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Daily News Analysis

The Hindu Important News Articles & Editorial For UPSC CSE

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News Analysis 1: PSLV-C62 strays from flight path, fails to launch satellite

The recent failure of the PSLV-C62 mission marks the second consecutive setback for India's Polar Satellite Launch Vehicle, raising concerns over the reliability of India's otherwise proven launch systems. The mission failed due to an anomaly in the third stage, leading to the loss of the EOS-N1 satellite and multiple co-passenger satellites.

Core Analysis

- The **Indian Space Research Organisation (ISRO)** reported a "roll rate disturbance" towards the end of the third stage (PS3), causing deviation from the intended flight path.
- The third stage is a **solid fuel motor**, and disturbances here are particularly serious because solid motors cannot be throttled or shut down once ignited.
- A similar failure occurred in **PSLV-C61 (May 2025)**, where telemetry indicated a sudden chamber pressure drop, pointing towards possible structural failure, nozzle malfunction, or casing breach.
- The recurrence suggests a **systemic issue**, possibly linked to manufacturing quality, material integrity, or inspection lapses rather than random failure.
- The PS3 stage lacks independent roll control thrusters and depends on the fourth stage for stabilisation, making it vulnerable to asymmetric thrust or gas leakage.

Conclusion

The PSLV-C62 failure highlights the critical importance of rigorous quality assurance and transparent post-failure analysis. For a technologically mature launch vehicle, repeated third-stage anomalies are unacceptable and demand institutional introspection and corrective reform.

PSLV-C62 strays from flight path, fails to launch satellite

Hemanth C.S.
Vasudevan Mukunth
BENGALURU/CHENNAI

The Indian Space Research Organisation (ISRO)'s PSLV-C62 mission carrying the EOS-N1 earth observation satellite and 15 co-passenger satellites failed to finish its intended trajectory on Monday after an anomaly was detected during the end of the third stage of the launch vehicle, resulting in the loss of the satellites and prompting a detailed analysis.

The PSLV-C62 lifted off from the Satish Dhawan Space Centre in Sriharikota at 10.18 a.m. on Monday. The launch of the vehicle, which has four stages, went as expected till the third stage, but showed "disturbance in the vehicle roll rates" close to the end of the third stage, ISRO chairman V. Narayanan said. "The performance of the vehicle up to the end of the third stage was as expected. Close to the end of the third stage, we saw some disturbance in the vehicle roll rates, and subsequently, a deviation was observed in the flight path. We are analysing the data, and we shall come back at the earliest," Mr. Narayanan said.

Monday's outcome is seen as a big setback for the space agency as the PSLV, its workhorse rocket, has suffered back-to-back failures now.

On May 18, 2025, ISRO's attempted launch of the EOS-09 satellite aboard the PSLV-C61 mission could not be completed, also due to an anomaly in the third stage of the rocket. The EOS-N1 earth observation satellite is said to be built for strategic purposes.

"It is a commercial mission of NewSpace India Limited (NSIL). EOS-N1 and 14 co-passenger satellites will be injected into a Sun Synchronous Orbit, and the KID Capsule into a re-entry trajectory," ISRO had said in a statement.

It added that after the injection of the EOS-N1 and 14 satellites, the PS4 stage would be restarted to de-boost and enter a re-entry trajectory, followed by the KID Capsule separation.

"Both PS4 stage and KID capsule will re-enter Earth's atmosphere and the impact will be in the South Pacific Ocean," the statement added.

Financial fallout

The financial burden for the satellites lost in the failed PSLV-C62 mission falls on different parties, depending on the nature of the satellite. In the space industry, there is no single payer for a failed mission; instead, the loss is absorbed by a mix of state funding and insurance claims. Governments typically do not purchase commercial insurance for their own strategic or military satellites because the premiums are very high. In the present instance, the direct financial loss of the EOS-N1 satellite, developed by DRDO, will be borne by the state, and DRDO may have to seek fresh budgetary approval to build a replacement.

The co-passenger satellites from private enterprises, including Indian startups and international entities, would have purchased policies that pay out a lump sum in the event of a 'total loss' during the launch phase. If a specific entity didn't purchase insurance, that company must absorb the total loss itself.

The NSIL is likely to have had contracts with the private customers. While the NSIL generally doesn't pay for the satellite itself, the contract might include a re-flight guarantee or a refund of the launch fee if the mission fails. This said, the ISRO or NSIL is not liable for the value of the customer's satellite unless gross negligence is proven, which is rare. The standard industry practice is a 'waiver of liability' where both the launcher and the satellite owner agree not to sue each other for damages.

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Off target
The anomaly in the PSLV-C62 launch occurred when the third stage of the vehicle was operating
Third stage (PS3) ignites 4 minutes 25 seconds after liftoff
Vehicle starts spinning in an uncontrollable way by around 2 minutes into third stage
ISRO reports trouble receiving data by the 12-minute mark
MONDAY'S FAILURE IS THE FOURTH SINCE THE PSLV'S FIRST MISSION IN 1993, AND SECOND WITHIN A YEAR
■ September 20, 1993: PSLV-D1, the first mission of the vehicle, fails to place the IRS-1E satellite in orbit
■ August 31, 2017: PSLV-C39 launch fails with malfunction in heat shield separation
■ May 18, 2025: PSLC-C61 launch fails with an incident in the third stage
PTI

News Analysis 2: What do two PSLV mission failures in a row mean for ISRO?

The back-to-back failures of PSLV missions have implications beyond technology, directly affecting India's ambitions in the global commercial launch market and its credibility as a reliable spacefaring nation.

Core Analysis

PSLV is marketed commercially through **NewSpace India Limited (NSIL)** as a cost-effective and dependable launch option.

Consecutive failures will likely lead to:

- Increased **insurance premiums** for PSLV launches.
- Hesitation among international customers and startups.
- Reputational damage in a competitive launch market dominated by SpaceX, Arianespace, and emerging Chinese providers.

The EOS-N1 satellite, reportedly built for strategic purposes by **Defence Research and Development Organisation (DRDO)**, was uninsured, meaning the **financial burden falls directly on the state**.

Private co-passenger satellites may be covered by commercial insurance, but NSIL may still face contractual obligations such as re-flight guarantees or refunds.

The standard "waiver of liability" regime protects ISRO legally, but not reputationally.

Screengrab from a video posted on Monday shows the ISRO's PSLV-C62 carrying the EOS-N1 satellite lifts off from Sriharikota. PTI

What do two PSLV mission failures in a row mean for ISRO?

