

**The Hindu Important News Articles For UPSC CSE**

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**Page 01 :GS II : International Relations / Preliminary Examination**

Recently, a high-level bilateral meeting was held between Prime Minister Narendra Modi and French President Emmanuel Macron in the French city of Nice. In this meeting, elevating their ties to a '**Special Global Strategic Partnership**', both countries adopted the '**Innovation Roadmap 2030**' and announced the establishment of a '**Dialogue on Economic Security**'. This dialogue provides a new direction to the technological, nuclear, space, and trade cooperation between the two nations.

# Modi, Macron talks stress economic security

- India, France adopt 'Innovation Roadmap 2030' as the two leaders meet in French city of Nice
- They establish Dialogue on Economic Security; call for early implementation of India-EU FTA
- The leaders discuss private sector ties in space sector and SHANTI Act's implications in India

**Sriram Lakshman**  
LONDON

India and France adopted an 'Innovation Roadmap 2030' and established a Dialogue on Economic Security during bilateral talks between Prime Minister Narendra Modi and French President Emmanuel Macron held in Nice on Sunday.

A press release from the government outlined a number of themes – including calling for the fast adoption of the India-EU Free Trade Agreement (FTA).

Earlier this year, the two countries had renamed their partnership a 'Special Global Strategic Partnership' to reflect an enhanced level of cooperation. No traditional 'joint statement' had emerged from the meeting as of this writing.

"Recognising the key role of innovation and



**Eyeing the sky:** Prime Minister Narendra Modi takes in the sea with French President Emmanuel Macron ahead of talks in Nice on Sunday. AP

technology in the bilateral relationship, both sides adopted an 'Innovation Roadmap 2030' to give the partnership a long-term direction," the press release said, with the two leaders agreeing to create a Joint India-France AI Working Group to expand cooperation

in AI. They also noted the signing of 19 agreements between entities in the innovation ecosystems of the two countries.

Calling for the early implementation of the India-EU FTA, which was signed in February this year, the two sides agreed to set up a

High-Level Mechanism to double trade in five years. The discussion also focused on cooperation in the SME, rail, and aviation sectors.

Mr. Modi and Mr. Macron agreed to strengthen supply chain resilience, particularly in critical min-

## PM, Macron inaugurate Bharat Innovates 2026

**Sriram Lakshman**

Prime Minister Narendra Modi and French President Emmanuel Macron on Sunday co-inaugurated the Bharat Innovates 2026 in Nice where the leaders focused on trust and cooperation in technology. Mr. Modi invited investors to "design and develop in

India" to "create solutions for the world", while Mr. Macron said India brings the reliability that the world seeks at moments of upheaval in geopolitics. Commerce and Industry Minister Piyush Goyal and External Affairs Minister S. Jaishankar were present.

**FULL REPORT ON**  
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erals, as part of the 'Dialogue on Economic Security', as per the press release.

### Cautious on crises

On the major crises in the world – in West Asia, including Iran and Gaza, as well as on Ukraine – the

press release remained circumspect relative to the February 17, 2026 joint statement from the two countries, saying only that leaders exchanged views "on matters of global importance, including the situation in West Asia and Ukraine".

The Prime Minister thanked Mr. Macron for the speedy implementation of visa-free transit for Indians in French airports and invited French universities to open campuses in India under the New Education Policy, as per the government statement.

The two leaders discussed private sector collaboration in the space sector and the SHANTI Act's (legislation governing the nuclear sector) implications in India.

"I think the field is open for French nuclear companies in this case to start looking at direct participation in the Indian nuclear sector, or do so with participation with Indian private sector companies, whether in conventional nuclear power reactors or in the more advanced small modular reactors," Foreign Secretary Vikram Misri said at a press briefing in Nice.



## Key Highlights of the Meet

- Innovation Roadmap 2030 and AI:** Highlighting the role of technology in bilateral relations, both countries adopted this roadmap. Along with this, an agreement was reached to form a '**Joint India-France AI Working Group**' to enhance cooperation in the field of Artificial Intelligence (AI). Furthermore, 19 agreements were signed between the innovation ecosystems of both nations.
- Dialogue on Economic Security:** In view of the disruptions in the global supply chain, both leaders emphasized strengthening the resilience of supply chains in various sectors, including critical minerals.
- India-EU Free Trade Agreement (India-EU FTA):** A call was made for the swift implementation of the India-EU FTA signed in February 2026. It was agreed to establish a '**High-Level Mechanism**' to double bilateral trade over the next five years.
- Nuclear Sector and SHANTI Act:** The talks included discussions on the implications of India's 'SHANTI Act' (the law regulating the nuclear sector) and private cooperation in the space sector. According to the Indian Foreign Secretary, the

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## Daily News Analysis

path has now been cleared for French nuclear companies to participate in India's nuclear sector—both in conventional reactors and cutting-edge Small Modular Reactors (SMRs)—either directly or in partnership with Indian private companies.

- **Education & Migration:** Prime Minister Modi thanked France for the swift implementation of visa-free transit for Indians at French airports and invited French universities to open campuses in India under India's New Education Policy (NEP).

### Strategic & Geo-political Importance for UPSC

- **Strategic Autonomy:** Both India and France believe in the principle of 'strategic autonomy'. On global crises (such as West Asia/Gaza, Iran, and Ukraine), both countries have adopted a balanced and circumspect approach, rather than overtly supporting any one side.
- **De-risking from China:** Establishing a dialogue on economic security and the critical minerals supply chain demonstrates that both countries want to reduce their dependence on a single nation (especially China) for raw materials and sensitive technologies.
- **Multipolar World Order:** From security in the Indo-Pacific region to the transfer of advanced defense technologies, France has been India's most reliable and oldest strategic partner among Western nations.

### Implications on Bilateral Relations

- **Boost to the Private Sector:** Opening doors for private sector participation in sectors like space and nuclear energy will provide a massive market for defense and tech startups of both countries.
- **Trade Momentum:** The goal of doubling trade in five years through the high-level mechanism will accelerate investments in the MSMEs (SMEs), railways, and aviation sectors of both nations.
- **People-to-People Ties:** Relaxation in visa rules and the establishment of academic campuses will enhance academic cooperation and the mobility of a skilled workforce.

### Conclusion

The talks held between India and France in Nice moved beyond traditional defense procurement (such as Rafale or submarines) to focus on future technologies (AI, space, SMRs) and economic security. Despite the absence of a joint statement, the designation of a 'Special Global Strategic Partnership' and the adoption of 'Roadmap 2030' prove that the relations between the two countries have now become more mature and multi-dimensional.

In the future, rapidly implementing the India-EU FTA on the ground and easing the legal aspects of French investment in the nuclear sector (such as under the SHANTI Act) will establish this partnership as a 'best practice' model on the global stage.

