crimes?

The HRF alleged that these activities by Gilboa were in violation of the Fourth Geneva Convention, to which India is a signatory. Under this convention, any intentional launch of an attack which is known to cause loss of life or injury to civilians, along with severe damage to civilian objects, is considered to be a war crime and a grave breach of the convention.

Though India does not have its own law criminalising war crimes, it has passed the Geneva Conventions Act, 1960. Under this law, any act which constitutes a 'grave breach' under four sections of the Geneva Convention is criminalised. India can arrest any person, irrespective of nationality, if found to have committed an offence under the convention, regardless of the geographical location of the offence.

If an arrest is not possible, the Home Ministry and the Bureau of Immigration can facilitate the deportation of the accused from Indian territory. However,

the Union government did not issue a statement regarding the allegations by HRF, nor initiated a probe.

What is the 'Hummus trail'?

Though Gilboa has now fled India, he was traced by pro-Palestinian activists and the HRF in Old Manali and Gondla Village of Himachal Pradesh, which are popular spots among Israelis along the 'Hummus trail'.

Every year, around 80,000 Israelis visit India, a large number of them young veterans who have been discharged from the mandatory Israeli army service. This trip, known as the Tiul Gadol, could last up to 6 months or a year and is mainly funded by the bonus they receive after serving in the army. In February 2026, the Israeli government allocated four million NIS to boost tourism collaboration with India.

From the north to the south of the country, there are several areas which are frequented by Israelis, and this is colloquially known as the 'Hummus trail in India'. This includes Kasol (also known

as mini-Israel), Kodaikanal, Kerala, Goa, Hampi, Gokarna, Rishikesh, Varanasi, Pushkar, Almora, Dharamkot, and, more recently, the Andaman and Nicobar Islands.

In these places frequented by Israelis, one can observe several changes to the cultural landscape. It is common to see signs in Hebrew, posters promoting the Israeli Defence Forces, along with cafes, stores and hostels run by Israelis. In 2015, an Israeli-run cafe in Himachal Pradesh faced backlash for allegedly denying entry to Indians with a 'whites only' sign.

According to a 2020 study published in the Journal of Travel & Tourism Marketing, drug abuse and rave parties are common along the Hummus trail, with drug peddling cases on the rise in these regions.

The study found that to cope with mental health challenges faced by these veterans during their service in the army, they resort to high drug consumption. Mental health workers from Israel have also been sent to India to aid these reservists.

Why is the issue drawing global attention?

"India-Israel tourism is not merely about routine holidays and cultural exchange. It is part of a broader normalisation process that seeks to deepen social and economic ties between the two countries," Azad Essa, author of *Hostile Homelands: The New Alliance Between India and Israel*, told *The Hindu*. He added that Israel has thanked India multiple times for being

one of the few countries that have provided political and moral support to Israel, when much of the world has turned its back on it, at least publicly.

As Israel has killed over 73,000 Palestinians in the Gaza Strip since the October 7, 2023, Hamas attack, and is currently facing a case filed by South Africa in the International Court of Justice over allegations of genocide, allowing unrestricted entry of Israeli soldiers to India after their service in Gaza demands scrutiny.

The UN Commission of Inquiry, in its report, has said that the Israeli military "deliberately carried out acts inflicting death and severe bodily and mental harm on hundreds of thousands of Palestinian children."

Five-year-old Hind Rajab is among the thousands of children killed by the Israeli forces in Gaza.

The HRF's legal action in other countries against Israeli soldiers travelling there has resulted in successful outcomes in Brazil, Romania, Peru, Belgium, and Canada, according to its website. A court in Chile is the latest to recognise universal jurisdiction over war crimes in Gaza while hearing HRF's complaint against Rom Kovtun, an Israeli-Ukrainian citizen accused of war crimes during the siege of Al-Shifa Hospital in Gaza.

"The 'Hummus Trail' – or these extended trips that IDF soldiers take to decompress after military duties – cannot become a route for impunity," Natacha Bracq, Head of Litigation at the HRF, said in a statement.

- **Key Terms and Explanations**
- **The Geneva Conventions Act, 1960 (India):** This is a specific domestic legislation passed by the Indian Parliament to give effect to the Geneva Conventions of 1949. While India is a signatory to these international treaties, international law is not automatically enforceable in domestic courts without enabling legislation. The 1960 Act criminalizes "grave breaches" of the Conventions, allowing Indian authorities to prosecute individuals accused of such violations.
- **Universal Jurisdiction:** A legal principle in international law that allows a sovereign state to claim criminal jurisdiction over an accused person regardless of where the alleged crime was committed, and regardless of the accused's nationality, country of residence, or any other relation with the prosecuting entity.
- **Grave Breaches:** These are a specific category of severe violations defined under the Geneva Conventions. They include acts like willful killing, torture or inhuman treatment, willfully causing great suffering or serious injury to body or health, and the extensive destruction and appropriation of property not justified by military necessity and carried out unlawfully and wantonly.
- **The 'Hummus Trail' (*Tiul Gadol*):** A colloquial term used to describe a popular travel route and network of enclaves across India frequented heavily by young Israeli citizens, particularly veterans who have recently completed their mandatory military service. The journey itself is traditionally known as *Tiul Gadol* (the big trip), serving as a long-term decompression period funded by military discharge bonuses.
- **Deportation vs. Universal Prosecution:** While universal jurisdiction involves putting an individual on trial within the host nation's domestic courts for international crimes, deportation is an administrative action taken by immigration authorities to expel a foreign national from the country. Deportation is often utilized when a state wishes to avoid the complex diplomatic and legal entanglements of conducting a high-profile international war crimes trial.
- **Main Arguments and Substantive Parts**
- The core thesis of this discourse revolves around the tension between a state's statutory international humanitarian obligations and its contemporary geopolitical and economic interests.
- **The Mandate for Universal Accountability**
- The primary argument put forward by transnational human rights organizations is that global accountability mechanisms must follow individuals accused of violations, regardless of where they choose to vacation. Under Section 4 of India's Geneva Conventions Act, 1960, the legal authority is absolute: any person, irrespective of nationality, who commits a grave breach anywhere in the world can be legally apprehended on Indian soil. Legal actions in nations like Chile, Belgium, and Canada demonstrate a growing global trend toward enforcing this extraterritorial jurisdiction.
- **The Socio-Psychological Reality of the Hummus Trail**
- The secondary dimension explores how these specific travel hubs operate. For thousands of military veterans, destinations like Kasol, Dharamkot, and Kodaikanal function as crucial decompression zones to cope with severe mental health challenges and Post-Traumatic Stress Disorder (PTSD) stemming from active combat service. However, this has created a complex local dynamic, characterized by:
 - Significant structural alterations to the local cultural landscape (Hebrew signage, exclusive cafes).
 - A notable rise in shadow economic activities, rave cultures, and drug consumption, as supported by tourism marketing studies.
 - Friction with indigenous populations, including past instances of local discrimination and "whites-only" access controversies.
- **The State's Strategic and Procedural Dilemma**
- Conversely, the state faces an acute dilemma. While the statutory law provides the mechanism for arrest or deportation, taking direct legal action against citizens of a close strategic partner presents severe diplomatic risks. The state must balance its historical commitment to international humanitarian principles against a burgeoning bilateral partnership that involves deep defense, economic, and tourism ties. This often results in procedural silence or institutional reluctance to initiate formal probes when complaints are filed.

