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VIDHVATH IAS KAS ACADEMY & STUDY CENTRE

DAILY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

DATE: 16/06/2026 (TUESDAY)



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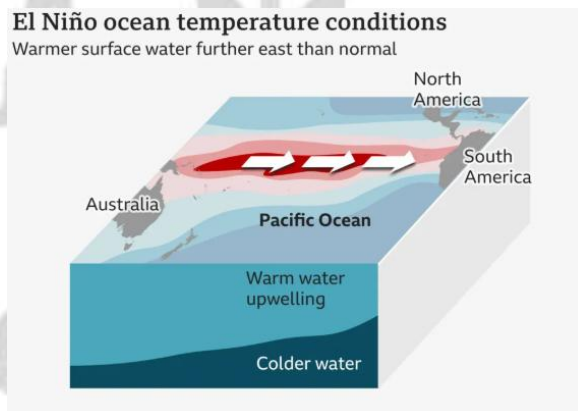
1. Strong El Niño and Its Implication on India

Key Definitions: * **El Niño:** A climate pattern involving the abnormal warming of surface waters in the equatorial Pacific Ocean, disrupting global atmospheric circulation.

- **Long-Period Average (LPA):** The benchmark rainfall calculated over a 50-year period (currently 82.8 cm for the southwest monsoon).

Core Summary & UPSC Key Points

- **The Forecast:** NOAA confirmed the emergence of a "very strong" El Niño, with a 63% probability of sea surface temperatures exceeding 2Degree above normal. It is expected to peak around November–December and persist into early 2027.
- **Monsoon Impact:** Historically, 12 out of 17 El Niño years since 1951 led to deficient or below-normal rainfall. Current projections estimate rainfall at 90% of the LPA, potentially making it the weakest monsoon since 2015.
- **Agricultural Vulnerability:** Delayed monsoon arrival and escalating rainfall deficits threaten the sowing of Kharif crops. While public rice stocks provide a buffer, rain-fed pulses, oilseeds, vegetables, and dairy production face severe risks from prolonged dry spells and pest infestations.
- **Macroeconomic and Sectoral Strain:** Beyond agriculture, a weak monsoon compromises groundwater recharge, reservoir replenishment, and hydropower generation. This supply-side disruption threatens to exacerbate retail food inflation, which climbed to 4.8% in May.
- **The IOD Factor:** A positive Indian Ocean Dipole (IOD)—warmer western Indian Ocean waters—can counter El Niño's impact. However, the IMD projects neutral IOD conditions, diminishing hopes for natural mitigation.



Constitutional & Legal Provisions

- **Article 21 (Right to Life):** Extends to the right to clean drinking water and food security, directly threatened by severe drought conditions.
- **Article 48 (Directive Principles):** Mandates the State to organize agriculture and animal husbandry on modern, scientific lines, underlining the need for climate-resilient farming.
- **Disaster Management Act, 2005:** The legal framework utilized for institutional response, compensation, and drought mitigation via the National Disaster Response Fund (NDRF).

Conclusion

A prolonged El Niño stretching into 2027 poses systemic risks to India's water security, rural economy, and inflation trajectory. Mitigating this requires proactive reservoir management, promoting micro-irrigation, and diversifying into climate-resilient crops.

UPSC Relevance

- **GS Paper I:** Geographical phenomena (Features of El Niño, Southern Oscillation, and Monsoon mechanisms).
- **GS Paper III:** Agricultural cropping patterns, water resources, food security, and macroeconomic stability (inflation).



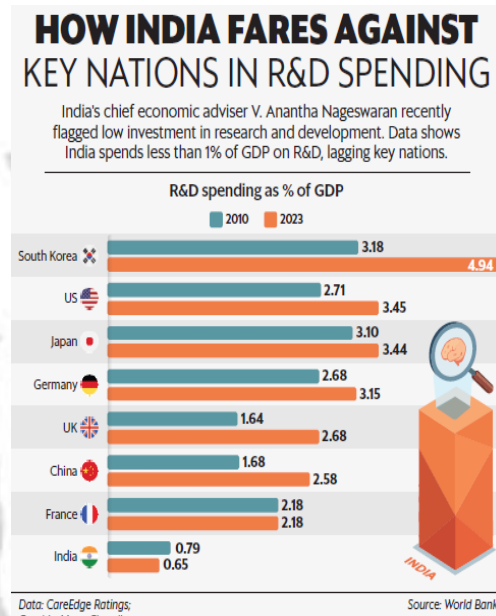
2. India's Research & Development Spending: A Critical Analysis

Key Definitions: * Gross Expenditure on R&D (GERD): The total expenditure incurred by all resident companies, research institutes, university and government laboratories within a country during a given period.

