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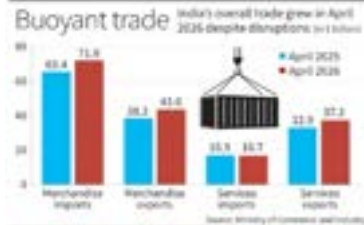
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## India's goods exports surge 14% in April to \$43.6 billion: Centre



**T.C.A. Sharad Raghavan**  
NEW DELHI

Despite significant headwinds to trade due to the West Asia crisis, the value of India's merchandise exports grew nearly 14% in April 2026 to \$43.6 billion, official data released on Friday showed.

This performance was due in part to the overall rise in prices as well as to the efforts by Indian exporters to diversify their markets, Commerce Secretary Rajesh Agrawal said on Friday. The overall trade deficit, counting merchandise and services, fell 20% in April 2026 to \$7.8 billion.

"The positive growth in value can have some contribution from prices because prices of many things are going up," Mr. Agrawal said at a press briefing. "It is also to the credit of our industry, which has been able to maintain the supply chains and look at new markets and diversify their exports."

### Diversified markets

He added that growth in exports in April has come from multiple countries where such high growth rates have not been seen in the past, such as Tanzania.

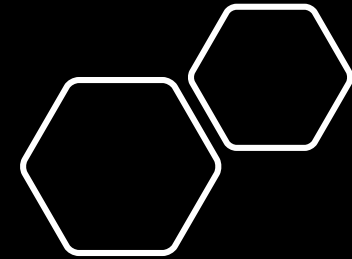
Merchandise exports to Tanzania grew 158% in

April 2026 to \$8.2 billion, while exports to several other historically smaller export destinations countries such as Sri Lanka (17%), Singapore (17%), Bangladesh (14%), and Vietnam (5%), also saw relatively strong growth.

The West Asia crisis did have an impact on India's exports to the region, however. "Exports to West Asia dived in March and declined in April as well, but now the decline is only 28%," Mr. Agrawal noted. "Our export to West Asia has been \$4.16 billion as compared to \$5.78 billion in April 2025." "On imports from West Asia, we see there has been a significant fall in merchandise imports, which has reduced from \$15.3 billion in April last year to \$10.5 billion, down 31.6%, for reasons that are well known," he added.

The data shows that exports to the UAE, one of India's biggest export destinations, fell 36.4% in April 2026 to about \$2.2 billion. Notably, India's exports to the U.S. also grew during this period, albeit by a relatively smaller 1.1% to about \$8.5 billion in April 2026.

On the services front, India's exports in April 2026 grew 13.4% to \$27.2 billion while imports fell 1.5% to \$14.7 billion.



- **Key Terms and Explanations**

- **Merchandise Trade vs. Services Trade**

- International trade is broadly split into two primary segments based on the tangibility of the economic output.
- **Merchandise Trade:** This refers strictly to the import and export of physical, tangible goods (often called "visible trade"). Examples include crude oil, electronic machinery, agricultural commodities, pharmaceuticals, and gems and jewelry.
- **Services Trade:** This encompasses intangible transactions or economic activities where value is exchanged without a physical product changing hands (often called "invisible trade"). Prominent examples include Information Technology (IT) and Business Process Management (BPM) services, tourism, transport, financial consulting, and intellectual property licensing.

- **Trade Balance and Trade Deficit**

- The net economic outcome of international trade is measured by subtracting total imports from total exports over a specific period.
- **Trade Balance:** The net balance can apply specifically to goods (Merchandise Trade Balance) or can combine both goods and services (Overall Trade Balance).
- **Trade Deficit:** This occurs when a nation's total expenditure on foreign imports exceeds its total earnings from foreign exports. The formula is expressed as:
  - Trade Balance = Total Exports- Total Imports
  - When this value is negative, it represents a deficit. For example, if a country imports merchandise worth \$71.9 billion but exports only \$43.6 billion, its merchandise trade deficit stands at \$28.3 billion.

- **Export Market Diversification**

- This is a strategic trade policy aimed at reducing economic vulnerability by expanding commercial footprint across multiple destination countries and regions.
- **Mechanics:** Rather than relying heavily on a few traditional economic partners (such as the United States or the European Union), an economy consciously builds trade relationships with emerging markets in regions like Sub-Saharan Africa, Southeast Asia, or Latin America.
- **Example:** If structural issues or geopolitical tensions suppress demand in a major market like Western Asia, an exporter can offset these losses by increasing sales volumes to expanding economies such as Tanzania, Sri Lanka, or Vietnam. This mitigates systemic shocks and stabilizes foreign exchange earnings.

- **Main Arguments and Substantive Parts**

- The structural core of the data indicates a resilient trade performance, driven by a strong expansion in merchandise exports alongside steady growth in services. This performance occurred despite contractionary trends in traditional geopolitical corridors.

- **Resilient Merchandise and Services Export Growth**

- The central takeaway from the latest trade data is the dual expansion across both tangible and intangible export sectors. Merchandise exports reached \$43.6 billion, driven by a mix of rising global commodity prices and proactive supply chain adaptations by domestic industries. Simultaneously, services exports continued their upward trajectory to reach \$37.2 billion. Because services imports simultaneously registered a marginal decline, the robust surplus in services trade acted as a critical stabilizer, cushioning the wider structural deficit intrinsic to merchandise trade.

- **Significant Contraction in Overall Trade Deficit**

- A major positive takeaway is the 30% contraction in the overall trade deficit, which dropped to \$7.8 billion. This narrowing was achieved through two reinforcing factors: the expansion of aggregate export values and a sharp decline in imports from regions experiencing geopolitical volatility. This contraction reduces the immediate pressure on the Current Account Deficit (CAD), strengthening external sector stability and supporting domestic currency valuation against global headwinds.

- **Geopolitical Disruptions and Regional Trade Shocks**

- The data highlights the direct impact of geopolitical instability on established trade channels. Ongoing tensions in Western Asia led to a significant drop in bilateral trade volumes. Exports to Western Asia declined by 28% to \$4.16 billion, while merchandise imports from the region dropped by over 31% to \$10.5 billion. Notably, exports to a major regional hub like the UAE fell by 36.4% to \$2.2 billion. This demonstrates how regional conflict, transport disruptions, and security risks in maritime corridors can quickly impact bilateral trade values.

- **Strategic Market Diversification as a Counter-Weight**

- To counter declines in volatile regions, domestic exporters successfully leveraged alternative markets. This shift points to a structural transition toward market diversification. High growth rates were recorded in non-traditional destinations, with exports to Tanzania surging by 158% to \$1.2 billion. Strong expansions were also recorded in South Asia and Southeast Asia, including Sri Lanka (215%), Singapore (179%), Bangladesh (64%), and Vietnam (53%). This geographic reorientation helped sustain aggregate export momentum even as traditional trade hubs faced pressure.

## • **Historical Evolution of the Issue**

• India's foreign trade paradigm has evolved through distinct phases, transforming from a highly regulated, inward-looking system into an open, globally integrated market economy.

• 1947–1991: Inward-Looking —► 1991: LPG Reforms —► 2010s: Global Integration —► Present: Strategic Autonomy

• (Import Substitution)      (Tariff Reductions)      (FTP & FTAs signed)      (Atmanirbhar Bharat)

### • **The Era of Inward-Looking Autarky (1947–1991)**

• Following independence, policymakers adopted an inward-looking economic strategy centered on import substitution and self-reliance. Guided by the Industrial Policy Resolutions and managed through the "License-Permit Raj," foreign trade was strictly regulated.

• **Policy Measures:** High tariff barriers, stringent import quotas, and tight foreign exchange controls were implemented to protect infant domestic industries from global competition.

• **Consequences:** While this approach established a basic domestic industrial base, it also led to inefficiencies, a lack of technological modernization, and uncompetitive export sectors. This prolonged focus on import substitution ultimately culminated in the Balance of Payments (BoP) crisis of 1991, when foreign exchange reserves fell to levels barely sufficient to finance two weeks of essential imports.

### • **Liberalization, Privatization, and Globalization (1991–2010s)**

• The 1991 BoP crisis forced a major structural shift. Under the structural adjustment programs backed by the IMF and World Bank, India implemented the landmark LPG reforms.

• **Policy Measures:** The government dismantled the import licensing system, sharply reduced peak customs duties, devalued the Rupee to market-determined rates, and opened key sectors to Foreign Direct Investment (FDI).

• **Consequences:** The creation of Special Economic Zones (SEZs) and the rise of the software technology services boom transformed the country into a global IT export hub. Joining the World Trade Organization (WTO) in 1995 further integrated the economy into global value chains, causing trade volumes to expand rapidly over the next two decades.

### • **Contemporary Focus on Strategic Autonomy and Export-Led Growth (2010s–Present)**

• In recent years, trade policy has shifted toward balancing global integration with domestic industrial capacity. The current strategy focuses on high-value manufacturing, diversified supply chains, and bilateral economic partnerships.

• **Policy Measures:** Key initiatives include the Foreign Trade Policy (FTP) 2023, which targets \$2 trillion in total exports by 2030, alongside the *Atmanirbhar Bharat* (Self-Reliant India) program and Production Linked Incentive (PLI) schemes.

• **Consequences:** Modern trade policy emphasizes signing high-standard, bilateral Free Trade Agreements (FTAs)—such as those concluded with the UAE and Australia—while pursuing aggressive market diversification to build resilience against rising global protectionism and geopolitical fragmentation.



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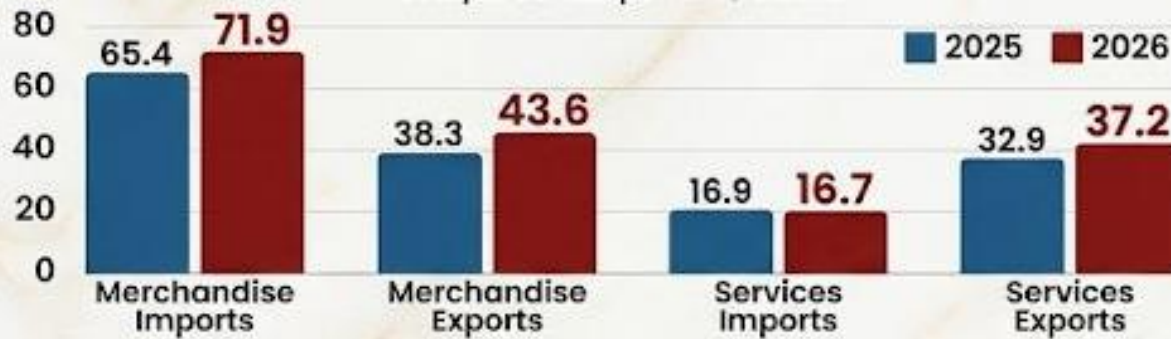
# INDIA'S TRADE PERFORMANCE: RESILIENCE AMIDST DISRUPTIONS (APRIL 2026)

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## OVERALL TRADE: APRIL 2025 vs. APRIL 2026 (IN \$ BILLION)

Compared component portions



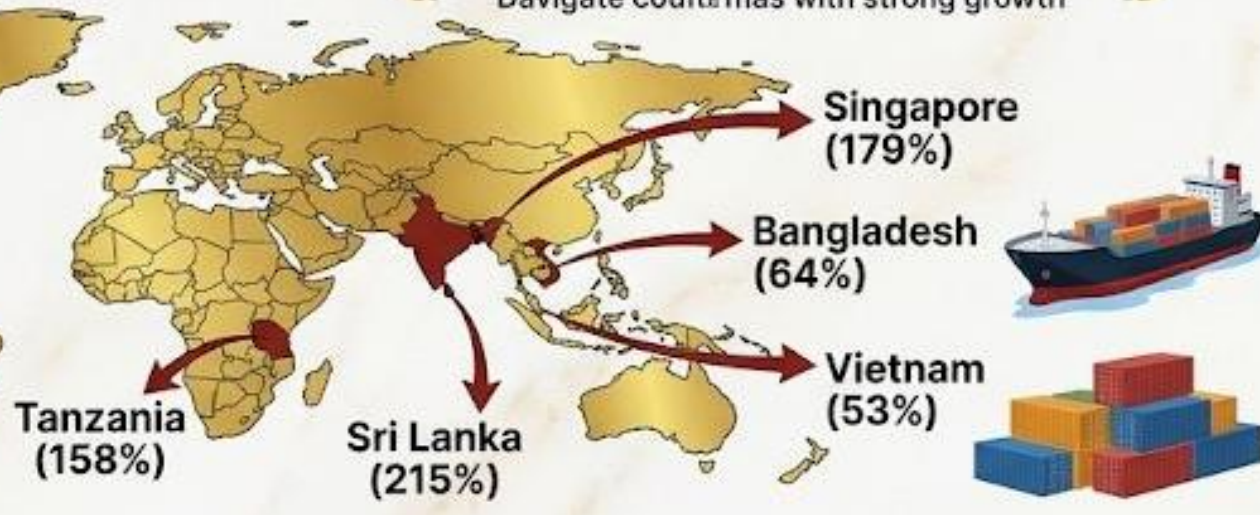
## OVERALL TRADE DEFICIT:

DOWN 30% to \$7.8B



## DIVERSIFIED EXPORT MARKETS

Navigate currents with strong growth



## IMPACT OF WEST ASIA CRISIS

Exports to West Asia with significant impact

Exports to region:  
**DOWN 28%**



# India's first satellite-tagged Ganges soft-shell turtle released in Kaziranga National Park

**The Hindu Bureau**  
GUWAHATI

India's first satellite-tagged Ganges soft-shell turtle, an endangered species, was released in the 1,302 sq. km Kaziranga National Park and Tiger Reserve in Assam on Friday.

The release of the freshwater reptile coincided with the observation of Endangered Species Day.

## Himanta hails event

Assam Chief Minister Himanta Biswa Sarma termed the event a major step for wildlife conservation and a proud moment for the State, "as we continue to protect every species that calls our forests home".