- **Historical Evolution of the Issue**

- **The Post-Independence Idealism (1949–1960):** Following independence, India sought a prominent moral position in global governance, strongly supporting anti-colonial movements and the codification of human rights. This led to India becoming a signatory to the 1949 Geneva Conventions and subsequently enacting the Geneva Conventions Act in 1960, embedding universal jurisdiction into its domestic legal framework long before strategic alignments shifted.

- **The Pragmatic Shift and Normalization (1992):** For decades, India maintained a distant diplomatic stance toward Israel. However, the formal normalization of bilateral relations in 1992 opened the doors for extensive trade, defense cooperation, and tourism. This period marked the birth of the "Hummus Trail," as Indian hill stations and coastal villages became affordable, welcoming destinations for Israeli youth finishing military service.

- **The Proliferation of Enclaves and Local Friction (2010s–2020s):** Over the next two decades, these travel patterns solidified into distinct socio-cultural enclaves. While boosting local economies, these hubs increasingly drew scrutiny due to instances of cultural segregation, illegal narcotics trade, and mental health crises among visiting veterans.

- **Transnational Accountability and the Current Context (2023–2026):** The intensification of conflicts in the Middle East post-October 2023, coupled with international legal proceedings at the International Court of Justice (ICJ), created a new paradigm. By 2026, international rights groups began actively tracking combatants traveling abroad, turning quiet vacation spots into focal points for international law enforcement and testing the boundaries of India's statutory commitments.

- **Way Forward**

- **Developing Procedural Guidelines for Extraterritorial Complaints**

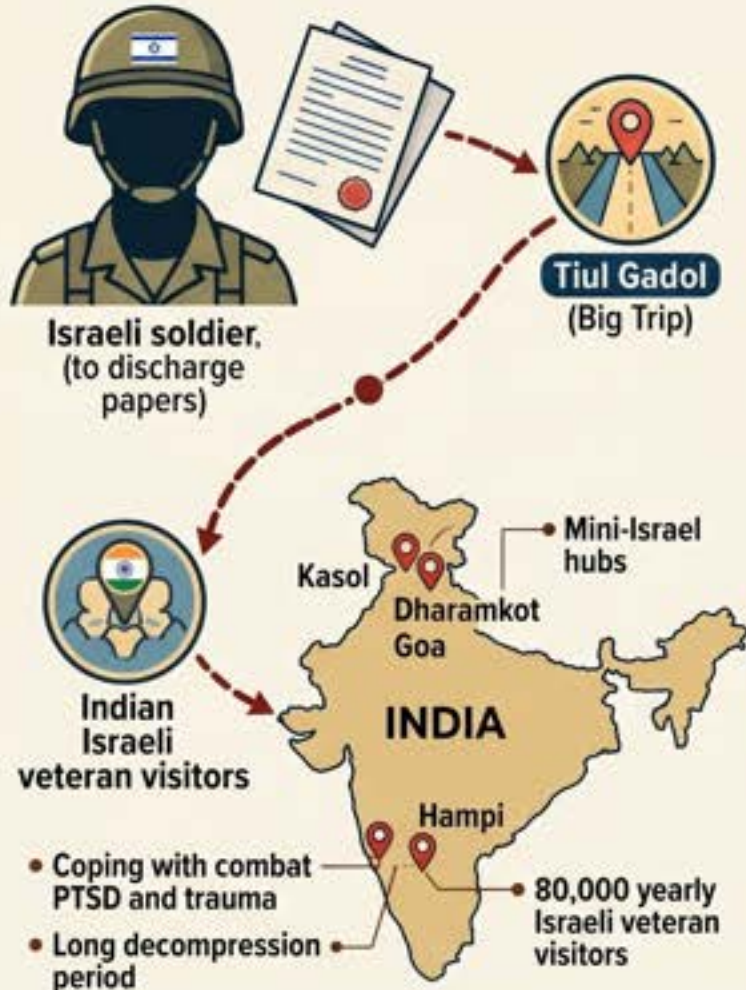
- The Ministry of Home Affairs, in coordination with the Ministry of External Affairs, should establish a clear procedural framework for handling legal complaints filed by transnational bodies against foreign nationals. Rather than relying on institutional silence, a formalized vetting process can assess the validity of evidence under the Geneva Conventions Act, 1960, ensuring that political considerations do not entirely override statutory mandates.

- **Regularizing Administrative Discretion (Deportation Frameworks)**

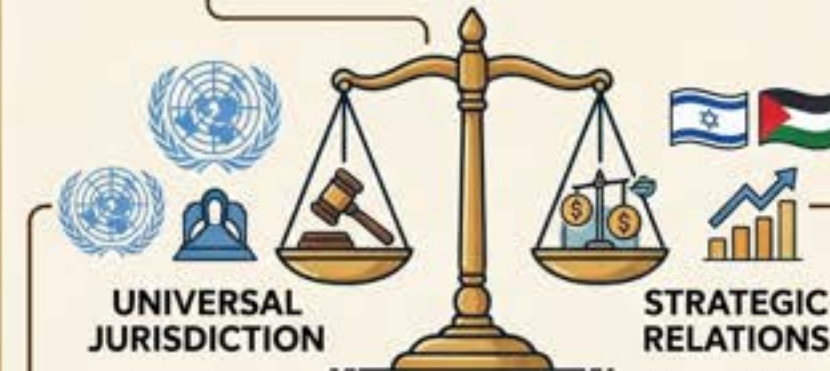
- When full-scale criminal prosecution presents overwhelming diplomatic challenges, the state can utilize clear administrative channels under the Foreigners Act. If credible prima facie evidence of serious international law violations is presented, immigration authorities can opt for structured deportation or deny entry to specific individuals, thereby maintaining India's commitment to international law without escalating diplomatic tensions.