NEWS ANALYSIS

Vasudevan Mukunth
CHENNAI

On May 18, 2025, the Indian Space Research Organisation (ISRO) suffered a rare failure with its PSLV-C61 mission. The PSLV rocket has long been considered the agency's "workhorse" due to its history of reliable launches. However, on January 12, the PSLV-C62 mission also failed. Indian Space Research Organisation Chairman V. Narayanan confirmed that the rocket's third stage (PS3) experienced an anomaly, marking two consecutive failures for the vehicle.

To understand the recent failure, it's necessary to examine the C61 mission, whose primary payload was the EOS-09 satellite.

While the first two stages performed correctly, telemetry data showed a sudden, unexpected drop in chamber pressure within the third stage motor around 203 seconds into the flight. Because the PS3 is a solid-fuel motor, a pressure drop of this nature may indicate a serious structural failure, such as a casing breach or a nozzle blowout. Without the necessary pressure, the engine would not have been able to generate enough thrust.

Data withheld

Following the C61 incident, a Failure Analysis Committee (FAC) investigated the root cause. However, the FAC's report submitted to the Prime Minister's Office has not been released to the public.

The reasons are not clear. One possibility is to protect sensitive information about the payload; this said, it is also possible to release a technical failure report regarding the rocket while redacting sensitive information about any satellites.

Commercial protection is another possibility: ISRO is aggressively pushing the PSLV as a commercial product through NewSpace India, Ltd (NSIL). The PS3 motor is a technologically mature component that should not fail. If the failure was caused by simple negligence or a manufacturing defect, admitting this publicly could damage the rocket's reputation and increase the cost of insuring its launches. Keeping the report classified may be a way to avoid admitting whether the issue was one bad batch of materials or a deeper lapse in quality assurance.

Reason for failure

Either way, the overall lack of transparency sets the context for the outcome of the PSLV-C62 mission. Once the third stage anomaly became clear, Mr. Narayanan stated that the mission failed due to a "roll rate disturbance", meaning the rocket began spinning uncontrollably. The PS3 stage lacks its own roll control thrusters and instead banks on the stage above it, the fourth stage, to remain stable.

If the PS3 motor suffered a leak and vented gas from the side of the nozzle, it could create a twisting force strong enough to overpower the fourth stage stabilisers.

That the third stage motor was affected in both missions suggests the two modes of failure could be related. By keeping the PSLV-C61 investigation internal, the ISRO and the Department of Space avoided external scrutiny of the organisation's "return to flight" criterion.

If independent experts had been able to review the initial findings, they may have been able to verify the quality of the fixes ISRO implemented before the second launch.

But the agency launched again eight months later and faced the same result.

Conclusion

While ISRO remains legally insulated, the commercial fallout of repeated failures could undermine India's position as an affordable and reliable launch service provider. Restoring confidence is essential for sustaining India's space economy and private-sector participation.

News Analysis 3: Troubling repeat : ISRO must begin rebuilding quality assurance protocols

The handling of the PSLV-C61 and C62 failures has triggered debate on transparency and governance within ISRO, especially regarding the non-disclosure of the Failure Analysis Committee (FAC) report.

Core Analysis

- The FAC report on PSLV-C61 was submitted to the Prime Minister's Office but **not released publicly**, despite PSLV being a civilian and commercial launch vehicle.
- Possible reasons for secrecy include:
  - Protection of sensitive payload information.
  - Avoiding reputational and commercial damage.
- However, the lack of transparency has consequences:
  - Prevents independent technical scrutiny.
  - Weakens public trust in a publicly funded institution.
  - Raises questions about the robustness of the "return-to-flight" clearance process.
- The decision to proceed with PSLV-C62 without public disclosure of corrective measures suggests **procedural haste**, possibly influenced by strategic payload urgency.
- This marks a shift from ISRO's traditional culture of scientific openness toward bureaucratic opacity.

Conclusion

For long-term credibility, ISRO must balance strategic confidentiality with institutional transparency. Releasing redacted technical findings of the PSLV-C61 failure would strengthen accountability, improve quality assurance, and restore public and commercial confidence.

Troubling repeat

ISRO must begin rebuilding quality assurance protocols

On January 12, as the PSLV-C62 mission rose from Sriharikota into the morning sky and its third stage kicked on, the live telecast abruptly stopped showing the rocket's performance and trajectory. As it became evident that its third stage had suffered an anomaly, putting paid to the C62 mission in a manner similar to the PSLV-C61 mission in May 2025, the change in the telecast became more familiar. For decades, the PSLV has been the 'workhorse' of India's space ambitions. Together with the rocket's technology being mature, the implication is that the mistakes that sank two PSLV launches could be on the quality assurance side. At least, these are not likely to be isolated anomalies. The C61 mission failed after its third stage lost chamber pressure, but rather than publicly reveal the diagnosed root cause, the decision was to leave the Failure Analysis Committee (FAC) report with the Prime Minister's Office. ISRO provided assurances of "structural reinforcements" and cleared the PSLV for its next flight. The symptom of the C62 failure, a "roll rate disturbance", parallels the events preceding the C61 failure. The financial consequences are poor: under the aegis of NewSpace India Limited, ISRO has been positioning the PSLV as a commercial product in a competitive global launch market. Now, international insurers operating in this market will reassess the PSLV's risk profile and the insurance premiums could skyrocket, rendering the vehicle less affordable – a strategic embarrassment for a country aspiring to be a net provider in space.

The tenure of ISRO Chairman V. Narayanan has been characterised by a continued shift away from ISRO's traditional culture of scientific openness toward a more guarded, bureaucratic posture. While the pressure to maintain a high launch cadence is understandable, his decision to move the C62 mission to the pad while the autopsy of its predecessor remains classified should raise tough questions about the organisation's priorities. That the C62 mission also carried the EOS-N1 satellite, built by the DRDO and with unspecified strategic applications, could help explain a 'rush' if there was one. Fortunately for Mr. Narayanan, ISRO has also demonstrated the increasing reliability of its LVM-3 rocket in his time, most recently with the M6 mission in December 2025. But right now, ISRO's and his best path to restoring confidence, and begin the painful work of rebuilding quality assurance protocols, is for the Department of Space to release the FAC report for the C61 mission. The tax-paying public and commercial stakeholders deserve to know what went wrong in 2025, whether it recurred in 2026, and why the third stage was affected again.