Assam is one of the world's top priority areas in freshwater turtle conservation. Of the eight soft-



The release of the freshwater reptile coincided with the observation of Endangered Species Day. SPECIAL ARRANGEMENT

shell turtles reported from India, five are known from the Kaziranga landscape.

The Ganges soft-shell turtle (*Nilssonia gangetica*), a Schedule I animal under the Wildlife Protection Act of 1972, can be differentiated from other riverine turtles by its distinct arrowhead-shaped markings on the top of the head. In

India, the species inhabits large rivers, lakes, and reservoirs.

Recorded as endangered on the International Union for Conservation of Nature (IUCN) Red List, this large turtle is a major river predator and helps clean up the system by feeding on dead and decaying animal matter.

"Understanding seasonal movement patterns, home range, and identifying critical habits like nesting and breeding will help in active management of soft-shell in the Brahmaputra river basin," Abhijit Das, a senior scientist at the Wildlife Institute of India, said.

He led a team under the Ministry of Environment, Forest and Climate Change in the satellite-tagging exercise in collaboration with the Kaziranga National Park authorities and the Assam Forest Department. The National Geographic Society funded the project.

Forest officials said a healthy adult turtle was captured, fitted with the transmitter under veterinary supervision, and released back into its natural habitat along the northern bank of the Brahmaputra.

- **Key Terms and Explanations**

- **Ganges Soft-shell Turtle (*Nilssonia gangetica*)**

- This is a prominent freshwater turtle species characterized by its soft, leathery carapace rather than a hard, bony shell. It is easily distinguished by its distinctive arrowhead-shaped markings on the top of its head. As an apex riverine predator and scavenger, it plays a vital ecological role by consuming dead and decaying animal matter, effectively acting as a natural purifier of river ecosystems.

- **Satellite-Tagging**

- A wildlife monitoring technique where a compact electronic transmitter is securely attached to an animal. This device transmits real-time location data via orbiting satellites to researchers. It tracks fine-scale seasonal movement patterns, home range sizes, and habitat preferences without disrupting the animal's natural behavior.

- **Schedule I Species**

- The highest level of legal protection afforded to wildlife under India's Wildlife (Protection) Act, 1972. Offences involving species listed under this schedule attract the most stringent penal provisions and mandatory minimum punishments, reflecting their critical conservation status.

- **IUCN Red List (Endangered)**

- The International Union for Conservation of Nature (IUCN) classifies this species as **Endangered**. This designation signifies that the species faces a very high risk of extinction in the wild in the near future due to rapid population declines, habitat degradation, or heavy exploitation.

- **Kaziranga National Park and Tiger Reserve**

- A UNESCO World Heritage Site located in Assam along the floodplains of the Brahmaputra River. While internationally renowned for housing the world's largest population of the great Indian one-horned rhinoceros, its diverse wetland complexes and river networks make it an equally vital sanctuary for freshwater megafauna, including rare riverine turtles.

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- **Main Arguments and Substantive Parts**

- **Core Thesis**

- The integration of satellite telemetry into freshwater turtle conservation marks a shift from passive habitat protection to active, data-driven ecological management. By tracking India's first satellite-tagged Ganges soft-shell turtle, conservationists aim to uncover essential behavioral and spatial data necessary to safeguard endangered riverine species across the highly dynamic Brahmaputra river basin.

- [Satellite Tracking Data] —> Identifies Nesting/Breeding Sites —> Targeted Localized Protection

- **Key Points and Supporting Evidence**

- **Data-Driven Habitat Conservation:** Traditional management often relies on generalized assumptions about wildlife movement. Telemetry provides precise data on nesting sites, breeding grounds, and seasonal migrations, allowing forest authorities to implement targeted, localized protection measures.

- **Kaziranga as a Turtle Diversity Hotspot:** Of the eight soft-shell turtle species recorded in India, five reside within the Kaziranga landscape. This makes the park a crucial laboratory for testing multi-species freshwater conservation strategies.

- **Collaborative Institutional Action:** The initiative highlights the importance of inter-agency cooperation. Bringing together state bodies (Assam Forest Department), national research entities (Wildlife Institute of India), and international funding agencies (National Geographic Society) creates a robust framework for long-term conservation projects.

- **Potential Counter-Perspectives**

- While the technological benefits are clear, some conservationists note that resource-intensive technological interventions should not overshadow basic, boots-on-the-ground enforcement. High-tech monitoring is most effective when paired with continuous anti-poaching patrols and community-led conservation along river banks outside protected zones.



- **Historical Evolution of the Issue**

- **Pre-Independence Era (Exploitation and Neglect)**

- During the colonial period, freshwater turtles were viewed primarily as a common-pool resource. They faced widespread harvesting for meat, shells, and oil across the Indo-Gangetic and Brahmaputra plains. Early conservation laws focused almost exclusively on terrestrial game animals and commercially valuable timber, leaving riverine ecosystems largely unmonitored.

- **Post-Independence to the 1970s (The Legislative Foundation)**

- The post-independence era witnessed rapid agricultural expansion, river damming, and rising pollution, which severely fragmented turtle habitats. This ecological decline led to the enactment of the **Wildlife (Protection) Act in 1972**. Placing vulnerable freshwater turtles under Schedule I provided them with the same high-level legal protection as iconic species like the Bengal tiger and Indian rhinoceros.

- **Late 20th Century (The Shift to River Conservation)**

- The launch of the Ganga Action Plan (GAP) in 1985 marked a growing recognition of turtles as ecological indicators. Hundreds of freshwater turtles were bred in captivity and released into the Ganga to consume half-burnt human remains and organic waste, highlighting their role in river purification. However, these programs often suffered from a lack of scientific tracking and systematic post-release monitoring.

- **21st Century to Present (The Era of Telemetry and Technology)**

- Modern conservation has shifted from simple captive-rearing to advanced telemetry and spatial ecology. The introduction of satellite tagging for riverine turtles reflects a broader trend of using real-time data to guide landscape-level conservation. This approach recognizes that rivers are open, dynamic corridors that cannot be protected by static terrestrial boundaries alone.

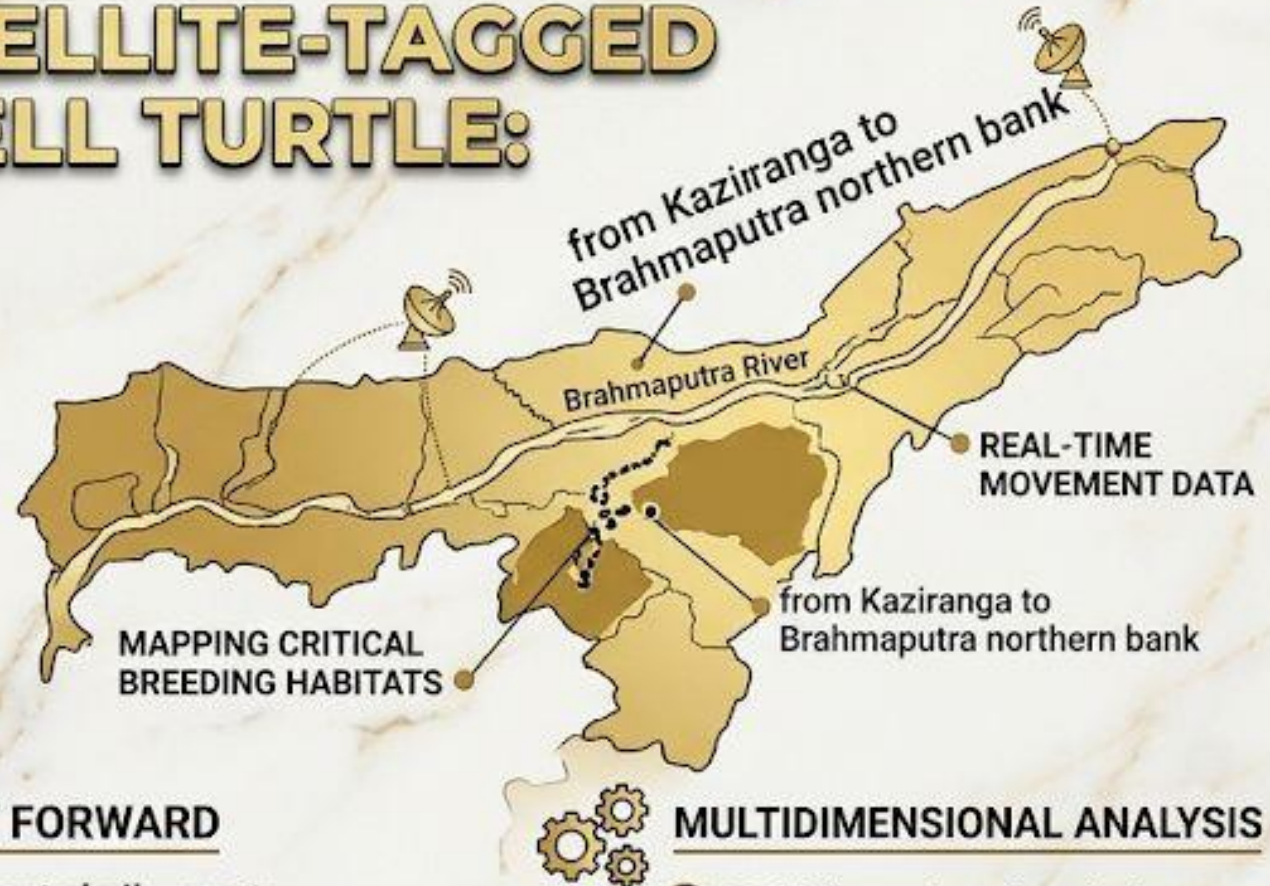


# INDIA'S FIRST SATELLITE-TAGGED GANGES SOFT-SHELL TURTLE: A CASE STUDY

Ganges Soft-shell Turtle (*Nilssonina gangetica*)



IUCN: Endangered  
WPA 1972: Schedule I



## UPSC RELEVANCE

GS Paper III Links: Conservation, Environment

- Role as Scavenger & River Purifier
- Basulitt sevation of asenvptions
- Multittimensional analysis



## WAY FORWARD

- 1 Himanta hails event: Role as Scavenger & River Purifier
- 2 Ganges soft-shell Turtle in Kaziranga *gangetica*



## MULTIDIMENSIONAL ANALYSIS

- 1 Multidimensional analysis to wildlife rassange
- 2 Real-time movement tourhies from nationa iterutus

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# State's duty is to ensure living wages for workers, not label them as 'terrorists', says SC

**Krishnadas Rajagopal**

NEW DELHI

The Uttar Pradesh government should not think of those who protested for higher wages in Noida on April 13 as "terrorists", the Supreme Court said on Friday, reminding the State of its obligation to provide a "living wage" to workers, in accordance with the Constitution's Directive Principles of State Policy. "They were asking for higher wages... Don't think they are terrorists," Justice B.V. Nagarathna, heading a two-person Bench including Justice Ujjal Bhuyan, told the Uttar Pradesh counsel.

Appearing for the petitioners – who are family members of protesters detained and jailed by the U.P. police under the National Security Act – senior advocate Colin Gonsalves and advocate Shahrukh



Alam said the authorities have registered multiple FIRs against the protesters without any preliminary enquiry. Ms. Alam said the only tag the authorities could find against the detainees were "left-wing sympathisers".

## **Directive Principles**

"Is it not that the Directive Principles of State Policy require the State to ensure that living wages are paid to workers?" Justice Bhuyan asked. Ms. Alam

pointed to Article 43 of the Constitution which mandates that the State "shall endeavour", through law or economic organisation or any other legitimate way, to secure to all workers a "living wage, conditions of work ensuring a decent standard of life and full enjoyment of leisure and social and cultural opportunities". Instead of fulfilling its obligations, the advocate noted, the State has detained them as "agent provocateurs" of the protests in Noida.

The Bench directed the State of Uttar Pradesh to produce the two young men, said to be detained in Kasna jail, on May 18 in the Court. The Court also stopped them from being moved out of judicial custody into police remand. The brothers of one of the detainees had alleged that the detainees had been tortured in police custody.

- **Key Terms and Explanations**

- **Living Wage:** Distinct from a minimum wage (which covers bare survival), a living wage is a broader concept. It ensures a worker can secure food, shelter, clothing, healthcare, education, and a basic level of social security and leisure for their family. It represents a level of income that guarantees a decent standard of life under human dignity.
- **Directive Principles of State Policy (DPSPs):** Contained in Part IV of the Indian Constitution (Articles 36–51), these are non-justiciable guidelines meant to steer the State in framing laws and policies. They envision a welfare state by aiming for social and economic democracy.
- **Article 43 of the Constitution:** This directive explicitly mandates that the State shall endeavor to secure, by suitable legislation or economic organization, a "living wage" and conditions of work ensuring a decent standard of life and full enjoyment of leisure and social-cultural opportunities for all workers.
- **National Security Act (NSA), 1980:** A stringent preventive detention law that allows central or state governments to detain a person to prevent them from acting in any manner prejudicial to national security, public order, or the maintenance of supplies and services essential to the community.
- **Preventive Detention:** The detention of a person without a formal trial or conviction by a court, executed purely on the executive's apprehension that the person might commit a crime or disrupt public order in the future.
- **First Information Report (FIR):** A formal document prepared by police organizations when they receive information about the commission of a cognizable offense. It sets the criminal justice machinery into motion.
- **Judicial Custody vs. Police Remand:** Judicial custody means the accused is under the safekeeping of the relevant magistrate and housed in a jail. Police remand means the accused is in the physical custody of the police for active interrogation.
- **Agent Provocateur:** A person employed by the state or an entity to encourage or entice others to commit illegal acts, thereby exposing them to punishment or discrediting their movement.

- **Main Arguments and Substantive Parts**

- The core discourse revolves around the limits of state power when dealing with labor dissent and the constitutional obligations of a welfare state.

- **The Right to Protest vs. National Security Labels**

- The central thesis emphasizes that citizens demanding better economic conditions cannot be arbitrarily equated with national security threats. Labeling individuals who agitate for higher wages as "terrorists" or "left-wing sympathizers" is a disproportionate use of state rhetoric that distorts the nature of peaceful labor disputes.