INDIA & THE 'HUMMUS TRAIL': A DEEP ANALYSIS OF WAR CRIMES, JURISDICTION & STRATEGIC TIES

THE 'HUMMUS TRAIL': ORIGINS & PHENOMENON



THE LEGAL DILEMMA & THE GILBOA CASE



INDIA'S LEGAL FRAMEWORK



GEOPOLITICAL REALITY



MULTIDIMENSIONAL IMPACTS & UPSC RELEVANCE



SOCIO-CULTURAL DIMENSION

- Hebrew signs, enclaves (Kasol, Dharamkot, Goa)
- Shadow economies (Drug abuse study)
- Local discrimination (whites-only cafes)
- Mental Health coping mechanisms

UPSC CSE SYLLABUS MAPPING & ACADEMIC INTEGRATION



GS 2 (IR/Polity):

- Strategic relations
- Statutory Acts
- Foreign Nationals



GS 3 (Security):

- Drug trafficking nexus
- shadow economies



GS 4 (Ethics):

- International Ethics, global justice vs impunity



Prelims: War crimes, Geneva Conventions, universal jurisdiction



Optional: PSIR/Law themes

WAY FORWARD

- Clear Procedural Guidelines for extraterritorial complaints
- Regularize Administrative Discretion (Deportation vs. Prosecution)
- Revitalize Local Governance (Crackdown on drugs, discrimination)

NCERT LINKAGES



Class XII: International Organisations



Class XI: Political Theory (Justice, Rights)

CACHE

CBSE's supplementary examination and the promise of no injustice

Every Class XII student should have a fair opportunity to verify digitised answer scripts and seek re-evaluation before supplementary examination, so that no one is disadvantaged by errors in the original evaluation

Rajesh Ranjan

Barely weeks after the supplementary exam (PMT) for Science Marking (CME) system adopted, these developments this week have created an extraordinary contradiction. First, CBSE has announced the Class XII supplementary examination, requiring students to improve their performance even though many might have scored substantially higher marks had they been given timely access to their digitised answer scripts for verification and re-evaluation. Second, the Central Information Commission (CIC) has directed CBSE to frame transparent, time-bound/transparent procedures (DPPs) for providing students with their marks, answer sheets, and assessment records. Third, within a month of appointing a new CBSE chairperson, the government unveiled his and examined the past two as interim additional charge arrangements, even as the CBSE controversy remained unresolved.

These developments stand to mark progress in the transparency and Minister's assurance that no student would suffer injustice – a commitment that implied confidence among students of students, parents, and society, yet many students still stand averse to their answer scripts and an opportunity to verify their evaluations and seek correction of genuine errors. The issue is no longer one of whether a better administrative procedure, but of whether that assurance has been translated into transparency, accountability, and timely corrective action.

Until every student is given a fair opportunity to verify the original evaluation, requiring them to appear in a supplementary examination addresses the consequence rather than the cause.

Provisional test

CBSE's circular of June 30 announced the Class XII supplementary examination, permitting competent candidates and students who have passed the examination to improve their performance. However, it overlooks another category of students – those whose marks may have increased substantially, had they been given access to their digitised answer scripts for verification and re-evaluation.

The state-of-the-art is significant. If the nearly 17 lakh Class XII students, only about four lakh obtained access to around 1 lakh answer scripts out of 16 lakh scripts, CBSE stated that along 10% of the requested scripts had been delivered by the end of May, while the access of nearly 15 lakh pending requests remains unaddressed. Consequently, nearly 14 lakh students never had the opportunity to examine their evaluated answer scripts independently, only about 14 lakh students could do so via evaluation logs, and results were declared for about 67% of them. Even within the limited access, around 10% of candidates secured independent mark revision, including in various approaches (20 marks out of 100 in highly structured science subjects, while another student's history marks rose from 18 to 92). In one widely reported case, a student because the CBSE support



Students looking at their answer scripts at a supplementary examination centre before receiving their original evaluation marks and timely corrective responses to questions (1/1/2024)

after re-evaluation by receiving letters of 100 to all five subjects. These answers emerged from only a small fraction of students, while the overwhelming majority remained outside the independent scrutiny.

Against this backdrop, asking students to appear in a supplementary examination is not to improve academic performance – not to compensate for possible deficiencies in the original evaluation. Before asking students to take a second examination, CBSE must first ensure that every student has had a fair opportunity to verify and, where warranted, correct the first. That remains the unfulfilled bottom line of the CBSE controversy.

A clear realising

The present controversy is particularly striking because the CIC, while declaring an appeal by a Class XII student seeking justice for their assessment records, established a clear way forward. Invoking Section 10(1) of the RTI Act, 2005, the CIC observed that time-bound DPPs for providing marks, answer sheets, and assessment records were “the best used of today’s scenario”.

It was further observed that such DPPs would avoid the handling-based by the young staff. It directed CBSE to formulate and publish a transparent DPP, holding that the denial of access to one’s own assessment records was contrary to the spirit of the RTI Act.

Formally, the CBSE framework, introduced in earlier transparency, updated in the opposite direction. Instead of providing automatic access to already digitised answer scripts, students were required to complete specific steps, the payments, partial access, verification, and re-evaluation within overlapping timelines, and extended disclosure limited independent scrutiny to only a small fraction of students.

The CIC’s recent direction provides a first with an opportunity to institutionalise a transparent, student-centric review process. The lesson is clear: transparency can only be built into the administrative system through well-defined, time-bound, and publicly accessible DPPs – not left to ad hoc protocols.

Questions persist

In the CBSE controversy, including the Union Education Minister publicly accepted responsibility and assured the nation that no student would suffer injustice. Since then, the government replaced the then CBSE Chairperson with a new full-time incumbent. Yet, barely a month later, he was removed, and the appointment was converted to an additional-charge arrangement.

The leadership transition does not diminish the need for institutional accountability. Instead, it leaves several fundamental questions unanswered.

There has been no satisfactory resolution for why already digitised answer scripts were not proactively disclosed, forcing students to apply, pay fees and deposit on partial access merely to obtain their own records. Nor has the CIC explained why administrative arrangements were not put in place after widespread parent protests and payment disclosures became evident, or why verification and re-evaluation windows were opened discontinuously over three months, dependent on prior access to answer scripts. Most importantly, despite expressing confidence in the CBSE process, the board has not opened all digitised answer scripts to national independent scrutiny. Public confidence will be restored not by administrative methods, but by transparency, accountability, and timely corrective action.