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**UPSC Prelims Exam Study Questions**

**Question: Which of the following best describes "Strategic Autonomy"?**

- (a) Complete isolation from global alliances
- (b) Dependence on a single strategic partner
- (c) Ability to pursue independent foreign policy decisions based on national interests
- (d) Military neutrality under all circumstances

**Ans:** (c)

**UPSC Mains Practice Questions**

**Question:**India-France relations have evolved beyond traditional defence cooperation into a comprehensive strategic partnership encompassing technology, innovation and economic security. Examine. **(15Marks, 250Words)**



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**Page 07 :GS II : International Relations & Social Justice / Preliminary Examination**

Following two deaths and severe adverse events (SAEs) during a dengue vaccination campaign in Brazil, the use of the 'Butantan-DV' vaccine was suspended on June 8, 2026. This incident serves as a serious **wake-up call for India**, as the upcoming indigenous vaccine 'DengiAll'—being developed by Panacea Biotec in collaboration with the Indian Council of Medical Research (ICMR)—is technically identical to the Brazilian vaccine. This article analyzes vaccine safety, biological mechanisms, and the necessary policy steps for India.

# Deaths in Brazil raise concerns about India's dengue vaccine, DengiAll

Brazilian authorities have stressed that the 42 cases of severe adverse events represent only 0.008% of half-a-million vaccinated; there is no doubt that it is a small risk at the population level; however, at the individual level even one life lost to a severe adverse event is one too many

S. Swaminathan

The recent deaths of two people in Brazil during its dengue vaccination campaign, leading to the shot's suspension on June 8, is a crucial wake-up call for India. This is because the dengue vaccine in Brazil, Butantan-DV, is pretty similar, if not identical, to India's upcoming dengue vaccine, DengiAll.

Both vaccines were several years in the making. Both have live but weakened (attenuated) versions of the dengue viruses (DENVs). And both vaccines are said to be tetravalent because each vaccine is a physical mixture of four live, weakened DENVs.

DENVs come in four versions called serotypes: DENV-1, -2, -3 and -4. All four serotypes are known to be prevalent in Brazil and India. Each DENV serotype has an outer shell adorned with specialised envelope proteins, called E proteins—akin to the spike protein of coronaviruses. Even though the four DENV serotypes are very similar, their E proteins are different enough to warrant immunisation against each of the four serotypes.

When weakened DENV is used in a vaccine, it will prompt two broad types of antibodies: type-specific antibodies and cross-reactive antibodies. Type-specific antibodies are often made in small amounts and recognise only one particular serotype (based on its E proteins) and excel at blocking infections by that serotype alone.

On the other hand, the cross-reactive antibodies are made usually in large amounts and can recognise any of the four serotypes and block an infection—provided they are present at adequate levels. When their levels drop, the cross-reactive antibodies do just fail to block a new DENV infection; they enhance it, leading to a severe and potentially fatal form of dengue. This phenomenon is called antibody-dependent enhancement (ADE).

The risk of ADE during dengue vaccination is considered a serious adverse event. If untreated, it can lead to death.

In Brazil's dengue vaccination campaign, of 42 vaccine recipients who displayed serious side-effects, two people died and one had to receive intensive care. These side-effects included severe abdominal pain, persistent vomiting, and bleeding, none of which the phase 3 clinical trials revealed. These signs are reminiscent of the symptoms of severe dengue. Medical researchers should look into whether this could be due to ADE. They should also clarify if DengiAll will manifest a similar risk when it is rolled out in India.

Butantan-DV and DengiAll are both based on a technology developed at the



This photograph taken on January 29 shows chief scientific officer Syed Khalid Ali explaining the development of the DengiAll vaccine's clinical sample at Panacea Biotec, a pharmaceutical company in New Delhi. AFP

U.S. National Institutes of Health (NIH). Over many years, scientists weakened each DENV serotype to make monovalent vaccines, assessed each one for its capacity to induce an immune response without causing disease, and finally mixed all four monovalent vaccine viruses to generate tetravalent vaccines. Two of them, called TV003 and TV005, and the monovalent vaccine viruses were licensed to Instituto Butantan in Brazil and Panacea Biotec in India, among others, for further development.

Butantan-DV is not the first dengue vaccine to be linked to such events. A little over a decade ago, Sanofi Pasteur developed the first tetravalent dengue vaccine to be licensed. It differed from the NIH's vaccines because the four weakened serotypes were hybrid viruses, each covered on its surface with the E protein of one of the DENV serotypes (plus another protein).

This shot, called Dengvaxia, was given to more than 8 lakh children in the Philippines, a dengue-endemic country like Brazil and India. Severe adverse events occurred three years after vaccination.

Further study revealed Dengvaxia worked like a monovalent vaccine, provoking antibodies to only DENV-4. That is, mixing four live yet weakened viruses didn't automatically ensure tetravalent immunity. There is no clear answer why.

The severe adverse events linked to Butantan-DV thus raise many questions. Is

**Once DengiAll is launched, the regulator must implement a robust pharmacovigilance programme for an extended duration to check for viruses, antibodies, and other parameters**

Butantan-DV really functionally tetravalent? Is there a possibility of viral interference compromising its functionality? Could ADE be responsible for the deaths?

There was also a lacuna in the vaccine efficacy data collected in the phase 3 trials. Reports in January 2024, November 2024, and March 2026 indicated that Butantan-DV's efficacy against DENV-3 and DENV-4 is unknown as these serotypes were not prevalent in Brazil at the time of the trials.

Panacea Biotec's DengiAll phase 3 trials, together with the Indian Council of Medical Research, completed its enrollment target of 10,335 healthy volunteers in January this year. The trial began in August 2024; its participants will be followed for two years post-vaccination. Once all the data have been analysed, the company will approach the drug regulator for market approval.

There is no solid reason to deny that DengiAll may not face the potentially fatal issues that have come up with Butantan-DV. However, India can take some proactive actions ahead of

DengiAll's rollout. First, Panacea must analyse a representative subset of sera from vaccinated volunteers for type-specific antibodies against all four serotypes. And the regulator must ensure such data are available and rules out the risk of ADE.

Next, once DengiAll is launched, the regulator must implement a robust pharmacovigilance programme for an extended duration. Vaccine recipients must be clinically monitored periodically and their blood must be collected at regular intervals to check for viruses, antibodies, and other parameters to implement remedial measures quickly. Continuous real-world monitoring is key to identifying rare or long-term adverse events.

The ADE concerns also apply to another tetravalent dengue vaccine, Qdenga, which is also a physical mix of four weakened versions of the DENV serotypes. Japan-based Takeda markets it and its India approval is imminent.

Brazilian authorities have stressed that the 42 cases of severe adverse events out of half-a-million vaccinated represent only 0.008%. There is no doubt it is a small risk at the population level. At the individual level, however, even one life lost to a severe adverse event is one too many.

