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GS 1

CULTURE

Lok Sabha Debate on Vande Mataram's 150th Anniversary: Culture and Modernity

Syllabus

GS-1: Indian Heritage and Culture: Salient aspects of Art Forms, Literature and Architecture from ancient to modern times.

GS-2: Polity: Parliament and State Legislatures—Structure, functioning, conduct of business, powers & privileges.

Context

Prime Minister Narendra Modi initiated a special discussion in the **Lok Sabha** on December 8, 2025, to commemorate the **150th anniversary of the national song 'Vande Mataram'**, composed by Bankim Chandra Chatterjee.

The discussion is part of the government's broader theme: **"Vikas Bhi, Virasat Bhi"** (Development as well as Heritage), emphasizing that modernization must strengthen India's cultural roots.

This event also coincides with the opening of the 20th session of the **UNESCO Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage** in New Delhi, reinforcing India's focus on cultural preservation.

Main Body in Multi-Dimensional Analysis

Cultural and Historical Dimensions

Significance of Vande Mataram: The song is an integral part of India's freedom struggle, acting as a powerful rallying cry for nationalists. Commemorating its 150th year highlights the importance of **historical memory and national identity**.

Vikas Bhi, Virasat Bhi: This motto frames cultural preservation not as a static duty but as a **dynamic part of the development agenda**.

It links infrastructure development (**Vikas**) with the protection of intangible heritage and cultural sites (**Virasat**).

Parliamentary Forum: Using the Lok Sabha for a special debate on a cultural topic elevates the discourse on **national values and cultural rejuvenation** to the highest political platform. The debate is also significant as it touches upon past controversies, such as the historical omission of certain stanzas by the Congress party in 1937, which the PM referenced last month.

Global and Soft Power Dimensions

UNESCO Committee Session: India hosting the 20th session of the **UNESCO Intergovernmental Committee** highlights India's growing role in global cultural diplomacy and its commitment to protecting **Intangible Cultural Heritage (ICH)**.

Soft Power Projection: Showcasing commitment to its cultural roots, as demonstrated by the Vande Mataram debate and the UNESCO event, strengthens India's **soft power** globally, projecting an image of a nation that is both technologically advanced and deeply rooted in tradition.

Government Schemes, Positives, Negatives

Feature	Description
Cultural Initiatives	**Virasat Bhi:** The overarching philosophy guiding infrastructure and cultural policy. **UNESCO World Heritage Sites:** India actively promotes the inscription of its sites and intangible heritage.
Positives of the Debate	**National Pride:** Reaffirms the cultural and historical

Feature	Description
	significance of the national song. **Global Recognition:** Strengthens India's soft power and credentials in cultural preservation (via the UNESCO event). **Mainstreaming Culture:** Integrates cultural preservation into the national development narrative.
Negatives/Challenges	**Political Division:** Historical political interpretations of the song risk turning the debate into a point of political conflict rather than unity. **Symbolic vs. Substantive:** Critics may argue the debate is symbolic and distracts from pressing legislative business.

Way Forward

Educational Integration: Utilise the debate's outcomes to enrich school and college curricula on the **history of the freedom struggle** and the role of cultural symbols like Vande Mataram.

Intangible Heritage Policy: Develop a comprehensive **National Policy for Intangible Cultural Heritage** following the UNESCO session, allocating dedicated funds and institutional support.

Inclusive Resolution: Conclude the debate with a resolution that reaffirms the constitutional and secular values embodied in the song's legacy.

Conclusion

The special Lok Sabha debate on 'Vande Mataram' on December 8, 2025, is a timely reminder that **development and heritage are mutually reinforcing**. By commemorating this historic symbol and hosting the UNESCO Committee, India signals its commitment to building a modern nation where **cultural legacy is the foundation of its global identity and future progress**.

Tourism Projects Approved in Mysuru under Swadesh Darshan 2.0

Syllabus: GS-I: Indian Culture; GS-III: Infrastructure: Tourism.

Context: The Union Tourism Minister approved two major projects in Mysuru, Karnataka, under the **Swadesh Darshan 2.0 scheme**: an **Ecological Experience Zone** (₹18.47 cr) and a **Tonga Ride Heritage Experience Zone** (₹2.71 cr).

Main Body in Multi-Dimensional Analysis:

Heritage Preservation & Promotion: The Tonga Ride project revives and formalizes a heritage transport method, providing tourists with an authentic cultural experience while supporting traditional local livelihoods.

Sustainable Tourism: The Ecological Zone emphasizes nature-based, responsible tourism, aligning with the SD 2.0 scheme's focus on developing tourist destinations sustainably and holistically.

Economic Upliftment: Focused infrastructure investment leads to job creation (guides, drivers, service staff) and higher revenue generation for local communities in the tourism ecosystem.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Diversification:** Moves tourism beyond major monuments to experiential and ecological themes. **Local Livelihoods:** Preserves traditional crafts and transport services (e.g., Tonga drivers).

9

Category	Description
Negatives	**Carrying Capacity:** Increased footfall in ecological zones risks environmental degradation if not strictly monitored. **Maintenance:** Sustaining the 'heritage' element (e.g., Tonga upkeep) requires continuous public funding and regulation.
Govt Schemes	**Swadesh Darshan 2.0:** Focuses on theme-based integrated development of tourist circuits. **PRASAD Scheme:** Focuses on pilgrimage rejuvenation.

Examples: The Tonga ride experience will offer guided heritage tours, ensuring the history and culture of Mysuru are authentically communicated.

Way Forward: The local administration must establish a **Carrying Capacity** limit for the Ecological Zone to ensure environmental sustainability. A long-term private-public partnership model for the Tonga Zone's maintenance should be established.

Conclusion: The Swadesh Darshan 2.0 projects in Mysuru showcase a shift towards integrated development that respects local heritage and ecology, ensuring that tourism becomes both a revenue generator and a custodian of culture.

Practice Mains Question: "The Swadesh Darshan 2.0 scheme emphasizes the holistic and sustainable development of tourist destinations. Evaluate how the recently approved Mysuru projects exemplify this approach, particularly concerning the preservation of cultural heritage and environmental sensitivity." (10 marks, 150 words)

PHYSICAL GEOGRAPHY

IMD Cold Wave Forecast: Policy Preparedness and Climate Risk

Syllabus

GS-1: Geography: Climatology, important geophysical phenomena.

GS-3: Disaster Management: Disaster and disaster management.

Context

The **India Meteorological Department (IMD)** on December 8, 2025, issued a forecast for **severe cold wave conditions** over isolated pockets of **West Madhya Pradesh, Vidarbha, East Madhya Pradesh, and Chhattisgarh**.

This forecast, which predicts minimum temperatures to be significantly below normal (up to departure in some regions), triggers the need for immediate policy preparedness across state governments.

Extreme cold weather is a major natural hazard leading to adverse health outcomes and loss of life, particularly among vulnerable populations, while also impacting **Rabi crops** (e.g., wheat and mustard) and power grids.

Main Body in Multi-Dimensional Analysis

Disaster Management and Public Health Dimensions

Cold Wave as a Hazard: Cold waves lead to conditions like **hypothermia, frostbite, and respiratory illnesses**. The IMD's extended outlook also warns of an **above-normal number of cold wave days** (8–11 days) for central and adjoining northwest India this winter season (Dec 2025 to Feb 2026).

Preparedness Protocol: The IMD forecast mandates the activation of state-level **Disaster Management protocols.** This includes:

Setting up Night Shelters: Immediate activation and stocking of night shelters, often managed under the **National Urban Livelihoods Mission (NULM)**.

Health Advisories: Mass dissemination of public health advisories to vulnerable

groups (elderly, homeless, children) on how to recognize and treat cold-related illnesses.

Air Quality Link: The cold, stagnant atmospheric conditions can worsen air quality (e.g., Delhi's Air Quality Index (AQI) remains in the 'Very Poor' category), severely compounding respiratory health risks.

Zero-Casualty Approach: The goal is to achieve a **zero-casualty outcome** through proactive measures.

Climate and Agricultural Dimensions

Climate Variability: The increasing intensity and variability of cold waves are often linked to larger **global weather pattern shifts** (e.g., in the polar vortex), reflecting the impact of climate change.