Every-day plan

The present response can still be reached before the supplementary examination through a simple, practical, and

realistic course framework. Since every Class XII answer script has already been digitised, no further scanning or processing is required.

A clear, time-bound transparency can be used to ensure that deficiencies in the original evaluation do not disadvantage any student.

Step 1: Universal disclosure – Provide every Class XII student, free of cost, with a secure digital copy of the evaluated answer script through registered email, WhatsApp, and the respective school.

Step 2: Verification – Allow students, parents, and schools to verify the completeness and authenticity of the digitised answer scripts and report any deficiencies relating to scanning, digitisation, document management, or evaluation. Students whose scripts are found to be free from such deficiencies may proceed directly to re-evaluation.

Step 3: Re-evaluation – Offer verified or corrected answer scripts are made available, permit students to seek re-evaluation of identified questions or awarded marks. Complete the process within a fixed timeline, publish every final statistic on verification deficiencies, and make responses to strengthen public confidence.

Such an exercise would be far more meaningful than requiring students to sit a supplementary examination before confirming the correctness of the original evaluation. It would reinforce transparency, accountability, and fairness while ensuring that no student is compelled to take a second examination because of avoidable deficiencies in the first.

The way forward

The CBSE controversy should not end with administrative changes, leadership changes, or supplementary examinations. It should end only when every affected student has a fair opportunity to verify the original evaluation and secure the correction of genuine deficiencies.

In an examination affecting nearly 17 lakh students, transparency cannot remain selective. It must become universal.

The proposed open-the-transparency framework offers a practical, low-cost, and time-bound solution. Since every answer script has already been digitised, universal disclosure, verification, and re-evaluation can all be completed before the supplementary examination. Such an exercise would secure confidence in the CBSE process while reinforcing fairness, accountability, and student-centric governance.

Ultimately, this is not about defending a technology, a review, an administrative process, or an institution. It is about protecting the academic future of millions of young students. The credibility of India’s examination system will be judged not by statistics, audits, or leadership changes, but by whether every student receives a fair, transparent, and trustworthy evaluation.

From now, it is not just to restore public confidence. Universal transparency is timely correction of genuine errors, and the assurance that no student suffers injustice should define the true legacy of the CBSE CBSE initiative. (Dr. Rajesh Ranjan is a former Computer Science Professor at IIT Kanpur, IIT Kharagpur, IIT Roorkee, IIT Madras, and IIT, and a former scientist at DRDO and ISRO.)

- **Key Terms and Explanations**

- **On-Screen Marking (OSM):** This is a digital evaluation system where physical answer scripts are scanned, converted into electronic copies, and distributed securely to examiners who grade them on computer screens. While designed to eliminate manual totaling errors, streamline data collection, and speed up result compilation, its efficacy depends heavily on user-friendly interfaces and robust portal infrastructure. For example, instead of flipping paper pages, a biology examiner uses dedicated software to read and mark a scanned digital script.
- **Universal Disclosure:** A proactive governance policy where a public authority automatically grants citizens access to their records without requiring individual applications, fees, or legal petitions. In an educational context, this means pushing digital copies of evaluated answer sheets directly to every student upon the declaration of results, shifting the burden of transparency from the student to the institution.
- **Verification vs. Re-evaluation:** These represent two distinct tiers of grievance redressal. *Verification* is a preliminary administrative check to ensure all questions have been marked, the marks have been totaled correctly, and no pages were missed during scanning. *Re-evaluation*, on the other hand, is a qualitative academic exercise where an independent examiner reviews the answers afresh to correct subjective errors, grading inconsistencies, or structural flaws in the initial assessment.
- **Supplementary Examination:** A secondary examination cycle organized shortly after the main annual results to allow students who failed or underperformed a chance to save their academic year. While meant as a remedial safety net, it turns into an institutional burden if students are forced to appear for it due to undetected evaluation errors rather than their own academic shortcomings.
- **Section 25(5) of the RTI Act, 2005:** A statutory provision that empowers Information Commissions to recommend structural reforms to a public authority if its official practices do not conform to the spirit of transparency mandated by the Act. This serves as a vital tool for systemic administrative correction, ensuring that access to personal information—such as assessment records—is smooth and unhindered.

- **Main Arguments and Substantive Parts**

- The intersection of technology, administration, and student welfare in public examinations reveals a fundamental tension between procedural efficiency and substantive justice. The core arguments surrounding contemporary examination systems focus on the following dimensions:
- **The Fallacy of Premature Remediation**
- Organizing supplementary examinations before establishing a foolproof, transparent mechanism for original script verification addresses the symptom rather than the disease. Data highlighted in student grievance trends shows that when independent scrutiny is permitted, a startling percentage of students receive massive mark upward revisions—sometimes jumping by up to twenty percent in highly structured science streams. Forcing a student to sit for a secondary exam to "improve" their score when their original paper was simply mismanaged or poorly graded shifts the institutional failure onto the individual child, turning a remedy into an undeserved penalty.
- **Structural Obstacles in Digital Reforms**
- While modernization initiatives like On-Screen Marking (OSM) are introduced under the banner of progress, their implementation often creates fresh bureaucratic hurdles. Instead of facilitating automatic, open access to scanned scripts, institutions frequently trap students in an adversarial maze of web portal failures, tight overlapping deadlines, and prohibitive application fees. As a result, out of millions of examinees, only a minuscule fraction manage to secure their scripts, leaving the vast majority entirely outside the ambit of independent evaluation scrutiny.
- **Dilution of Institutional Accountability**
- Frequent changes in top leadership and the reliance on interim administrative arrangements within premier educational boards severely dilute long-term institutional accountability. When the administrative leadership remains in a state of flux, critical systemic crises—such as digital glitches in evaluation or compliance with transparency directives—remain unaddressed. True institutional integrity cannot be restored through superficial personnel reshuffles; it requires a deep, cultural commitment to embedding accountability and transparency directly into standard operating procedures.