UPSC Prelims Exam Practice Question

Ques: In the context of space missions, the term "roll rate disturbance" refers to:

(a) Loss of orbital velocity

(b) Uncontrolled rotation of the launch vehicle along its longitudinal axis

(c) Sudden drop in engine chamber pressure

(d) Deviation in payload separation timing

Ans : b)

UPSC Mains Exam Practice Question

Ques: Two consecutive failures of the PSLV launch vehicle raise concerns over India's space launch reliability. Examine the possible technical and institutional reasons behind such failures. **(250 Words)**

Page 01: GS III : Indian Economy / Prelims Exam

India's retail inflation, measured by the Consumer Price Index (CPI), rose to **1.33% in December 2025**, marking a three-month high, according to data released by the Ministry of Statistics and Programme Implementation. Despite this uptick, inflation remains **well below the lower threshold of 2%** under the inflation-targeting framework of the Reserve Bank of India (RBI), which aims for 4% inflation with a tolerance band of ±2%. The data point to a broad-based decline in prices across sectors, even as core inflation shows signs of firmness.

Retail inflation at 3-month high of 1.33% in December

Increased figure still below RBI's lower comfort level of 2%; data show broad-based decline in price levels across sectors as reason for low figure; core inflation at 28-month high of 4.8%, says expert

T.C.A. Sharad Raghavan
NEW DELHI

India's retail inflation quickened to a three-month high of 1.33% in December 2025, which is still significantly below the lower comfort level of 2% set by the Reserve Bank of India (RBI), official data released on Monday showed.

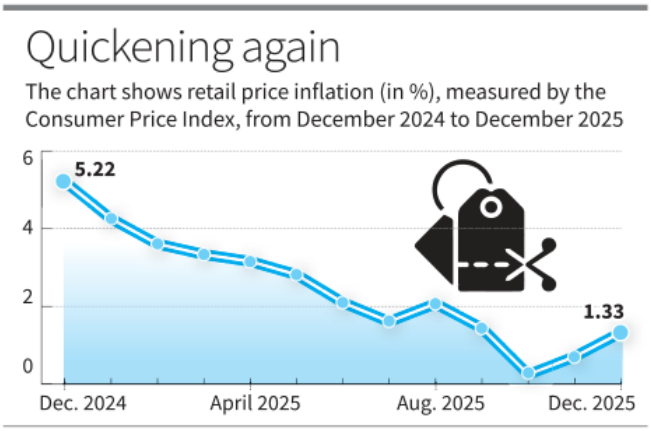
Data on the Consumer Price Index for December 2025, released by the Ministry of Statistics and Programme Implementation, show that the low levels of retail inflation are a result of a broad-based decline in price levels across sectors. The RBI targets an inflation rate of 4%, with a comfort band of 2% above and below that.

The food and beverages category saw a contraction of 1.85% in prices in December 2025, a moderation from the contraction of 2.8% seen in November. This is likely due to a high base effect as inflation in this category stood at 7.7% in December last year.

"However, inflation was high at over 5% for meat products, oils, and fruits and will continue to exert upward pressure in the coming months," Madan Sabnavis, chief economist at the Bank of Baroda said.

Inflation in the 'pan, tobacco, and intoxicants' category remained unchanged at 2.96% in December 2025 as compared to November. The clothing and footwear category saw inflation easing marginally to 1.44% in December 2025 from 1.49% in the previous month. Inflation in this category had been 2.7% in December 2024. The housing sector, too, saw inflation easing to 2.86% in December 2025 from 2.95% in the previous month. The fuel and light category saw inflation ease to 1.97% in December 2025, as compared to 2.3% in November.

"Core inflation (CPI excluding food and beverages, fuel and light, and petrol and diesel for vehicles) jumped to a 28-month high of 4.8% in December 2025 from 4.4% in November 2025," Aditi Nayar, chief economist and head, research & outreach at ICRA Limited said. "However, this was largely led by precious metals; core CPI excluding gold and silver remained unchanged at 2.4% between these months."



Inflation (in short)

Inflation is the sustained increase in the general price level of goods and services in an economy over time, which results in a decline in the purchasing power of money.

Types of Inflation

Demand-Pull Inflation: Occurs when aggregate demand exceeds aggregate supply (e.g., high income, excess liquidity).

Cost-Push Inflation: Caused by a rise in production costs such as wages, raw materials, fuel, or taxes.

Creeping (Mild) Inflation: Slow and manageable inflation, usually below 3%, considered healthy for growth.

Walking (Moderate) Inflation: Inflation in the range of 3–7%, requires close monitoring by policymakers.

Running (High) Inflation: Rapid inflation, typically above 7–10%, harmful to economic stability.

Hyperinflation: Extremely high and uncontrollable inflation, leading to collapse of currency value.

Core Inflation: Inflation excluding food and fuel, used to assess underlying price pressures.

Headline Inflation: Overall inflation including all commodities, commonly measured by CPI.

Imported Inflation: Arises due to rise in prices of imported goods or currency depreciation.

Structural Inflation : Caused by structural rigidities such as supply bottlenecks or poor infrastructure.

Key Drivers and Sectoral Trends

Food and Beverages Deflation

Prices in the food and beverages category contracted by **1.85%**, continuing deflationary trends, though less sharply than in November.

This moderation is largely attributed to a **high base effect**, as food inflation had been elevated in December 2024.

However, persistent price pressures in **meat, oils, and fruits** could reverse this trend, as highlighted by economists from Bank of Baroda.

Moderation in Non-Food Categories

Inflation in **clothing and footwear**, **housing**, and **fuel and light** eased marginally, indicating soft demand conditions and subdued cost pressures.

Stable inflation in **pan, tobacco, and intoxicants** reflects limited pass-through of price changes in discretionary consumption.

Rise in Core Inflation

Core CPI rose to a **28-month high of 4.8%**, signalling underlying inflationary pressures.

Importantly, this rise was driven primarily by **precious metals**; excluding gold and silver, core inflation remained muted at **2.4%**, as noted by analysts from ICRA Limited.

This divergence suggests that demand-side inflation remains weak, while asset-linked prices are driving headline core inflation.

Implications for Monetary Policy and the Economy

Policy Space for RBI: Persistently low headline inflation provides the RBI with **policy flexibility** to prioritise growth, especially in a context of uneven recovery and global uncertainty.