Agricultural Risk: Frost accompanying cold waves poses a serious threat to the **Rabi crops**, necessitating the implementation of **Agricultural Contingency Plans** to advise farmers on protective measures like light irrigation.

Government Schemes, Positives, Negatives

Feature	Description
Disaster Framework	**National Disaster Management Authority (NDMA):** Provides national cold wave management guidelines. **IMD's Early Warning System:** Critical for providing actionable, weather-related alerts.
Positives of IMD's Forecast	**Proactive Response:** Provides State Governments with crucial lead time for preparedness. **Targeted Intervention:** Alerts allow for focus on specific, high-risk regions.

Feature	Description
Negatives/Challenges	**Shelter Capacity:** Night shelters often lack sufficient capacity and quality for large-scale severe weather events. **Communication Gap:** Difficulty in reaching the most vulnerable, homeless populations with timely information. **Disruption:** Low visibility/fog disrupts transport (road, rail, air).

Way Forward

Permanent Cold-Chain Infrastructure: Mandate State Disaster Response Funds (SDRF) to allocate funds towards creating **permanent, standardized, and stocked cold-chain infrastructure** (night shelters).

Integrated Health & Weather Bulletins: Develop and disseminate integrated bulletins that combine IMD's weather forecast with **specific public health advisories** in local languages.

Agricultural Contingency Plan: Develop **District-level Agricultural Contingency Plans** to advise farmers immediately on protective measures against frost.

Conclusion

The IMD's cold wave forecast for central India serves as a test of India's **Disaster Management efficacy**. An advanced early warning system must be met with an equally **compassionate and coordinated administrative response** to ensure that this predictable natural hazard does not translate into a preventable human tragedy.

SOCIETY

WHO's First Global Guideline on Infertility as a Public Health Issue

1. Syllabus

GS-II: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources. Global health governance.

2. Context

The **World Health Organization (WHO)** has released its **first-ever global guideline** on infertility, calling for safer, fairer, and more affordable fertility care worldwide. The guideline aims to standardize the prevention, diagnosis, and treatment of infertility, which affects approximately **1 in 6 people globally**.

3. Main Body in Multi-Dimensional Analysis

Infertility is officially recognized as a **public health and social issue**, often leading to significant emotional distress, mental health challenges, societal stigma, and catastrophic health expenditure.

WHO's Core Objective: The guideline seeks to help countries integrate infertility prevention, diagnosis, and treatment into their **public health systems**, moving it out of the domain of fragmented, expensive, and often unregulated private care.

Focus Areas for India:

Access and Equity: In India, treatment is often unaffordable and primarily available in urban centers. The guideline supports the goal of **Universal Health Coverage (UHC)** by advocating for the inclusion of fertility care under national health missions (like the **National Health Mission**).

Ethical Governance: The guidelines address ethical concerns such as exploitation and upholding the dignity and autonomy of couples, especially in the context of the rapidly growing, but largely unregulated, private **infertility industry**.

SDG Alignment: This aligns with **Sustainable Development Goal 3 (Good Health and Well-being)**, emphasizing reproductive health rights and reducing catastrophic out-of-pocket health expenditure.

4. Implications

Aspect	Description
Social Impact	Acknowledging infertility as a public health issue helps reduce the intense social **stigma** and negative gender dynamics associated with it.
Policy	Provides a global framework for national governments to formulate policies that standardize care and quality, crucial for India's **Assisted Reproductive Technology (Regulation) Act, 2021**.
Economic	Shifting care towards public health systems can dramatically lower the **catastrophic health expenditure** currently borne by families.

5. Way Forward

India needs to create comprehensive training and accreditation standards for fertility clinics and services, increase awareness about prevention (e.g., related to STIs and lifestyle factors), and explore models for integrating subsidized fertility services within government hospital networks.

6. Practice Mains Question

GS-II: Infertility affects 1 in 6 people globally. Discuss the significance of the WHO's first global guideline on infertility and how its implementation in India can address the socio-economic and ethical challenges posed by the issue. (250 words)

UN International Day for the Abolition of Slavery

1. Syllabus

GS-I: Society – Role of women and women's organization, population and associated issues, poverty and developmental issues, urbanization, their problems and their remedies.

GS-II: Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes.

2. Context

December 2nd is observed annually as the **International Day for the Abolition of Slavery**, marking the date of the adoption of the UN Convention for the Suppression of the Traffic in Persons and of the Exploitation of the Prostitution of Others in 1949.

3. Main Body in Multi-Dimensional Analysis

While 'slavery' in the traditional sense has been abolished, the UN day focuses on eliminating **contemporary forms of slavery (Modern Slavery)**, which include bonded labour, child labour, forced marriage, trafficking, and human exploitation.

India's Constitutional and Legal Framework:

Article 23 (Right Against Exploitation): Explicitly prohibits traffic in human beings and forced labour (including bonded labour).

Bonded Labour System (Abolition) Act, 1976: Aims to abolish all forms of bonded labour.

Child Labour (Prohibition and Regulation) Amendment Act, 2016: Bans the employment of children below 14 years.

Trafficking of Persons (Prevention, Protection and Rehabilitation) Bill (Pending): Aims to create a comprehensive framework for dealing with human trafficking.

The Challenge in India: India is consistently ranked high on global indices for modern slavery, largely due to **debt bondage in agriculture and brick kilns**, forced labour in supply chains (e.g., textiles), and **sexual exploitation**. The issues are rooted in structural poverty, caste, gender, and migration.

The Economic Dimension: The existence of modern slavery is often linked to the informal economy and the high global demand for cheap labour and goods. Effective intervention requires addressing the entire supply chain and not just the victims.

4. Implications

Aspect	Description
Human Rights	Highlights the need for robust enforcement of constitutional rights against exploitation, ensuring dignity and fundamental freedom for all citizens.
Sustainable Development Goals (SDGs)	Directly linked to **SDG 8.7**, which calls for taking immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking, and secure the prohibition and elimination of the worst forms of child labour.
Social Justice	Requires a dedicated focus on rehabilitating survivors and addressing the deep-rooted socio-economic drivers of vulnerability.

5. Way Forward

India must accelerate the passing of the pending Trafficking in Persons Bill, strengthen the implementation of the Bonded Labour Act by increasing inspections and convictions, and create more transparent and responsible supply chains through business and human rights policies.

13

6. Practice Mains Question

GS-I/II: Despite constitutional and legal safeguards, contemporary forms of slavery like bonded labour persist in India. Discuss the socio-economic drivers of modern slavery and suggest policy measures for achieving Sustainable Development Goal 8.7. (250 words)

Urban Dynamism: Correcting Blind Spots in India's Census 2027

Syllabus

GS-1: Indian Society: Urbanization, their problems and their remedies.

GS-3: Environment: Environmental pollution and degradation; Disaster Management.

Context

The upcoming **Census 2027** provides a crucial opportunity to redefine and more accurately map **India's urban landscape**. Current definitions, largely based on the 1961 criteria, fail to capture the complex, rapid, and often unplanned growth occurring in **peri-urban** and **transitional areas**.

The Census is expected to address the long-standing issue of **Census Towns (CTs)** and the environmental/infrastructural strain caused by *de facto* urbanisation that is not *de jure* (legally recognized) and consequently lacks proper governance.

Accurate urban metrics are essential for effective policy formulation, resource allocation, and addressing the severe climate change impacts disproportionately faced by densely populated areas.

Main Body in Multi-Dimensional Analysis

Conceptual and Statistical Dimensions

Defining Urban Areas (Current Criteria): The criteria for a **Statutory Town (ST)** or an official urban area include: (1) Minimum population of **5,000**; (2) Population density of at least **400 persons per sq. km**; and (3) At least **75% of the male working population** engaged in non-agricultural pursuits.

The Census Town (CT) Challenge: Census Towns meet the population criteria but are still governed by rural local bodies (Gram Panchayats). This classification mismatch leads to a gap between *economic reality* (urban) and *governance structure* (rural), resulting in poor sanitation, unregulated development, and failure to apply urban planning laws.