- **R&D Intensity:** A nation's total R&D expenditure expressed as a percentage of its Gross Domestic Product (GDP), reflecting its innovative priority.

Core Summary & UPSC Key Points

- **Declining R&D Intensity:** India's Chief Economic Adviser has flagged the country's low investment in R&D. World Bank data reveals India's R&D spending as a percentage of GDP declined from 0.79% in 2010 to a meager 0.65% in 2023.
- **Global Asymmetry:** India severely lags behind major global economies. For instance, South Korea leads with 4.94% of GDP spent on R&D in 2023, followed by the US (3.45%), Japan (3.44%), and China, which significantly raised its share from 1.68% to 2.58%.
- **Private Sector Reluctance:** A major structural issue in India is that the public sector bears over 60% of R&D costs, whereas in advanced economies like the US and Japan, the private sector contributes over 70% of total innovation expenditure.
- **Socio-Economic Stagnation:** Low R&D spending weakens India's transition toward a high-value knowledge economy. It limits patent filings, leaves the domestic manufacturing sector overly reliant on imported technology, and fuels the brain drain of scientific talent.
- **Strategic Counter-Measures:** To meet global challenges, India has set up the Anusandhan National Research Foundation (ANRF) and established a 1 lakh crore rupee corpus fund to provide long-term, low-interest financing for commercial R&D.



Constitutional & Legal Provisions

- **Article 51A(h) (Fundamental Duties):** Explicitly states that it shall be the duty of every citizen of India to develop the scientific temper, humanism, and the spirit of inquiry and reform.
- **Seventh Schedule (Entry 65 & 66, Union List):** Vests the central government with the exclusive responsibility for coordination and determination of standards in institutions for higher education or research and scientific and technical institutions.
- **Anusandhan National Research Foundation (ANRF) Act, 2023:** Provides the statutory framework to seed, grow, and promote R&D across India's universities and colleges, bridging academia with industry.

Conclusion

Achieving the vision of a developed nation (*Viksit Bharat*) hinges on altering India's innovation trajectory. Reversing the downward trend in R&D intensity requires removing bureaucratic hurdles for researchers and providing targeted tax incentives to stimulate private sector collaboration.



UPSC Relevance

- **GS Paper II:** Statutory, regulatory, and various quasi-judicial bodies (ANRF); Government policies and interventions for development.
- **GS Paper III:** Science and Technology—developments and their applications and effects in everyday life; Achievements of Indians in science & technology; Indigenization of technology.

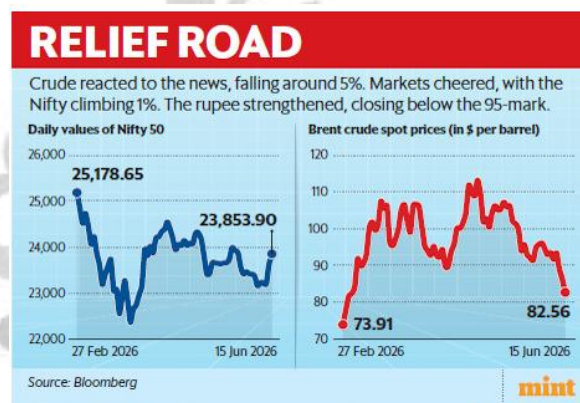
3. Geopolitical De-escalation in West Asia and Global Economic Implications

Key Definitions: * **Monetary Policy Committee (MPC):** A statutory body of the Reserve Bank of India (RBI) responsible for fixing the benchmark policy interest rate to maintain price stability while keeping the objective of growth in mind.

- **Brent Crude:** A major trading classification of sweet light crude oil that serves as a major benchmark price for purchases of oil worldwide.