(S. Swaminathan is retired professor of biology from BITS Pilani-Hyderabad and a former scientist in the area of dengue virology at ICGER, New Delhi. ssn225@gmail.com)

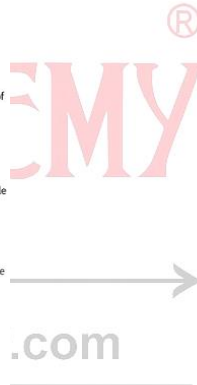
**THE GIST**

The dengue vaccine in Brazil, Butantan-DV, is pretty similar, if not identical, to India's upcoming dengue vaccine, DengiAll. Both have live but weakened versions of the dengue viruses (DENVs)

Both vaccines are said to be tetravalent because each vaccine is a physical mixture of four live, weakened DENVs

In Brazil's dengue vaccination campaign, of 42 vaccine recipients who displayed serious side-effects, two people died and one had to receive intensive care

Medical researchers should look into whether this could be due to antibody-dependent enhancement. They should also clarify if DengiAll will manifest a similar risk when it is rolled out in India



**Key Highlights & Core Issues**

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- **Technical Similarity:** Both Brazil's Butantan-DV and India's DengiAll have been developed using the 'TV003/TV005' technology from the US National Institutes of Health (US NIH). Both are 'Live Attenuated Tetravalent Vaccines', which contain a mixture of weakened viruses of all four dengue serotypes (DENV-1, 2, 3, 4).
- **Data Lacunae in Clinical Trials:** During the Phase-3 trials in Brazil, dengue serotype-3 and serotype-4 were not active, leaving the real-world efficacy of this vaccine against these two serotypes unknown.
- **Safety vs. Population Risk:** According to Brazilian authorities, only 42 severe cases occurred out of 500,000 people (0.008%). While this risk is very small at the population level, vaccine-induced deaths at the individual level trigger distrust in the public health system.

### Core Scientific Concepts for UPSC

- **Dengue Serotypes (DENV Serotypes):** The dengue virus has four distinct forms (DENV 1-4). All of these possess a specific envelope protein (E-Protein) on their outer surface. For complete protection, it is essential for the body to develop equal immunity against all four serotypes.
- **Antibody-Dependent Enhancement (ADE):** This is the biggest challenge in dengue vaccine development. When a person receives the vaccine, two types of antibodies are produced:
  - Type-specific: These completely block the specific serotype.
  - Cross-reactive: These can recognize all four serotypes, but if their level in the body drops, instead of neutralizing a new infection, they assist the virus in entering host cells. This makes the dengue infection much more lethal (causing conditions like internal bleeding and persistent vomiting).
- **Viral Interference:** When four different weakened viruses are mixed together, one serotype sometimes suppresses the replication/growth of the others. As a result, the vaccine fails to be equally effective against all four serotypes (as previously occurred in the Philippines with Sanofi Pasteur's Dengvaxia vaccine).

### Current Status of India's 'DengiAll'

- Panacea Biotec completed the enrollment for its Phase-3 clinical trials on 10,335 healthy volunteers in January 2026.
- This trial commenced in August 2024, and participants will be monitored for two years, after which an application for market approval will be submitted.
- Additionally, the Japanese company Takeda's dengue vaccine 'Qdenga' is also likely to receive approval in India soon, which falls under the purview of the same technical risks.

### Way Forward and Policy Recommendations for India

Taking lessons from the crisis in Brazil, India must take the following preventive and administrative measures before the vaccine rollout:

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## Daily News Analysis

- **Rigorous Serum Analysis:** The Drugs Controller General of India (DCGI) should direct Panacea Biotec to strictly test the blood samples (sera) of vaccinated volunteers to ensure that uniform 'type-specific antibodies' are being formed against all four serotypes and that there is no risk of ADE.
- **Robust Pharmacovigilance Programme:** Post-vaccine launch, India must establish a long-term and stringent post-marketing surveillance mechanism. Citizens receiving the vaccine should undergo regular clinical monitoring so that any adverse effects can be detected at an early stage.
- **Transparent Data Sharing:** Regulatory bodies must make all safety data from clinical trials public to prevent any confusion or 'Vaccine Hesitancy' among the medical community and the general public.

### Conclusion

Developing a safe dengue vaccine has always been a complex challenge in the field of medical science. The unfortunate deaths in Brazil underscore that there can be no compromise with safety standards in biotechnology.

India, which is already established as the 'Pharmacy of the World', must exercise extreme caution in the approval process of 'DengiAll' and 'Qdenga'. The goals of "Viksit Bharat" (Developed India) and "Universal Health Coverage" can only be achieved when the efficacy of medical innovations goes hand-in-hand with the absolute guarantee of the safety and dignity of every citizen's life.

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### UPSC Prelims Exam Study Questions

**Question: The term "Tetravalent Vaccine" refers to a vaccine that:**

- (a) Protects against four different diseases
- (b) Protects against four strains/serotypes of the same pathogen
- (c) Contains four doses of antigen
- (d) Is administered four times

**Ans: b)**

### UPSC Mains Practice Questions

**Question:** Discuss the challenges associated with the development and deployment of dengue vaccines. How can regulatory agencies ensure vaccine safety without compromising innovation?(15Marks, 250 Words)

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## Page 08 :GS II : Social Justice / Preliminary Examination

Cases of Child Sexual Abuse (CSA) persist relentlessly in India, yet the actual reporting of such cases remains critically low due to systemic inefficiencies and public distrust towards the police. The recently filed chargesheet in the Sular case in Coimbatore has once again highlighted this ongoing crisis. According to the National Crime Records Bureau (NCRB), 69,191 cases were registered under the POCSO Act in the year 2024, involving more than 70,000 child victims. This analysis underscores the deep structural, administrative, and social gaps that continue to obstruct child safety.

### Key Systemic Challenges & Gaps

- **Threat from Acquaintances vs. Social Perception:**

- **Fact:** In more than 90% of cases, child abuse occurs within the trusted circles of the family, relatives, or acquaintances.
- **Problem:** Public perception still widely believes that the threat originates solely from 'predatory strangers'. This misconception prevents families and communities from identifying risks in a timely manner.

- **Lack of Urban Planning and Social Security:**

- Migrant and working-class communities are at the highest risk because they are often completely disconnected from local protective social networks.
- Despite 'Safe City' projects, the focus of urban restructuring remains confined primarily to the core areas of major metropolitan cities. The social security dimensions of restoring abandoned industrial sites, poorly maintained common lands, and urban wetlands like the Noyyal River are neglected, turning these spaces into crime scenes.

- **High Pendency & Low Conviction Rate:**

- According to the POCSO Act, trials by special courts should ideally be completed within one year of taking cognizance.
- Contrarily, the current pendency rate in POCSO courts stands at a staggering 89%, and historically, the conviction rate has hovered between a mere 3% and 30%. This failure severely undermines public confidence in the police and the judiciary.

- **Impact of Public Distrust in Police:**

### Series of gaps

Distrust of police has led to underreporting of child sexual abuse

**C**hild sexual abuse in India remains persistently under-reported and the state response to it has shown up trenchant systemic inefficiencies. In over 90% of cases, including the recent Sular case in Coimbatore in which a charge sheet was filed last week, the threat to a child is from within the family's trusted circles. Public imagination often fixates on predatory strangers, which is not conducive to helping families and communities identify a risk in time. Migrant and working-class communities are especially at risk as they are less integrated in local protective social networks. Second, abandoned industrial sites and poorly maintained common land tend to become crime scenes. But despite the 'Safe City' project and the recognition of child-friendly urban development paradigms, urban redesign still focuses on core areas of major metros. The social safety dimensions of urban wetland restoration, like that of the Noyyal river, are often overlooked as well. Next, while POCSO trials are required to conclude within a year of the special court taking cognizance, POCSO courts face an 89% pendency rate and conviction rates have historically ranged between 3% and 30%, undermining confidence in the police and judiciary. The Sular case prompted promises of swift action, but this is only one case; systemic reforms to protect vulnerable children remain elusive. In 2024, the NCRB recorded 69,191 POCSO cases involving more than 70,000 child victims.