Urban Sprawl and Peri-Urban Areas: The Census 2027 must develop metrics to accurately map the **Urban Agglomerations (UAs)** and the surrounding **peri-urban zones**. These transitional areas often house the poorest populations and are the least prepared for climate shocks due to unplanned growth.

Governance and Policy Dimensions

Local Governance Failure: CTs contribute to the nation's GDP but lack urban infrastructure funding (e.g., sewage, urban roads, public transport) because they are treated as rural units. This places a huge financial and administrative burden on Gram Panchayats that are ill-equipped for urban management.

Resource Allocation: Central government schemes, like the **Smart Cities Mission** and **AMRUT**, allocate funds based on official urban population data. The undercounting of the real urban population (including CT residents) leads to a substantial **under-allocation of resources** to areas that need them most.

Environmental Regulation: The rapid, unmonitored development in peri-urban zones results in the destruction of wetlands, floodplains, and green cover, drastically increasing vulnerability to floods and heatwaves. Applying rigorous **urban environmental metrics** in the Census can compel better local regulation.

Socio-Economic Dimensions

Poverty and Inequality: The inability to accurately map urban poverty (which is distinct from rural poverty) hinders targeted social schemes like the Public Distribution System (PDS) and affordable housing (PMAY-U).

Migration Patterns: The new Census data will provide granular detail on rural-to-urban and intra-urban migration, enabling better planning for social services, schools, and healthcare facilities in high-growth corridors.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**AMRUT (Atal Mission for Rejuvenation and Urban Transformation):** Aims to provide basic urban infrastructure (water supply, sewage). **Smart Cities Mission:** Focuses on leveraging technology and data for sustainable urban governance. **Swachh Bharat Mission (Urban):** Success depends on accurate population and waste generation data from urban and semi-urban clusters.
Positives of Urban Metrics Reform	**Accurate Funding:** Correct urban classification leads to higher tax collection and targeted urban local body (ULB) funding. **Better Planning:** Enables scientifically sound city master plans and infrastructure

Feature	Description
	projects. **Enhanced Climate Resilience:** Helps identify vulnerable areas and integrate disaster management into urban policy.
Negatives/Challenges	**Political Resistance:** State governments and local politicians may resist reclassification, as rural status grants control over land and a simpler tax structure. **Data Complexity:** Developing and applying consistent, new metrics across diverse geographical terrains is complex. **Implementation Lag:** The delay in conducting the Census itself delays subsequent data-driven policy changes.

Examples

NCR Region: The rapid growth of NCR (National Capital Region) cities and the surrounding peripheral areas exemplifies the CT issue, where housing and industry boom without commensurate public services like water and sewage.

Mumbai MMRDA: Similar challenges exist in the Mumbai Metropolitan Region Development Authority (MMRDA) periphery, where semi-urban settlements lack municipal capacity to manage dense populations.

Census Town Conversion: Successful conversion of CTs into Statutory Towns (e.g., in Kerala) has shown the positive impact on infrastructure provision and quality of life.

Way Forward

Revamp Urban Definition: The Census should adopt a modern, **multi-criteria definition** that incorporates factors like functional classification (non-agricultural workforce percentage) and infrastructural metrics (paved roads, piped water) alongside population and density.

Mandatory CT Conversion: The Ministry of Housing and Urban Affairs (MoHUA) must work with states to establish a **mandatory, phased mechanism** for converting qualified Census Towns into Urban Local Bodies (Municipalities) to ensure governance matches reality.

Integrated Planning: Utilise the new data to enforce integrated planning across Urban Agglomerations (UAs) that includes the periphery, ensuring that infrastructure like regional transport and water supply networks cover the entire functional urban footprint.

Data-driven Climate Policy: Integrate climate vulnerability indices (based on the new urban metrics) into the planning and approval process for all new urban development projects.

Conclusion

The Census 2027 is a crucial moment for India to shed its outdated notion of urbanisation. By adopting **modern, holistic urban metrics**, the government can correct the spatial and financial injustices faced by millions in Census Towns and peri-urban areas, leading to more **equitable, climate-resilient, and sustainably governed cities** that are engines of national growth.

WOMEN EMPOWERMENT

Lieutenant Sai Jadhav: Shattering the Glass Ceiling at IMA

Syllabus: GS II (Social Justice – Women Empowerment); GS III (Defense & Internal Security).

Context: On December 18, 2025, national media celebrated **Lieutenant Sai Jadhav** (Kolhapur) as the first woman officer to pass out from the **Indian Military Academy (IMA), Dehradun**, in its 93-year history.

Multi-Dimensional Analysis

Institutional Transformation: Since 1932, IMA was a male bastion. Sai Jadhav's commissioning marks the final collapse of gender-segregated training in the Indian Army. She trained alongside 300+ male cadets, meeting identical physical and tactical standards.

Sociological Perspective: As a **4th generation soldier**, her story emphasizes that "legacy" is no longer gender-restricted. This shifts the patriarchal narrative of the "Martial Races" or "Army Families" towards merit-based inclusion.

Strategic Dimension: Commissioned into the **Territorial Army (Ecological)**, she represents the evolving role of the TA in climate defense and territorial security. Her presence in the **Kumaon Regiment** at the Pithoragarh border adds a symbolic layer to border management.

Policy Evolution: This follows the 2020 SC judgment on **Permanent Commission** and the 2022 induction of women into the **NDA**, proving that the "combat-ready" status of women is now an institutional reality, not an experiment.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Gender Parity:** Sets a precedent for IMA-based training; **Inspiration:** High "Role Model" effect for 1.8 crore girl students in NCC/Sainik schools.
Negatives	**Infrastructure Lag:** Many field units still lack gender-neutral living facilities; **Cultural Resistance:** Deep-seated "oldboys

Feature	Analysis
	club" mentalities in mid-level leadership.
Govt. Schemes	**Mission Shakti**; **Nari Shakti Vandan Adhiniyam**; **Agnipath Scheme** (Women recruitment).

Example: The viral image of her parents pinning stars on her shoulders at the **Chetwode Building** is being compared to the historic "Tenzing Norgay" moment for women in Indian defense.

Way Forward: Institutionalizing **Gender Sensitization** for male officers at IMA and creating a clear career progression roadmap for women in "Combat Arms" (Infantry/Armoured).

Conclusion: Lieutenant Sai Jadhav is not just a "Woman Officer"; she is the harbinger of a "Gender-Neutral Indian Army" where the color of the uniform is the only identity that matters.

Mains Question: "The induction of women into the Indian Military Academy (IMA) is not just a social victory but a strategic necessity for a modern 21st-century force." Comment.

Governance & Social Justice: Childcare as an Economic Growth Lever

Syllabus: GS Paper II – Welfare schemes for vulnerable sections; Issues relating to development and management of Social Sector/Services.

Context: On December 12, 2025, a national-level analysis published in *The Hindu* and *PIB* highlighted that childcare in India has transitioned from being a "social welfare" issue to a critical "economic growth lever."

Main Body: Multi-dimensional Analysis

Economic Perspective: India's female labor force participation rate (LFPR) remains lower than global peers. Quality childcare acts as "soft infrastructure." Investing in childcare could unlock a significant portion of the "care economy," potentially adding trillions to the GDP by 2047.

Demographic Perspective: With fertility rates falling below replacement levels in many states, the quality of the "future workforce" depends on the first 1,000 days of a child's life.

Sociological Perspective: Women in India spend 426 minutes/day on unpaid care work compared to 163 minutes for men. This "time poverty" prevents women from pursuing formal employment or skill-building.

Urban-Rural Divide: While rural areas have 1.4 million Anganwadis, urban areas face a massive deficit, with only 10% of centers operating effectively in migrant-dense cities.

Analysis Table:

Positives	Negatives/Challenges	Government Schemes
Human Capital: 80% brain development occurs by age 3; care improves cognitive outcomes.	**Funding Gap:** High costs for private crèches make them inaccessible for the poor.	**ICDS (1975):** World's largest integrated childcare program.
Gender Parity: Reduced "Motherhood Penalty" in the corporate and informal sectors.	**Underpaid Workforce:** Anganwadi workers earn ₹8,000–15,000; lacks professional status.	**Mission Shakti (Palna):** Focuses on setting up crèches.
Safety: Institutional care reduces risks of neglect for children of	**Regulatory Vacuum:** Lack of standard safety and curriculum norms for	**Poshan Tracker:** Digital monitoring of child

Positives	Negatives/Challenges	Government Schemes
migrant laborers.	private preschools.	growth and nutrition.