- **Constitutional Obligation of the Welfare State**

- The primary duty of the governance apparatus is to actively advance the economic well-being of the working class. Invoking Article 43, the judiciary emphasizes that securing a living wage is a constitutional promise. When the state shifts its role from an enabler of economic justice to a prosecutor of economic demands, it deviates from its welfare mandate.

- **Procedural Flaws and Executive High-Handedness**

- A critical point of concern is the hasty invocation of stringent laws, like the National Security Act, without proper preliminary inquiries or robust evidentiary backing. Registering serious criminal cases against workers for simple economic demonstrations reflects institutional overreach, bypasses standard criminal procedure, and raises major human rights concerns regarding custodial torture and arbitrary detention.

- **Historical Evolution of the Issue**

- The tension between state control, national security, and labor rights has evolved through distinct phases in modern Indian history.

- [Pre-Independence] Trade Unions Act (1926) & Defense of India Rules

- |

- [Post-Independence] Adoption of Constitution (Part III vs Part IV)

- |

- [1970s - 1980s] Internal Security Laws (MISA) & Enactment of NSA (1980)

- |

- [Liberalization Era] Shift toward market flexibility vs Labor protections

- |

- [Modern Era] Codification of Labor Laws & Use of anti-terror laws in civil dissent

- **Pre-Independence Era**

- Under British colonial rule, labor agitations were largely viewed through the lens of law and order. While the Trade Unions Act of 1926 provided limited legal recognition to unions, the colonial administration frequently used the Defense of India Rules and sedition laws to suppress strikes that threatened imperial economic interests or fueled the nationalist movement.

- **Post-Independence and the Constitutional Era (1950s)**

- With the adoption of the Constitution in 1950, India committed to becoming a socialist welfare state. A deliberate balance was struck between Fundamental Rights (Part III) and Directive Principles (Part IV). While workers gained the right to form associations under Article 19(1)(c), the state retained powers for preventive detention under Article 22 to safeguard a nascent democracy.

- **The Era of Stringent Laws and Industrial Unrest (1970s–1980s)**

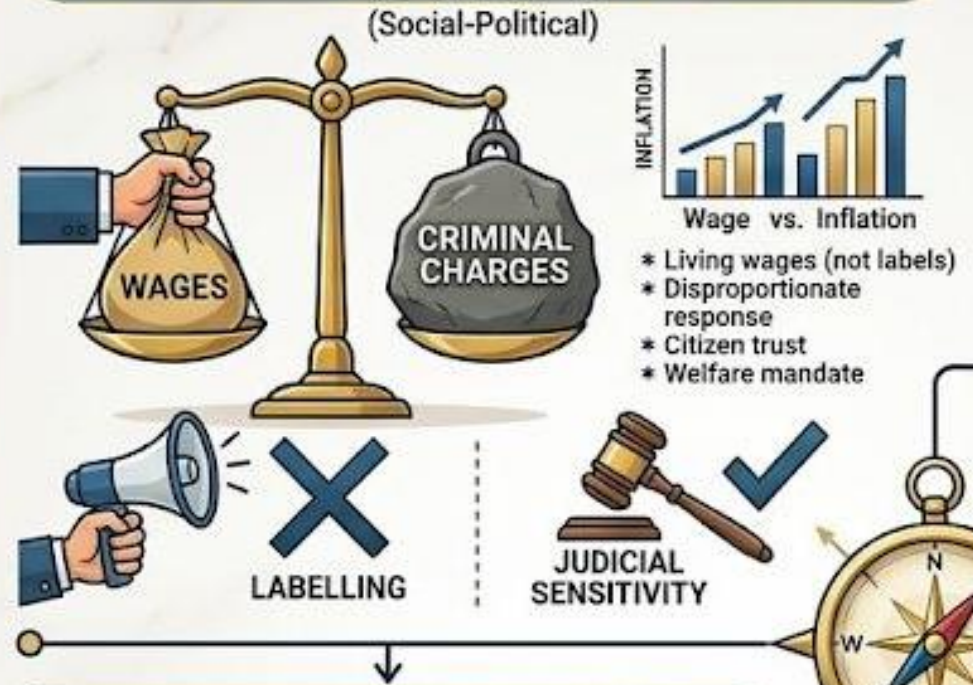
- The 1970s witnessed widespread industrial unrest, culminating in the historic 1974 Railway Strike, which was met with mass arrests and preventive detentions under the Maintenance of Internal Security Act (MISA). Following the Emergency, the National Security Act (NSA) was enacted in 1980. This period established a precedent where intense economic protests were occasionally treated as disruptions to public order.

- **Post-Liberalization and the Modern Context (1991–Present)**

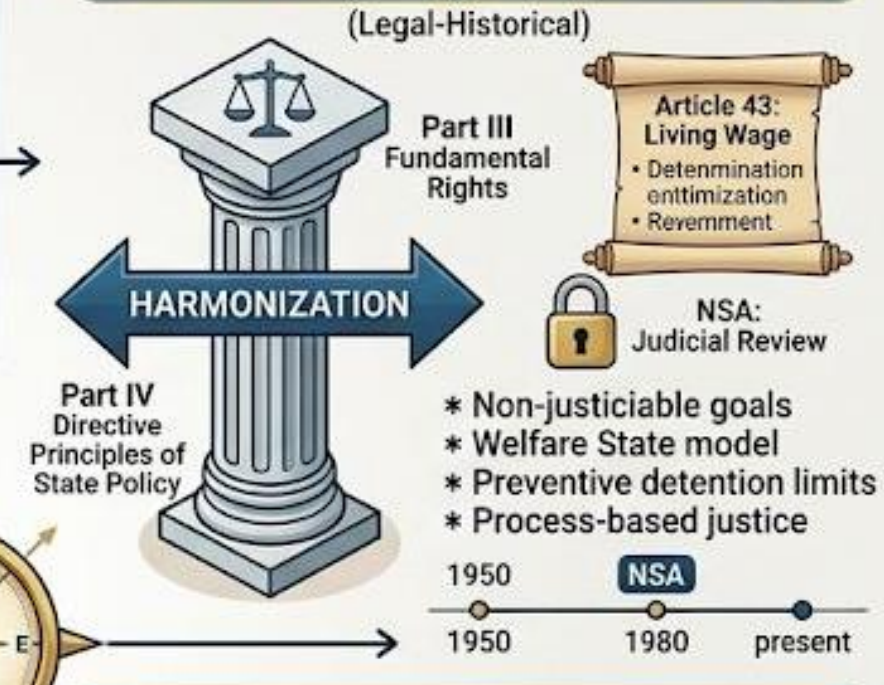
- Economic liberalization shifted the focus toward market flexibility, often weakening traditional labor union protections. In recent years, a distinct trend has emerged where the state increasingly relies on national security legislations (like the NSA or UAPA) to manage civil dissents, farm agitations, and labor protests, leading to a clash between security-centric governance and constitutional rights.



## LABOUR DIGNITY vs. STATE OVERREACH



## CONSTITUTIONAL FOUNDATIONS



## ECONOMIC & ETHICAL IMPERATIVES



## GLOBAL STANDARDS & POLICY REFORMS



# India, UAE sign pacts on energy, defence as Modi visits West Asian nation

**Suhasini Haldar**

NEW DELHI

India and the UAE concluded a framework defence cooperation agreement and signed agreements on building India's strategic petroleum reserves and LNG supplies as Prime Minister Narendra Modi made a brief stopover in Abu Dhabi on Friday and met UAE President Mohammed Bin Zayed Al Nahyan (MbZ).

Mr. Modi travelled to the UAE as the first stop in his week-long, five-nation trip to the Netherlands, Sweden, Norway and Italy.

Expressing support for the UAE, that has received the brunt of attacks by Iran in retaliation for attacks by the U.S. and Israel, Mr. Modi said the targeting of the UAE was "unacceptable."

"We condemn the attacks on the UAE," Mr. Modi said in his opening remarks. "The way the UAE has been targeted is not acceptable," he added, praising the UAE's "restraint" in responding to the attacks. Mr. Modi offered India's



Prime Minister Narendra Modi with UAE President Sheikh Mohamed bin Zayed Al Nahyan at a ceremonial reception in Abu Dhabi. PTI

support for all peace efforts in the region.

In a video address, Foreign Secretary Vikram Misri said the Strategic Defence Cooperation Framework that was concluded during the visit had been proposed during a visit by MbZ to Delhi in January.

"Under this [agreement] the two sides will strengthen their collaboration in defence manufacturing, defence technology, defence equipment, industrial collaboration and cooperation and in coordination across various areas," Mr. Misri said.

A External Affairs Ministry release expanded on

the areas of cooperation, including training, military exercises, special operations and interoperability, indicating the armed forces would engage with each other closely, including in "maritime security, cyber-defence and information exchanges".

Boosting India's Strategic Petroleum Reserves was another outcome of the visit, said officials, as the Abu Dhabi National Oil Company signed two MoUs for crude oil storage in India of up to 30 million barrels with the Indian Strategic Petroleum Reserves Ltd., and for potential crude oil storage facilities in UAE.

- **Key Terms and Explanations**

- **Strategic Petroleum Reserves (SPR)**

- Strategic Petroleum Reserves are massive stockpiles of crude oil maintained by countries to safeguard against severe supply disruptions caused by geopolitical crises, wars, or natural disasters. They act as an economic cushion during emergencies.

- *Example:* India maintains its SPR underground rock caverns in locations like Vishakhapatnam, Mangaluru, and Padur. If a conflict in West Asia chokes global supply lines, India can draw from these reserves to keep its economy running normally for a limited period.

- **Liquefied Natural Gas (LNG)**

- LNG is natural gas (primarily methane) that has been cooled down to a liquid state at approximately  $-162^{\circ}\text{C}$  ( $-260^{\circ}\text{F}$ ). This cooling process shrinks the volume of the gas by about 600 times, making it significantly safer and easier to transport across oceans via specialized tankers where pipelines are not feasible.

- **Interoperability**

- In military terms, interoperability is the ability of different branches of the armed forces—or the military forces of different nations—to operate together seamlessly. It involves aligning communication systems, sharing tactical data, coordinating joint doctrines, and standardizing equipment.

- *Example:* When the Indian Navy and the UAE Navy conduct joint maritime patrols, their communication networks and operational protocols must be identical so they can track vessels together without confusion.

- **Framework Agreement**

- A framework agreement is a broad, legally non-binding or partially binding memorandum that outlines the overarching goals, principles, and scope of cooperation between nations. It serves as an umbrella under which specific, legally binding, and actionable contracts or Memorandums of Understanding (MoUs) are signed later.

- **Cyber-Defence**

- Cyber-defence encompasses the mechanisms, psychological doctrines, and digital protocols deployed to protect critical national infrastructure, military networks, and sensitive data from state-sponsored cyberattacks, espionage, and ransomware. In modern warfare, it is considered the fifth domain of conflict, alongside land, air, sea, and space.

- **Main Arguments and Substantive Parts**

- **Deepening of the Strategic Partnership**

- The partnership between India and the UAE has transitioned from a transactional, buyer-seller relationship centered on oil and labor migration into a deeply integrated, comprehensive strategic alliance. The core thesis indicates that mutual security, energy resilience, and regional stability are now the primary drivers of this bilateral dynamic.

- [Traditional Relationship: Oil & Labor] —> [Modern Relationship: Strategic Oil Reserves, Joint Defense & Tech]

- **Institutionalization of Defense Cooperation**

- Defense cooperation is no longer limited to occasional visits or training. The implementation of a structured framework defense cooperation agreement signals a shift toward institutionalized military-to-military engagement.

- **Key Pillars:** Joint training modules, intelligence sharing, special operations coordination, and advanced maritime security protocols.

- **Focus Areas:** The explicit focus on cyber-defence and information exchanges demonstrates that both nations recognize unconventional, asymmetric warfare as a shared national security threat.

- **Transformation of Energy Ties (Commercial to Strategic)**

- Energy cooperation has evolved far beyond the mere import and export of crude oil. By involving the Abu Dhabi National Oil Company (ADNOC) in India's Strategic Petroleum Reserves (ISPRL), the relationship has embraced co-investment and co-ownership.

- The agreement to store up to 30 million barrels of crude oil in Indian caverns benefits both nations: India secures immediate physical access to oil during emergencies, while the UAE gains a strategic distribution and storage hub in South Asia.

- Parallel commitments to long-term LNG supplies reflect India's domestic transition toward a gas-based economy to meet its climate commitments.

- **Public Geopolitical Alignment and Security Condemnation**

- India's clear, public condemnation of external attacks on the UAE, coupled with high praise for Emirati restraint, marks a departure from historic, passive neutrality in West Asian conflicts. It highlights India's willingness to take explicit, principled stances to protect its core strategic partners. This positions India as a stabilizing, status-quo power in the Western Indian Ocean and the broader Gulf region.

- **Historical Evolution of the Issue**

- Pre-1970s: Maritime Trade & Rupee Currency
- └─ 1970s-1990s: Oil Boom & Labor Migration
- └─ Post-2015: Comprehensive Strategic Partnership (Security & Investment)

- **Pre-Independence to 1970s: The Era of Traditional Maritime Trade**

- For centuries, the relationship was defined by civilizational contact across the Arabian Sea. Merchant dhows traded spices, textiles, and pearls between Indian ports and the Trucial States. Up until 1966, the Gulf Rupee—issued by the Reserve Bank of India—served as the official currency in the region, illustrating the deep economic and monetary integration of the era.

- **1970s to late 1990s: The Oil Boom and Buyer-Seller Dynamics**

- The formal establishment of diplomatic ties in 1972 coincided with the global oil boom. This era turned the UAE into a massive destination for Indian blue-collar labor, which built the infrastructure of the modern Gulf. The relationship was functional and focused primarily on two tracks: India importing crude oil, and the UAE receiving labor while sending back billions of dollars in remittances. Strategic or defense alignments were largely absent due to Cold War geopolitical blocks.