Core Summary & UPSC Key Points

- **The Peace Agreement:** Following extensive diplomatic negotiations, the United States and Iran have agreed to sign a peace pact in Switzerland. This deal aims to terminate a volatile West Asia conflict that persisted for over 100 days, destabilizing regional security.
- **Crude Oil Market Rebound:** Global energy markets immediately reacted to the breakthrough, with Brent crude prices sliding by nearly 5% to settle around \$83.01 per barrel. This drop reduces structural import-bill pressures for net energy-importing countries.
- **Positive Indian Market Response:** India's equity markets cheered the geopolitical breakthrough, with the Nifty 50 surging by 1%. Concurrently, the Indian Rupee exhibited strength, breaking and closing below the significant 95-per-dollar threshold.
- **Macroeconomic Cushion for India:** Lower oil prices alleviate domestic fiscal strain by cooling down input costs for petroleum, petrochemicals, and fertilizers. This offers crucial breathing room to the MPC to manage retail inflation without aggressively raising interest rates.
- **Persistent Strategic Bottlenecks:** Despite global optimism, long-term stability remains fragile. Israeli authorities have explicitly opposed the US-Iran accord, arguing that the framework fails to comprehensively address their core national security vulnerabilities.



Constitutional & Legal Provisions

- **Article 51 (Directive Principles):** Directs the State to promote international peace and security, maintain just and honorable relations between nations, and foster respect for international law and treaty obligations.
- **Article 73 (Extent of Executive Power):** Empowers the Union government of India with executive jurisdiction over international treaties, foreign affairs, and trade agreements.
- **Petroleum Act, 1934:** The domestic legal framework governing the import, transport, storage, and production of petroleum products, which are directly impacted by external supply disruptions.



Conclusion

While the US-Iran agreement provides immediate economic relief to global markets and net-energy importers like India, the unilateral opposition from regional powers highlights the precarious nature of West Asian diplomacy. Sustainable stability will require a holistic multilateral framework rather than isolated bilateral compacts.

UPSC Relevance

- **GS Paper II:** Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests; Effect of policies and politics of developed and developing countries on India's interests.
- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development, and inflation.

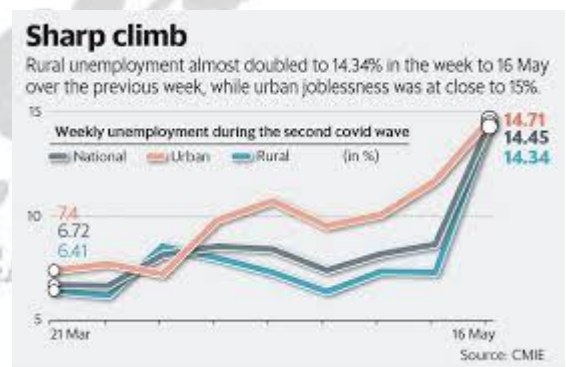
4. Spurt in Rural Joblessness and Indian Labor Dynamics

Key Definitions: * **Unemployment Rate (UR):** The percentage of persons unemployed among the persons in the labour force.

- **Periodic Labour Force Survey (PLFS):** A survey launched by the National Sample Survey Office (NSSO) to estimate key employment and unemployment indicators at regular intervals.

Core Summary & UPSC Key Points

- **Unemployment Surge:** According to the latest Periodic Labour Force Survey (PLFS-M), India's unemployment rate for individuals aged 15 years and above spiked to an 11-month high of 5.5% in May, up from 5.2% in April.
- **Rural Distress Sector:** The overall increase was primarily driven by rural areas, where the unemployment rate climbed sharply to 5.1% in May from 4.6% in the previous month, affecting both men and women.
- **Seasonal Agrarian Factors:** The rise in rural joblessness often coincides with the lean agricultural season between the harvesting of Rabi crops and the onset of Kharif sowing, highlighting a persistent structural vulnerability.
- **Labor Force Participation:** Fluctuations in rural employment directly impact the Labour Force Participation Rate (LFPR) and Worker Population Ratio (WPR), reflecting the precarious nature of informal rural contracts.
- **Policy Intervention Demands:** The escalation in rural joblessness underscores the critical role of state-sponsored safety nets like MGNREGS to absorb the surplus workforce during periods of low private agricultural demand.



Constitutional & Legal Provisions

- **Article 39(a) (Directive Principles):** Directs the State to secure that all citizens, men and women equally, have the right to an adequate means of livelihood.



- **Article 41 (Right to Work):** Mandates that the State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work.
- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005:** Provides a legal guarantee of at least 100 days of wage employment in a financial year to every rural household whose adult members volunteer to do unskilled manual work.