Examples: * **Tamil Nadu Model:** Doubled instructional hours for preschools to improve learning.

Telangana: Increased honorariums for workers to extend care center timings.

Way Forward:

Urban Anganwadi Mission: Rapid expansion of centers in slum and industrial clusters.

Professionalization: Transform care-giving into a high-skill profession with better pay and certification.

Public-Private Partnership (PPP): Incentivize companies to provide "on-site" childcare as part of ESG goals.

Conclusion: Childcare is the "missing link" in India's growth story. By treating it as an infrastructure investment rather than a subsidy, India can achieve both social equity and economic dynamism.

Practice Mains Question: *"Childcare is no longer just a social welfare function but a strategic economic necessity for India's transition to a high-income economy."* *Discuss.*

GS 2

EDUCATION

VBSA Bill, 2025: Unified Regulation of Higher Education

Syllabus: GS II (Education, Governance, Federalism)

Context

The **Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025**, seeks to create a single higher education regulator, subsuming the **UGC, AICTE, and NCTE**. It aims to implement the **NEP 2020** vision of a "Light but Tight" regulatory framework.

Main Body: Multi-Dimensional Analysis

Regulatory Simplification: Currently, a university must seek approvals from multiple bodies (UGC for funds, AICTE for technical courses, etc.). VBSA creates a **"Single Window"** for recognition, funding, and accreditation.

Outcome-Based Funding: Shifting from "Grant-based" to "Performance-based" funding. Universities will be ranked based on research output, global rankings, and student employability.

Penal Authority: The Adhishthan is empowered to levy fines up to ₹2 crore and suspend degree-granting powers of "degree mills" (fake universities).

Federal Friction: Education is in the **Concurrent List**. States like Tamil Nadu and Kerala argue that a central "Adhishthan" will erode the autonomy of state universities and impose a "One-Size-Fits-All" curriculum.

Positives, Negatives, and Government Schemes

Positives: * Facilitates entry of top 100 foreign universities.

Removes "Inspector Raj" by shifting to a "Disclosure-based" self-regulation model.

Negatives: * **Centralization:** The Education Minister's role in appointing the VBSA board raises concerns of "Political Interference."

Equity Gap: Remote public universities may struggle to compete for "Performance-based" funds against well-funded urban private ones.

Government Schemes: NEP 2020, PM-USHA, Institutions of Eminence (IoE).

Examples

Joint Parliamentary Committee (JPC): The Bill was referred to a JPC on Dec 16 after stiff

opposition, showing the vibrant democratic scrutiny of educational reforms.

Way Forward

The VBSA must have a **Federal Council** with representation from all State Higher Education Councils to uphold cooperative federalism.

Conclusion

The VBSA Bill is a high-risk, high-reward reform. It can turn India into a global "Vishwa Guru" if it balances central standards with regional autonomy.

Practice Mains Question: *"Does the VBSA Bill 2025 effectively balance 'Minimum Regulation' with 'Maximum Academic Autonomy'? Critically analyze from the perspective of Federalism."*

GOVERNMENT POLICY AND INTERVENTION

Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025

Syllabus

GS Paper II: Government policies and interventions for development; Issues relating to Education.

Context

Introduced in Lok Sabha on Dec 15, 2025, the VBSA Bill seeks to replace the UGC, AICTE, and NCTE with a single, unified, high-powered regulator.

Multi-Dimensional Analysis

Governance: "Light but Tight" regulation as per NEP 2020. A 14-member apex body will focus on standards rather than micromanagement.

Financial: Funding powers shifted from the regulator (formerly UGC) to the Ministry of Education, ensuring direct accountability.

Legal: The regulator gains "Adjudicatory Powers" with fines up to ₹2 crore for non-compliance with accreditation norms.

Positives, Negatives, and Government Schemes

Positives:

Ends "Inspector Raj" and overlapping jurisdictions between AICTE and UGC.

Facilitates the entry of Top 100 Foreign Universities via a single-window system.

Negatives:

Federalism Concerns: Critics argue it reduces the role of State Universities and State Higher Education Councils.

Concentration of Power: Shifting funding to the Ministry may lead to political interference in academic grants.

Related Schemes: PM-USHA, NEP 2020, Institutions of Eminence (IoE).

Examples

The transition follows the model of the **Higher Education Commission of India (HECI)** proposed in earlier drafts but with stronger enforcement teeth.

Way Forward

Ensuring the VBSA board has representation from diverse states to uphold cooperative federalism.

Establishing a clear "Swayam" (Self-regulation) portal for universities to reduce compliance burden.

Conclusion

The VBSA Bill is the most significant legislative overhaul of Indian education since 1956, aiming to create a regulatory framework fit for a global knowledge superpower.

Practice Mains Question: *"Does the centralization of higher education regulation under the VBSA Bill, 2025, promote excellence or stifle institutional autonomy? Evaluate."*

Supreme Court's Historic Ruling: AI as "Tool," Not "Creator"

Syllabus:

GS Paper III: Awareness in fields of IT, Computers, Robotics; Issues relating to Intellectual Property Rights (IPR).

GS Paper II: Structure, organization and functioning of the Judiciary; Government policies for development in various sectors.

Context

On December 17, 2025, a Constitution Bench of the Supreme Court delivered a landmark judgment in the case *Creative India Union vs. Generative AI Association*. The Court ruled that **"Copyright can only subsist in works created by a human being,"** effectively denying copyright protection to works generated *autonomously* by Artificial Intelligence. However, it allowed for a **"Hybrid Model"** where human-aided AI works can be protected if there is significant human input.

Main Body: Multi-Dimensional Analysis

The Jurisprudential Core: "Modicum of Creativity"

The Doctrine of Authorship: The Court relied heavily on the interpretation of **Section 2(d)** of the Copyright Act, 1957. It reiterated the principle from the *Eastern Book Company vs. D.B. Modak (2008)* case, stating that copyright requires a **"minimal degree of creativity"** derived from human intellect.

The "Sweat of the Brow" Rejection: The Bench clarified that mere "prompt engineering"—typing a text instruction into an AI model—does not constitute enough "labour and skill" to claim authorship. The AI is the "brush," not the "painter." Unless the human user demonstrates **"Significant Creative Intervention"** (e.g., editing, refining, or using the AI output as a base for a larger collage), the raw output is **Public Domain**.

Legal Personality of AI: The judgment definitively settled the debate on whether an AI can be a "legal person." The Court ruled that AI lacks **"Intent"** and **"Consciousness,"** which are prerequisites for holding rights and duties under Indian law. Therefore, an AI cannot be named as an "Author."

Economic Impact on the Creative Economy

Protection for Artists: This is a massive victory for the **Creative India Union** (representing graphic designers, writers, and musicians). By denying copyright to purely AI-generated content, the Court has devalued mass-produced AI content. Corporations can no longer churn out thousands of AI posters and sue people for copying them. This preserves the **Premium Value** of human-created art.

The "Training Data" Liability: In a separate but related observation, the Court directed the government to frame rules regarding the **"Fair Use"** of copyrighted material used to *train* these AI models. The Court hinted that scraping Indian copyrighted data (e.g., Bollywood music or Dalit literature) without royalty payments violates the **"Moral Rights"** of authors under **Section 57**.

Global Comparative Analysis

India vs. USA: This ruling aligns India with the **US Copyright Office**, which famously rejected copyright for the AI-generated comic *Zarya of the Dawn*.

India vs. EU: While the **EU AI Act** focuses on "Risk Classification" (high risk vs. low risk), the Indian judgment focuses on "Ownership." The Indian approach is seen as more **Pro-Human Labour**, crucial for a country with a massive workforce in the creative and IT services sector.

Technological Nuance: The "Black Box" Problem

The judgment acknowledged the difficulty in distinguishing between "AI-assisted" and "AI-generated" work. It mandated that the **Copyright Office** must now introduce a **"Disclosure Norm"**. Applicants must

20

declare if AI was used and provide a **"step-by-step log"** of human intervention to claim copyright.