Risks Ahead: Potential upside risks include food price volatility, global commodity shocks, and imported inflation. A sustained rise in core inflation could also constrain accommodative monetary policy in the medium term.

Demand Conditions: Broad-based price declines indicate **subdued aggregate demand**, pointing to the need for continued fiscal support and structural reforms to stimulate consumption and investment.

Conclusion

The December 2025 inflation data reflect a **benign headline inflation environment**, largely driven by food price deflation and easing pressures across most sectors. However, the rise in core inflation—though concentrated in precious metals—warrants cautious monitoring. For policymakers, the challenge lies in balancing growth support with vigilance against emerging inflationary risks, ensuring that temporary price softness does not mask underlying structural vulnerabilities in the economy.

UPSC Prelims Exam Practice Question

Ques : A "high base effect" leads to lower inflation mainly because:

(a) Demand in the economy contracts sharply

(b) Supply shocks reduce prices

(c) Prices were unusually high in the previous period

(d) Monetary policy becomes contractionary

Ans: c)

UPSC Mians Exam Practice Question

Ques : Analyze the role of food price dynamics and base effects in keeping India's retail inflation below the Reserve Bank of India's comfort band. What risks do these trends pose for future inflation management?

Page 01 & 06 : GS II : International Relations

India and Germany have taken a significant step in deepening their strategic partnership with the signing of an agreement to strengthen **bilateral defence industrial cooperation**, with a focus on co-production and co-development. The agreement was concluded during the visit of German Chancellor **Friedrich Merz** to India, following talks with Prime Minister **Narendra Modi**. This development comes at a time of rising geopolitical instability and increasing emphasis on trusted partnerships in defence, technology, and supply chains.

Joint effort: Prime Minister Narendra Modi and German Chancellor Friedrich Merz flying a kite in Ahmedabad on Monday. PTI

India, Germany sign pact to shore up defence industrial cooperation

Kallol Bhattacherjee
Abhinay Deshpande
NEW DELHI/AHMEDABAD

India and Germany will enhance defence trade with an eye on 'co-production and co-development,' Prime Minister Narendra Modi said on Monday, as the two sides signed an agreement to strengthen bilateral defence industrial cooperation.

Welcoming German Chancellor Friedrich Merz to India, Mr. Modi said India will launch a 'consultation mechanism' on increasing collaboration with Germany in the Indo-Pacific region. In his remarks, Mr. Merz, who is on his first visit to Asia since assuming office in May 2025, said "rough winds" are blowing in world politics and that India and Germany should increase partnership to counter global trends of instability.

The list of 'outcomes' following the meeting between the two leaders also included several other MoUs and Joint Declarations of Intent covering areas like recruitment of skilled professionals by Germany, sports, and higher education.

"The growing cooperation in defence and security is a symbol of our mutual trust and shared vision. I express my heartfelt gratitude to Chancellor Merz for simplifying the processes related to defence trade. We will also work on a roadmap to enhance cooperation between our defence industries," said Prime Minister Modi in his remarks following talks with Chancellor Merz, when several agreements, including one on 'Strengthening the Bilateral Defence Industrial Cooperation', were signed. Mr. Modi pointed out that the Chancellor's visit coincided with India and Germany marking 25 years of strategic partnership and 75 years of diplomatic ties.

The two teams also discussed multiple regional issues, including the conflicts in Ukraine and the Gaza Strip, with Mr. Modi reiterating India's condemnation of terrorism.

'Rise in protectionism'

The German Chancellor urged India to partner with Germany in strengthening 'global supply chains'. "Unfortunately, we are seeing a renaissance of protectionism," he said, adding that protectionism hurts India-Germany trade ties.

His comments about the rise in protectionism in global affairs came against the backdrop of a decline in India-U.S. trade relations that have been hit by the imposition of punitive tariffs on India by U.S. President Donald Trump.

Chancellor Merz did not talk about Mr. Trump in his formal remarks, but later, talking to reporters, he mentioned that Germany does not impose tariffs on other countries, an indirect reference to the punitive tariffs that the U.S. has imposed on India.

A joint statement issued after bilateral talks said that the two leaders have "reiterated their support for the conclusion of the India-EU Free Trade Agreement as a key outcome of the upcoming EU-India Summit, which will facilitate trade flows and inject further momentum into German-India economic relations."

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Key Dimensions of the Agreement

Defence Industrial Cooperation

The pact aims to move beyond a buyer–seller relationship towards **joint production, technology transfer, and collaborative R&D**.

It aligns with India's Atmanirbhar Bharat and defence indigenisation goals, while offering Germany access to India's expanding defence manufacturing ecosystem.

Strategic and Geopolitical Context

The two leaders highlighted cooperation in the **Indo-Pacific**, signalling convergence on maritime security, freedom of navigation, and rule-based order.

Chancellor Merz's reference to "rough winds" in global politics reflects shared concerns over conflicts such as **Ukraine and Gaza**, terrorism, and systemic instability.

Economic and Trade Linkages

Germany emphasised the need to counter the **rise of protectionism** and strengthen global supply chains.

Both sides reiterated support for concluding the **India–EU Free Trade Agreement**, which could boost trade, investment, and technology flows amid strains in other trade relationships.

Broader Bilateral Engagement

Multiple MoUs were signed in areas such as **skilled workforce mobility**, **higher education**, and **sports**, reflecting a comprehensive partnership beyond defence.

The visit also coincided with **25 years of strategic partnership** and **75 years of diplomatic relations**, underlining the maturity of India–Germany ties.

Soft Power and People-to-People Connect

The joint participation of the two leaders in the International Kite Festival in Ahmedabad symbolised cultural diplomacy and people-centric engagement, complementing strategic cooperation.

Significance for India

Strategic Autonomy: Diversification of defence partners reduces overdependence on a single supplier.

Technology and Manufacturing: Scope for high-end German defence technology supports indigenous capability building.

Global Positioning: Enhances India's profile as a reliable partner in Europe amid shifting global alliances.

Economic Security: Collaboration on supply chains and FTA negotiations can cushion external trade shocks.

Conclusion

The India–Germany defence industrial cooperation agreement reflects a **strategic convergence driven by shared security concerns, economic complementarities, and commitment to multilateralism**. By emphasising co-production, co-development, and trusted supply chains, the partnership moves towards long-term strategic depth rather than transactional engagement. For India, this marks another step in leveraging external partnerships to strengthen domestic capacity, strategic autonomy, and its role in an increasingly multipolar world.