- **Historical Evolution of the Issue**

- **The Pre-Independence Era (Colonial Foundations):** Public examinations in British India were designed primarily as an elimination tool to filter candidates for administrative clerical positions. Heavily rooted in rote learning and terminal, high-stakes testing, the system lacked any concept of student rights, transparency, or grievance redressal. The assessment of the examiner was absolute and beyond question.
- **The Kothari Commission (1964-66):** This landmark commission recognized that the existing examination pattern was a major source of acute student stress and psychological trauma. It highlighted the high element of subjectivity and chance in evaluation and recommended shifting toward reliable, continuous internal assessments alongside standardized external exams to mitigate grading errors.
- **The National Policy on Education (NPE 1986):** The NPE 1986 explicitly advocated for structural examination reforms. It emphasized the need to eliminate subjectivity in evaluation, de-emphasize memorization, and introduce transparent methods of grading. This period saw the conceptual birth of formal verification and re-evaluation mechanisms across central and state boards.
- **The RTI Revolution and Supreme Court Intervention (2011):** The defining milestone in student rights occurred with the historic Supreme Court judgment in *CBSE vs. Aditya Bandopadhyay*. The apex court ruled that an evaluated answer script constitutes "information" under Section 2(f) of the RTI Act, 2005. This fundamentally altered the dynamic, establishing that a student has a legal, justiciable right to inspect and receive a copy of their evaluated answer sheet.
- **The Transition to Digital Governance (Present Day):** The current era is characterized by the adoption of e-governance tools, such as digital answer vaults, DigiLocker integration, and On-Screen Marking (OSM). However, as evidenced by recent structural bottlenecks, the transition from paper-based systems to digital workflows has created a new battleground where old bureaucratic mindsets clash with modern tech-enabled transparency.

- **Way Forward**

- To move away from an adversarial, opaque system and build a student-centric, highly accountable examination framework, a series of urgent structural and policy reforms are required. A practical roadmap involves the implementation of a comprehensive **Seven-Day Transparency Framework** alongside broader institutional updates:
 - **Day 1: Universal Proactive Disclosure:** Educational boards must discontinue the practice of forcing students to apply and pay fees for their own records. Upon result declaration, a secure, digital copy of the evaluated answer script should be automatically pushed to every student's registered email, WhatsApp, or school portal profile free of cost.
 - **Days 1 to 3: Systematic Verification Phase:** A dedicated, user-friendly portal window should open allowing students, parents, and schools to verify the completeness of the digital script. Any missing pages, unrated questions, or totaling errors must be flagged through an automated ticketing system.
 - **Days 2 to 7: Fast-Track Academic Re-evaluation:** For scripts flagged with genuine evaluative discrepancies, a time-bound independent re-evaluation must be carried out by a secondary examiner. To maintain systemic transparency and rebuild public trust, boards should publish anonymized, aggregated data regarding mark revisions and evaluation deficiencies.
-



AXIA
IAS ACADEMY
RISE ABOVE THE REST

POLICY DEEP DIVE: TRANSPARENCY IN PUBLIC EXAMINATIONS

Conceptual Analysis for UPSC/APSC Aspirants (Based on Examination Systems & Evaluation Credibility)

THE CORE DILEMMA: PREMATURE REMEDY OR SYSTEMIC FIX?

CURRENT APPROACH:
ANNOUNCE SUPPLEMENTARY EXAM



ADDRESSES SYMPTOM,
NOT, NOT CAUSE

FORCES STUDENTS
TO REPEAT CYCLE

TRANSPARENT APPROACH:
SYSTEMIC VERIFICATION & RE-EVALUATION



IDENTIFIES &
CORRECTS

& CORRECTS
INITIAL ERRORS

ENSURES JUSTICE
BEFORE REMEDY

PHILOSOPHICAL & LOGICAL UNDERPINNINGS



MULTIDIMENSIONAL IMPACTS



UPSC/APSC CSE RELEVANCE

GS 2	GS 2, lim-relevant topics, assembl, ecc. and r-relevant topics
GS 4	GS 4, oith government contexts, protests, and lead topics
Essay	Topics, relevant topics, with :relevant topics

KEY TERMINOLOGY: UPSC ASPIRANT'S GLOSSARY

1 ON-SCREEN MARKING (OSM)



Digital Assessment, scanned physical scripts graded by examiners on screens. Relies on robust portals.

2 VERIFICATION vs. RE-EVALUATION



Verification: Checks Administrative Errors (totaling, missed pages, scanning).
Re-evaluation: Qualitative Re-grading by an Independent Expert (corrections in subjective answers).

3 SECTION 25(5), RTI ACT 2005



Information Commission's power to recommend systemic changes to public authorities to align with transparency mandates.

WAY FORWARD: THE SEVEN-DAY TRANSPARENCY FRAMEWORK



UNIVERSAL
DISCLOSURE
(Day 1)



VERIFICATION
PHASE
(Days 1-3)



FAST-TRACK
RE-EVALUATION
(Days 2-7)



PUBLISH STATISTICS
Anonymized ro and
restalized results to
build public trust

India added 52.5 mtpa regasification capacity in 2025: IGU World LNG Report

Santosh V. Perumal
CHENNAI

India added 52.5 million tonnes per annum (mtpa) of regasification capacity across eight terminals, as it surpassed Spain to become the fourth largest market for regasification capacity in 2025, according to the International Gas Union's (IGU) World LNG Report.

Rising demand for fertilizer, city gas and utilities as well as the government's push for enhanced share of liquefied natural gas (LNG) in the energy mix was seen helping the country.

Among operational LNG regasification terminals in India, Dahej LNG (17.5 mtpa) stands out as the only ultra-large facility and ranks as the sixth largest globally.

Large-scale category

The remaining seven terminals fall into the large-scale category, each with a regasification capacity of 5 mtpa.

In 2025, India commissioned two LNG regasification projects, including one new onshore terminal, Chhara LNG, with a regasification capacity of 5 mtpa, and one expansion project at the Dabhol LNG terminal through the completion of its breakwater infrastructure.

The project has effectively enhanced the terminal's operational efficiency and has increased its capacity to 5 mtpa from 2.9 mtpa. Previously idle during the monsoon season, the Dabhol LNG terminal now enables uninterrupted, year-round operations after commissioning of the breakwater.

India currently has four LNG projects under construction, including one new terminal and three ex-



Dahej LNG terminal ranks as the sixth largest globally.

pansion projects at existing facilities, including the expansion of India's largest terminal, Dahej LNG.

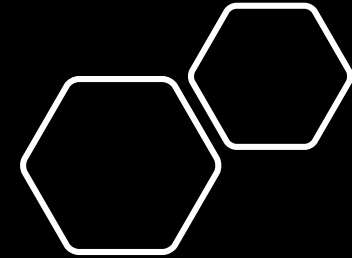
Once commissioned, these projects are expected to add a combined 11.3 mtpa of regasification capacity by 2028.

According to the International Energy Agency, India's natural gas consumption is forecast to increase by nearly 60% by 2030, driven by robust growth in city gas distribution, industrial demand, and power generation.

India's LNG regasification utilisation fell to about 47% in 2025, down from 58% in 2024, reflecting a combination of weaker LNG imports during the summer months and an increase in regasification capacity following recent infrastructure additions.