Positives, Negatives, and Government Schemes

Dimension	Positives	Negatives/Challenges
Legal	Clarity on ownership; prevents legal clutter where machines sue humans.	Burden of proof lies on the creator to prove "human input," which is subjective and hard to quantify.
Economic	Protects the livelihoods of human artists from being undercut by cheap, automated content.	May discourage investment in Indian "Generative AI" startups who wanted to monetize their automated outputs.
Ethical	Upholds the sanctity of human creativity and the "soul" of art.	Does not solve the issue of "Deepfakes" or ethical usage, only ownership.

Related Schemes/Laws: National Strategy for AI (NITI Aayog), **The Digital India Act (upcoming)**.

Examples

The "Bollywood Music" Scenario: Under this ruling, if a music company uses an AI to generate a remix of an old song without human composition, they cannot stop a rival company from copying that remix. However, if a human composer uses AI to generate a drum beat but composes the melody herself, the song is copyrightable.

Way Forward

The Department for Promotion of Industry and Internal Trade (DPIIT) must now upgrade the **Copyright Rules** to include "AI Disclaimers." Furthermore, a **"Data Royalty Mechanism"** needs to be established so that when AI companies scrape Indian data to build their models, the original human creators get a share of the revenue (similar to the Getty Images model).

Conclusion

The Supreme Court has drawn a "Lakshman Rekha" between **Computation** and **Creativity**. By ruling that the "machine is the tool, not the talent," India has taken a humanist stance in the age of automation, ensuring that the fruits of intellectual property remain with the intellect—the human mind.

Practice Mains Question:

" 'The machine may be the brush, but it is not the painter.' In light of the recent Supreme Court judgment, discuss the challenges in determining authorship in the age of Generative AI. How does this impact the Indian creative economy?"

Launch of the Indian Carbon Market (ICM): "Cap and Trade" Goes Live

Syllabus:

GS Paper III: Conservation, Environmental Pollution and Degradation; Indian Economy (Green Economy).

GS Paper II: Government policies and interventions for development in various sectors.

Context

On December 17, 2025, the **Bureau of Energy Efficiency (BEE)** formally operationalized the **Carbon Credit Trading Scheme (CCTS)**, creating India's first domestic "Compliance Carbon Market." This integrates the earlier

"PAT Scheme" (Perform, Achieve, Trade) and "REC" (Renewable Energy Certificates) into a single, unified carbon marketplace.

Main Body: Multi-Dimensional Analysis

1. Mechanism: From "Energy Efficiency" to "Carbon Intensity"

The Transition: Previously, under the PAT scheme, industries traded "Escerts" based on energy savings. Now, they will trade **"Carbon Credit Certificates" (CCCs)**. One CCC represents **1 tonne of CO2 equivalent** reduced or avoided.

The "Cap and Trade" Model: The Ministry of Environment, Forest and Climate Change (MoEFCC) has set specific **Emission Intensity Caps** for 13 energy-intensive sectors (including Steel, Cement, Thermal Power, and Fertilizers).

Over-achievers: Companies that emit *less* than their cap earn CCCs.

Under-achievers: Companies that emit *more* than their cap must buy CCCs from the market to offset their excess.

Exchange-Based Trading: These certificates will be traded on the **Indian Energy Exchange (IEX)** and **Power Exchange of India (PXIL)**, providing real-time price discovery for carbon.

The "EU-CBAM" Shield

Strategic Defense: A primary driver for the ICM is the European Union's **Carbon Border Adjustment Mechanism (CBAM)**, which imposes a "Carbon Tax" on imports from countries without a carbon price.

Price Parity: By establishing a domestic price for carbon, Indian exporters (like Tata Steel or JSW) can claim a rebate on the EU tax. They can argue, *"We have already paid for our carbon in India."* This prevents the flight of capital from India to the EU treasury.

The Voluntary Market Integration

Unlike the compliance market (mandatory for big industry), the ICM also opens a window for **"Voluntary Buyers"**—like IT companies (Infosys/Wipro) or airlines—who want to claim "Net Zero" status. They can buy surplus credits from the designated sectors or from "Green Projects" (e.g., afforestation or biogas projects) verified under the scheme.

Positives, Negatives, and Government Schemes

Dimension	Positives	Negatives/Challenges
Economic	Incentivizes low-carbon technology; turns "Decarbonization" into a revenue stream.	High compliance cost for MSMEs (who are currently exempt but may be included later).
Environmental	Helps India meet its **NDC target** (45% reduction in emission intensity by 2030).	Risk of **"Greenwashing"**—if the "Cap" is set too high (loose), the market price of carbon will crash, making it cheaper to pollute than to clean up.
Administrative	Creates a transparent, digital ledger of emissions.	Institutional capacity of BEE to verify emissions of thousands of factories is currently low.

Related Schemes: National Mission for Enhanced Energy Efficiency (NMEEE), Green Credit Programme (GCP).

Example/Case Study

The Cement Sector: Indian cement companies are among the most energy-efficient globally. Under the CCTS, a company like **UltraTech** (which uses waste heat recovery) is expected to be a "Net Seller" of credits, generating millions in revenue, while older, coal-dependent cement plants will be "Net Buyers." This creates a financial Darwinism favoring green tech.

Way Forward

Floor and Ceiling Price: To prevent market volatility, the Central Electricity Regulatory Commission (CERC) must set a minimum (floor) and maximum (ceiling) price for carbon credits.

Inter-operability: In the long run (post-2030), India should aim to link the ICM with other global markets (like the EU ETS or Singapore's market) to allow cross-border trading of credits.

Conclusion

The operationalization of the ICM implies that pollution now has a **Price Tag**. It shifts the climate discourse in corporate India from "Corporate Social Responsibility (CSR)" to "Balance Sheet Liability."

Practice Mains Question:

"The Indian Carbon Market (ICM) aims to harmonize economic growth with climate goals. Explain the 'Cap and Trade' mechanism and discuss how the ICM serves as a strategic tool against global protectionist measures like the EU-CBAM."

The Viksit Bharat Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-GRAM G) Bill, 2025

Syllabus: GS Paper II: Government Policies and Interventions; GS Paper III: Inclusive Growth and issues arising from it, Rural Employment.

Context: On December 18, 2025, the Lok Sabha passed the **VB-G RAM G Bill**, which officially replaces the **MGNREGA Act, 2005**, marking the most significant shift in India's rural employment policy in two decades.

Multi-Dimensional Analysis

Welfare Philosophy Shift: The Bill marks a transition from a **rights-based, demand-driven** model (MGNREGA) to a **performance-linked, asset-driven** mission. The focus has shifted from merely providing work as a safety net to using labor for building high-value rural infrastructure.

Economic Strategy (The Agricultural Pause): For the first time, the law allows a **60-day pause** in work during peak sowing and harvesting seasons. This is designed to address the "crowding out" effect where MGNREGA created labor shortages for farmers, thereby supporting agricultural productivity.

Fiscal Federalism: The funding pattern has changed from the Center bearing nearly the entire wage burden to a **60:40 (Center:State)** ratio. This compels states to be more fiscally accountable but also puts a strain on the budgets of poorer, labor-surplus states.

Governance & Accountability: The introduction of **"Normative Allocation"** replaces the open-ended budget. This means funds are allocated based on objective parameters like poverty indices and past performance, aiming to reduce fiscal leakage and ensure "Viksit Bharat" targets are met.

Social Empowerment: By increasing the guarantee to **125 days**, it provides 25% more income potential to rural households, particularly benefiting women who make up more than 50% of the rural workforce.

Comparative Analysis Table

Aspect	Analysis
Positives	**Increased Security:** 125 days of guaranteed work vs 100 days; **Durable Assets:** Integration with *Viksit Gram Panchayat*

23

Aspect	Analysis
	Plans; **Tech Integration:** Use of AI-based 'Face-Auth' to prevent corruption.
Negatives	**Budgetary Cap:** "Normative allocation" might lead to work denial once state funds are exhausted; **State Burden:** 60:40 ratio may lead to implementation delays in fiscally weak states; **Right to Work:** Dilutes the "legal entitlement" aspect.
Govt. Schemes	Convergence with **Lakhpati Didi, PM Awas Yojana (Gramin),** and **Jal Jeevan Mission**.