UPSC Mains Exam Practice Question

Ques: How does strengthening defence and supply-chain cooperation with Germany help India navigate rising protectionism and geopolitical instability? **(150 words)**

Page 04 : GS II : International Relations

The announcement that India will be invited to join **"Pax Silica"**, a U.S.-led multilateral initiative on **semiconductors, critical minerals, and artificial intelligence**, marks an important development in India–U.S. strategic and technological engagement. The statement was made by incoming U.S. Ambassador **Sergio Gor**, reflecting Washington's intent to deepen cooperation with India in high-technology and supply-chain resilience amid evolving geopolitical and economic realities.

India to be invited to join U.S-led initiative Pax Silica, says envoy

India was not included in the original launch of the arrangement for cooperation on semiconductors, critical minerals, AI; Gor 'takes charge' of U.S. Embassy with music and fanfare, says both countries continue to actively engage over trade deal

Suhasini Haidar
NEW DELHI

India will be invited to join "Pax Silica", the U.S.-led eight-nation arrangement to cooperate on semiconductors, critical minerals, and artificial intelligence, next month, incoming U.S. Ambassador Sergio Gor announced on Monday. He added that both countries hoped to make progress on long-delayed trade negotiations soon.

Mr. Gor, who is yet to present his credentials to President Droupadi Murmu, projected a positive outlook for India-U.S. ties after months of tensions over trade, tariffs, and India's import of Russian oil.

"The United States and India are bound not just by shared interests, but by relationship anchored at the highest levels," Mr. Gor said in an unprecedented "arrival speech", delivered with much fanfare from the steps of the U.S. Embassy on Shantipath in Delhi.

"Real friends can disagree but always resolve their differences in the end," he added. He said the two sides "continue to actively engage" over the trade deal that had been initially launched nearly a year ago when Prime Minister Narendra Modi visited Washington. Subsequently, the deal lost momentum as the U.S. imposed 50% tariffs on Indian goods, and has seen six official rounds of negotiations and three visits to the U.S. by Commerce Minister Piyush Goyal.

New beginning: U.S. Ambassador to India Sergio Gor receives a warm welcome as he marks his first day at the U.S. Embassy in New Delhi on Monday. ANI

"Remember, India is the world's largest nation, so it's not an easy task to get this across the finish line, but we are determined to get there," he said.

India was not included in the original launch of "Pax Silica" in Washington in December, though fellow Quad members Japan and Australia, I2U2 countries, Israel and the UAE, and others including South Korea, Singapore, the U.K., and the Netherlands were invited.

Trump's visit

Mr. Gor said he hoped U.S. President Donald Trump would visit India "soon, hopefully in the next year or two". Mr. Trump was expected to visit India last year to attend the Quad Summit, and India is hoping to host the summit this year.

Unconventional arrival

The Ambassador's statement, made to hundreds of U.S. Embassy staffers in Delhi and Indian media, was unconventional as Mr. Gor is expected to present his credentials later this week. According to diplomatic protocol, Ambassadors are expected to make public appearances only after the credentials are presented. Mr. Gor arrived at the Embassy with his Ambassadorial convoy, including a special armoured car with red and blue blinking lights. As he alighted, the Embassy officials who had gathered there more than two hours before, along with the press, greeted him with loud applause, and as he walked up the steps, a special playlist of songs, reportedly chosen by Mr. Gor, that included the 1960s soul song *Hold on, I'm Coming* and Mr. Trump's favourite *YMCA* were played over loudspeakers. The ceremony, which included dozens of media outlets, was telecast live – a break from the past. His predecessor, Biden-appointee Eric Garcetti, had arrived to take up his assignment in a colourful autorickshaw in April 2023, but without the media or the large welcoming assembly.

Mr. Gor begins with his tasks cut out, given spiralling ties between New Delhi and Washington, particularly over a number of statements, including Mr. Trump's repeated claim that he mediated the India-Pakistan conflict in May 2025, which the government has strenuously denied.

Last week, the External Affairs Ministry rejected a claim by U.S. Commerce Secretary Howard Lutnick that the trade deal had fallen through as Prime Minister Narendra Modi had not called Mr. Trump to finalise it, pointing out that the two leaders had spoken eight times during the year.

Mr. Gor said that India-U.S. trade negotiators would hold another call on Tuesday.

In addition, the government has been uncomfortable with the U.S. President's contention that Mr. Modi had promised to cut India's imports of Russian oil "to make him happy", stressing that any decisions are led by market conditions.

Special envoy

Mr. Gor, who has also been appointed Mr. Trump's Special Envoy for South and Central Asia, has taken a few months to arrive, after being named for the post in August 2024, and confirmed by the U.S. Senate in October.

Alongside bilateral issues, his travels in the region, particularly to Pakistan and Bangladesh, will be watched most closely in New Delhi.

What is Pax Silica?

Pax Silica is an **eight-nation U.S.-led framework** aimed at cooperation in:

- Semiconductor supply chains
- Critical minerals essential for clean energy and electronics
- Artificial Intelligence and advanced technologies

India was **not part of the original launch** in December, despite being a Quad member and a major technology market.

Its proposed inclusion signals recognition of India's **strategic weight and technological potential**.

Strategic Significance for India

Semiconductor and Technology Ecosystem

Supports India's ambition to become a **global semiconductor manufacturing and design hub**.

Complements domestic initiatives such as production-linked incentives (PLI) and digital public infrastructure.

Supply Chain Resilience

Reduces dependence on concentrated supply chains, especially in East Asia.

Aligns with India's interests in **trusted and diversified global supply chains**.

Geopolitical Alignment

Reinforces India's position in the **U.S.-led strategic technology architecture**, alongside Quad and I2U2 partners.

Enhances India's leverage in the Indo-Pacific without entering formal alliances, consistent with **strategic autonomy**.

India–U.S. Relations: Broader Context

The announcement comes amid **trade frictions**, including:

U.S. imposition of high tariffs on Indian goods

Delays in concluding the bilateral trade agreement, despite multiple negotiation rounds led by Commerce Minister **Piyush Goyal**

Diplomatic tensions have also arisen over:

U.S. claims regarding mediation in the India–Pakistan conflict

India's continued import of Russian oil, defended on market-based grounds

Despite these challenges, Ambassador Gor's remarks emphasise **high-level political engagement**, including frequent interactions between Prime Minister **Narendra Modi** and U.S. President **Donald Trump**.