Conclusion

The spike in rural unemployment emphasizes the structural imbalance within India's labor market, which remains highly vulnerable to seasonal economic cycles. Mitigating this requires transforming rural economies by fostering non-farm employment, building robust agro-processing supply chains, and expanding targeted skill development initiatives.

UPSC Relevance

- **GS Paper II:** Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; Issues relating to development and management of Social Sector/Services relating to Employment.
- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development, and employment.

5. WPI Series Revision and Surge in Wholesale Inflation

Key Definitions: * **Wholesale Price Index (WPI):** An index that measures and tracks the changes in the price of goods in the stages before the retail level, capturing inflation at the factory gate.

- **Output Producer Price Index (OPPI):** An index that measures the average change over time in the selling prices received by domestic producers for their output.

Core Summary & UPSC Key Points

- **Inflation Spike:** India's headline WPI inflation surged to a series high of 9.68% in May 2026 from 8.26% in April, driven heavily by a global surge in crude petroleum, mineral oils, chemicals, and basic metals.
- **Base Year Revision:** The Ministry of Commerce and Industry debuted a revised WPI series, shifting the base year from 2011-12 to 2022-23 to better align with the contemporary structure of the Indian economy.
- **Expanded Commodity Basket:** The total number of items sampled has been scaled up from 697 to 957. Green energy sources like "Solar and Wind" as well as "Nuclear Electricity" have been integrated into the "Electricity" group.
- **Structural Regrouping:** "Crude Petroleum and Natural Gas" has been reclassified from "Primary Articles" to the "Fuel and Power" major group. The revised group weights stand at 63.1% for Manufactured Products, 22.8% for Primary Articles, and 14.1% for Fuel and Power.
- **Fuel and Manufacturing Push:** Driven by global supply disruptions, inflation for crude petroleum and natural gas soared to 61.51%, while the core "Fuel and Power" group rose by 30.33%. Manufactured products also recorded an accelerated growth of 7.48%.





Constitutional & Legal Provisions

- **Article 246 (Seventh Schedule):** Statistics and economic data collection fall under the concurrent and union jurisdictions (Entries 45 and 94 of the Union List), authorizing the central government to track macroeconomic metrics.
- **Collection of Statistics Act, 2008:** The statutory framework that empowers the Ministry of Commerce and Industry to collect socio-economic data for calculating national indices like WPI and OPPI.

Conclusion

The revamp of the WPI series with a 2022-23 base year improves the structural accuracy of input-cost measurements in India. While the May surge highlights acute vulnerability to external energy shocks, the diversification of the index basket to include renewable energy reflects India's shifting economic landscape.

UPSC Relevance

- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development, and inflation; Changes in industrial policy and their effects on industrial growth.

6. India-Slovakia Comprehensive Partnership: Redefining Central European Dynamics

Key Definitions: * **Comprehensive Partnership:** A high-level diplomatic framework that upgrades bilateral relations across multiple strategic dimensions, including defense, trade, technology, and cultural ties.

- **Free Trade Agreement (FTA):** A treaty between two or more countries to facilitate trade by reducing or eliminating tariffs, quotas, and administrative barriers on goods and services.

Core Summary & UPSC Key Points

- **Historic State Visit:** Prime Minister Narendra Modi paid a historic state visit to Bratislava, marking the first-ever visit by an Indian Prime Minister to Slovakia since its independence in 1993.
- **Elevation of Bilateral Ties:** Following high-level bilateral talks between PM Modi and his Slovak counterpart Robert Fico, India and Slovakia formally elevated their diplomatic relationship to a Comprehensive Partnership.
- **Strategic Defense Collaboration:** Deepening mutual trust led to the finalization of a Letter of Intent on defense cooperation. This framework aims to catalyze joint research, development, and co-production between the defense industries of both nations.
- **Expediting the India-EU FTA:** Both leaders committed to accelerating the implementation of the India-European Union Free Trade Agreement, which will offer market access and structural relief to startups, industries, and traders.
- **Socio-Economic and Labor Mobility:** The nations signed a Memorandum of Understanding (MoU) on labor migration to address Slovakia's manpower shortages while streamlining legal, skilled mobility for Indian professionals in the IT, engineering, and digital sectors.





- **Multilateral and Institutional Alignment:** Slovakia reaffirmed its consistent support for India's permanent membership in a reformed UN Security Council (UNSC) and maintained a constructive approach regarding India's entry into the Nuclear Suppliers Group (NSG).