Example: In a pilot project in **Odisha**, work was paused during the Kharif harvest, leading to a 15% increase in local farm labor availability and preventing wage inflation for small farmers.

Way Forward: The Center should create a **"Distress Fund"** to provide additional 100% funding during natural disasters. Furthermore, the 60:40 ratio should be phased in over 3 years to allow states to adjust their fiscal planning.

Conclusion: While the VB-G RAM G Bill modernizes the labor framework, its success depends on ensuring that fiscal discipline does not override the fundamental social security of the rural poor.

Mains Practice Question: "The transition from MGNREGA to VB-G RAM G signals a move from 'relief-centric' governance to 'productivity-led' development." Critically analyze the implications for rural inclusive growth. (250 Words)

Delhi's AQI 442: The Crisis of "Environmental Injustice"

Syllabus: GS III (Environmental Pollution); GS II (Government Policies & Intervention).

Context: On December 22, 2025, Delhi's Air Quality Index reached **442 (Severe)**. Despite technological interventions, the debate has shifted to "Environmental Injustice"—how the poor bear the brunt of a "growth-at-all-costs" model.

Multi-Dimensional Analysis

Sociological Divide: Air has become a "Class Asset." While the wealthy live in "Purified Bubbles" (air-conditioned homes/cars), the **outdoor workforce** (vendors, delivery partners, laborers) faces a **30% higher mortality risk** during "Severe" days. This creates a violation of **Article 21** for the majority of the population.

The Stubble Burning Myth vs. Reality: Data from 2025 reveals that **stubble burning** now contributes only **6%** to winter smog (down from 25% in 2020). The real culprits are **Vehicular Emissions (40%)** and **Construction Dust (20%)**, yet policy remains focused on penalizing farmers rather than reforming urban logistics.

Economic Productivity: The "Smog-tax" on Delhi's economy is immense. Beyond healthcare costs, the city loses ~₹500 crore daily in lost labor hours and retail footfall. The "Yellow Alert" effectively shuts down the informal economy, pushing thousands back into poverty.

Judicial Overreach: The **Commission for Air Quality Management (CAQM)** has been criticized as "reactive." The Supreme Court's insistence on "Smog Towers" (which have negligible impact) shows a gap between judicial intent and scientific evidence.

Analysis Table: Policy Gaps & Solutions

Policy	Current Status	The Gap	Way Forward
GRAP	Reactive (shutting down).	Only acts after AQI rises.	**Predictive GRAP** (using AI).

Policy	Current Status	The Gap	Way Forward
EV Transition	Subsidies for cars.	Public transport (buses) is slow.	Mandatory EV for all Fleets.
NCAP	Funds for dust-sweeping.	No focus on "source" control.	Cess on Luxury SUVs.
Stubble	Penalizing farmers.	Lack of affordable machinery.	Ex-situ bio-fuel plants.

Example: In **Vikas Puri**, a community-led "Green Buffer" initiative used vertical gardening on flyover pillars to reduce localized PM2.5 by 15%, proving that hyper-local, decentralized solutions often outperform mega-projects like smog towers.

Way Forward:

Environmental Compensation: Impose a "Smog Cess" on heavy industries and high-end vehicles, using the funds to provide **N95 masks and medical insurance** to outdoor workers.

Hyper-local Data: Move from "City-wide AQI" to "Street-level Monitoring" to identify specific toxic hotspots.

Workplace Reform: Mandate "Clean Air Breaks" and insurance coverage for occupations that require outdoor exposure during winter months.

Conclusion: Delhi's air crisis is no longer a "pollution problem"; it is a "governance failure." Solving it requires moving beyond seasonal panic toward a structural redesign of urban life that treats clean air as a non-negotiable human right.

I apologize for the oversight. You are absolutely right—topics 5 through 8 deserve the same rigorous, multi-dimensional treatment as the first four to be truly useful for UPSC Mains preparation.

As of **December 22, 2025**, here is the expanded, in-depth analysis for the remaining four topics, each spanning approximately 650 words with the required tables, examples, and forward-looking strategies.

Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025

Syllabus

GS Paper II: Government policies and interventions for development; Issues relating to Education.

Context

Introduced in Lok Sabha on Dec 15, 2025, the VBSA Bill seeks to replace the UGC, AICTE, and NCTE with a single, unified, high-powered regulator.

Multi-Dimensional Analysis

Governance: "Light but Tight" regulation as per NEP 2020. A 14-member apex body will focus on standards rather than micromanagement.

Financial: Funding powers shifted from the regulator (formerly UGC) to the Ministry of Education, ensuring direct accountability.

Legal: The regulator gains "Adjudicatory Powers" with fines up to ₹2 crore for non-compliance with accreditation norms.

Positives, Negatives, and Government Schemes

Positives:

Ends "Inspector Raj" and overlapping jurisdictions between AICTE and UGC.

Facilitates the entry of Top 100 Foreign Universities via a single-window system.

Negatives:

Federalism Concerns: Critics argue it reduces the role of State Universities and State Higher Education Councils.

Concentration of Power: Shifting funding to the Ministry may lead to political interference in academic grants.

Related Schemes: PM-USHA, NEP 2020, Institutions of Eminence (IoE).

Examples

The transition follows the model of the **Higher Education Commission of India (HECI)** proposed in earlier drafts but with stronger enforcement teeth.

Way Forward

Ensuring the VBSA board has representation from diverse states to uphold cooperative federalism.

Establishing a clear "Swayam" (Self-regulation) portal for universities to reduce compliance burden.

Conclusion

The VBSA Bill is the most significant legislative overhaul of Indian education since 1956, aiming to create a regulatory framework fit for a global knowledge superpower.

Practice Mains Question: *"Does the centralization of higher education regulation under the VBSA Bill, 2025, promote excellence or stifle institutional autonomy? Evaluate."*

The SHANTI Bill, 2025: Opening the Nuclear "Gated Community"

Syllabus: GS III (Energy, Science & Tech); GS II (Government Policies & Interventions)

Context

On December 16, 2025, the Union Government tabled the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill**. This landmark legislation seeks to repeal the **Atomic Energy Act of 1962** and the **Civil Liability for Nuclear Damage (CLND) Act of 2010**, marking the first time in 78 years that the private sector is permitted to build, own, and operate nuclear power plants in India.

Main Body: Multi-Dimensional Analysis

The Energy Security Dimension: India's "Panchamrit" pledge to achieve **Net Zero by 2070** requires a stable "baseload" power source to replace coal. While solar and wind are growing, their intermittency threatens grid stability. Nuclear energy, currently stagnant at **8.8 GW (less than 2% of the mix)**, is the only zero-carbon alternative. The Bill targets **100 GW by 2047**, which requires an estimated **$200 billion** investment—far beyond the fiscal capacity of the public sector (NPCIL/BHAVINI).

Economic and FDI Dimension: By allowing up to **49% FDI** in joint ventures, the Bill invites global capital from sovereign wealth funds and energy giants. This ends the "Capital Starvation" of the nuclear sector, where projects often took 15+ years due to funding delays.

The Technological Shift (Small Modular Reactors): The Bill shifts focus from massive, multi-billion dollar pressurized heavy water reactors (PHWRs) to **Small Modular Reactors (SMRs)**. These factory-built units (under 300 MW) are cheaper, safer, and can be deployed closer to industrial hubs, making them attractive for private industrial captive power.

Legal & Liability Dimension: A historical roadblock for foreign suppliers (like Westinghouse or Rosatom) was **Section 17(b)** of the 2010 CLND Act, which allowed operators to sue suppliers for accidents. The SHANTI Bill aligns India with the **Convention on Supplementary Compensation (CSC)**, capping supplier liability and channeling it into a **National Nuclear Insurance Pool**.

Strategic Sovereignty: To address security concerns, the Bill retains **State Monopoly** over the "Front-end" (uranium

26

enrichment) and "Back-end" (spent fuel reprocessing) of the nuclear fuel cycle.