Diplomatic and Institutional Implications

Mr. Gor's **unconventional public arrival** and early policy signalling suggest a more **assertive and media-facing diplomacy** by the U.S.

His dual role as **U.S. Special Envoy for South and Central Asia** adds regional complexity, especially given sensitivities around Pakistan and Bangladesh.

India will closely watch how Pax Silica participation aligns with its interests vis-à-vis the EU, Russia, and Global South partnerships.

Conclusion

India's likely inclusion in Pax Silica represents a **strategic recalibration in India–U.S. relations**, shifting focus from trade disputes to long-term cooperation in critical and emerging technologies. While challenges remain in trade, tariffs, and geopolitical perceptions, the move underscores India's growing centrality in global technology governance. For India, effective participation will depend on balancing strategic partnerships with autonomy, leveraging technology collaboration to strengthen domestic capacity, and navigating great-power politics with prudence.

UPSC Mains Exam Practice Question

Ques : India is likely to be invited to join the U.S.-led initiative "Pax Silica", focused on cooperation in semiconductors, critical minerals, and artificial intelligence. In this context, examine the strategic significance of India's participation in such technology-driven minilateral groupings. What opportunities and challenges does this pose for India's strategic autonomy and economic security? **(250 words)**

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The operationalisation of **Article 6 of the Paris Agreement** at **COP29** marks a major turning point in global climate governance. For India, the decision to actively participate in Article 6 mechanisms—especially after signing the Joint Crediting Mechanism (JCM) in August 2025—signals a shift from cautious engagement to strategic utilisation of international carbon markets. Article 6 offers India not merely a financing tool, but a pathway for structural economic and technological transformation in a carbon-constrained world.

Why Article 6 is a powerful tool for India

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To strengthen the delivery and efficiency of climate finance, the carbon markets under Article 6 (A6) of the Paris Agreement were made fully operational at COP29. According to the A6 Implementation Partnership, there are 89 cooperation arrangements made under Article 6.2 across 58 Parties, reflecting the growing momentum and acceleration of bilateral and plurilateral carbon market collaborations. The adoption of the Paris Agreement Crediting Mechanism (Article 6.4) at COP29 marked a milestone in the transition from the Clean Development Mechanism. This step has paved the way for a more rigorous, transparent, and globally aligned crediting framework under the Paris Agreement.

After years of anticipation and careful deliberation, in August 2025, India entered a new era of carbon markets by signing the Joint Crediting Mechanism (JCM). This effectively operationalised Article 6.2 of the Paris Agreement and signalled a new chapter in international climate cooperation.

The potential of Article 6

Why does participation of India in the A6 mechanism hold critical significance for India? Partnerships within A6 can translate into transfer of advanced tech, support to research and development, strengthen bilateral relations and channel much-needed climate finance into the economy. This can be a lever for socio-economic transformation that aligns with domestic climate goals, especially for a rapidly growing country such as India.

Critically, the potential of A6 market mechanisms (both 6.2 and 6.4) is not just restricted to generating climate finance through the exchange of carbon credits, known as internationally transferred mitigation outcomes. Instead, the real prize lies in using this mechanism to accelerate a low-carbon industrial and technological transformation, while building resilient trade relationships in a carbon-constrained world.

The Paris Agreement's Rule book sets out the architecture for A6. It allows countries to cooperate bilaterally or multilaterally, transferring emissions reductions while ensuring rigorous accounting to avoid double counting. India's new JCM partnership with Japan is an early example of how this cooperation can work.

To operationalise both Article 6.2 and 6.4, the Indian government has already strategically identified a first set of 13 eligible activities keeping both developmental and climate goals in balance. These are high-end, emerging technologies that can fundamentally shift the country's emissions profile and significantly contribute to the acceleration of India's economic growth trajectory. For the next three years, credits can be generated in sectors which hold most attention for the country in all fronts. These include renewable energy with storage; solar thermal power plants and offshore wind; green hydrogen and compressed bio-gas; emerging mobility solutions like fuel cells; high-end energy-efficiency technologies; and sustainable aviation fuel.

The current Indian list of activities reflects a deliberate and forward-looking strategy that aligns with India's long-term goals of sustainable growth and deep decarbonisation. As India continues to depend on coal for power generation, emerging solutions such as offshore wind, large-scale energy storage, and marine energy can accelerate diversification of its energy mix. Green hydrogen, particularly in industrial applications like steelmaking, offers a pathway to significantly lower emissions intensity across critical sectors. In hard-to-abate industries such as cement, carbon capture, utilisation, and storage provides a credible route to deep decarbonisation. Each of these technologies complements national priorities while strengthening the foundation for a low-carbon economy.

From intent to action

However, to unlock these opportunities, India must now move from intent to action. Key policy priorities stand out. First, strengthen the domestic framework. India has appointed a Designated National Authority for A6, but so far it is yet to detail the scope of the activities to be implemented. This necessitates the articulation of rules governing the issuance of Letters of Authorisation, the application of corresponding adjustments, and the establishment of a stable legal and regulatory framework for carbon trading.

Second, streamline project clearances. A steering committee could be created at the Cabinet level to offer broader guidelines and regularly take stock. CEEW research shows that voluntary carbon projects in India take over 1,600 days to register for Agriculture, Forestry and Other Land Use projects, compared to less than 400 days elsewhere in Asia. For A6 projects, where land and multiple stakeholders are often involved, a single-window clearance system is essential.

Third, build and strengthen the removals market. The global demand for carbon removals is rising. Article 6 provides an ideal platform to build a domestic market for activities like Biochar and Enhanced Rock Weathering, positioning India as a supplier of high-quality removal credits.

Fourth, strengthen South-South collaboration. India can take the lead in building shared systems, knowledge networks, and financing models across developing countries.

India's first step under A6 marks more than a technical milestone; it is an opportunity to access advanced technologies, attract climate-aligned finance, and deepen international partnerships.

India's first step under Article 6 marks more than a technical milestone; it is an opportunity to access advanced technologies, attract climate-aligned finance, and deepen international partnerships

Understanding Article 6: What It Offers

Article 6 provides a **cooperative framework** allowing countries to:

Transfer emission reductions through **Article 6.2** (bilateral/plurilateral cooperation and ITMOs),

Generate high-integrity carbon credits under **Article 6.4** (Paris Agreement Crediting Mechanism, successor to CDM).

Crucially, the Article 6 rulebook ensures **environmental integrity**, transparency, and avoidance of **double counting**, making it more robust than earlier mechanisms like the Clean Development Mechanism.