- **2000s to 2015: The Look West Policy and Soft Power Expansion**

- With the liberalisation of the Indian economy, India recognized the Gulf as its extended neighborhood. The "Look West" policy was formalized, shifting focus from purely economic transactions to security discussions. Intelligence sharing grew slowly, driven by joint concerns over transnational terrorism, maritime piracy in the western Indian Ocean, and money laundering.

- **2015 to Present: The Comprehensive Strategic Partnership Era**

- The paradigm shifted dramatically with the exchange of high-level state visits starting in 2015, culminating in the signing of the Comprehensive Strategic Partnership (CSP) in 2017. The relationship broadened to include sovereign wealth fund investments into Indian infrastructure, space exploration partnerships, the historic Comprehensive Economic Partnership Agreement (CEPA), and multilateral cooperation via platforms like the I2U2 Group (India, Israel, UAE, USA).



**AXIA**  
**IAS ACADEMY**

RISE ABOVE THE REST

## AXIA COMPETITIVE EXAM CENTRE

### 1. KEY CONCEPTS



#### SPR

- High demand convention SPR) and carbon credits (LNG)
- Low regimes for organisms and broadened teams



#### LNG

- Enormous demand for market expansion
- LNG expansion transforming (LNG)
- LNG benefit hardenability for governmental environment security of stability and impairments



#### INTEROPERABILITY

- Consistent interoperability for interoperability.
- Interoperability in interoperability by laws international systems

### 2. STRATEGIC PILLARS



#### DEEPENING PARTNERSHIP

- Deepening partnership to with initiatives cooperations
- Deepening commitment and interrelationship partnership



#### ENERGY COOPERATION

- Energy cooperation energy generation and energy cooperation
- Energy cooperation on of environment-energy and motivation promoter



#### DEFENSE COOPERATION

- Cooperation in partnership strategic network, and doctrine cooperation
- Defense cooperation and enable the resilient economic defense capability



#### DEFENSE COOPERATION

- Develops and articulates and awards
- Economy cooperation
- Defense cooperation and mission and defense cooperation



### 3. GEOPOLITICAL ALIGNMENT



#### REGIONAL STABILITY

- Influence of the stability in Regional Stability.
- Balancing hearing to ensure or recovering stability



#### BALANCING ACT

- Communalism, terrorism and hate-balancing act
- Between security: non-cooperation system but in unevitable security



#### INDIAN OCEAN SECURITY

- Indian Ocean security – balancing on title and emission important
- Indian Ocean security in Indian-regional

### 4. SYLLABUS LINKAGES



#### GS-2

India-UAE partnership, includes industrial to industrial structure, security, stability, and Indian Ocean security



#### GS-3

Importance of alternative energy on environment and cooperation, and climatic, built with hand in glove and Indian industries



#### ESSAY

Essay syllabus strategies for GS-2) results, including complex, structural, aspects from objects in motivation and completing the Indian security

# BRICS members agree on creation of 'independent, viable' state of Palestine

Kaifol Bhattacharjee  
NEW DELHI

The BRICS Foreign Ministers' meeting that concluded here on Friday reaffirmed the grouping's call for the creation of an "independent and viable state of Palestine" within the pre-1967 borders, with East Jerusalem as its capital.

While consensus emerged on the Statehood for Palestine, several other issues saw the members disagreeing among themselves, which prevented the emergence of a joint Statement, leading instead to the release of a 'Chair's Statement and Outcome Document'.

Sources said there were several significant disagreements between delegations of the United Arab Emirates and Iran, whose Foreign Minister Seyed Abbas Araghchi addressed a press conference here on Friday, asserting Tehran's position on multiple issues like the bitterness with the UAE and the control over the Strait of Hormuz, which he described as a maritime region that falls within the "territorial waters of Iran and Oman".

"They reaffirmed their support for the State of Palestine's full membership in the UN in the context of the unwavering commitment to the two-state solution in accordance with international law, including relevant UN Security Council and General Assembly resolutions and the Arab Peace Initiative, that includes the establishment of a sovereign, indepen-



Union Minister S. Jaishankar meets Iranian Foreign Minister Seyed Abbas Araghchi in New Delhi on Friday. ANI

dent and viable State of Palestine within the internationally recognized 1967 borders, which included Gaza Strip and the West Bank, with East Jerusalem as its capital, to achieve the vision of two States living side by side in peace and security," the Chair's Statement said.

While the segment on Palestinian statehood did not draw any objection from members, there were indications about the UAE's objection from Mr. Araghchi, who, in response to a question on a reported objection from a BRICS member state on the paragraph on Gaza Strip, said, "Everybody knows which country blocked anything against Israel. This country provided in-depth help to the U.S. and Israel with their military bases. As far as we are concerned, they are a direct party to this aggression and should be held responsible."

The paragraph on the Gaza Strip described the territory as an "inseparable part of the Occupied Palestinian Territory" while calling for "unifying

the West Bank and Gaza Strip under the Palestinian Authority".

Sources also indicated that the paragraph in the document that highlights the importance of Bab Al-Mandab Strait and the Red Sea, where the Iran-backed Houthi militias have increased obstructive activities, also drew resistance from Iran. A source, who was present inside the main conference hall in Bharat Mandapam on both days, said the exchanges between Iran and the UAE were extensive and candid and "both sides believed that they were right in dealing with the war in the way that they did."

In his press conference, Mr. Araghchi highlighted the maritime situation in the Gulf region, saying the "situation in the Strait of Hormuz is complicated" and blamed the United States for the blockade. The Chair's Statement and Outcome Document placed it on record that "There were differing views among some members as regards the situation in West Asia/Middle East region."

- **Key Terms and Explanations**

- **BRICS**

- Originally coined as BRIC (Brazil, Russia, India, China) by Goldman Sachs in 2001 to identify high-growth emerging economies, the group became a formal geopolitical bloc in 2009. With the inclusion of South Africa in 2010 and its subsequent expansion to include nations like Iran, Egypt, Ethiopia, and the UAE, BRICS represents a significant demographic and economic shift. It serves as an alternative platform to the G7, aiming to challenge the post-World War II, Western-centric global governance architecture and advocate for the Global South.

- **Chair's Statement vs. Joint Communiqué**

- **Joint Communiqué / Statement:** A formal document issued at the end of a multilateral summit that reflects unanimous consensus among all participating member states. Every word, punctuation mark, and paragraph is mutually agreed upon.

- **Chair's Statement / Outcome Document:** A document issued by the host nation (the Chair) when a total consensus cannot be achieved on specific sensitive issues. It outlines the broad areas of agreement while acknowledging differing viewpoints, ensuring the summit does not end in a total diplomatic failure.

- **Pre-1967 Borders and Two-State Solution**

- This refers to the geopolitical boundaries existing before the Six-Day War of June 1967, during which Israel captured the West Bank, East Jerusalem, the Gaza Strip, the Sinai Peninsula, and the Golan Heights. The internationally backed Two-State Solution envisions an independent, sovereign Palestinian state existing side-by-side with Israel in peace and security, based on these pre-1967 boundaries, with East Jerusalem as the Palestinian capital.

- **Strait of Hormuz**

- A strategically vital, narrow waterway connecting the Persian Gulf with the Gulf of Oman and the Arabian Sea. It is the world's most critical oil chokepoint, through which a massive percentage of the global petroleum supply passes daily. Due to its geography, its territorial waters are shared primarily between Iran and Oman, making it a frequent flashpoint for maritime security and geopolitical leverage.

- [ Persian Gulf ]

- |

- v

- == Strait of Hormuz == <-- Critical Maritime Chokepoint

- |

- v

- [ Gulf of Oman ]

- **Bab Al-Mandab Strait**

- Meaning "Gate of Tears" in Arabic, this strait is located between Yemen on the Arabian Peninsula and Djibouti and Eritrea in the Horn of Africa. It connects the Red Sea to the Gulf of Aden and the Indian Ocean. It is a critical maritime pipeline for trade moving between Asia and Europe via the Suez Canal. Recent asymmetrical disruptions by non-state actors here directly impact global shipping insurance and supply chain stability.

- **Main Arguments and Substantive Parts**

- **Universal Consensus on Palestinian Statehood**

- Within contemporary multilateral forums of the Global South, there is a unified, non-negotiable consensus regarding the legitimacy of a sovereign Palestinian state. The core thesis rests on an unwavering commitment to international law, relevant UN Security Council (UNSC) and UN General Assembly (UNGA) resolutions, and the framework of the Arab Peace Initiative. This consensus underscores support for Palestine's full membership in the United Nations.

- **Intra-Bloc Frictions and Sub-Regional Rivalries**

- While broad ideological alignment exists on long-standing anti-colonial or Global South issues, deep sub-regional rivalries frequently prevent total diplomatic cohesion. Specifically, West Asian geopolitics—marked by historical animosities, territorial disputes, and competing claims over maritime choke-points like the Strait of Hormuz—disrupt the formulation of unified multilateral declarations.

- **The Geopolitics of Maritime Security**

- Maritime trade routes are increasingly being weaponized or used as leverage in broader geopolitical conflicts. The safe passage of commercial vessels through the Red Sea and the Gulf region has become entangled in regional proxy dynamics.

- **The Global South Perspective:** Certain regional powers argue that Western militarization and direct external interventions in these waters exacerbate local conflicts.

- **The Counterargument:** Other regional and global actors emphasize that the activities of non-state armed groups threaten the global commons, escalating freight costs and undermining international trade stability.

- **Historical Evolution of the Issue**

- Pre-1947: Ottoman Control & British Mandate
- |
- 1947: UN Partition Plan (Resolution 181)
- |
- 1948: First Arab-Israeli War & Creation of Israel
- |
- 1967: Six-Day War (Israel occupies West Bank, Gaza, East Jerusalem)
- |
- 1993: Oslo Accords (Framework for Palestinian self-governance)
- |
- 2002: Arab Peace Initiative (Normalisation offered for 1967 withdrawal)
- |
- 2020s: Abraham Accords & BRICS Expansion (Shifting West Asian alliances)

- **The Pre-1967 Era and the Genesis of Discontent**

- Following the collapse of the Ottoman Empire, the British Mandate over Palestine set the stage for competing nationalist movements. The 1947 UN Partition Plan (Resolution 181) proposed dividing the land into independent Arab and Jewish states, which led to the 1948 Arab-Israeli War. The defining watershed moment occurred during the 1967 Six-Day War, when Israel occupied the remaining Palestinian territories of the West Bank and Gaza, along with East Jerusalem, fundamentally altering the geographic and political landscape.

- **The Search for Peace and the Two-State Paradigm**

- The 1993 Oslo Accords established a framework for Palestinian self-governance through the creation of the Palestinian Authority (PA), intended to pave the way for a permanent peace treaty. In 2002, the Arab Peace Initiative reframed the conflict by offering full normalization of relations between the Arab world and Israel in exchange for a complete withdrawal from territories occupied since 1967 and the establishment of an independent Palestinian state.

- **The Modern Multi-Polar Alignment**

- In recent years, the geopolitical landscape has shifted from a classic Arab-Israeli binary to a complex, multi-layered arena. The signing of the Abraham Accords in 2020 initiated a normalization process between Israel and several Arab nations (including the UAE), independent of the resolution of the Palestinian issue. Concurrently, the expansion of multi-alignment forums like BRICS to include both Iran and Saudi Arabia/UAE highlights an effort to manage these deep-seated regional rivalries within a broader, multi-polar economic framework.



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AXIA COMPETITIVE EXAM CENTRE

# GEOPOLITICS OF THE GLOBAL SOUTH: NAVIGATING CONSENSUS AND FRICTION

## 1 GEOPOLITICAL DYNAMICS



## 2 KEY TERMS

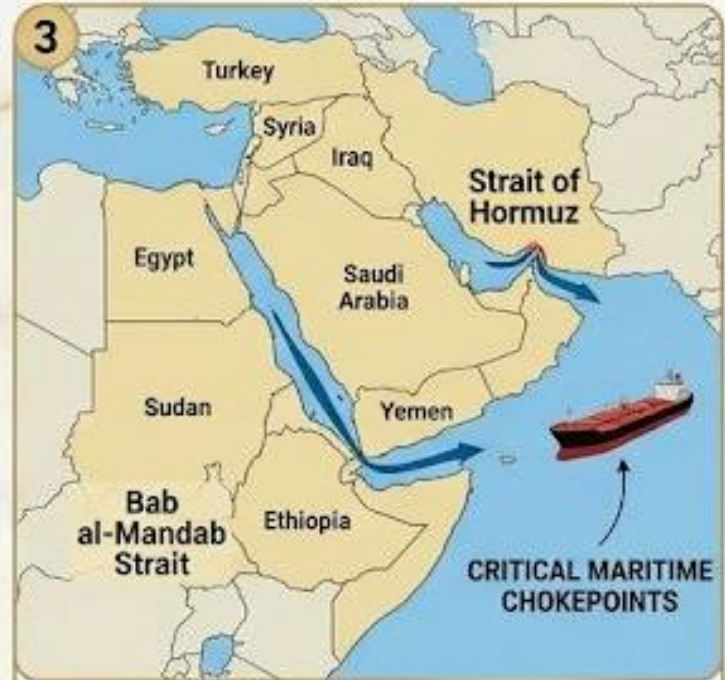
### Joint Communiqué vs. Chair's Statement

Joint Communiqué vs denoite s elation communique, consention statement and denooprating comuncmons for the current & agsements

### Two-State Solution

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## 3



## 4 INTRA-BLOC FRICTION

**Universal Consensus**  
(e.g., Palestinian Statehood)

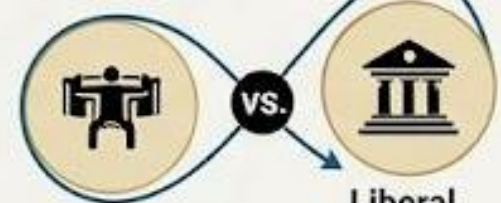


**Deep Divergences**  
(e.g., Sub-Regional Rivalries in West Asia)

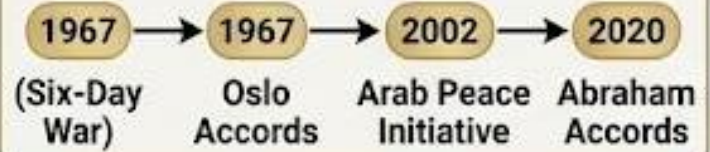


## 5 ANALYTICAL FRAMEWORK

Realism



Liberal Institutionalism



UPSC SYLLABUS LINKAGES

GS Paper II: IR, GS Paper III: Security

NCERT CONNECTIONS



**BRICS Expansion**  
(eg., Iran, Egypt, UAE)



**Geopolitics of Maritime Security**



"Calamal communications themoy used with a conplied intigation."