Constitutional & Legal Provisions

- **Article 51 (Directive Principles):** Enjoins the State to promote international peace and security and maintain just and honorable relations between nations.
- **Article 253 (Legislation for International Agreements):** Grants the Parliament exclusive power to make laws for implementing any treaty, agreement, or convention with other countries.

Conclusion

The upgrade to a Comprehensive Partnership marks a critical shift in India's Central Europe outreach. By leveraging Slovakia's manufacturing capacities and strategic position within the EU and NATO, India secures a robust partner for defense indigenization, technology transfer, and continental trade integration.

UPSC Relevance

- **GS Paper II:** Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests; Effect of policies and politics of developed and developing countries on India's interests.

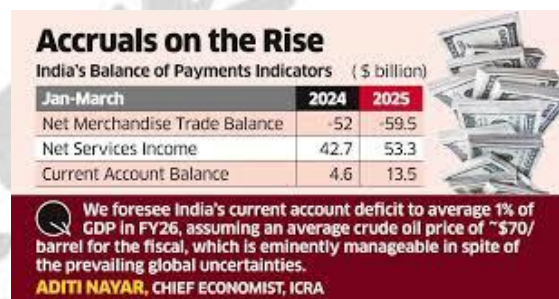
7. India's Balance of Payments: Shift to Current Account Surplus

Key Definitions: * **Current Account Surplus:** A macroeconomic condition where a nation's total export value of goods, services, and transfers exceeds the total import value over a specified period.

- **Balance of Payments (BoP):** A comprehensive statistical statement that systematically records all economic transactions between residents of a country and the rest of the world.

Core Summary & UPSC Key Points

- **Surplus Turnaround:** India recorded a notable current account surplus of \$4.7 billion in April, marking a strong recovery compared to the \$4.8 billion deficit registered during the corresponding month of the previous fiscal year.
- **Services Sector Resilience:** The turnaround was heavily anchored by resilient services exports, which reached \$37 billion. Net services receipts expanded significantly to \$18.6 billion from \$15.9 billion a year ago.
- **Robust Remittance Inflows:** Net transfer receipts—primarily consisting of private remittances from overseas Indians—witnessed a major surge, climbing to \$16 billion from \$9.4 billion in the year-ago period.
- **Widening Merchandise Deficit:** Despite higher overall exports (\$44.6 billion), a larger import bill of \$72.5 billion pushed the merchandise trade deficit marginally higher to \$27.9 billion from \$27.1 billion last year.
- **Capital Account Volatility:** The capital account faced headwinds, recording a net outflow of \$11.3 billion compared to an inflow of \$5.3 billion last year. While net Foreign Direct Investment (FDI) robustly increased to \$7.4 billion, Foreign Portfolio Investment (FPI) pulled out a net \$8.7 billion due to global market realignments.





Constitutional & Legal Provisions

- **Article 246 (Seventh Schedule):** Places international trade, commerce, and foreign exchange regulation under the exclusive domain of the Union List (Entries 41 and 93), empowering the central government and the RBI to manage external accounts.
- **Foreign Exchange Management Act (FEMA), 1999:** The primary legal framework that regulates foreign exchange transactions, cross-border trade, and capital flows to maintain orderly development of India's forex market.

Conclusion

The transition to a current account surplus underlines the structural strength of India's invisible earnings, particularly software services and remittances, which continue to cushion the persistent merchandise trade deficit. However, the accompanying capital account volatility emphasizes the need for consistent domestic policy reforms to sustain long-term FDI inflows and counter fickle FPI behavior.

UPSC Relevance

- **GS Paper III:** Indian Economy and issues relating to planning, mobilization of resources, growth, development; Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.

8. Non-Implementation of RTE Act in Punjab: SC Scrutiny

Key Definitions: * **Economically Weaker Sections (EWS):** A category of citizens having an income below a specified threshold, eligible for affirmative action and welfare benefits.

- **Mandamus:** A prerogative writ issued by a superior court commanding a public authority or lower court to perform a mandatory statutory duty.