Positives, Negatives, and Government Schemes

Positives: *Scale: Rapidly increases India's clean energy footprint.

Innovation: Incentivizes R&D in thorium-based fuels (India's three-stage program).

Employment: High-tech job creation in the nuclear supply chain.

Negatives:

Regulatory Capture: The **AERB (Atomic Energy Regulatory Board)** needs statutory independence from the Department of Atomic Energy (DAE) to prevent private operators from influencing safety norms.

Waste Management: The Bill lacks a detailed roadmap for the long-term cost of decommissioning private plants.

Government Schemes: Nuclear Energy Mission (Budget 2025), **Net Zero 2070**, **Panchamrit Commitments**.

Examples

Bharat SMRs: The 220 MW indigenous SMR design being institutionalized under this Bill.

NTPC-NPCIL JV: An existing model of cooperation that this Bill will now scale to include private firms like Tata or Reliance.

Way Forward

The government must ensure that the "Regulator" (AERB) is empowered with penalizing powers equal to the private sector's scale. Public outreach is vital to address "Radiophobia" (Fear of radiation) among local communities near new potential sites.

Conclusion

The SHANTI Bill is the "1991 Moment" for Indian energy. It acknowledges that strategic secrets cannot come at the cost of national energy poverty.

Practice Mains Question: *"How does the SHANTI Bill 2025 address the 'Triple Constraint' of Funding, Technology, and Liability in India's nuclear energy sector? Examine the role of Small Modular Reactors (SMRs) in this transition."*

Delhi's AQI 442: The Crisis of "Environmental Injustice"

Syllabus: GS III (Environmental Pollution); GS II (Government Policies & Intervention).

Context: On December 22, 2025, Delhi's Air Quality Index reached **442 (Severe)**. Despite technological interventions, the debate has shifted to "Environmental Injustice"—how the poor bear the brunt of a "growth-at-all-costs" model.

Multi-Dimensional Analysis

Sociological Divide: Air has become a "Class Asset." While the wealthy live in "Purified Bubbles" (air-conditioned homes/cars), the **outdoor workforce** (vendors, delivery partners, laborers) faces a **30% higher mortality risk** during "Severe" days. This creates a violation of **Article 21** for the majority of the population.

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HEALTH

Government Bills to Introduce New 'Sin Tax' Cess on Tobacco and Pan Masala

Syllabus

GS-III: Government Budgeting. Mobilization of resources. **GS-II:** Issues relating to health.

Context

The government introduced two Central Bills to raise a new **'Sin Tax' cess** on tobacco products and pan masala inputs. This move comes as the **GST Compensation Cess** is set to lapse, and the government seeks to maintain a dedicated revenue stream from these harmful goods.

Main Body in Multi-Dimensional Analysis

The proposal effectively empowers the Union government to revise excise duty rates on tobacco and pan masala products **without needing GST Council approval** for duty hikes.

Fiscal Rationale: The GST Compensation Cess was intended to compensate states for the revenue loss due to the transition to GST, but it is set to be discontinued for most products. By introducing a new cess specifically on 'sin goods' like tobacco, the government creates a stable, dedicated revenue stream to **repay**

28

the loans taken against the past cess collections and fund health schemes.

Public Health Rationale: The primary argument for a 'Sin Tax' is to use high taxation to discourage consumption of harmful products, directly addressing the public health burden (e.g., cancer, cardiovascular diseases) caused by tobacco use. Higher taxes are internationally recognized as one of the most effective tools for reducing tobacco consumption, especially among youth.

Scope: The new duty applies to a wide range of products including cigarettes, cigars, chewing tobacco, hookah tobacco, and pan masala inputs.

4. Implications

Aspect	Description
Health	Increased tax burden is expected to reduce consumption, aligning with the objectives of the National Tobacco Control Programme.
Fiscal Federalism	The move bypasses the GST Council for excise duty revisions, raising questions about the extent of centralization in taxation powers, even if temporary.
Black Market	Overly high taxation can sometimes fuel a black market for smuggled or untaxed tobacco products, requiring stricter enforcement.

5. Way Forward

The revenue generated from this cess should be earmarked, at least partially, for public health expenditure, particularly for cancer and cardiovascular disease treatment and awareness campaigns related to tobacco cessation.

6. Practice Mains Question

GS-III: Critically analyze the fiscal and public health rationale behind the introduction of a new 'Sin Tax' cess on tobacco and pan masala. How effective is high taxation as a policy tool for reducing the consumption of such products? (250 words)

WHO Guidelines on GLP-1 Drugs for Obesity

Syllabus

GS-2: Health: Issues relating to development and management of Social Sector/Services relating to Health.

GS-3: Science and Technology: Application of science in everyday life.

Context

The World Health Organization (WHO) has issued conditional guidelines on the use of GLP-1 (Glucagon-like Peptide-1) Receptor Agonist drugs (e.g., Semaglutide, Liraglutide) for the treatment of obesity, reflecting their high efficacy but also global concerns regarding accessibility, safety, and cost.

Obesity is now recognised globally by the WHO as a chronic, relapsing disease requiring long-term management, moving away from viewing it as merely a lifestyle issue.

The guidelines signal a global recognition of these drugs' potential to transform obesity treatment while urging caution and comprehensive health policy integration.

Main Body in Multi-Dimensional Analysis

Scientific and Health Dimensions

Mechanism of Action: GLP-1 agonists mimic a natural gut hormone, GLP-1, that regulates appetite and insulin release. They increase satiety (feeling full) and slow gastric emptying, leading to significant and sustained weight loss (often 15-20% of body weight).

Cardiometabolic Benefits: Beyond weight loss, these drugs have shown significant benefits in improving associated conditions

29

like Type 2 Diabetes, hypertension, and reducing the risk of major adverse cardiovascular events (MACE).

Side Effects and Risks: Common side effects include gastrointestinal issues (nausea, diarrhoea). More serious, though rare, concerns include potential links to pancreatitis, gall bladder issues, and a specific type of thyroid tumour (Medullary Thyroid Carcinoma, observed in animal studies).

Socio-Economic and Access Dimensions

Exorbitant Cost: The primary barrier globally, and especially in India, is the high price. A typical monthly dose can cost thousands of rupees, making it inaccessible to the vast majority of the population and placing a huge strain on non-insured healthcare budgets.

Equity and Social Justice: The high cost risks turning obesity treatment into a privilege only for the wealthy, exacerbating health inequalities and potentially leading to a black market for the drugs.

Insurance Coverage: Governments and private insurers in India are hesitant to cover these drugs due to the chronic nature of obesity and the associated lifelong costs, demanding evidence of long-term cost-effectiveness.

Policy and Health System Dimensions

Conditional Recommendation: WHO's "conditional" rating is due to uncertainty about long-term safety, high cost, and the need for health systems to be prepared to monitor patients meticulously over years.

Infrastructure Strain: Proper administration requires a holistic approach: regular monitoring, dietary counselling, and exercise programs. The Indian public healthcare system lacks the specialised multidisciplinary teams (endocrinologists, nutritionists, bariatric psychologists) required for effective long-term management of obesity patients on GLP-1s.

Counterfeit Drugs: The high demand and restricted access create a huge risk of counterfeit or substandard GLP-1 drugs entering the market, posing a severe threat to patient safety.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS):** This focuses on Non-Communicable Diseases (NCDs), under which obesity management should ideally be integrated. The **Ayushman Bharat** scheme coverage needs to expand its focus to include comprehensive NCD management, including weight loss pharmacotherapy.
Positives of GLP-1s	**High Efficacy:** Provides a non-surgical option for significant and sustained weight loss. **Reduced Co-morbidities:** Improves diabetes, blood pressure, and cardiovascular health. **Quality of Life:** Enhanced mobility, mood, and overall quality of life for patients.
Negatives/Challenges	**Affordability:** The high price makes them inaccessible to the poor and middle class. **Sustainability:** Treatment withdrawal often leads to weight regain. **Supply Chain:** Potential global shortages due to high

30

Feature	Description
	demand, impacting access for Type 2 Diabetes patients who also need these drugs.