Asia led the global LNG regasification capacity additions in 2025, with all new capacity coming from China and India, contributing 15.1 mtpa and 7.1 mtpa, representing 24% and 11.3% of global additions, respectively.

Although the Asia Pacific remained the largest LNG-importing region, IGU found imports into Asia fell by 9.2 MT to 108.7 MT, driven mainly by lower intake in China and India.



- **Key Terms and Explanations**
 - **Regasification Capacity:** The process of warming Liquefied Natural Gas (LNG) from its cryogenic liquid state (stored at -162°C) back to a gaseous state at ambient temperature so it can be pumped into national pipeline grids. For example, when massive LNG tankers dock at ports like Dahej, the liquid fuel must pass through vaporizers before it can supply domestic urea plants or households.
 - **MTPA (Million Tonnes Per Annum):** The standard international volumetric metric used to measure the annual operational capacity or trade volume of liquefied gases. In energy planning, scaling up MTPA capacity directly correlates with a nation's ability to diversify its primary energy mix away from dirtier fossil fuels.
 - **Breakwater Infrastructure:** Solid coastal engineering structures—built from concrete blocks or heavy stone—projecting into the sea to absorb the hydrodynamic force of waves. A practical example is the infrastructure addition at the Dabhol terminal, which tames rough monsoon swells, transforming a historically seasonal terminal into an uninterrupted, year-round operational hub.
 - **Capacity Utilization Rate:** An economic metric representing the ratio of actual output produced by an infrastructure asset relative to its maximum potential output. If a country expands its technical regasification limits rapidly but experiences a drop to a 47% utilization rate, it highlights a structural friction where physical capacity temporarily outpaces immediate market consumption or import affordability.
 - **City Gas Distribution (CGD) Network:** The localized network of pipelines dedicated to supplying Compressed Natural Gas (CNG) for the transport sector and Piped Natural Gas (PNG) for domestic, commercial, and industrial consumers. This network serves as the crucial last-mile retail demand aggregator for the midstream gas infrastructure.
- **Main Arguments and Substantive Parts**
 - **The Expansion-Utilization Paradox**
 - **Unprecedented Infrastructural Leap:** Data from global energy assessments, including the International Gas Union (IGU) World LNG Report, reveals that India has achieved a milestone by reaching 52.5 MTPA of operational regasification capacity across eight major terminals. By surpassing nations like Spain, India has established itself as the fourth-largest market globally for regasification capacity, anchoring its energy transition in concrete midstream assets.
 - **The Midstream Friction Point:** A critical counter-narrative emerges through a noticeable dip in capacity utilization, which slid from 58% down to approximately 47%. This drop exposes a systemic mismatch: while physical import terminals are scaling up rapidly, actual volume intake has been constrained by high global spot prices and softer domestic buying during peak summer months, proving that capacity does not automatically guarantee consumption.
 - **Strategic Drivers and Nodes**
 - **Anchor Sectors Propelling Demand:** The expansion is fundamentally sustained by high-priority sectors including fertilizer manufacturing (urea production), power utilities, and expanding municipal City Gas Distribution networks. Medium-term forecasts indicate that India's natural gas consumption will grow by nearly 60% by 2030, reinforcing the state's vision of a gas-reliant economic architecture.
 - **Mega-Nodes and Operational Stabilization:** Mega-facilities like the Dahej LNG terminal (17.5 MTPA), which ranks as the sixth-largest facility globally, form the core of this network. Simultaneously, targeted engineering interventions—such as the commissioning of the 5 MTPA Chhara onshore terminal and the structural stabilization of the Dabhol terminal—demonstrate a clear transition from localized, weather-dependent operations to resilient, year-round maritime energy intake.

- **Historical Evolution of the Issue**
- **The Era of Administered Scarcity (Pre-1990s to 2000s)**
- **Domestic Allocation Paradigms:** Historically, India's natural gas sector was entirely dependent on domestic offshore fields like Mumbai High. Distribution was heavily centralized under the Administered Price Mechanism (APM), where limited supplies were stringently rationed out to strategic fertilizer and public power plants, leaving commercial sectors starved of gas options.
- **The Cryogenic Pivot (2004):** Recognizing that domestic production could not support rapid industrialization, India shifted toward the global market. The establishment of Petronet LNG and the subsequent commissioning of the nation's pioneering regasification terminal at Dahej in 2004 marked a structural transition from absolute domestic reliance to integrated global LNG trade.
- **Grid Integration and Market Re-alignment (2005–Present)**
- **Regulatory Institutionalization:** The passage of the PNGRB Act in 2006 created an independent regulatory landscape for downstream pipelines. This era faced developmental challenges, characterized by "stranded assets" where terminals like Kochi stood underutilized for years due to local delays in Right-of-Way (RoW) clearances for interstate transmission pipelines.
- **The Strategic Push For a Gas-Based Economy:** Over the past decade, policy shifted toward a unified national energy vision under the "One Nation, One Gas Grid" initiative. The state set a target to expand natural gas's share in the total energy mix from roughly 6% to 15%. This policy shift directly facilitated the infrastructural milestones seen today, positioning India alongside China as a primary driver of Asian regasification capacity.
- **Way Forward**
- **Accelerating Last-Mile Pipeline Connectivity:** To address the 47% underutilization challenge, the state must prioritize finishing delayed national pipeline links. Connecting high-capacity coastal hubs directly to landlocked industrial clusters will unlock suppressed demand and optimize capital efficiency across the network.
- **Fiscal Rationalization via GST Integration:** Natural gas remains excluded from the Goods and Services Tax (GST) framework, causing a cascading tax effect that artificially inflates costs for industrial users. Bringing natural gas under the unified GST structure would lower production costs, making it a more attractive option than more polluting alternative fuels.
- **Diversifying Portfolios with Long-Term Contracts:** To guard against global spot market price spikes that depress import volumes, Indian energy utilities should shift away from volatile spot purchases. Emphasizing long-term, formula-priced supply contracts provides cost predictability and stabilizes terminal utilization rates year-round.
- **Future-Proofing Infrastructure for Green Hydrogen:** New and existing regasification assets should be engineered to allow for future technical adaptations. Designing terminals and pipelines to handle blended green hydrogen or synthetic natural gas ensures these multi-billion dollar midstream investments remain useful as the energy landscape evolves.