Strategic Significance of Article 6 for India

Access to Climate Finance and Advanced Technology

Article 6 partnerships can unlock **predictable climate finance**, reduce cost of capital, and facilitate **technology transfer** in areas such as green hydrogen, offshore wind, energy storage, and carbon capture.

India's JCM partnership with **Japan** illustrates how bilateral cooperation can support deployment of cutting-edge technologies aligned with national priorities.

Accelerating Low-Carbon Industrial Transformation

India's identification of **13 priority activities** under Article 6 reflects a forward-looking strategy targeting hard-to-abate sectors like steel, cement, aviation, and heavy transport.

This enables India to pursue **deep decarbonisation without compromising growth**, reinforcing the principle of climate action with development.

Energy Transition with Coal Realities

As India continues to rely on coal for energy security, Article 6 provides a pragmatic route to **diversify the energy mix** through offshore wind, marine energy, and large-scale storage.

Green hydrogen and CCUS technologies can significantly lower emissions intensity while preserving industrial competitiveness.

Strengthening Trade and Strategic Autonomy

In a world moving towards **carbon border taxes and green trade barriers**, Article 6 helps India build **resilient, climate-aligned trade relationships**.

It positions India as a credible partner in global climate markets rather than a passive rule-taker.

Leadership in the Global South

India can leverage Article 6 to promote **South–South cooperation**, sharing institutional knowledge, MRV systems, and financing models with other developing countries.

This enhances India's normative leadership in climate diplomacy.

Key Challenges and Policy Priorities

Institutional and Regulatory Clarity: While India has designated a national authority for Article 6, clear rules on authorisation, corresponding adjustments, and credit issuance are urgently required.

Project Approval and Governance Bottlenecks: Delays in project registration (often exceeding 1,600 days in AFOLU projects) undermine investor confidence. A **single-window clearance mechanism** and Cabinet-level steering oversight are essential.

Building a Carbon Removals Market: Rising global demand for removals presents an opportunity for India in areas like biochar and enhanced rock weathering, where Article 6 can support market creation.

Conclusion

Article 6 is not merely a carbon trading provision for India; it is a **strategic instrument for economic modernisation, technological upgrading, and climate-resilient growth**. If supported by strong domestic institutions, streamlined governance, and proactive diplomacy, Article 6 can help India align its development trajectory with global climate goals while safeguarding energy security and strategic autonomy. For India, effective use of Article 6 could redefine its role from a climate negotiator to a **climate solutions provider**.

UPSC Mains Exam Practice Question

Ques : Article 6 of the Paris Agreement has emerged as a key instrument for climate finance and low-carbon transition. Discuss how India can strategically leverage Article 6 mechanisms to achieve its developmental objectives while ensuring environmental integrity. (250 words)

Early investment in children, the key to India's future

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India's aspiration to become a Viksit Bharat and a $30 trillion economy by 2047 is ambitious and desirable. However, such a vision cannot be realised through slogans or macroeconomic targets alone. It demands sustained, evidence-based investments over the next two decades, particularly in human capital formation. Infrastructure, manufacturing, digital innovation and ease of doing business dominate public discourse, and there is often mention of health and education in various policy discussions.

However, in spite of all these discussions, a critical link remains largely missing: a concrete road map and focused and systematic investment in early childhood care and development (ECCD). Without strengthening the foundations laid in the earliest years of life, India's development ambitions risk being on fragile ground.

An investment in ECCD is not a welfare intervention but a strategic economic investment. From conception to the second birthday of a child – the first 1,000 days of life – have been considered most important for the growth and development of children. This phase has been recognised by the World Health Organization (WHO) and UNICEF as a crucial 'window of opportunity' for shaping a child's future well-being and potential. The next six years which follow (three to eight years) constitute approximately another 2,000 days. Thus, the first 3,000 days shape brain architecture, physical health, cognitive ability, emotional regulation and social skills. The early capabilities developed during this period determine a child's capacity to learn, adapt and contribute productively to society as an adult.

Children who are well-nourished, emotionally secure and cognitively stimulated are more likely to complete education, acquire skills, participate meaningfully in the workforce and earn higher incomes. At the national level, such investments reduce future spending on health care, remedial education and social protection, while expanding the tax base through a healthier and more productive workforce. These efforts can lift families out of poverty and help them move upward in the economic ladder. By reducing inequities rooted in poverty, gender, and geography, ECCD strengthens social mobility and inclusive growth. The evidence and experience from many countries including the United States, the Nordic countries, particularly Finland, and also from South Korea support these arguments. However, ECCD investments demand patience. Their most visible benefits emerge over 10 to 20 years later, as healthier and better-prepared cohorts enter adulthood. Yet, once realised, these gains are durable, intergenerational and central to national competitiveness.

Build upon the existing foundation

India's experience offers important lessons. Over the past five decades, the country has made notable progress in child and newborn survival. This did not occur by chance. Programmes such as the Child Survival and Safe Motherhood initiative (1992), the Reproductive and Child Health programme (1997), and their consolidation under the National Health Mission, significantly reduced infant and under-five mortality, improved immunisation coverage and addressed severe malnutrition. The Integrated Child Development Services (ICDS), 1975, later restructured as Mission Saksham Anganwadi and POSHAN 2.0, laid the foundation for nutrition and early care, especially among poorer households. State governments also contributed through innovations and delivery models.

However, most interventions have been narrowly focused and fragmented. The primary emphasis has remained on survival – keeping children alive – rather than enabling them to reach their full developmental potential.

Moreover, ECCD initiatives have largely been targeted at children within government safety nets, leaving out vast sections of middle- and higher-income families. This exclusion is problematic, because developmental challenges are not confined to poverty alone. Children from middle and even upper income households increasingly face obesity, physical inactivity, excessive screen exposure, delayed social skills, emotional difficulties and behavioural problems. Early childhood development must be universal, not targeted.

The focus needs to be on the first 3,000 days of life and a national mission on early childhood care and development

A case for early interventions

Scientific understanding of child development has advanced rapidly, reinforcing the urgency of early intervention. Research in epigenetics shows that health, nutrition, stress and environmental exposures even before conception can influence gene expression and long-term health outcomes.

Parental obesity, substance use, poor nutrition and chronic stress increase a child's risk of non-communicable diseases, developmental delays, and metabolic disorders. During the first 1,000 days, most neural connections are formed, and nearly 80%-85% of brain development occurs. Deprivation or neglect at this stage is often irreversible.