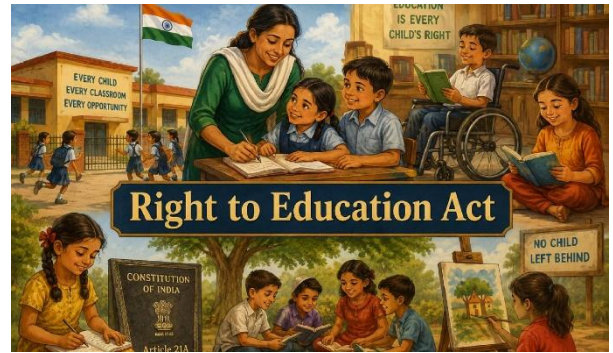
Core Summary & UPSC Key Points

- **Supreme Court Intervention:** A Supreme Court bench comprising Chief Justice Surya Kant and Justice A. Mohana issued notices to the Centre and the Punjab government regarding a public interest plea alleging non-implementation of the Right to Education (RTE) Act.
- **Failure of Section 12(1)(c):** The petition highlights systemic failure in implementing Section 12(1)(c) of the RTE Act, which mandates private unaided non-minority schools to reserve a minimum of 25% of entry-level seats for children from weaker and disadvantaged groups.
- **Persistent Compliance Gap:** The plea alleges that the non-compliance by Punjab has persisted for 15 years since the Act's inception, demonstrating an institutional failure to operationalize fundamental educational rights.
- **Data Discrepancy:** While the state government reported admitting only 476 EWS children into private-aided schools, data reveals that out of nearly 2 lakh annual entry-level admissions across private schools, the mandatory 25% quota should translate to approximately 50,000 students.
- **Policy Lack on Reimbursement:** The apex court questioned the state's universal policy regarding financial compensation to private schools for hosting EWS students, emphasizing that funding friction shouldn't hinder a child's right to education.



Constitutional & Legal Provisions

- **Article 21A (Fundamental Right):** Mandates the State to provide free and compulsory education to all children aged 6 to 14 years in such manner as the State may determine.
- **Article 45 (Directive Principles):** Urges the State to provide early childhood care and education for all children until they complete the age of six years.
- **Section 12(1)(c) of RTE Act, 2009:** Imposes a statutory social obligation on private unaided educational institutions to provide free education to disadvantaged children, ensuring socioeconomic integration.



Conclusion

The execution deficit of the RTE Act in Punjab reflects a broader national challenge where progressive social legislation stalls at the implementation level. Ensuring compliance requires robust state oversight, transparent independent auditing of private school seats, and a streamlined, timely reimbursement mechanism to prevent private institutions from bottlenecking underprivileged admissions.

UPSC Relevance

- **GS Paper II:** Welfare schemes for vulnerable sections; Issues relating to development and management of Social Sector/Services relating to Education and Human Resources; Judgments upholding Fundamental Rights.

9. Shifting Horizon: Delhi Master Plan Realignment to 2047

Key Definitions: * **Master Plan:** A dynamic long-term planning document that provides a conceptual layout to guide the future growth, land use, and infrastructural development of an urban area.

- **Transit-Oriented Development (TOD):** A high-density urban development model centered around public transport hubs to maximize access to public transportation and minimize private vehicle dependency.

Core Summary & UPSC Key Points

- **Strategic Shift:** The central government is contemplating moving the target horizon year of the pending Delhi Master Plan from 2041 to 2047, seeking structural alignment with the nationwide *Viksit Bharat* vision.
- **Chronic Implementation Delays:** Initially put into the public domain in June 2021 by the Delhi Development Authority (DDA), the notification of the plan has faced a five-year delay, repeatedly missing judicial and ministerial deadlines.
- **Contentious Urban Challenges:** The structural finalization remains entangled in critical policy deadlocks, including land pooling guidelines, green development area policies, and the eco-sensitive zoning of the Yamuna O-Zone (floodplains).
- **Policy Regularization Metrics:** The revised urban blueprint aims to address the status of 1,511 unauthorized colonies on an "as-is-where-is" basis and extend the cut-off date for in-situ slum rehabilitation by nearly 10 years to January 1, 2025.



- **Demographic Re-modelling:** Extending the planning horizon necessitates re-evaluating long-term public infrastructure, health systems, and housing projects based on the fresh population projection models for 2047.

Constitutional & Legal Provisions

- **Article 243ZE (74th Amendment Act):** Mandates the constitution of a Metropolitan Planning Committee in every metropolitan area to prepare a draft development plan for the region as a whole.
- **Delhi Development Act, 1957:** The primary statutory legislation under which the DDA is empowered to formulate, modify, and enforce the Master Plan for the National Capital Territory.
- **Public Trust Doctrine (Article 21):** Extends to environmental preservation, underpinning the Delhi High Court's strict judicial orders declaring residential construction in the Yamuna eco-sensitive floodplain completely impermissible.