UPSC CSE COMPREHENSIVE ANALYSIS: INDIA'S LNG REGASIFICATION INFRASTRUCTURE

GLOBAL STANDING & DATA

52.5 MTPA
CAPACITY ADDED (2025)



CAPACITY UTILIZATION & CHALLENGES



WEAKER LNG IMPORTS
(High global spot prices)

INCREASED PHYSICAL CAPACITY
(Structural Friction)

MULTI-DIMENSIONAL ANALYSIS

Economic

- Global Price Volatility
- GDP linkage
- Price volatility
- Cnchange

Political

- Energy Diplomacy
- Interstate pipelines
- Ereninew pipelines

Social

- Public Health
- Energy Equity
- Price raxage
- Gridgeeeconomics
- Energy Equity

Ethical/ International

- Climate Justice
- Bridge Fuel Ethics
- Bonvate Ritare
- Interstate Detimes
- Bridge Fuel Ethics

ACADEMIC BASE ZONE

UPSC CSE LINKAGES

GS I	GS II	GS III
- Energy Infra - Topic: Description & Econ: Show	- Economic Infraviation anot - Economic topic Descriptions	- Energy Energy-Capaits & Energy - Economic Descriptions

NCERT LINKAGES

Geography	Econ
Class X, XII Chapters: • Minerals & Energy • Infrastructure Chapter: Minerals & Energy Chapter: Infrastructure	Class XI Chapters: • Minerals & Energy

DAHEJ LNG TERMINAL (Highlight)

High-resolution Vignette

6th
LARGEST
GLOBALLY



STRATEGIC PROJECTS & OUTLOOK

- DABHOL**
(Year-round ops, 5 mtpa, breakwater)
- CHHARA**
(New onshore, 5 mtpa)
- FUTURE ADDITIONS**
(11.3 mtpa by 2028)

LOGICAL BASE

(Bridge Fuel)



AI boom drives intangible investment to record level, says UN

Agence France-Presse
GENEVA

The Artificial Intelligence (AI) boom has helped drive investments in intangible assets such as software, data and research to a record high in 2025, the United Nations' patent and innovation agency said Wednesday.

These investments, which encompass research and development, software and data, brands, design and organisational know-how, represent a large and growing share of the global economy, the World Intellectual Property Organization said.

Across the 29 economies studied, which account for 57% of global GDP, intangible investment "reached an all-time

high" of over \$10 trillion in 2025, according to WIPO.

China left out

The study included the United States, EU nations, Britain, Japan, India as well as other countries. However, China, the world's second-largest economy, was not among the nations covered.

The record figure was detailed in the World Intangible Investment Highlights 2026, which WIPO co-published with the Rome-headquartered Luiss Business School.

Intangibles surge

Since 2008, intangible investment has grown by 3.5% annually in real terms; way ahead of tangible investments, which saw annual growth of just



Two to tango: A visitor interacts with a robot dog at the AI for Good Global Summit in Geneva. AFP

0.98% over the same period, the study said.

"These figures point to a durable structural shift in

the composition of investment, with intangible assets playing a growing role in value creation," WIPO

said.

The United States accounts for the largest share of intangible investment by

far, reaching nearly \$5 trillion in 2025. This was around six times the level in second-placed Japan, with Germany third.

Sweden retains its position as the most intangible-intensive economy, reaching 17.4% of GDP in 2025, followed by the United States at 15.6% and France at 15.2%.

Meanwhile India, Japan and the Philippines recorded the fastest growth, said WIPO.

More resilience

The report said intangible investments proved more resilient than tangible ones in the face of high interest rates, trade tensions and the economic slowdown seen in recent years.

Between 2020 and 2025, they grew by 5.5%

Sweden retains its position as the most intangible-intensive economy, reaching 17.4% of GDP in 2025

annually in real terms, compared to 3.2% for tangible investments.

The report said artificial intelligence was playing a major role in the transformation.

While it initially drives physical investments in data centres, semiconductors and energy infrastructure, WIPO estimates that its lasting impact stems primarily from investments in software, data, research and development, and corporate reorganisation.

Investment in software and databases recorded

the highest aggregate real growth rate across all intangible asset categories between 2013 and 2023, at 7.3% annually, ahead of organisational capital (4.9%) and brands (4.4%).

The report also highlights the economic importance of brands, with investments across the 29 economies reaching \$1.4 trillion in 2025.

The U.S. leads global brand investment by a wide margin, exceeding \$566 billion in 2025 – more than four times the figure for Britain, in second place on \$137 billion, followed by Japan on \$112 billion. Established in 1967, Geneva-based WIPO helps creators and entrepreneurs protect their intellectual property across borders.

- **Key Terms and Explanations**

- **Intangible Assets:** Unlike physical assets such as factories, land, or machinery, intangible assets lack physical substance but hold immense, long-term economic value. They encompass software, proprietary algorithms, massive data ecosystems, scientific research and development (R&D), brand reputations, and specialized organizational structures.
- **World Intellectual Property Organization (WIPO):** Established in 1967 and headquartered in Geneva, WIPO is a specialized agency of the United Nations. Its core mandate is to promote the protection of intellectual property (IP) across international borders, ensuring that creators, innovators, and entrepreneurs can safeguard their inventions, designs, and brand identities in a globalized market.
- **Organisational Capital:** This refers to the non-physical internal assets of a firm, including its unique business models, institutional knowledge, streamlined supply chain mechanisms, corporate culture, and workflow designs. It is the structural "know-how" that allows a company to utilize its physical and human resources more efficiently than its competitors.
- **Structural Economic Shift:** A fundamental rearrangement in the way an economy generates value and growth over a sustained period. The transition from agricultural economies to industrial manufacturing was a classic structural shift; today, we are witnessing an equally massive shift from a tangible, capital-heavy economy to a knowledge-driven, asset-light digital economy.
- **Real Terms Growth:** An economic metric that measures the expansion of value or output while adjusting for the distorting effects of inflation. This ensures that the tracked growth represents an actual increase in volume, capacity, and true economic clout, rather than just an artificial inflation of prices.

- **Main Arguments and Substantive Parts**

- The global investment landscape has reached a historical tipping point, demonstrating a decisive decoupling of value creation from the physical world.
- **The Surge of the Invisible Economy**
 - The core thesis of recent global economic assessments reveals that investments in intangible assets—such as software, data architectures, and brand equity—surpassed a staggering \$10 trillion globally by 2025. This explosion is not a temporary fluctuation; it represents a durable structural transformation. For over a decade, intangible investments have expanded at a real annual rate of 3.5%, leaving traditional tangible investments (growing at a meager 0.98%) far behind. In the post-2020 era, this gap widened even further, with intangibles surging by 5.5% annually.
- **The Double-Phased AI Catalyst**
 - Artificial Intelligence functions as the primary engine behind this structural shift. Analysts observe that the AI boom behaves like a **two-stage rocket**:
 - **The Initial Tangible Phase:** The early wave of AI deployment triggers massive capital expenditure in physical infrastructure, including advanced semiconductor fabrication units, hyperscale data centers, and heavy energy grids.
 - **The Enduring Intangible Phase:** The long-term, compounding value of AI ultimately crystallizes in the intangible realm. The real economic moats are built on proprietary machine learning models, meticulously cleaned databases, integrated software ecosystems, and comprehensive corporate reorganizations designed to deploy these technologies.