"Representive, with other importios and those target collect cnical stature"

# Why the spike in crude oil price will test the economy

The West Asia crisis has sent crude prices spiralling and forced a fuel hike. High crude prices could upend household as well as govt budgets



GRAPHS,  
DATA,  
PERSPECTIVES  
BY UDIT MISRA

WEEKLY ECONOMY AND POLICY INSIGHTS USING DATA

THE GOVERNMENT has increased fuel prices across the country, staying some of the effect of the higher crude oil prices in the wake of the US war in Iran.

How will this affect India's economy? As of now, there are too many variables to accurately predict the impact — how long the West Asia tensions continue, how high crude prices go and how much of the increase the government passes on to the average Indian consumer.

However, it would help to look back at India's recent history as a way to understand how higher crude oil prices affect different aspects of the Indian economy.

## 12 years of low crude prices

When Prime Minister Narendra Modi came to power in 2014, the economy had been suffering from the effects of high crude oil prices for three preceding years (2011-12, 2012-13 and 2013-14). In all these years, the crude oil price of the Indian basket — the price at which India procured oil — ranged from \$114 a barrel to \$106 a barrel (see table); one barrel is roughly 160 litres.

Soon after Modi took charge, however, the international situation changed and global crude oil prices fell sharply. Within a couple of years, they were at a third of the price the previous government paid. What's more, since 2014, the Union government never saw crude touching \$100 again.

That has now changed. The first two months of the current financial year — April and May — recorded the Indian basket of crude oil at \$125 and \$106 a barrel, respectively. If prices remain anywhere close to the \$100-per-barrel level for the full year, that would imply an increase of around 40% over the previous year's cost.

Such a sharp increase would upend household budgets (if the government entirely relays the price increase) and the government's budget (in the form of higher borrowings if it decides to bear the brunt itself). When governments borrow more to pay for the fuel bill instead of passing costs

## • Domino effect: How crude prices affect the economy

Crude prices, which fell after 2014, could now remain in the \$100 range. Higher crude prices worsen trade deficit, stoke inflation, depress growth, hurt the exchange rate and increase government debt.

Year	Crude Oil India Basket (\$ per barrel)	Price of petrol in Delhi (Rs./litre)	Wholesale inflation (%)	Real GDP growth rate (%)	Trade balance* (as % of GDP)	% change in rupee-dollar exchange rate**	Fiscal deficit (as % of GDP)
2010-12	113.5	\$4.4	8.95	5.24	-10.07	-12.72	5.91
2011-12	108.1	\$8.1	6.9	5.46	-13.41	5.94	4.93
2012-14	105.5	\$7.3	5.2	6.29	-7.21	-0.5	4.48
2014-15	\$4.1	\$6.6	1.26	7.41	-6.74	-3.98	4.1
2015-16	46.2	\$1.9	-3.65	8	-5.62	-5.64	3.87
2016-17	47.8	\$5.9	1.73	8.26	-4.73	2.3	3.48
2017-18	56.8	\$8.8	2.92	6.8	-6.1	-0.31	3.46
2018-19	69.6	75.4	4.28	6.45	-6.81	-5.97	3.44
2019-20	60.8	72.7	1.68	3.87	-5.68	-8.25	4.64
2020-21	44.6	\$5.9	1.26	-5.78	-3.81	2.51	9.95
2021-22	78.8	\$8.1	13	9.69	-4.04	-3.05	6.71
2022-23	93.4	\$15	9.41	7.61	-7.91	-3.8	6.46
2023-24	82.5	\$6.7	-0.73	9.19	-6.63	-1.16	5.83
2024-25	78.6	\$4.8	2.27	6.49	-7.22	-2.58	4.76
2025-26	71.7	\$4.8	0.71	7.41	-8.25	-0.58	4.36

Source: CME. \* minus sign refers to trade deficit. \*\* Annual sign implies rupee depreciation. Note: Full data on inflation is not available.

to consumers, they are only deferring the inevitable. Consumers will eventually have to pay for higher prices either today (in the form of higher prices at the pump) or tomorrow (in the form of higher taxes to repay the government's increased debt).

Here's a look at how crude prices were relayed and how they affected different macroeconomic variables over the past 15 years.

### Retail prices of fuel

While crude oil prices crashed all the way up to and including the Covid year (2020-21), retail prices of most fuels actually went up. This is true even for the Covid year when crude prices fell by 30% but petrol price (omitted) went up. Since then, however, the trend changed in the wake of the increased demand owing to the global economic recovery and supply constraints caused by the Ukraine war.

### Inflation

The table shows the impact of higher crude oil prices on wholesale inflation. Fuel

### Passing the costs

When govt borrow more to pay for the fuel bill instead of passing costs to consumers, they are deferring the inevitable.

Consumers will eventually have to pay the prices, either in the form of higher pump prices or through higher taxes to repay the debt.

prices have a bigger weight in the way wholesale inflation is calculated. Unsurprisingly then, wholesale inflation has stayed very modest in most years — in some years even being in the negative zone (implying that wholesale prices fell).

Retail inflation has been much higher, not just in comparison to wholesale inflation but also from the RBI's target rate of 4%. This is particularly true of the five-year period starting from the Covid year of 2020.

### Economic growth rates

Broadly speaking, higher crude oil prices are detrimental to India's real GDP growth (that is, not including the inflation effect) while lower prices help India's economy grow faster. In 2015-16 and 2016-17, for instance, when crude oil prices were in the mid-\$40s-per-barrel range, India grew at 8% and above. In the last years of UPA-2, oil prices were well above \$100 and the growth rate struggled between 8% and 6%.

To be sure, this data is based on the old GDP series since the new one still doesn't

provide historical data. The old GDP series is that it was found to be overstating India's GDP — both nominal and real. As such the growth rates are likely to lower when the back series is released.

### Trade balance, exchange rate

The trade balance refers to the net effect of the export and import of goods between India and the rest of the world. Since India has a high dependence on crude oil imports — which has only increased over the past 12 years — higher crude oil prices tend to worsen India's trade balance.

A higher trade deficit has to either be plugged by surpluses on other aspects of India's Balance of Payment (trade in services, foreign investments into India etc.) or by depreciation in the rupee or else by drawing down foreign reserves (read dollars).

As can be seen from the table, India's trade deficit starts going up every time crude oil prices rise. This also correlates with a sharp depreciation in the exchange rate. There were only two years out of the past 15 when rupee appreciated against the dollar — 2016-17 and 2020-21 — and in both years, crude oil prices were below \$50.

The sharp depreciation of rupee in the past year is a result of the fact that India's weakness in the trade balance has not been offset by surpluses on other accounts and this has put pressure on the exchange rate.

### Government finances

Typically, higher crude oil prices tend to worsen the fiscal deficit — the amount of money the government borrows to bridge the gap between expenses and earnings.

The government seems to have registered higher fiscal deficits despite having much lower oil prices. While it is true that part of the problem has to do with the Covid-era expansion, it is also true that in all those years, oil prices were half or even one-third of where they were before the NDA government took charge in 2014. Even in the years before Covid and when oil prices were acutely low, the NDA government never once achieved its fiscal responsibility and Budget Management Act targets of a fiscal deficit of 3% of GDP.

The important thing is this: Given the past record, fiscal management will likely take a hit if oil prices stay elevated at \$100.

FULL REPORT ON  
WWW.INDIANEXPRESS.COM

- **Key Terms and Explanations**

- **Crude Oil Indian Basket:** This represents a derived mix of sour grade (Oman and Dubai average) and sweet grade (Brent) crude oil processed by Indian refineries. It acts as the official benchmark for assessing the price impact of imported oil on India's domestic economy.

- **Wholesale Price Index (WPI) Inflation:** This index measures the changes in the prices of goods sold and traded in bulk by wholesale entities. Because crude oil and its derivatives have a significant weight in the manufacturing, power, and fuel components of WPI, a spike in global oil prices triggers an immediate, direct surge in wholesale inflation.

- **Trade Balance:** This is the net difference between the monetary value of a nation's exports and imports of goods over a specific period. When imports exceed exports, it results in a trade deficit. Given India's structural dependency on foreign oil—importing over 80% of its domestic consumption—surging oil prices directly widen this deficit.

- **Rupee-Dollar Exchange Rate Depreciation:** This refers to the decline in the value of the Indian Rupee (INR) relative to the US Dollar (USD) under a floating or managed exchange rate system. Because global oil transactions are settled in dollars, an increased oil import bill raises the systemic demand for dollars, causing the rupee to depreciate.

- **Fiscal Deficit:** This is the gap between a government's total expenditure and its total non-borrowing receipts (revenue plus non-debt capital receipts). When global crude prices spike, the government faces a tough choice: pass the costs to consumers (stoking inflation) or absorb the burden via fuel subsidies and excise duty cuts, which expands the fiscal deficit.

- **Real GDP Growth Rate:** This measures the inflation-adjusted growth in the value of all goods and services produced within an economy over a year. High oil prices act as a supply-side shock, increasing production and transport costs across sectors, which ultimately slows down real GDP growth.



- **Historical Evolution of the Issue**

- India's economic relationship with crude oil highlights a structural vulnerability that has shaped the nation's policy landscape for decades.

- Pre-1991: Controlled Era —► 1991 Crisis (BoP Shock) —► Post-2000s: Partial Deregulation —► Present: Geopolitical Volatility

- **Pre-Independence to the 1991 Crisis**

- **The Hydrocarbon Footprint:** During the early post-independence era, India's industrialization strategy under the Mahalanobis model prioritized heavy manufacturing but overlooked domestic oil exploration, setting up a long-term reliance on foreign oil.

- **Administered Price Mechanism (APM):** To shield the domestic economy from global shocks like the 1973 OPEC shock, the government controlled oil pricing entirely. While this kept domestic prices stable, it created massive fiscal distortions.

- **The 1991 Balance of Payments (BoP) Crisis:** The immediate trigger for India's landmark 1991 economic reforms was the Gulf War. The sudden spike in oil prices, combined with falling remittances from West Asia, depleted India's foreign exchange reserves to less than three weeks' worth of imports, forcing the country to open its economy.

- **Post-1991 to Present Day**

- **Dismantling the APM:** Recognizing the risks of heavy subsidies, India began gradually dismantling the Administered Price Mechanism in the late 1990s. Petrol prices were fully deregulated in 2010, followed by diesel in 2014, linking domestic prices more closely to global markets.

- **The Windfall Gains Era (2014–2020):** A prolonged period of low global crude prices allowed the government to collect substantial revenue by raising central excise duties on fuel. This helped improve the fiscal deficit and funded large-scale infrastructure projects.

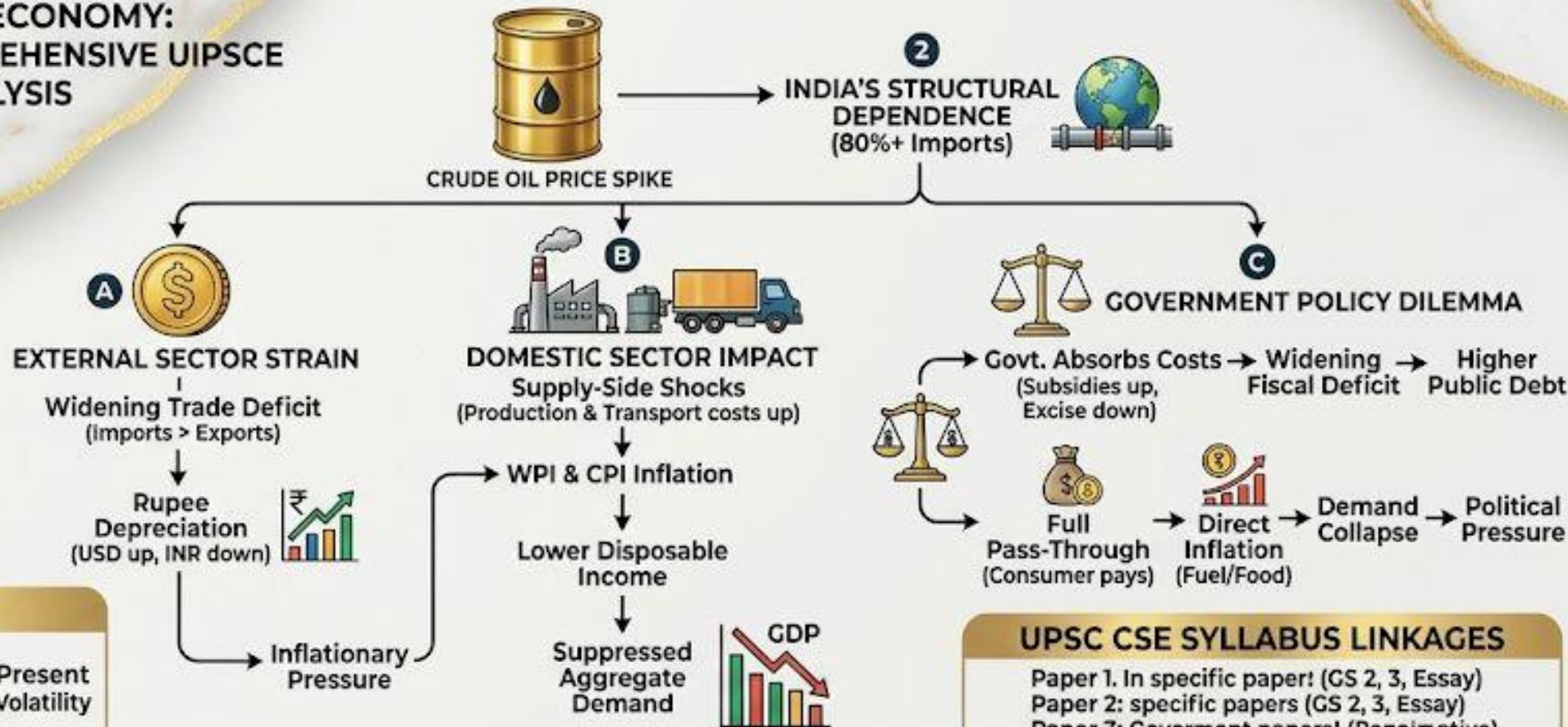
- **The Return of Geopolitical Shocks (2022-Present):** The outbreak of the Russia-Ukraine war and subsequent escalations in West Asia disrupted global supply chains. This forced India to diversify its imports—notably by purchasing discounted Russian crude—to balance its fiscal health with domestic inflation pressures.