Paradoxically, this is also when children spend almost all their time within families, with minimal engagement with formal systems beyond immunisation or illness care. In the digital age, many parents rely on social media for guidance, much of which is commercially driven or poorly informed. Credible and structured support on early stimulation, responsive care-giving, play and emotional nurturing remain scarce. Formal interventions typically begin only around 30-36 months, through Anganwadi centres or private preschools. While important, these come late. The provision of developmental interventions in the first 1,000 days of life is still a 'big missing window'.

Therefore, India must move beyond fragmented approaches centred on feeding programmes or notional school health services. What is needed is an integrated ECCD framework that brings together health, nutrition, early learning, emotional wellbeing and care-giving, from conception to eight years of age. For a nation aspiring to economic leadership, investment in early childhood is not optional. It is foundational.

First, India needs structured premarital and pre-conception counselling for young adults and couples, focusing on nutrition, mental health, lifestyle choices and intergenerational impacts. This would represent one of the highest-return investments in public health, benefiting two generations simultaneously.

Second, parents must be empowered with knowledge about early stimulation and responsive care-giving. Simple, low-cost activities – talking, reading, singing, playing and emotional engagement – can profoundly shape brain development from the earliest weeks of life. For example, stories can be read and told to a baby as young as four weeks. Doing so, accelerates formation of neural connections in the brain and future learning capacity. A nationwide system of parental education on child growth and development is an urgent need.

Third, parents and families should be trained in basic growth monitoring and age-appropriate developmental milestones, through periodic, simple sessions. Early identification of delays can be among the most cost-effective interventions for infants and toddlers, rivalled only by immunisation.

Fourth, India must invest far more in quality care and learning systems for children aged two to five, a phase critical for preventing undernutrition and obesity and for shaping life-long habits related to health and emotional regulation.

Fifth, education, nutrition and health systems must break out of silos. Children need learning, not just schooling; nutrition for life, not just feeding; and well-being, not ritualistic check-ups. Schools, as the most widely accepted institutional platform, should evolve into integrated hubs for learning, health and nutrition.

Sixth, preconception health and the first 3,000 days must become part of a nationwide social conversation, extending beyond clinics into homes, workplaces and communities. Every teacher in every school in India, too needs training in child growth and development beyond academics.

Finally, schools should engage parents as partners, while non-profit organisations, philanthropic institutions, and corporate social responsibility initiatives must help build a supportive ECCD ecosystem.

Need for a citizen-led movement

India's future will not be determined by what it promises its children, but by what it invests in them during their earliest years. A citizen-led movement for child growth, learning and development – supported by the state and owned by society – may well be the missing link in India's journey to becoming a truly developed nation. These actions would require effective and functional coordination between different Ministries, especially the Union Ministry of Health and Family Welfare, Ministry of Education and Ministry of Women and Child Development, amongst others. To formalise and ensure a road map, it can be implemented as an inter-ministerial plan or as an overarching national mission on early childhood care and development.

GS Paper II : **Social Justice**

UPSC Mians Practice Question: **Early Childhood Care and Development (ECCD) is not a welfare measure but a strategic investment in India's human capital. Discuss in the context of India's aspiration to become a developed nation by 2047. (250 Words)**

Context :

India's vision of becoming a Viksit Bharat and a $30 trillion economy by 2047 places human capital at the centre of national transformation. While infrastructure, industry, and digital growth dominate policy debates, a foundational pillar remains underemphasised: Early Childhood Care and Development (ECCD). Scientific evidence and global experience show that investments made in the first 3,000 days of life yield the highest and most durable returns. As recognised by World Health Organization and UNICEF, early childhood is a decisive window for shaping cognitive, physical, and emotional capacities. For India, ECCD is not welfare—it is a strategic economic and social investment.

Why Early Childhood Investment Matters

Human Capital and Economic Returns

Well-nourished, emotionally secure, and cognitively stimulated children are more likely to complete education, acquire skills, and contribute productively to the economy.

Early investments reduce future public expenditure on healthcare, remedial education, and social protection, while expanding the tax base.

Scientific Basis of Early Intervention

Nearly **80–85% of brain development occurs in the first 1,000 days**, with neural connections formed rapidly during this phase.

Epigenetic research shows that preconception health, maternal nutrition, stress, and environment influence lifelong outcomes, including non-communicable diseases.

Equity and Social Mobility

ECCD helps break intergenerational cycles of poverty, gender disadvantage, and regional inequality.

Importantly, developmental risks now affect **all socio-economic groups**, including middle- and upper-income households, due to obesity, screen exposure, emotional stress, and lifestyle factors—making ECCD a **universal necessity**, not a targeted scheme.

India's Experience: Achievements and Gaps

India has made substantial gains in child survival through programmes such as **National Health Mission** and **Integrated Child Development Services**, now restructured as Mission Saksham Anganwadi and POSHAN 2.0.

These interventions successfully reduced infant and under-five mortality and improved immunisation and nutrition coverage.

However, the focus has largely remained on **survival rather than holistic development**, with fragmented approaches and limited emphasis on early stimulation, emotional well-being, and caregiving support—especially in the critical first 1,000 days.

Policy Imperatives for India

Integrated ECCD Framework

Move beyond siloed nutrition or schooling programmes to a unified approach covering health, nutrition, early learning, and emotional well-being from conception to eight years.

Preconception and Parental Support

Institutionalise preconception and premarital counselling on nutrition, mental health, and lifestyle.

Establish nationwide parental education on responsive caregiving, play, reading, and early stimulation.

Early Detection and Quality Care

Train families in growth monitoring and developmental milestones to enable early identification of delays.

Invest in high-quality care and learning systems for children aged 2–5 years to address both undernutrition and emerging risks like obesity.

Institutional Convergence and Social Mobilisation

Ensure coordination among the Ministries of Health, Education, and Women & Child Development.

Schools should evolve into integrated hubs for learning, health, and nutrition, with teachers trained in child development beyond academics.

Conclusion

India's long-term economic competitiveness and social cohesion will be determined not by short-term growth indicators, but by the quality of investments made in its youngest citizens. Early childhood development offers **the highest return on public investment**, with benefits that are intergenerational, inclusive, and irreversible if missed. A **national, citizen-led ECCD mission**, backed by strong inter-ministerial coordination and societal ownership, can become the missing link in India's journey towards sustainable development and true nation-building.