- **Historical Evolution of the Issue**
- **The Era of Tangible Dominance (Pre-Independence to 1980s)**
 - During the pre-independence and early post-independence periods, India's economic philosophy was deeply anchored in physical, tangible assets. Influenced by the Mahalanobis model and the early Five-Year Plans, the national focus was on building the "temples of modern India"—heavy manufacturing plants, massive dams, steel mills, and physical transport infrastructure. Value was calculated in terms of metric tons of steel produced or hectares of land irrigated. Intellectual property was nascent, and corporate value was strictly tied to physical balance sheets.
- **The TRIPS Transition and IT Revolution (1990s to 2000s)**
 - The dual forces of economic liberalization in 1991 and the signing of the WTO's TRIPS (Trade-Related Aspects of Intellectual Property Rights) agreement in 1995 fundamentally altered the landscape. This era saw the explosive growth of India's Information Technology (IT) and Business Process Management (BPM) sectors. For the first time, Indian enterprises began generating massive economic value purely out of lines of code, software services, and operational know-how, shifting the national imagination toward a knowledge-based economy.
- **The Post-Financial Crisis Decoupling (2008 to 2019)**
 - Following the 2008 Global Financial Crisis, global capital markets realized that traditional industrial investments yielded diminishing returns. This sparked the rise of the platform economy, characterized by cloud computing, mobile applications, and digital marketplaces. Between 2008 and 2019, intangible investments grew at more than three times the rate of physical investments globally, turning data into the new economic currency.
- **The Hyper-Acceleration Era (2020 to 2026)**
 - The onset of the COVID-19 pandemic in 2020 forced a compressed timeline for digital migration, driving real intangible investment growth to 5.5% annually. By 2025 and 2026, the commercial maturity of generative AI systems solidified this transformation. Economies like India have shifted focus from being mere backend software service providers to creators of localized AI models, digital public goods (like UPI and ONDC), and high-value proprietary databases, cementing intangibles as the primary driver of national competitiveness.
- **Way Forward**
- **Comprehensive Reform of the National IPR Framework**
 - India must update its intellectual property regimes to handle an AI-driven economic reality. The patenting process needs to be streamlined, and clear legal guidelines must be drawn regarding data ownership, algorithmic copyrighting, and text-and-data mining exceptions. This will incentivize domestic startups to invest heavily in deep-tech research without fear of immediate IP piracy.
- **Revolutionizing Financial Accounting and Bank Lending**
 - The Reserve Bank of India (RBI), in coordination with accounting bodies, should spearhead the creation of robust, standardized methodologies for valuing intangible assets.
 - **Policy Directive:** Commercial banks must be empowered to move away from rigid physical-collateral mandates. They need frameworks to extend credit backed by verified patents, secured software contracts, and high-value corporate data assets, unlocking credit flow for knowledge enterprises.
- **Synchronized Execution of National Digital Missions**
 - The government must aggressively synthesize its existing schemes, such as the **IndiaAI Mission**, the **National Quantum Mission**, and the **Digital India** initiative.
 - Even though intangible assets are invisible, they require a physical spine. India must build green, hyperscale data centers, expand domestic semiconductor manufacturing under the modified PLI schemes, and ensure cheap, uninterrupted clean power to fuel the immense computational needs of an AI economy.
- **Democratizing Intangible Asset Creation via DPI**
 - India can uniquely leverage its pioneer status in **Digital Public Infrastructure (DPI)**. By building open, public-access data registries, unified geospatial platforms, and localized language translation datasets (such as Bhashini), the state can provide the raw materials (clean data) to millions of small entrepreneurs. This prevents a handful of global big-tech monopolies from capturing the country's entire intangible ecosystem.

1 KEY TERMS & DEFINITIONS



Intangible Assets
(Data, Software, R&D)



WIPO
(UN Agency for IP Protection)



Organisational Capital
(Proprietary Processes)

2 THE AI CATALYST: A TWO-PHASED INVESTMENT MODEL (DIAGRAM)



Phase 1: Initial Tangible
Data Centers,
Semiconductors

Traditional Value
(Scarcity, Rivals)



Phase 2: Enduring Intangible
Algorithm Moats,
Databases

vs.

Knowledge Value
(Abundance, Non-Rivalry)



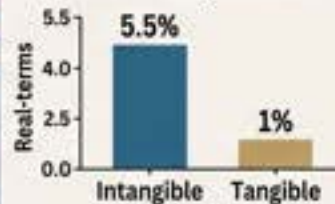
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LIVE ABOVE THE BEST

UPSC COMPREHENSIVE ANALYSIS: GLOBAL ECONOMIC TRANSFORMATION - THE INTANGIBLE REVOLUTION & THE AI BOOM.

3 GLOBAL FINDINGS (UN-WIPO DATA)



Example 'Intangible' vs 'Tangible'
real-terms growth rate



- Record investments high, resilience during global headwinds,
- fastest growth: growth: India, Japan, Philippines

4 MULTIDIMENSIONAL ANALYSIS (GS SYLLABUS)



SOCIAL
Skills Divide,
Cognitive Elite



POLITICAL
Tech
Sovereignty

ECONOMIC
Capital-Light
scaling

ECONOMIC
Capital-Light
scaling

LEGAL
IPR reform
for AI

ETHICAL
INTERNATIONAL
Invisible Trade
flows

ETHICAL
Data extraction
Bias

5 HISTORICAL EVOLUTION: PRE-INDEPENDENCE TO AI ERA

Tangible Dominance

IT Revolution

Decoupling

AI Acceleration

Plan Era

TRIPS 1995

Post-2008

2020+

WAY FORWARD: A ROADMAP FOR INDIA

- ✓ National AI Mission Synchronization
- ✓ Unified Data Public Infrastructure (DPI)
- ✓ Patenting for deep-tech
- ✓ Skills Development





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UPSC CSE CLASSES - PRELIMS + MAINS + INTERVIEW GUIDANCE

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

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