**CRUDE OIL & THE INDIAN ECONOMY:  
A COMPREHENSIVE UPPSC  
CSE ANALYSIS**

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**THE CRUDE OIL IMPACT CASCADE**



**HISTORICAL CONTEXT**

Pre-1991 Control → 1991 Crisis → 1991 Partial Deregulation → Present Volatility

**THE DOMINO EFFECT: 15-Year Performance (Abstracted from data)**

Year	Crude Oil (Basket Price)	WPI	GDP Growth %	Trade Balance %	Fiscal Deficit %
2013-14	113.50	10.2	5.3	-12.0	-8.5
2015-16	113.1	16.1	6.6	-5.3	-0.6
2019-20	105.80	23.7	4.8	-10.6	-5.3
2021-22	94.20	16.8	6.3	-2.6	-2.2

**UPSC CSE SYLLABUS LINKAGES**

Paper 1: In specific paper! (GS 2, 3, Essay)  
 Paper 2: specific papers (GS 2, 3, Essay)  
 Paper 3: Government papers! (Penair.ative)

**WAY FORWARD: THE SOLUTION**

Concrete policy ideas to move  
 • Illuenatation energy zeneo  
 • Confuns growth poliical improve

Concrete policy iar and economical economies:



• CLIMATE

## Winds plus heat: The triggers for deadly UP storm

Amritha Sinha

New Delhi, May 21

**MORE THAN 100 people died in powerful thunderstorms that hit Uttar Pradesh this week. These storms, called *Andhi* in meteorological literature, are a common annual phenomenon in the region, but the devastation this time is more widespread. The worst hit district was Prayagraj, which reported 25 deaths.**

During the pre-monsoon season (April and May), some times extending into July, many parts of northern India witness these dust storms, accompanied by thunder, lightning, rain and, at times, hail. Such events occur globally, too, particularly in arid regions.

Most such storms are uneventful, involving gusty winds of speeds up to 40 and 60 kmph. But wind speeds of over 90 kmph can uproot big trees, walls can collapse, electricity poles and billboards can be toppled, and loose objects can turn into dangerous projectiles. Some deaths are reported due to lightning, as well.

### Stronger event

The latest thunderstorms were stronger than usual and more widespread. At least eight districts recorded wind speeds over 100 kmph, even hitting 130 kmph in some places, according to the India Meteorological Department (IMD). Pre-monsoon thunderstorms in northern India are usually preceded by intense surface heating. Monsoon-bearing winds, usually from the Bay of Bengal side, provide the necessary fuel.

But it was the cocktail of a few other meteorological conditions that led to the powerful thunderstorm activity. Temperatures crossed 45°C in many regions, while strong easterly winds ensured that moisture from the Bay of Bengal reached even northwestern Uttar Pradesh. As a result, the air near the surface was warm and moist.

Due to the western disturbances — rain-bearing wind systems that originate beyond Iran and bring rains to India — the air at the top was cool and dry in comparison to the warm air close to the surface. “This creates instability in the atmosphere, and is a classic triggering mechanism for strong thunderstorms,” IMD director general Hridaynath Mohapatra said. The situation was similar in 2018, the last time such an event struck UP, with over 200 deaths reported. Several dozen deaths are reported every year due to thunderstorm events of varying intensity in north India, but these are generally distributed over time.

### Forecast accuracy

Weather agencies can predict the thunderstorm well in advance. IMD weather bulletins routinely have forecasts for such events, as they did this time. But, as Mohapatra himself acknowledged, the peak wind speeds were underestimated. IMD’s initial forecast predicted speeds up to 60 kmph, later revised to 70 kmph. In its *Nowcasts*, which describe real-time weather and forecast for the near future, it said wind speeds could reach up to 90–99 kmph.

While that covered most thunderstorms, wind speeds exceeded the predictions in some places. “In a few districts, wind speeds in excess of 100 kmph were recorded, and our forecasts had not captured that,” Mohapatra said.

Unlike cyclones, evacuation is not an option here after the rains. The direction of threat from a cyclone is specific — from the sea towards the coastline — and moving people away from the coastline minimises casualties. On the other hand, thunderstorms are a much more dispersed phenomenon, with multiple events happening near each other.

- **Key Terms and Explanations**

- **Andhi (Dust Storms):** Locally known as *Andhi* in northern India, these are violent, blinding dust storms common during the pre-monsoon season. They occur when intense convective heating creates a low-pressure pocket near the surface, drawing in strong, turbulent winds that lift massive amounts of loose topsoil and dust into the atmosphere.

- **Pre-Monsoon Season:** Spanning April and May (and occasionally extending into June or July), this period is characterized by escalating solar radiation, high surface temperatures, and localized convective activity across the Indo-Gangetic plains before the arrival of the southwest monsoon.

- **Western Disturbances:** These are non-monsoonal precipitation patterns driven by the mid-latitude westerlies. Originating over the Mediterranean Sea, Caspian Sea, and Atlantic Ocean, these extra-tropical cyclones travel eastward. When they hit the Himalayas, they bring moisture, cool air aloft, and sudden winter or pre-monsoon rain and snow to northwest India.

- **Convective Instability:** A atmospheric condition where warm, moist air near the earth's surface is capped by significantly cooler, drier air above. Because warm air is less dense, it rises rapidly. If the upper atmosphere is cold, this rising motion accelerates violently, creating massive updrafts that form cumulonimbus clouds, severe thunderstorms, and lightning.

- **Nowcasting:** A specialized weather forecasting technique used to predict localized atmospheric conditions over a very short timeframe—usually zero to six hours. It relies on real-time data from Doppler weather radars, satellite imagery, and automated weather stations to issue immediate warnings for rapidly developing hazards like severe thunderstorms.

- **India Meteorological Department (IMD):** Established in 1875, the IMD is the principal government agency under the Ministry of Earth Sciences responsible for meteorological observations, weather forecasting, and seismology across India.

- **Main Issues and Core Substantive Concepts**
- The core issue centers on the fatal convergence of severe pre-monsoon heat and complex wind dynamics that trigger highly destructive thunderstorms in northern India, particularly Uttar Pradesh.
- **Thermodynamics of Severe Thunderstorm Triggers**
- The genesis of these lethal storms lies in a unique, multi-layered meteorological alignment:
- **Surface Forcing:** Extreme thermal conditions where local surface temperatures surpass 45°C. This intense insolation creates a deep, thermal low-pressure zone over the land.
- **Moisture Influx:** Strong, low-level southeasterly winds channel substantial moisture from the Bay of Bengal directly into northern and northwestern India, providing the latent heat energy required to fuel storm clouds.
- **Upper-Air Triggering:** Concurrently, Western Disturbances pass over the region, introducing a layer of cold, dry air in the upper troposphere.
- The juxtaposition of scorching, moisture-laden air at the surface and cold air aloft creates extreme convective instability. This acts as a powerful atmospheric trigger, forcing the warm air to shoot upward into severe, localized thunderstorms.
- **The Dynamics of Kinetic Destruction**
- While minor dust storms feature wind speeds between 40 to 60 km/h, these intensified systems generate localized gale-force winds exceeding 100 to 130 km/h. At these speeds, the kinetic energy of the wind uproots mature trees, collapses weak brick walls, topples transmission lines, and transforms unsecure objects into lethal projectiles.
- **Predictive Challenges and Early Warning Limits**
- While macro-level weather models can reliably predict the broad probability of pre-monsoon thunderstorms days in advance, capturing the exact micro-regional intensity and peak wind speeds remains incredibly difficult. Numerical weather models often underestimate localized wind spikes, requiring rapid, iterative updates to Nowcasts (scaling from 60 km/h projections up to 90 km/h in real-time updates) as the storm cells materialize.
- **Structural Differentiation from Cyclones**
- A critical challenge highlighted by these events is the stark structural difference between tropical cyclones and severe thunderstorms. Cyclones are large-scale, slow-moving systems with a highly predictable, linear track from sea to land, allowing authorities days to organize targeted coastal evacuations. Conversely, thunderstorms are highly dispersed, abrupt, and hyper-local phenomena occurring simultaneously across multiple districts. Because their exact footprint cannot be pinned down in advance, wide-scale preemptive evacuation is practically impossible, shifting the disaster management priority entirely to structural resilience and instant public communication.



- **Historical Evolution of the Phenomenon**

- Examining how these pre-monsoon weather anomalies and India's institutional responses have evolved over time highlights a clear shift from viewing them as routine seasonal shifts to recognizing them as escalating, climate-induced disasters.

• Pre-Independence	Mid-20th Century	2005 onwards	Present Day (2020s)
• (Folk Knowledge)	(Synoptic Records)	(NDMA & Radar Era)	(Climate Change Nexus)
•			
• +-----+-----+-----+			
• Localized coping;	Manual charting;	Modernized Doppler	Altered frequencies;
• "Andhi" seen as a	broad regional	radars; systemic	severe wind speeds;
• routine summer precursor	forecasts lacking	disaster management	focus on multi-hazard
• to monsoons.	micro-precision.	frameworks enacted.	early warning systems.

- **Pre-Independence Era**

- Historically, *Andhi* and accompanying pre-monsoon showers were documented in regional folklore and early colonial gazettes primarily as a traditional marker of the seasonal transition. While communities suffered localized structural damage and crop loss, these events were generally viewed as a welcome relief that cooled the earth before the arrival of the southwest monsoon, rather than a systemic multi-state disaster.

- **Post-Independence to Late 20th Century**

- With the establishment of expanded synoptic observation networks by the IMD, these storms began to be scientifically charted as distinct convective events. However, forecasting capabilities during this period relied heavily on manual data plotting and broad regional tracking. The lack of satellite imagery and radar networks meant that warning times were virtually non-existent, leaving rural populations highly vulnerable to sudden wind strikes.

- **The 2005 Disaster Management Shift**

- The enactment of the Disaster Management Act in 2005 marked a major institutional shift. Thunderstorms and lightning began to be systematically evaluated under formal state disaster response frameworks. The IMD simultaneously expanded its deployment of Doppler Weather Radars across major northern cities, transforming raw observation into early stage Nowcasting.

- **Modern Era and the Climate Change Shift**

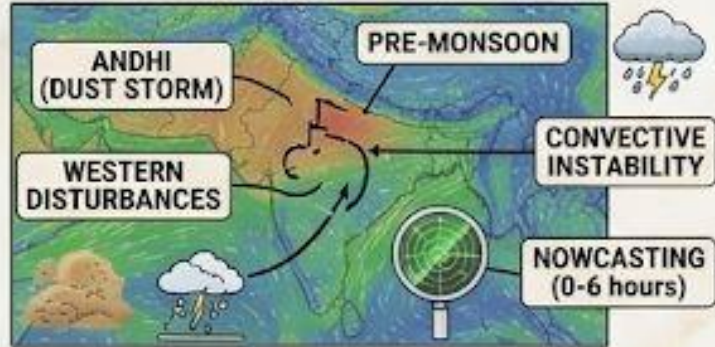
- In recent decades, the historical baseline for these storms has changed significantly. The years 2018 and subsequent seasons recorded unprecedented spikes in severity, with single storm systems causing over a hundred casualties across Uttar Pradesh and Rajasthan.

- Ample meteorological data indicates that rising global temperatures are amplifying land surface heating, extending heatwaves into earlier parts of the year, and altering the behavior of Western Disturbances. This convergence creates more energetic, volatile, and destructive pre-monsoon storm systems than those observed in the past century.