Conclusion

Aligning the Delhi Master Plan with 2047 highlights the shifting demands of modern Indian urbanization. Resolving the gridlock requires balancing high-density economic zones like TODs with stringent ecological safeguards for the Yamuna floodplains, transforming the national capital into a sustainable metropolis.

UPSC Relevance

- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies (DDA, NCRPB); Government policies and interventions for development in various sectors.
- **GS Paper III:** Conservation, environmental pollution and degradation; Urbanization, their problems and their remedies.

10. Legal Framework for Managing Dangerous Trees in Urban Spaces

Key Definitions: * **Tree Officer:** A statutory authority appointed under state forest laws empowered to oversee tree preservation, grant felling permissions, and enforce environmental compliance.

- **Judicial Overreach:** A situation where court judgments or orders extend beyond interpretation, potentially infringing upon the executive or administrative domain.

Core Summary & UPSC Key Points

- **Forest Department Guidelines:** Following a Delhi High Court stay on a controversial 2025 tree-removal Standard Operating Procedure (SOP), the Forest Department issued explicit directives to civic bodies, police, and infrastructure agencies regarding emergency tree cutting.
- **Emergency Powers Sustained:** While the broader SOP remains stayed due to environmental concerns, the department clarified that critical emergency powers granted under Section 8 of the Delhi Preservation of Trees Act, 1994, remain legally operational.
- **Immediate Public Safety Protocol:** Section 8 permits the immediate pruning or removal of trees only when they pose an "immediate grave danger to life or property or traffic" near vital corridors like metro lines, railways, and major roads during storms.





- **High Court Environmental Concerns:** The High Court raised concerns that the administrative guidelines seemed to lack rigorous safeguards, potentially functioning as a tool to bypass environmental clearances under the guise of developmental works.
- **Mandatory Reporting and Deadlines:** For non-emergency scenarios, landowners or Resident Welfare Associations (RWAs) must apply under Section 9 with land documents, while emergency acts require reporting to the Tree Officer within 24 hours. The officer must decide on standard felling applications within 60 days.

Constitutional & Legal Provisions

- **Article 21 (Right to Life):** Encompasses both the right to a safe, hazard-free public environment and the right to a clean, healthy ecosystem, requiring a fine balance in urban management.
- **Article 48A (Directive Principles):** Directs the State to protect and improve the environment and to safeguard the forests and wildlife of the country.
- **Delhi Preservation of Trees Act, 1994:** The primary regional statutory legislation governing the regulation, preservation, and penalty structures regarding tree cutting within urban municipal limits.

Conclusion

Managing hazardous urban vegetation requires balancing civil safety with environmental conservation. Moving forward, the executive must establish transparent, scientifically backed criteria for identifying high-risk trees to eliminate arbitrary felling while keeping public spaces secure ahead of extreme weather events.

UPSC Relevance

- **GS Paper II:** Statutory, regulatory and various quasi-judicial bodies; Government policies and interventions for development in various sectors and issues arising out of their design and implementation.
- **GS Paper III:** Environmental pollution and degradation; Disaster management (urban hazards and safety infrastructure).

11. Overcoming Structural Setbacks in India's Space Launch Pipeline

Key Definitions: * **Polar Satellite Launch Vehicle (PSLV):** A third-generation, four-stage launch vehicle developed by ISRO, traditionally known as its "workhorse" for placing earth observation and remote sensing satellites into Sun-Synchronous Polar Orbits.

- **Third-Stage Failure:** A critical technical malfunction occurring in the solid propellant rocket motor stage responsible for providing initial upper-atmospheric velocity, preventing the vehicle from achieving terminal orbital injection parameters.



Core Summary & UPSC Key Points

- **Resumption of Flight Operations:** Following consecutive launch failures, the Indian Space Research Organisation (ISRO) is scheduling a fresh PSLV flight attempt to restore operational confidence in its satellite deployment timeline.
- **Anatomy of Recent Anomalies:** Space operations ground to a halt following two separate orbital injection failures. The vehicle failed to place the Earth Observation Satellites EOS-09 (May 2025)



and EOS-N1 (January 2026) into their target slots due to anomalies originating in the rocket's third stage.