Public distrust discourages residents from reporting suspicions and encourages families fearing police apathy to search for missing children themselves, potentially allowing the perpetrators to hide evidence or flee. Ultimately, when the state fails to deliver due punishment, the people perceive the police to be a bureaucratic hurdle, leaving children more vulnerable. Repeatedly strengthening penalties merely suppresses reporting in most cases where the offender is familiar. Even the 2018 and 2019 amendments to the POCSO Act reacted to public outrage rather than considered evidence and focused on harsher punishments. Both comprehensive longitudinal data on recidivism and analyses of whether harsher legal penalties are effective deterrents remain scarce. While data collection has improved, the Ministry of Women and Child Development has noted that qualitative analyses of acquittals rarely inform policy changes. Finally, survivors and families face secondary victimisation from insensitive administrative responses and media reports. Together with the lack of policing informed by trauma response and stigma, true safety continues to evade thousands of children leaving them vulnerable to a cycle of unreported and unpunished violence.

- Fearing police apathy and bureaucratic hurdles, citizens often avoid reporting suspicious activities. In cases of missing children, families often initiate the search on their own, giving perpetrators ample time to destroy evidence or abscond.

### **Policy Gaps: Overemphasis on Harsher Punishment**

- **Failure as a Deterrent:** In response to public outrage, the government amended the POCSO Act in 2018 and 2019 to introduce stricter punishments and the death penalty. However, evidence indicates that when the offender is an acquaintance, harsher punishments often deter families from reporting the case altogether due to social stigma or familial pressure.
- **Darth of Data and Qualitative Analysis:** India lacks comprehensive data or analysis on whether harsher legal penalties have actually been effective in deterring crimes against children. According to the Ministry of Women and Child Development, qualitative analysis of court acquittals is rarely utilized to inform policy revisions.

### **Secondary Victimization**

During the process of seeking justice, survivors and their families face 'secondary victimisation' and intense social stigma due to insensitive administrative responses and irresponsible media reporting.

The Indian policing system still lacks '**Trauma-informed Policing**' (sensitivity that understands psychological trauma), leaving the victimized child feeling insecure even within the protective mechanism of the state.

### **Conclusion & Way Forward**

The battle against child sexual abuse cannot be won merely by making laws more punitive or stringent. Until the state and its policing apparatus establish themselves as accessible and empathetic protectors, the actual safety of children will remain incomplete.

- **Sensitive Policing and Trauma Care:** Police personnel must be specifically trained in child psychology and trauma care. A 'child-friendly' environment must be mandatorily implemented in police stations.
- **Fast-track Justice:** To reduce the massive 89% pendency, the number of special POCSO courts must be increased, and time-bound trials (within 1 year) must be strictly enforced so that witnesses and evidence are not compromised due to judicial delays.
- **Inclusive Urban Design:** The 'Safe City' concept in urban planning should not be confined only to VIP areas; it must be extended to slums, migrant colonies, and riverfront/wetland areas by ensuring adequate infrastructure such as street lighting, CCTV surveillance, and regular police patrolling.
- **Awareness and Education:** Awareness regarding 'Good Touch-Bad Touch' must be amplified in schools and communities. It is crucial to educate stakeholders that threats often emerge from acquaintances, empowering children and parents to break the silence and report incidents in time.

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**UPSC Prelims Exam Study Questions**

**Question:** Which one of the following is NOT a major objective of Safe City Projects?

- (a) Improving urban surveillance
- (b) Enhancing women's and children's safety
- (c) Expanding industrial production
- (d) Improving public safety infrastructure

**Ans:** c)

**UPSC Mains Practice Questions**

**Question:** Child sexual abuse in India is not merely a law-and-order issue but also a challenge of governance, social awareness and institutional trust. Discuss. **(15 Marks, 250 Words)**



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**Page 10 :GS II : International Relations**

The tragic demise of three Indian seafarers in recent missile strikes executed by the US Navy near the Coast of Oman and the Strait of Hormuz—targeting merchant vessels (Marivex, Settebello, and Jalveer) allegedly carrying suspected Iranian oil—has triggered significant diplomatic friction between India and the United States. While the Government of India has registered a "strong protest" over the incident, the US has justified its actions as enforcement against the violation of its maritime blockade.

This crisis brings to the forefront critical questions regarding the safety of Indian human capital in global trade, the legal complexities associated with 'Flags of Convenience' (FOC), and the operational efficacy of international maritime laws.

**Can India protect its seafarers in Gulf?**

How many Indian seafarers are working in the Gulf region? What happened to the three vessels attacked by the US Navy? What sanctions were imposed on some ships? Does the foreign-flag status of the vessels limit India's options? Do international maritime laws protect civilian crews?

**Indian Seafarers Globally & in the Gulf Region**

- **Global Share:** Approximately 3.5 lakh Indian seafarers are employed across global merchant vessels. Statistically, every sixth mariner (1 in 6) operating large international merchant ships is an Indian national.
- **Presence in the Gulf:** In the wake of the current crisis, nearly 23,000 Indian seafarers are rendering services in various capacities across the Gulf region, with more than half of them stationed exclusively in the United Arab Emirates (UAE).

**Recent Developments and US Sanctions**

- **Nature of the Strikes:** In June 2026, the US Central Command (CENTCOM) launched precision Hellfire missile strikes targeting three vessels. The strikes specifically neutralized the engine rooms and steering compartments of the ships to immobilize them without sinking them. The casualties involving three Indian nationals occurred aboard the vessel named *Settebello*.
- **US Stance vs. Ship Management Claims:** The US administration asserts that these vessels breached the US-led blockade and were engaged in the illicit transportation of Iranian crude oil. Conversely, the ship management companies maintain that the vessels were stationary and had no operational linkages with Iranian oil.

**EXPLAINER**  
H. Kalyanasaram  
The story so far: On June 12, after India summoned U.S. Embassy representative Jason Meeks and lodged its "strong protest" against U.S. missile attacks on merchant vessels carrying Indian crew, U.S. Secretary of State Marco Rubio told External Affairs Minister S. Jaishankar that violations of the American blockade and "illicit transport of Iranian oil" would not be tolerated. Recalling his discussion with Mr. Rubio, Mr. Jaishankar posted on X: "I reiterated India's strong protest at the attacks by the U.S. Navy in the Gulf that killed three Indian mariners. Such lethal actions against commercial shipping are not tenable."

**How many Indians are working on merchant vessels globally?**  
There are an estimated 3.5 lakh Indian seafarers manning ships across the world. The Indian government estimates that more than half of them are in active service, mostly in foreign-flagged ships. This means one in every six seafarers serving on large merchant ships worldwide is Indian. The International Maritime Organization (IMO) estimates that some 20,000 seafarers of all nationalities are stranded on ships in the Persian Gulf region. The DG Shipping of India estimated at the start of the crisis that some 23,000 Indian seafarers are serving in the broader Gulf region in various capacities and facilities, with the UAE accounting for more than half.