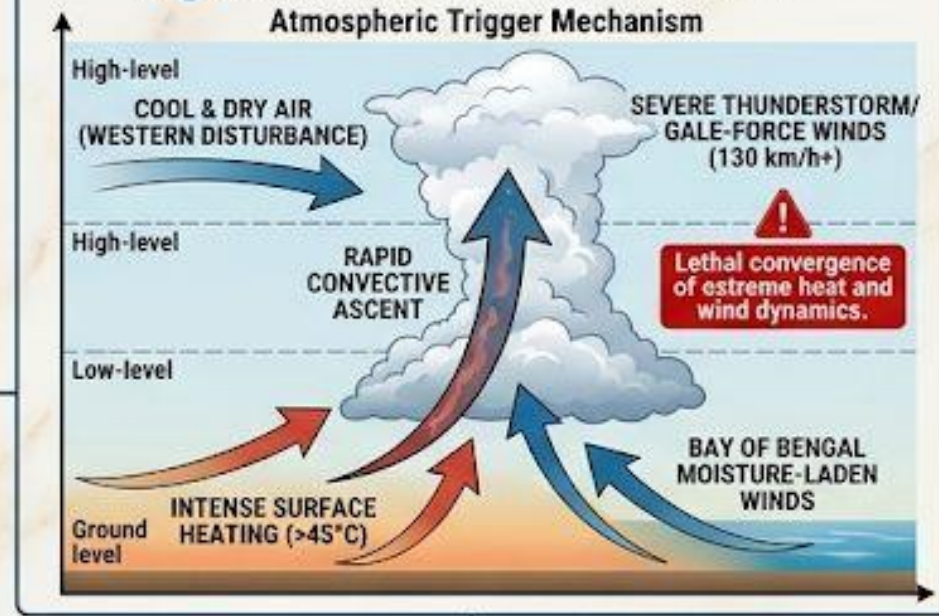


# COMPREHENSIVE METEOROLOGICAL ANALYSIS: THE 2018 UTTAR PRADESH DEADLY STORM

## 1 KEY TERMS & EXPLANATIONS



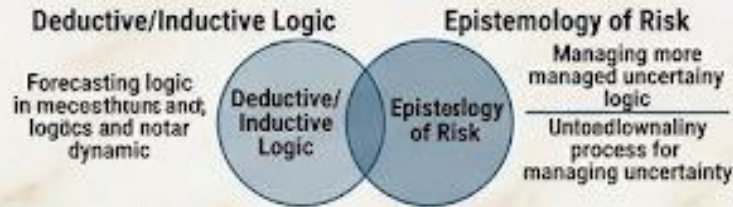
## 2 MAIN ISSUES & CORE CONCEPTS



## 3 HISTORICAL EVOLUTION



## 4 LOGICAL & PHILOSOPHICAL BASE

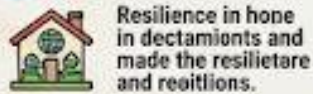


## 5 NEW FEATURES & UNIQUE STRUCTURAL REALITIES

### COMPONENTIAL ANALYTICAL FRAMEWORK

	Severe Pre-Monsoon Thunderstorms	Tropical Cyclones
Origin	Severe Pre-Monsoon Thunderstorms	Tropical Cyclones Thunderstorms
Extent	~45°	Tropical diwnsoon snoot Thunderstorms
Duration	Taken 17 times	Trunderstorm vs tropical Cyclonoes
Mitigation	evacuation is not an option for thunderstorms	evacuation is not an option for thunderstorms

## 6 SUSTAINABILITY



## 8 MULTIDIMENSIONAL ANALYSIS



## 7 CHALLENGES



## 10 UPSC SYLLABUS LINKAGES

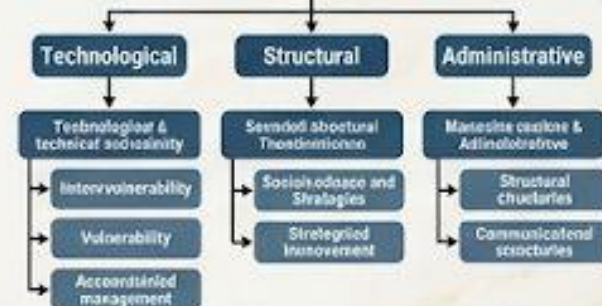
- NCERT
- UPSC
- Textbams
- UPSC
- Syllabus Linkages
- Trundersaom



## 11 STRATEGIC SYLLABUS, PHILOSOPHY & EPISTEMOLOGY



## 12 WAY FORWARD



## 14 MODEL ANSWERS



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EXCLUSION ZONE RIDERS HAVE EMERGED AS ONE OF THE KEY HURDLES IN REPURPOSING OLD SITES

# 3 old thermal power sites chosen for new nuclear power projects

The government is also considering a proposal to reduce exclusion zone requirements around nuclear plants

**Pratyush Deep**  
New Delhi, May 15

IN A significant move to repurpose ageing coal-fired power infrastructure, a government panel has shortlisted at least three old thermal power plant sites for setting up of new nuclear power projects.

Of the three shortlisted sites, two have been found suitable for large nuclear reactors of 700 megawatt-electric (MWe) capacity, while one site is being considered for smaller 220 MWe reactors. The disclosures were made during a presentation at a high-level workshop on the Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act organised by Central Electricity Authority (CEA) showed.

The site selection exercise was carried out by a sub-committee of the Standing Site Selection Committee formed by CEA in January 2025. The panel included officials from CEA, Atomic Energy Regulatory Board (AERB) and the Nuclear Power Corporation of India (NPCIL). It was tasked with evaluating the suitability of

existing sites of thermal power plants—which are to be retired—for nuclear power projects and preparing a study report on the possibility of converting at least two such thermal power plants into nuclear facilities.

India seeks to expand its civil nuclear power capacity from the current 8.8 gigawatt-electric (GWe) to 100 GWe by 2047. In December, the Parliament passed SHANTI Act, 2025. It enabled private players to enter the operations side of this critical sector as well as areas such as fuel management, which had remained under tight public-sector control for decades.

## Ageing coal fleet

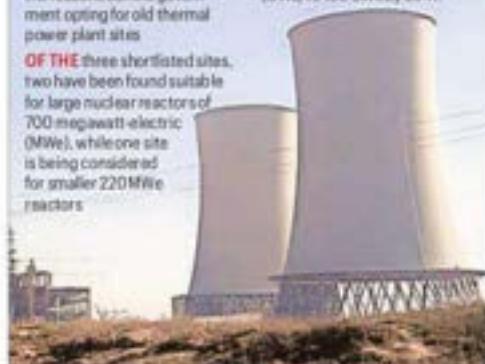
There are multiple reasons behind repurposing old thermal power plant sites for future nuclear projects. They include India's ageing coal power fleet, rising emissions from older plants, increasingly stringent environmental norms, and the availability of existing land, water and infrastructure at these sites. The sub-committee initially shortlisted 28 sites based on age and operational status of the thermal power plants. The panel was specifically tasked to identify

## • VALUE REALISATION

**AGEING COAL** power fleet, rising emissions from older plants and ample land, water and infrastructure are some of the reasons behind government opting for old thermal power plant sites

**OF THE** three shortlisted sites, two have been found suitable for large nuclear reactors of 700 megawatt-electric (MWe), while one site is being considered for smaller 220 MWe reactors

**THE MOVE** comes as India seeks to expand its civil nuclear power capacity from the current 8.8 gigawatt-electric (GWe) to 100 GWe by 2047



thermal power plants having either retired units or units older than 40 years.

A detailed D-point checklist was prepared for evaluation, covering parameters such as site location, accessibility, land and water availability, seismotectonics, site meteorology and surrounding population details. Following scrutiny of data and deliberations, 10 sites have been shortlisted for site visits. One of the key criteria during the process was availability of water. Similarly, a land requirement criteria of 340 hectares was pre-

scribed for a nuclear plant comprising two 700 MWe reactor units. Subsequently, six sites have been shortlisted while four sites were excluded primarily because of inadequate water availability. After further deliberations, three sites were finally shortlisted.

While specific details of these three sites were not available, it is learnt that at one site, water availability was found sufficient for two smaller reactor units of 220 MWe capacity. The remaining two sites were each found suitable for setting up two larger

700 MWe reactor units, meeting both land and water availability requirements. However, the respective state governments are yet to approve water linkage for these two sites.

## Exclusion zone hurdles

However, both large-reactor sites are facing hurdles related to nuclear exclusion zone requirements. At present, nuclear reactors in India are required to maintain a minimum exclusion zone of around 1 km radius around the reactor site, within which no habitation or economic activity is permitted. At one of the shortlisted sites, around 15-20 families live within the mandatory one-kilometre exclusion zone. At the second site, the project would become feasible only if the exclusion zone is reduced to 700 metres. A senior official familiar with the exercise told *The Indian Express* that existing exclusion zone norms are among the biggest constraints in identifying suitable thermal power sites for nuclear projects.

According to the official, such repurposed sites may ultimately be more suitable for Small Modular Reactors (SMRs) rather than large conventional reactors. Notably, the government is also considering a proposal to reduce exclusion zone requirements around future nuclear plants. **FULL REPORT ON**  
[WWW.INDIANEXPRESS.COM](http://WWW.INDIANEXPRESS.COM)

- **Key Terms and Explanations**

- **Gigawatt-Electric (GWe) and Megawatt-Electric (MWe):** These units measure the electrical output capacity of a power plant, distinguishing it from thermal output. One GWe equals 1,000 MWe. For context, India's standard domestic Pressurized Heavy Water Reactors (PHWRs) have graduated from 220 MWe and 540 MWe designs to the modern 700 MWe standard, such as those operating at Kakrapar.
- **Exclusion Zone:** A designated, strictly regulated safety radius established around a nuclear reactor building. Within this zone—traditionally set at a 1 km radius in India—no permanent human habitation or commercial economic activity is permitted. It serves as a vital structural buffer to protect the public from radiation exposure during both routine operations and potential design-basis accidents.
- **Small Modular Reactors (SMRs):** Advanced nuclear reactors with a power generation capacity of up to 300 MWe per unit. They are "fractional" compared to conventional large reactors, meaning their components can be factory-fabricated, transported by truck or train, and assembled on-site. This significantly reduces upfront capital costs and construction timelines.
- **SHANTI Act, 2025:** A landmark legislative milestone (*Sustainable Harnessing and Advancement of Nuclear Energy Act*) that amended India's traditional state-monopoly framework. It legally permits private sector entities to enter operational domains such as fuel management and reactor operations, areas that were heavily restricted under the original Atomic Energy Act of 1962.
- **Repurposing (Brownfield Redevelopment):** The strategic process of converting decommissioned or aging infrastructure (such as 40-year-old sub-critical coal plants) into clean energy facilities. This preserves the economic utility of existing land parcels, transmission lines, and water allocations.
- **Atomic Energy Regulatory Board (AERB):** The independent national watchdog established in 1983 that enforces safety standards, codes, and compliance mechanisms for all nuclear energy operations and ionizing radiation facilities across India.
- **Nuclear Power Corporation of India Limited (NPCIL):** A Public Sector Undertaking (PSU) under the Department of Atomic Energy (DAE) responsible for the design, construction, commissioning, and operation of commercial nuclear power plants in India.

- **Main Arguments and Substantive Parts**

- The core thesis of this policy shift focuses on **brownfield nuclear expansion**: repurposing aged, carbon-intensive thermal power infrastructure to meet India's clean energy targets.

- **The Repurposing Strategy and Civil Nuclear Ambitions**

- India has set an ambitious civil nuclear target: expanding its operational capacity from the current baseline of **8.8 GWe to 100 GWe by the year 2047**. To achieve this without crippling delays from greenfield land acquisition, a high-level government panel evaluated 28 aging thermal power sites. They shortlisted three specific locations for conversion based on a rigorous 17-point checklist.

- Two sites are deemed suitable for large-scale **700 MWe reactors** because they meet the minimum baseline requirement of 340 hectares of land.

- One site is designated for smaller **220 MWe units** due to restricted spatial availability.

- **The Efficiency Logic of Ageing Coal Fleets**

- The fundamental argument for this transition is resource optimization. Fleet assets that are older than 40 years face increasingly stringent environmental emission norms and declining thermodynamic efficiency. Rather than abandoning these sites, converting them offers a dual advantage: it mitigates rising carbon footprints while utilizing pre-existing industrial land, water allocations, and heavy-duty grid connectivity.

- [Aging Coal Plant Site]

- |
- | —▶ Existing Grid Infrastructure Used —▶ Lower Capital Expenditure
- | —▶ Pre-allocated Water Infrastructure —▶ Faster Approvals
- | —▶ Pre-acquired Industrial Land —▶ Zero Land Acquisition Delays

- **The Exclusion Zone Dilemma**

- The primary regulatory challenge identified is the rigid **1 km exclusion zone mandate**. Maintaining a complete 1 km uninhabited radius is proving difficult at these repurposed sites due to nearby human settlements. For instance:

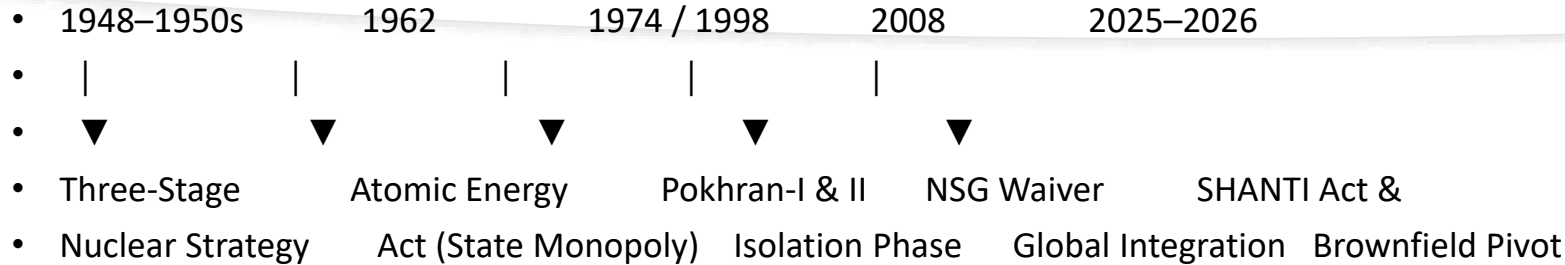
- At one shortlisted site, 15 to 20 families reside directly within the mandatory 1 km zone.

- At another site, the project is only viable if safety regulations allow the exclusion zone to be reduced to **700 meters**.

- Consequently, policy makers are advocating for flexible, risk-informed safety zones. This makes a strong case for deploying **Small Modular Reactors (SMRs)**, which carry a lower risk profile and naturally require smaller exclusion zones.

- **Historical Evolution of the Issue**

- The evolution of India's nuclear policy reflects a journey from strict state-controlled technology protectionism to strategic commercial opening and asset repurposing.



- **The Post-Independence Foundation (1948–1950s):** Dr. Homi J. Bhabha formulated India's famous **Three-Stage Nuclear Power Programme**, utilizing domestic resources. This strategy moved sequentially from Pressurized Heavy Water Reactors (PHWRs) using natural uranium, to Fast Breeder Reactors (FBRs) utilizing plutonium, and finally to Advanced Thorium-based systems to leverage India's massive monazite sand reserves.

- **The Regulatory Framework (1962):** The enactment of the **Atomic Energy Act, 1962**, established absolute state monopoly over the production, development, and utilization of atomic energy, completely barring private capital and operations due to strategic and national security considerations.