- **Supply Chain and Vendor Correction:** Internal investigations traced the failures to specific sub-components outsourced to external manufacturers. In response, ISRO has restructured its procurement pipeline, changing vendors for the problematic assemblies to enforce strict quality control.
- **Commercial and Private Alignment:** The upcoming launch schedule coincides with the highly anticipated first orbital launch by private aerospace firm Skyroot, highlighting a shifting landscape toward private sector participation under the central space reforms.
- **Strategic Reorientation:** While rectifying its vehicle systems, the Space Ministry confirmed that high-level human capital and funding will remain prioritized toward executing the Gaganyaan human spaceflight mission.

Constitutional & Legal Provisions

- **Article 51A(h) (Fundamental Duties):** Explicitly states that it shall be the duty of every citizen of India to develop the scientific temper, humanism, and the spirit of inquiry and reform.
- **Seventh Schedule (Entry 65, Union List):** Vests the central government with exclusive jurisdiction over research and scientific institutions, granting the Union sole administrative control over national space exploration agencies.
- **Indian Space Policy, 2023:** The updated institutional roadmap designed to institutionalize private participation via IN-SPACe, allowing ISRO to pivot from routine commercial production toward advanced scientific exploration.

Conclusion

Rectifying the PSLV third-stage vulnerability is a critical necessity for preserving India's competitive edge in the global commercial launch market. Resolving these component-level defects through strict oversight ensures that structural pivots toward privatization and the Gaganyaan human spaceflight program proceed without systemic delays.

UPSC Relevance

- **GS Paper III:** Science and Technology—developments and their applications and effects in everyday life; Achievements of Indians in science and technology; Awareness in the fields of Space.

12. India-US Critical Minerals Cooperation: Countering Supply Chain Monopolies

Key Definitions: * **Critical Minerals:** Metallic or non-metallic elements that are essential for modern technologies, economic national security, and clean energy transitions, and face a high risk of supply chain disruption.

- **Offtake Commitments:** Legal arrangements in which a buyer agrees to purchase a specific portion of a producer's future output, securing market demand and financing for resource extraction.

Core Summary & UPSC Key Points

- **Strategic Task Force Alliance:** Days after signing the India-US Critical Minerals Framework, the US-India Business Council (USIBC) formed a





dedicated Critical Minerals Security Task Force to secure and deepen bilateral resource supply chains.

- **Geopolitical Counterweight:** The alliance directly responds to growing global concerns over China's asymmetric dominance, as Beijing controls 90% of global critical mineral processing and frequently uses export controls as economic leverage during trade disputes.
- **Overlapping Strategic Interests:** Out of 30 minerals identified by India as "critical", 26 overlap with US resource priorities. Key focus areas include securing rare earth elements, lithium, cobalt, nickel, graphite, gallium, and tungsten.
- **Targeted Engagement Areas:** The task force has charted five core priority verticals: lithium refining, cathode active materials development, battery recycling, synthetic graphite production, and rare earth element processing.
- **Domestic Capability Deficits:** Lithium refining remains a major bottleneck in India's electric vehicle (EV) supply chain due to near-zero domestic refining capacity. The task force aims to bridge this through technology partnerships and integrated supply chain corridors.
- **Enhancing REPM Capacity:** To counter vulnerabilities in manufacturing rare earth permanent magnets (REPM)—vital for defense, aerospace, and clean energy—India has launched a dedicated incentive scheme targeting 6,000 metric tonnes of annual capacity.

Constitutional & Legal Provisions

- **Seventh Schedule (Entry 54, Union List):** Grants the central government exclusive jurisdiction over the regulation of mines and mineral development to the extent declared by Parliament by law to be expedient in the public interest.
- **Mines and Minerals (Development and Regulation) Amendment Act, 2023:** Legal amendment that de-listed six critical minerals (including Lithium and Titanium) from the atomic minerals list, opening them up for private exploration and auctioning to secure domestic supply.

Conclusion

The US-India Critical Minerals Task Force provides a pragmatic institutional mechanism to break the Chinese processing monopoly. For India to successfully transition into a clean energy powerhouse, it must rapidly capitalize on this partnership to build domestic refining infrastructure and diversify its technological supply chains.

UPSC Relevance

- **GS Paper II:** Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests; Effect of policies and politics of developed countries on India's interests.
- **GS Paper III:** Science and Technology—developments and applications; Changes in industrial policy and their effects on economic and industrial growth.