**What happened to the three vessels targeted by the U.S.?**  
On June 9, 10, and 11, the U.S. Navy fired precision munitions – Hellfire missiles – on merchant vessels Marivex, Settebello, and Jalveer. The three were tankers carrying Indian crew. While no one was hurt in the case of Marivex and Jalveer, three Indian seafarers – one chief engineer, one engine fitter, and one deck cadet – died aboard Settebello. While Marivex was attacked off the coast of Oman, which is closer to the Strait of Hormuz, the others were attacked off the coast of Shinas in Oman, which is closer to the Strait.

Videos put out by the United States Central Command (CENTCOM) show the engine rooms of the ships being hit as well as the steering compartments. These attacks damaged the vessels above the waterline, so water didn't rush in to sink them. But their ability to move and manoeuvre on their own was lost.

In its press releases, the U.S. CENTCOM has said the crew of Settebello and Marivex refused to comply with instructions and all of them violated the blockade by attempting to transport Iranian oil. Marivex attempted to sail to an Iranian port, it claimed.

While the Marivex crew is reported to have informed seafarers' unions that their ship was at anchor while attacked, Settebello's manager, US Marine P2E, a firm registered in Panama, has fully contradicted the U.S. The company has said Settebello was stationary for nearly 10 days in the region. It said the ship had no communication from the U.S. Navy and had no connection with Iranian oil or ports.

**What sanctions were imposed on these ships?**  
Marivex was sanctioned by the U.S. in



The Palva Ragoor tanker MT Settebello, carrying 24 Indian seafarers, was attacked by U.S. forces off the coast of Oman near the Strait of Hormuz. Three Indian crew members were killed in the strike, it says.



Karanwadi Devi, mother of one of three Indian seafarers killed aboard the tanker MT Settebello, mourns at her home in Dooka, Uttar Pradesh, on June 11, 2024.

December 2025 for Iranian connections. Settebello had been flagged by a U.S. non-profit advocacy organisation, United Against Nuclear Iran, for alleged Iranian links. U.S. sanctions are not binding on any other country besides the U.S., although the U.S. Treasury Department's sanctions make it difficult for the companies associated with the concerned ship to access the financial system and other business transactions. Quite often, sanctioned ships lose insurance cover, without which ports will not accept calls by the ships, and charterers will refuse to handle cargo through them.

There have been reports of non-compliance of these ships with some maritime regulations. Typically, such violations, not uncommon in merchant shipping, relate to safety aspects. And ships are typically given time to remedy them before the consequences of losing insurance cover can kick in.

**Does the foreign-flag status of the vessels limit India's options?**  
They all carried foreign flags of convenience (FOCs) but had deep Indian links, including in ownership and management. In merchant shipping, ships are often registered in little-known nations with no infrastructure to rigorously supervise and monitor ships. Popular FOCs include Panama, Marshall

**THE GIST**  
India has protested U.S. missile attacks on three merchant vessels carrying Indian crew in the Gulf, in which three Indian seafarers aboard Settebello were killed.  
The U.S. says the vessels violated its blockade and were involved in transporting Iranian oil, but ship operators have disputed these claims and said some of the vessels were stationary when attacked.  
With about 23,000 Indian seafarers in the Gulf region, India has limited options, because the vessels were foreign-flagged, while international maritime bodies and laws have limited enforcement powers in such situations.

channels open for communication with nearby vessels and any instructions from governments and Navies and Coast Guard vessels are immediately complied with. Seafarers are trained to protect crew, cargo and the ship.  
Somalian pirates coming in small craft and carrying firearms could easily board and seize massive oil tankers. The only evasive action ships have against attackers is a high-pressure water jet that can direct at them.

**What can India do to protect Indian seafarers in the region?**  
India did launch Operation Sankalp to protect merchant ships against Houthis attacks. Indian Navy and Coast Guard intervened to protect four merchant ships in 2024. India did take action against Somalian pirates. But the helicopters in the Persian Gulf are the U.S. and Iran. Therefore, India's options are rather limited.

**Does international maritime law adequately protect civilian crews?**  
The nodal agency for regulating global shipping is the IMO, a United Nations agency. Though the IMO has the means to regulate the technical, commercial, environmental and safety aspects of global shipping through consensus and rulemaking, it has often fallen short in protecting ships and seafarers. Quite often, national governments take unilateral action, and typical of an UN agency, the IMO has been unable to act to prevent or take remedial action.

The law governing the oceans is the United Nations Convention on the Law of the Sea (UNCLOS). Its acts and mandates are extensive and are an outcome of decades of negotiations and consensus-building. UNCLOS is thorough and considers various situations, including transits across straits such as the Hormuz. But many nations have not signed on to it. The U.S. refused to sign it on the grounds that UNCLOS considers the deep seabed as the commons. Iran has signed the convention but has not ratified it. There really is no overarching body for enforcement. Things are often left to the good sense of governments.

- **Impact of US Sanctions:** The vessel *Marivex* had already been sanctioned by the US in December 2025. Although US unilateral sanctions are legally binding only on US citizens and entities, they practically cripple vessels globally by denying them access to the international banking system, maritime insurance cover, and major global ports.

### 'Flags of Convenience' (FOC) and India's Legal Limitations

- **The Challenge of Foreign-Flag Status:** All the targeted vessels were registered under foreign 'Flags of Convenience' (FOC)—such as Panama, Marshall Islands, Liberia, or Guinea-Bissau—despite having Indian ownership or crew representation.
- **Legal Constraints:** Under international maritime law, primary jurisdiction over a vessel rests with the Flag State. Had these vessels been flying the Indian Flag, New Delhi would have possessed a robust legal and military mandate to intervene, including providing naval escorts.
- **Strategic Interests:** Despite operating under foreign flags, these vessels were catering to India's massive energy architecture, transporting crude oil and bitumen (essential for road infrastructure) to Indian ports like Mangalore.

### International Maritime Laws and Civilian Safety

- **Institutional Failure of the IMO:** The International Maritime Organization (IMO) is the United Nations' nodal agency for global shipping. While it successfully formulates technical and safety frameworks, it has consistently failed to insulate civilian seafarers from unilateral military actions undertaken by sovereign superpowers.
- **Limitations of UNCLOS:** The United Nations Convention on the Law of the Sea (UNCLOS) codifies the rules of transit passage through international straits (such as the Strait of Hormuz). However, global powers themselves bypass its compliance:
  - The US has not ratified UNCLOS, opposing the classification of the deep seabed as a shared global commons.
  - Iran has signed the convention but its parliament has not ratified it.
- **Lack of an Enforcement Mechanism:** There is a vacuum of a sovereign global police force or enforcement agency to strictly implement these maritime conventions internationally.

### India's Options and Strategic Constraints

- **Operation Sankalp:** India has historically deployed the Indian Navy successfully under *Operation Sankalp* in the Gulf of Aden and the Red Sea to secure merchant vessels against Houthi rebels and Somali pirates.
- **Great Power Confrontation:** Unlike combating pirates or non-state actors, the current geopolitical friction in the Persian Gulf involves a direct confrontation between two powerful sovereign nations—the US and Iran. Consequently, direct military intervention by India remains strategically complex and highly constrained.