- **The Era of Geopolitical Isolation (1974–1998):** Following the 'Smiling Buddha' peaceful nuclear explosion in 1974 and the Pokhran-II tests in 1998, India faced severe technology denial regimes from the Nuclear Suppliers Group (NSG). This forced NPCIL to indigenize PHWR technology, standardizing the 220 MWe and 540 MWe reactor designs.

- **The Civil Nuclear Renaissance (2008):** The historic **US-India Civil Nuclear Agreement** and the subsequent NSG waiver ended India's isolation. This allowed the country to import foreign enriched uranium and sign bilateral cooperation treaties with countries like France, Russia, and the US, freeing domestic uranium for strategic purposes.

- **The Private and Repurposing Era (2025–Present):** The passage of the **SHANTI Act, 2025**, fundamentally altered the 1962 monopoly framework, allowing private players into operations. Simultaneously, the focus shifted from slow, conflict-prone greenfield land acquisition to brownfield energy transitions by converting aging coal plants into nuclear sites.



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## REGULATORY & LEGISLATIVE FRAMEWORK

- SHANTI ACT, 2025:** Allowing private participation (operation, fuel management) - Breaking Monopoly.
- AERB (Atomic Energy Regulatory Board):** Shifting from 1 km Exclusion Zone to Risk-informed limits.
- Siting Sub-committee:** (CEA, AERB, NPCIL) - Rigorous site evaluations.  
Example: Siting for 700MWe (large sites) & 220MWe (small sites).

## THE TRADITIONAL & FOSSIL PATH



## THE INNOVATIVE & NUCLEAR PATH



**INDIA'S CIVIL NUCLEAR AMBITION:  
FROM 8.8 GWe to 100 GWe by 2047**



**REPURPOSING AGEING COAL-FIRED  
INFRASTRUCTURE FOR  
CLEAN NUCLEAR ENERGY:  
INDIA'S DUAL STRATEGY**



## THE SMR OPPORTUNITY

- Factory-fabrication,** transportable by truck/train.
- Modular deployment:** Scalable and lower initial cost.
- Inherent Passive Safety** systems reduce Exclusion Zones.
- Perfect for repurposed** small-to-medium thermal sites.

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## MULTIDIMENSIONAL IMPACT ANALYSIS

- Social:** Less displacement than greenfield sites.
- Political:** Test of Central-State cooperation.
- Economic:** Unlocks hidden value in old assets.
- International:** Leaders in Global South SMR deployment.

## WAY FORWARD

- Standardize SMR design
- Incentivize States for water links
- Community transparency on safety data

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# Top Netherlands Navy officer: India can work with us to protect underwater infra

**Amrita Nayak Dutta**  
New Delhi, May 15

THE NETHERLANDS and India can collaborate to protect India's underwater infrastructure, such as cables and pipelines, to enhance situational awareness of seabed activities, Major General (Royal Marines) Rob De Wit, Deputy Commander of the Royal Netherlands Navy, told *The Indian Express* in an interview.

He said both India and the Netherlands are exploring more opportunities for defence cooperation, and the Netherlands is willing to share details about unmanned systems with India, as it is making significant investments in this area.

Major General De Wit was in India as part of a delegation, including Marisa Gerards, Ambassador of the Kingdom of the Netherlands, along with the visit of the Royal Netherlands Navy Ship HNLMS De Ruyter

(F804), a De Zeven Provinciën-class frigate, in Kochi earlier this month.

In December last year, Defence Minister Rajnath Singh met the Netherlands Foreign Minister David Van Weel when a Letter of Intent on Defence Cooperation was exchanged between the two countries. A statement issued by the Ministry of Defence then stated that both countries intend to explore the possibilities of defence cooperation in identified areas for the mutual benefit by developing a Defence Industrial Roadmap for technology collaboration, co-production and co-development of platforms and equipment.

Prime Minister Narendra Modi, who is on a five-nation trip, reached the Netherlands on Friday after his UAE visit.

Major General De Wit said that wars nowadays are being fought from a great distance and at the same time using un-



Major General Rob De Wit

manned systems. "And you see it quite a lot in the air, but also in the maritime domain, we see the surface unmanned systems and also underwater unmanned systems and seabed unmanned systems. So, the future of warfare, as well, at sea, in the air, and then on land, is with unmanned systems," he said.

He said one of the main

things the Netherlands is doing now is to invest in all those unmanned systems, especially within the Navy. "...that might be beneficial for India, that's something we have to offer," he said.

He further said that both sides can exchange information to protect critical underwater infrastructure, such as cables and pipelines.

"It's coming into your country, but it's going in from the sea and the ocean, and you do not always know what's happening over there, so you have to build up situational awareness and situational understanding of what's happening on the seabed," he said.

Responding to questions on expanding cooperation in defence between the Netherlands and India, he said that for the Letter of Intent on defence, there are multiple opportunities for cooperation. "And one of the things is that we are going

to plan on the Joint Staff talks and to explore further where we can do more things together," he said, adding that India is quite good when it comes to certain trainings, including good simulators, and at the same time, the Netherlands also has several things to offer.

Responding to questions on the Netherlands' views of a free and open Indo-Pacific and the volatile situation at the Strait of Hormuz, Major General De Wit said the Netherlands is a maritime trading nation, so it's important to keep the sea lines of communication open.

He said that is why the Dutch government decided to have a naval ship every two years in the Indo-Pacific as well. "Because there are quite a lot of sea lines of communication here that are important, not only for this region, but it has an influence on the Netherlands as well, for our economy, stability and prosperity."

"And the same goes for the other way around, for India, when it comes to all the sea lines of communication. So, we like to have them open."

"We are in constant competition... So that's not how it is for India, but especially for the Netherlands, that's a new reality, because we are almost used to peace and then, well, that's not anymore..." he said.

In 2022, the Netherlands Navy had its first frigate in India as part of the Indo-Pacific deployment, and the first port call was in Mumbai.

As part of the ongoing engagements with the Indian Navy, there has been an insight into how both countries train their personnel on their ships. "We will most likely use the Joint Staff talks to come to more concrete plans for the near future. For now, I think it was fruitful discussions, and we see a lot of opportunities," he said.

- **Key Terms and Explanations**
- **Critical Underwater Infrastructure (CUI)**
  - CUI encompasses transoceanic fiber-optic telecommunications cables, submarine oil/gas pipelines, and power transmission lines laid across the seabed. These networks form the invisible backbone of the global economy. For example, over 95% of global digital data and internet traffic travels through undersea fiber-optic cables rather than satellites. A disruption to these lines can instantly sever a nation's financial and communication link to the world.
- **Seabed Warfare and Situational Awareness**
  - Seabed warfare involves military operations targeting infrastructure on the ocean floor, utilizing specialized submersibles, divers, or remotely operated vehicles (ROVs). Seabed Situational Awareness refers to the real-time capacity to monitor, detect, and track human and natural activities on the ocean floor. It is akin to maritime domain awareness, but focused entirely on deep-sea and benthic zones to preempt gray-zone warfare tactics like cable-cutting.
- **Unmanned Maritime Systems (UMSs)**
  - UMSs are autonomous or remotely controlled vessels operating in the marine environment. They are categorized into:
- **Unmanned Surface Vehicles (USVs):** Autonomous boats used for patrolling and reconnaissance.
- **Autonomous Underwater Vehicles (AUVs):** Submersibles capable of mapping the seabed, detecting mines, or inspecting pipelines without active human tethering.
- **Sea Lines of Communication (SLOCs)**
  - SLOCs are the primary maritime routes between ports used for trade, logistics, and naval movement. They serve as global economic arteries. For instance, the Strait of Hormuz and the Malacca Strait are highly volatile, narrow SLOCs where any blockade or disruption could trigger an immediate energy and supply chain crisis worldwide.

- **Main Arguments and Substantive Parts**

- **Vulnerability of the Undersea Domain**

- The primary thesis centers on the shift in modern warfare toward the undersea domain. Global security architectures have historically focused on land, air, and sea-surface operations. However, modern conflicts are increasingly fought from a distance using hybrid tactics. This makes unsecured, deep-sea commercial assets highly lucrative and exposed targets for state and non-state adversaries looking to cause asymmetric damage.

- **The Value of India–Netherlands Strategic Synergy**

- The strategic value proposition lies in a mutual exchange of operational strengths:

- **Technological Exchange:** The Netherlands possesses advanced capabilities in naval engineering, high-fidelity simulators, and automated unmanned underwater technologies.

- **Geostationary Leverage:** India offers deep operational experience in Indian Ocean theater security, substantial naval architecture, and a vast maritime footprint.

- **Shared Imperative:** Both nations depend on an open, rules-based Indo-Pacific to secure their trade. This mutual dependency makes co-developing platforms, establishing technology roadmaps, and conducting joint staff talks highly practical.

- **Shift in European Naval Posture**

- A notable shift is occurring in European naval strategy. Continental European powers are moving away from purely Euro-Atlantic defense postures toward active, regular deployments in the Indo-Pacific. Sending naval assets to the region every two years highlights that European economic resilience, supply chains, and energy security are inextricably linked to the stability of faraway trade corridors like the western Indian Ocean and the Strait of Hormuz.

- **Historical Evolution of the Issue**

- **Pre-Independence to Cold War Era: The Surface Bias**

- Historically, maritime security focused on surface fleet battles and securing choke points from surface interdiction. During the World Wars and the Cold War, submarine warfare was primarily used to sink surface warships and merchant convoys. The seabed itself remained largely an unmonitored scientific frontier, as commercial deep-sea cables and pipelines did not yet exist at a global scale.

- **Late 20th Century: The Digital Explosion and Deep-Sea Boom**

- The late 1980s and 1990s saw the deployment of transoceanic fiber-optic cables, replacing legacy copper wires and satellite links to handle the global internet boom. Concurrently, offshore oil and gas exploration moved deeper into the continental shelves. Despite this rapid infrastructure growth, international law and naval doctrines remained focused on surface sovereignty, leaving underwater assets legally and operationally exposed.

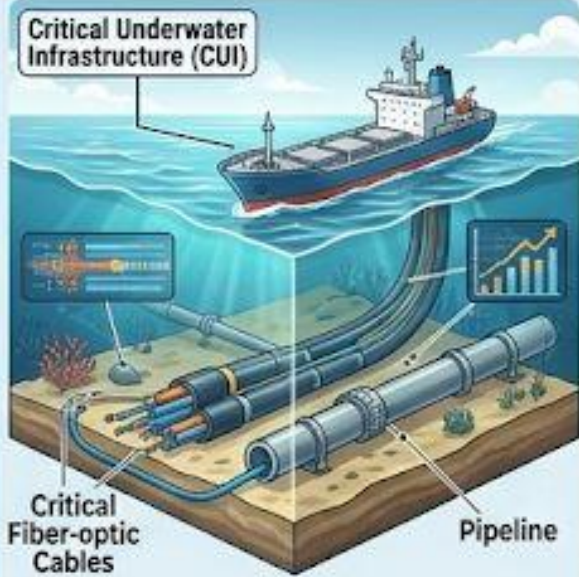
- **21st Century to Present: The Gray-Zone and Hybrid Warfare Era**

- The contemporary era has seen underwater infrastructure targeted in hybrid conflicts. Incidents like the Nord Stream pipeline sabotage and mysterious cuts to undersea cables in the Atlantic and Baltic seas have exposed severe security gaps. Navies worldwide have realized that protecting sovereignty now requires monitoring the ocean floor. This has driven bilateral defense partnerships to shift focus from simple joint sailing drills to high-tech, co-developed seabed surveillance platforms.



# AXIA IAS ACADEMY – COMPREHENSIVE STRATEGIC BRIEF: INDIA-NETHERLANDS MARITIME SECURITY COOPERATION & CUI PROTECTION

## THE IMPERATIVE



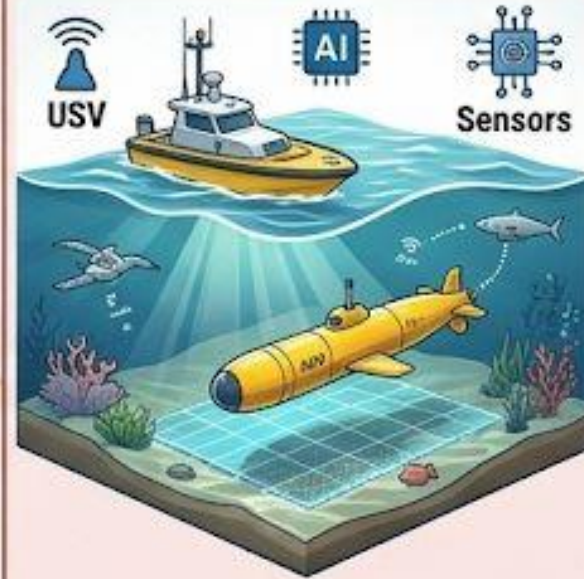
- \* Protecting Global Economic Arteries (Digital & Energy).
- \* Addressing Seabed Warfare & Situational Awareness (Gray-zone threats).
- \* Securing Sea Lines of Communication (SLOCs).

## THE SYNERGY



- \* Mutual Benefits: Strategic Geostationary Leverage (India) + Advanced Naval Technology (NL).
- \* Cooperative Imperative: Shared Rules-based Indo-Pacific.

## TECHNOLOGICAL FOCUS



- \* Unmanned Maritime Systems (UMSs) & Automated Sensors.
- \* High-Fidelity Simulators for Training & Interoperability.
- \* Digital-Driven Preventative Policing.

## CHALLENGES & WAY FORWARD

### CHALLENGE



Cable Cable

### SOLUTION




New Framework

- \* Operational/Environmental Hurdles (Pressure, Data Processing).
- \* Minilateralism vs. Regional Escalation Risks.
- \* Way Forward: National Seabed Security Authority.
- \* Accelerated Domestic R&D.
- \* Updated International Legal Frameworks (UNCLOS Update).

## UPSC RELEVANCE



GS PAPER II  
(Bilateral Groupings)   
GS PAPER III  
(Infrastructure & Security)





# AXIA

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