### Conclusion

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Merchant vessels are fundamentally defenseless, and targeting innocent civilian seafarers in geopolitical conflicts cannot be justified under any circumstances. Ensuring the safety of Indian mariners in the Gulf region is paramount to India's '**economic security**' as well as its '**diaspora diplomacy**'.

Moving forward, India must leverage its strategic defense partnership with the US to ensure that sanctions enforcement utilizes non-lethal mechanisms—such as boarding operations or financial asset freezes—rather than kinetic missile strikes. Concurrently, New Delhi must champion an international framework at global forums (such as the IMO and the UN) that guarantees civilian crews a legal 'Safe Passage'—akin to the protections granted to prisoners of war (PoWs) or diplomatic personnel—even within active conflict zones or sanctioned maritime corridors.

**UPSC Mains Practice Questions**

**Question:**The security of Indian seafarers has emerged as a critical dimension of India's foreign policy. Examine in the context of growing geopolitical tensions in West Asia.(15Marks, 250 Words)

In a landmark step toward fostering sustainable maritime growth, India's Directorate General of Shipping (DG Shipping) recently issued the country's first 'Ship Recycling Credit Note'. This inaugural credit note was awarded to a Liberian shipping firm for the safe and compliant recycling of the St. Kitts and Nevis-flagged sunken vessel, 'Costa'. Embedded within the Government of India's ₹70,000 crore comprehensive financial package, this scheme aims to position India as a premier global hub for green ship recycling and eco-friendly shipbuilding, while structurally reinforcing the tenets of a circular economy.

**Understanding the Ship Recycling Credit Note Scheme**

- Financial Incentive:** Shipowners who choose to scrap their decommissioned vessels at certified and accredited domestic recycling yards will receive a credit note valued at 40% of the ship's total scrap value.
- Redemption and Validity:** The credit note carries a validity period of three years. It can be redeemed to avail of a discount of up to 5% on the fair contractual price of a new vessel commissioned and built at any Indian shipyard.
- Digital Infrastructure:** To ensure operational transparency and administrative ease, a 'Unified Ship Recycling Portal' has been operationalized. This digital platform facilitates seamlessly integrated application processing, tracking, and the issuance of digitally signed credit notes.

**India's maritime sector growth gets a push as DG Shipping issues first ship recycling credit note**

**Aneesh Phadnis**

India's ambitions for sustainable maritime sector growth have taken off with the sector regulator issuing the first ship recycling credit note.

On May 28, the Directorate General of Shipping issued the credit note to a Liberia-based shipping firm under a scheme to promote safe recycling and shipbuilding.

India is a global leader in the ship recycling industry handling around 30% of dismantled vessels. The credit note scheme is expected to boost competitiveness of Indian yards, attract fresh investments and strengthen the circular economy.

Ship owners will get a credit note equivalent to 40% of scrap value upon recycling in certified facilities. The note will be valid for three years and can be redeemed up to five per cent of the fair price of a new vessel built in an Indian shipyard.

"The ship recycling credit note scheme is a step in the right direction and demonstrates the government's intent to position India as a hub for ship recycling and shipbuilding," said Deepak Shetty, former Director General of Shipping.

Its launch also aligns with the implementation of the Hong Kong International Convention for Safe and Environmentally Sound Recycling of Ships. The convention is a binding global treaty which



**Smooth seas:** Ship owners will get a credit note equivalent to 40% of scrap value upon recycling in certified facilities. AP

mandates environmentally sound recycling practices that minimise health risks for yard workers and prevents pollution from its activities. The convention came into force last June.

**Ensuring compliance** "India currently has 111 ship recycling yards compliant with the Hong Kong International Convention (HKC), located at Alang, Gujarat. This represents one of the largest concentrations of HKC-compliant ship recycling facilities anywhere in the world," said Director General of Shipping Shyam Jagannathan.

Under the convention, recycling yards are required to implement occupational health and safety measures, maintain environmental protection systems and ensure proper management of hazardous materials and waste. Facilities are also required to

maintain worker training programmes, emergency preparedness procedures and environmental monitoring mechanisms. Mr. Jagannathan said the directorate in coordination with state authorities and recognised organisations undertakes periodic inspections, audits and certification activities to ensure continued compliance. According to Ship Recycling Industries Association (India) a total of 119 ships were recycled in India in FY 2026 amounting to 1.08 million light displacement tons – an industry metric that measures the quantity of recyclable material available for pro-

cessing. The new scheme and initiatives in digitalisation and ease of doing business will help grow the numbers. Mr. Jagannathan said the ship recycling credit note scheme has seen encouraging traction. Already 41 ship owners have registered and six applications have been received under the scheme.

The first credit note valued ₹29 crore was issued for recycling of a St. Kitts and Nevis flagged capsized vessel called Kosta. The ship owned by Bella Shipping Inc was recycled at the Inducto Steel Limited yard at Alang in April.

"All ships recycled at Hong Kong Convention compliant yards in India are eligible for the credit note, subject to adherence to the scheme's prescribed conditions and procedures," he said. A unified ship recycling portal enables seamless applications,

processing, tracking and issuance of digitally signed credit notes bringing together the Directorate, state maritime boards and recycling yards on a single platform, he added.

While the scheme creates a powerful incentive for shipowners to recycle and build in India, its execution will depend on practical considerations whether credit note validity aligns with shipping firm's acquisition plans. A crucial test would also be the Indian shipyard's ability to deliver vessels on time. While India is a leader in ship recycling, it is a laggard in shipbuilding. A S&P Global Commodity Insights report last year said the Indian shipbuilding industry accounts for less than one per cent of the global market while China holds 60 per cent share.

Last year the government unveiled a ₹70,000 crore package to boost

shipbuilding and maritime sector in the country. The credit note scheme was a part of the package. The package is seeing signs of success with HD Hyundai signing an MoU for greenfield shipyard in Tamil Nadu. Cochin Shipyard securing a contract for six LNG-powered vessels from shipping line CMA CGM is also seen as a win.

Ship recycling specialist Dr. Anand Hiremath suggests that the government could take further steps.

"New building decisions take time. A three year window for credit note may be too short for serious global owners. A 4-6 year period could make the scheme more attractive," he said.

A pre-approval mechanism could also help owners find out in advance the eligibility and discounts available through credit note mechanism. "The government should support yard capability through completion guarantees, vendor clusters, training support and milestone linked grants. The focus must be on execution," Mr. Hiremath said. Over the years the skilled Indian workforce has moved to shipyards overseas for better career prospects. The government should launch a targeted programme to attract this experienced workforce through incentives, relocation support, skill recognition and long term employment opportunities, he added.

(The writer is with The Hindu businessline)

**Alignment with the Hong Kong International Convention (HKC)**

The incentive framework operates in absolute alignment with the statutory mandates of the Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships, which entered into force globally in June 2025.

- Objective of the Convention:** This legally binding multilateral treaty establishes strict global benchmarks for ship recycling, aiming to mitigate occupational health risks for yard laborers and eliminate hazardous environmental pollution.
- India's Compliance Landscape:** Alang, Gujarat—the nerve center of India's shipbreaking industry—currently hosts 111 recycling yards certified under the Hong Kong Convention. This represents the densest concentration of HKC-compliant maritime recycling facilities globally.

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- **Recycling Throughput:** In Financial Year 2026, India successfully recycled 119 vessels, aggregating to 1.08 million Light Displacement Tonnage (LDT—the metrics measuring recyclable structural weight). Currently, India commands a substantial 30% share of the global ship recycling market.

### Strategic Imperatives for the Indian Maritime Sector

- **Strengthening the Circular Economy:** The high-grade steel and non-ferrous scrap recovered from dismantled vessels feed directly into the domestic steel sector, substituting primary raw material demands and significantly alleviating pressure on natural iron ore reserves.
- **Bridging the Recycling-Shipbuilding Divide:** While India maintains a dominant global position in ship recycling, its footprint in core commercial shipbuilding is negligible. Globally, China commands a staggering 60% of the shipbuilding market, whereas India's share languishes below 1%. This credit note policy serves as an innovative structural bridge to translate recycling leadership into domestic shipbuilding capacity.
- **Recent Industrial Headwinds:** Driven by these proactive policy interventions, South Korea's HD Hyundai has signed a Memorandum of Understanding (MoU) to establish a greenfield shipyard in Tamil Nadu. Concurrently, Cochin Shipyard Limited (CSL) has secured premium export orders for the construction of six LNG-powered, zero-emission merchant vessels.

### Critical Constraints and Implementation Challenges

- **Restrictive Validity Window:** Commercial procurement cycles and capital budgeting decisions for new vessel orders in global shipping typically span across multi-year horizons. Consequently, the 3-year validity window of the credit note is viewed by the industry as excessively brief.
- **Execution Risks and Project Delays:** Indian shipyards have historically faced systemic vulnerabilities concerning project overruns and delayed deliveries. If domestic yards fail to meet strict international timelines, global shipping conglomerates will look away from the scheme.
- **Brain Drain of Skilled Human Capital:** Over the past decade, a significant volume of India's highly skilled marine engineers, naval architects, and specialized shipyard technicians have migrated to prominent maritime clusters like Singapore and the Gulf cooperation nations due to superior compensation structures.

### The Way Forward and Policy Interventions

Drawing upon policy recommendations from leading maritime sustainability experts, the following corrective and promotional interventions are vital to anchoring India as a global maritime hub:

- **Extending the Horizon of Credit Validity:** To effectively capture the long-term capital cycles of global shipowners, the validity of the credit notes should be lengthened from 3 years to a more viable window of 4 to 6 years.
- **Institutionalizing a Pre-Approval Framework:** A transparent, front-end mechanism must be designed to allow shipowners to calculate their prospective credit accruals and shipbuilding discounts prior to commencing the physical dismantling process.

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## Daily News Analysis

- **Capacity Augmentation of Domestic Yards:** The state must aggressively de-risk domestic shipyards by extending absolute performance and completion guarantees, cultivating localized component vendor clusters, and introducing milestone-linked fiscal grants.
- **Targeted 'Reverse Brain Drain' Initiatives:** A dedicated repatriation program should be institutionalized to incentivize skilled Indian maritime professionals abroad to return, offering competitive long-term employment frameworks and comprehensive relocation assistance.

### Conclusion

The rollout of India's first Ship Recycling Credit Note marks a historic milestone in the implementation architecture of India's 'Blue Economy' vision and the overarching 'Maritime India Vision 2030'. It serves as an exemplary policy model balancing economic industrialization with strict environmental governance. However, to meaningfully contest the shipbuilding hegemony of economic heavyweights like China and South Korea, India must radically upgrade its industrial execution velocity and manufacturing throughput. Only when innovative fiscal instruments like credit notes are backed by a robust industrial ecosystem and a highly skilled workforce can India realize its geopolitical ambition of becoming a global maritime superpower.

### UPSC Prelims Exam Study Questions

**Question: The term "Light Displacement Tonnage (LDT)" is commonly associated with:**

- (a) Cargo carrying capacity of ships
- (b) Measurement of recyclable material available in a ship
- (c) Weight of fuel carried by a vessel
- (d) Depth of a shipping channel

**Ans: b)**

### UPSC Mains Practice Questions

**Question:** Discuss the significance of the Ship Recycling Credit Note Scheme in promoting India's shipbuilding industry and Blue Economy objectives. **(15 Marks, 250 Words)**

**Page :06 : Editorial Analysis**

*The 'seven-point IQ opportunity' for Indian children*

**W**hat if we could increase the IQ of India's future generations by seven points with a pivot in the understanding of early childhood development under the Anganwadi system?

For decades, India's early childhood agenda has focused on ensuring that children survive early childhood, reducing under-five mortality from 43 in 2012 to 32 in 2020 (UNICEF and World Bank data) with sufficient inputs invested toward their health, nutrition, immunisation and sanitation conditions. The Anganwadi system reflects these priorities at scale: approximately eight crore children (ages 0-6 years) receive supplementary nutrition, growth monitoring and health services, alongside counselling and home visits for their parents. However, body and brain development in the early years do not proceed on separate tracks.

Early childhood development is an ecological process in which nutrition, health, and early learning interact dynamically with each other through the body, brain, and environment. The developing brain is highly energy-intensive, consuming nearly one-fifth of the body's energy at rest. In the first year alone, grey matter volume increases by 149% and the cerebellum by 240% as millions of synapses form in regions associated with movement, language, and planning.

**Middle-income evidence is clear**

Paediatric research in Jamaica in the 1980s provided hard academic evidence to an idea that many cultures already understood. Researchers working with stunted children found that nutritional supplementation improved physical health alone, but adding regular psychosocial stimulation (love-talk-play and responsive interaction) resulted in stronger cognitive gains.

Similar findings emerged in India from a birth cohort study in Vellore (250 children followed from birth to age 9) where children stunted early in life performed worst on later cognitive assessments, but those who recovered physically also showed better cognitive outcomes.



**Beena Koshy**  
Senior Professor, Developmental Paediatrics, Christian Medical College (CMC), Vellore, Tamil Nadu



**Riday Chokshi**  
Senior Associate – National Initiatives and Policy, Rocket Learning

Anganwadis can help boost cognitive development through holistic early intervention

International research on enteric dysfunction and poor sanitation has shown that nutritional inputs are mediated by the child's environment. A child's body may receive food, but infection, inflammation, toxic exposure and deprivation of stimulation can adversely influence this very nutrition. In studies in Vellore, children with iron deficiency or high lead exposure in early life, score lower on developmental and cognitive assessments, even when their height and weight appear normal. It is not simply what children eat that matters, but whether their bodies can absorb and use it. Yet, numbers on a growth chart never tell the full story. The quality of the home environment – how much they are talked to, read to, played with and emotionally supported, keeps emerging as a stronger predictor of cognitive outcomes than diet alone.

Most encouragingly, exposure to structured preschool and early stimulation has the potential to transform a generation. Children in the Vellore cohort who attend preschool regularly for 18 to 24 months, including in Anganwadi centres, are scoring seven IQ units higher on cognitive tests than those not attending preschool, even after accounting for poverty, maternal education and early stunting. In a similar Brazilian birth cohort, children who received structured preschool had higher cognition scores by eight units at age five. This is powerful evidence that stimulation and nutrition have strong, independent effects and amplify each other when both are fulfilled.

**A role for Anganwadis**

Indian policymakers are responding to new evidence quickly. The Anganwadi system has started to incorporate this broader understanding of holistic early childhood development into its core design. This shift is most visible in the rollout of national frameworks such as Aadharshila and Navchetana and programmes such as Poshan Bhi Padhai Bhi. They are critical inputs in redefining neighbourhood Anganwadis as vibrant early childhood education centres that nourish both mind and body. Aadharshila

strengthens play-based preschool education within centres, while Navchetana extends early stimulation into the home, equipping caregivers with simple, science-based ways to support development through everyday interactions.

In clinical practice, we offer these frameworks to parents everyday, helping to turn routine moments into opportunities for learning. We encourage the integration of Navchetana's "loving, talking and playing" into daily life while feeding, cooking or playing with children. The home lays the foundation of early language, cognition and socio-emotional skills in the first three years, and Anganwadis deepen it through structured play-based activities, storytelling and peer learning from ages three to six.

Systemic community mobilisation initiatives, such as Poshan Pakhwada conducted in April 2026 by the Ministry of Women and Child Development focus on promoting early stimulation for brain development, play-based education in the early years, and the role of parents and communities in reducing screen exposure and strengthening engagement with Anganwadis. The campaign signals that early childhood development is not confined to centres or programmes, but depends on what happens within households and neighbourhoods.

**Building futures**

An "ecological" approach uplifts families as much as it strengthens children. Reliable childcare gives mothers the time, the confidence and the opportunity to work, study or contribute economically. In Vellore, we have seen women trained as childcare workers gain both dignity and livelihood, creating a virtuous circle of care. When the kitchen, classroom and crèche align, children flourish, women work and communities thrive.

For a Viksit Bharat, progress cannot rest on calories alone. The physical and interactive learning and playing environments in homes, Anganwadis and communities must be as enriching as the meals they receive.

**GS Paper II: Governance and Social Justice**

**UPSC Mains Exam Practice Questions:** Examine the role of Anganwadi Centres in transforming India's demographic dividend into human capital. **(15 Marks, 250 Words)**

**Context :**For decades, India's Early Childhood Development (ECD) agenda has been heavily anchored around child survival, health, nutrition, immunization, and sanitation. This sustained focus successfully reduced the Under-5 Mortality Rate (U5MR) from 43 per 1,000 live births in 2012 to 32 in 2020. However, recent scientific insights from the Vellore (Tamil Nadu) Birth Cohort study reveal that caloric intake and basic nutrition alone are insufficient for a child's holistic development. By integrating 'Early Psychosocial Stimulation' (nurturing through love, talk, and play) with 'nutrition' under the Anganwadi system, India can unlock a potential 7-point increase in the Intelligence Quotient (IQ) scores of its future generations.

### The 'Ecological Approach' to Early Childhood Development

- **Energy-Intensive Brain Development:** During the formative years, physical growth and neurological development do not occur in isolation. The human brain consumes approximately 1/5 (20%) of the body's total energy in a resting state. In the first year of life alone, a child's grey matter volume expands by 149% and the cerebellum grows by 240%, forging millions of synapses in regions regulating motion, language, and planning.
- **Nutrition vs. Environmental Mediation:** Environmental stressors—such as environmental enteric dysfunction (gut infections), exposure to toxic heavy metals like lead, or psycho-emotional stress—dictate how efficiently a child's body absorbs nutrients. Studies indicate that even children with optimal weight-for-age and height-for-age metrics can experience stunted cognitive development if subjected to a low-stimulation or contaminated environment in early life.

### Empirical and Global Scientific Evidence

- **The Jamaica Study (1980s):** Research on stunted children demonstrated that while nutritional supplementation improved physical health, it was the addition of regular psychosocial stimulation (Love-Talk-Play) that catalyzed extraordinary, long-term advancements in their cognitive capabilities.
- **The CMC Vellore Cohort Study:** A longitudinal tracking of 250 children from birth to 9 years of age revealed that toddlers who consistently attended a structured preschool environment (like an Anganwadi) between 18 to 24 months of age scored 7 points higher on standardized IQ tests compared to those who did not attend preschool.
- **The Brazil Cohort Study:** Mirroring these findings, a similar cohort study in Brazil demonstrated that children who received structured early childhood education displayed an 8-point higher cognitive score by the age of 5.

### Policy Response: Structural Transformation of the Anganwadi System

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Leveraging this scientific paradigm, the Government of India is systematically pivoting its public policy framework from a "nutrition-centric" model to an integrated "nutrition-and-education" paradigm, as reflected in the following flagship initiatives:

- **Poshan Bhi Padhai Bhi (Nutrition as well as Education):** This national flagship program aims to overhaul neighborhood Anganwadi centers into vibrant Early Childhood Education (ECE) hubs that nourish both the mind and the body.
- **Aadharshila (The Foundation Framework):** A curriculum framework formulated to structurally reinforce play-based, non-formal preschool education within Anganwadi ecosystems.
- **Navchetana (The New Consciousness):** A strategic initiative designed to extend early childhood stimulation into domestic spaces. It equips parents and primary caregivers with simple, science-backed techniques to integrate 'Loving, Talking, and Playing' into everyday routines (such as during feeding or cooking).
- **Poshan Pakhwada (April 2026):** Organized by the Ministry of Women and Child Development, this nationwide campaign placed special emphasis on early childhood stimulation for brain development, play-based learning, minimizing early screen exposure (mobiles/TV), and driving robust community mobilization.

### Socio-Economic Implications

- **Women Empowerment and Labor Force Participation:** The institutionalization of reliable, high-quality early childhood care at Anganwadis liberates mothers from unpaid care work, granting them the time and opportunity to pursue formal employment, higher education, or entrepreneurial ventures.
- **Cultivating a Virtuous Circle:** Training local women as specialized early childhood care workers generates dignified, sustainable livelihoods at the grassroots level. This local capacity building structurally strengthens the social fabric and economic resilience of the community.

### Conclusion

The strategic vision of a 'Viksit Bharat' (Developed India) cannot be achieved merely by counting the calories or the volume of food delivered to our children. Genuine human capital formation occurs only when a child's learning and playing environment is as rich and secure as their nutritional intake.

Anganwadi centers must transcend their traditional identity as mere day-care facilities or food distribution centers; they must be repositioned as the 'epicenters of early cognitive development'. The rigorous, nationwide execution of frameworks like *Poshan Bhi Padhai Bhi*, *Aadharshila*, and *Navchetana* holds the definitive key to converting India's



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demographic dividend into a highly skilled, intelligent, and optimal workforce. This 7-point IQ window represents the single most high-yielding, transformative, and far-reaching investment India can make in its sovereign future.



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