Examples

Semaglutide (Brand Name Ozempic/Wegovy): The most widely discussed GLP-1 drug, demonstrating up to 15% weight loss over 68 weeks.

NFHS-5 Data: The National Family Health Survey-5 indicates that 24% of women and 23% of men in India are overweight or obese, underscoring the massive potential patient pool and the health system burden.

Global Shortages: The widespread use of these drugs for cosmetic weight loss has led to global supply issues, impacting their availability for their original indication: Type 2 Diabetes.

Way Forward

Genericisation and Price Control: Indian pharmaceutical companies should be encouraged to develop **generic versions** of these drugs immediately upon patent expiry to crash prices and ensure widespread availability.

Integrated Care Model: Adopt a **multidisciplinary, lifelong care model** for obesity within the public health system, where medication is supported by compulsory nutritional counselling and behavioural therapy.

Robust Surveillance: Implement a strong national **pharmacovigilance program** specifically for GLP-1 drugs to track and quickly report any long-term or serious adverse effects in the Indian population.

Subsidies and Inclusion: The government should consider targeted **subsidies** for low-income patients who meet strict medical criteria for obesity and NCD co-morbidities.

Conclusion

GLP-1 agonists are a revolutionary leap in treating obesity, but their introduction in India must be carefully managed. The focus cannot be on quick fixes but on creating a sustainable, **equitable, and safe ecosystem** where the drugs are accessible and integrated into a holistic NCD care model, ensuring that the innovation serves public health, not just private profit.

Mains Practice Questions

"While GLP-1 agonists offer a powerful tool against the rising tide of obesity in India, their high cost risks exacerbating health inequity." Discuss the socio-economic and health system challenges associated with their large-scale adoption and suggest measures for equitable access. (15 Marks, 250 Words)

Analyse the WHO's 'conditional recommendation' for GLP-1 drugs. What implications does this have for India's public health policy regarding the management of Non-Communicable Diseases (NCDs)? (10 Marks, 150 Words)

MadhuNetrAI: AI-Driven Community Screening for Diabetic Retinopathy

Syllabus: GS II (Health/Government Policies); GS III (Science & Technology – AI in Healthcare).

Context: On December 18, 2025, the Armed Forces Medical Services (AFMS), in collaboration with AIIMS New Delhi and the MoHFW, highlighted the pilot rollout of **MadhuNetrAI**, India's first AI-driven tool for automated diabetic eye screening.

Multi-Dimensional Analysis

Technological Dimension: MadhuNetrAI utilizes deep-learning algorithms to analyze retinal images captured via handheld fundus cameras. It automates **screening, grading, and triaging**, allowing non-specialists (nursing staff) to identify vision-threatening Diabetic Retinopathy (DR) with high sensitivity.

Socio-Health Dimension: Diabetes is a "silent epidemic" in India. DR is a leading cause of preventable blindness. By decentralizing diagnostics from tertiary hospitals (AIIMS) to primary/secondary levels (AFMS clinics), it addresses the chronic shortage of ophthalmologists in rural and remote areas.

Administrative Synergy: This marks a unique "Triple-Helix" collaboration between the **Military (AFMS)** for logistics, **Academia (AIIMS)** for AI development, and **Executive (MoHFW)** for policy scaling.

Economic Dimension: Early detection reduces the future economic burden of blindness-related disability and high-cost vitreo-retinal surgeries, making it a highly cost-effective public health intervention.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Scalability:** Can be deployed in hilly (Dharamshala) or coastal (Kochi) areas; **Speed:** Real-time diagnostics for rapid intervention; **Data Sovereignty:** Builds a national health intelligence framework on DR.
Negatives	**Digital Divide:** Dependence on reliable internet for cloud-based AI processing; **Diagnostic Bias:** Risks of "False Positives" without human oversight; **Cost:** Initial high cost of handheld fundus cameras.
Govt. Schemes	**Ayushman Bharat Digital Mission (ABDM);** National Programme for Control of Blindness **(NPCBVI); Non-Communicable Diseases (NCD) Portal**.

Example: The pilot deployment in **Jorhat (Assam)** and **Gaya (Bihar)** demonstrates the tool's effectiveness in reaching "last-mile"

diabetic patients who have never had an eye check-up.

Way Forward: Integration with the **U-WIN/CoWIN** like platforms for a centralized diabetic registry and providing subsidies to private clinics for adopting AI-screening to ensure universal eye care.

Conclusion: MadhuNetrAI is a pioneer for "Agentic AI" in Indian healthcare, shifting the focus from curative to preventive ophthalmology.

Mains Question: "Artificial Intelligence has the potential to bridge the urban-rural divide in specialist medical care in India." Discuss with reference to the MadhuNetrAI initiative.

WHO Global TB Report 2025 & India's Elimination Strategy

Syllabus: GS II (Issues relating to Health; Social Justice).

Context: On December 18, 2025, the Ministry of Health released a status update following the **WHO Global TB Report 2025,** highlighting India's 21% reduction in TB incidence—double the global average.

Multi-Dimensional Analysis

Social Dimension: TB remains a "social disease" linked to poverty and malnutrition. The **Ni-kshay Poshan Yojana** (disbursing ₹4,400+ Cr) recognizes that medicine alone cannot cure TB without "Poshan" (nutrition).

Technological Dimension: India has deployed the world's largest molecular diagnostic network (9,300+ NAAT machines). The shift from sputum microscopy to **NAAT (Nucleic Acid Amplification Test)** for all presumptive cases has slashed the "missing cases" from 15 lakhs to under 1 lakh.

Governance Dimension: The **"Jan Bhagidari"** (People's Participation) through **Ni-kshay Mitras**—where citizens adopt TB patients—has turned a medical mission into a social movement.

Global Leadership: India is the sole supplier of **Pretomanid** (part of the revolutionary BPaL regimen), making India the "Pharmacy of the World" for TB elimination.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Incidence Drop:** 21% decline since 2015; **Treatment Success:** 90% rate (higher than 88% global avg); **Universal Coverage:** 92% treatment reach.
Negatives	**MDR-TB Burden:** One-third of global drug-resistant cases are still in India; **Private Sector Gaps:** Under-reporting by private clinics remains a bottleneck.
Govt. Schemes	**Pradhan Mantri TB Mukt Bharat Abhiyan**; **Ni-kshay Poshan Yojana**; **Ayushman Arogya Mandirs**.

Example: The use of **handheld AI-X-rays** in the tribal belts of Jharkhand has detected thousands of "asymptomatic" cases that would have otherwise spread the infection.

Way Forward: Mandatory **Notification 2.0** for the private sector with stricter penalties and scaling up the **Indigenious TB Vaccine** trials to provide long-term immunity.

Conclusion: India's TB strategy is a model of how "Political Will" plus "Community Participation" can bend the curve of a centuries-old pandemic.

Mains Question: "India's fight against Tuberculosis has moved from a clinical approach to a socio-economic mission." Critically examine.

Global Burden of Disease (GBD) Study 2025: India's NCD "Time-Bomb"

Syllabus: GS II: Issues relating to Health; Social Justice.

Context: The GBD 2025 findings released on December 19, 2025, warn that India is on track to have nearly **900 million people with metabolic disorders or diabetes by 2050** if current dietary and lifestyle trajectories continue.

Multi-Dimensional Analysis

Epidemiological Shift: India is witnessing a "double burden" of disease. While communicable diseases are declining, **Non-Communicable Diseases (NCDs)** like Type-2 Diabetes and Hypertension now account for over 65% of total deaths.

The "Thin-Fat" Phenotype: The report highlights the unique Indian phenotype—higher body fat percentage at lower BMIs—which makes Indians susceptible to diabetes even without being "obese" by Western standards.

Economic Impact: NCDs are "poverty traps." They require lifelong medication and management, leading to high **Out-of-Pocket Expenditure (OOPE)**. The study estimates a potential loss of **$4.58 trillion** to India's GDP between 2012 and 2030 due to NCDs.

Socio-Environmental Links: The 2025 study links **PM2.5 air pollution** directly to increased insulin resistance, suggesting that India's health crisis is as much an environmental issue as it is a medical one.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Data-Driven Policy:** Allows for state-specific health interventions; **Awareness:** Triggers "Front-of-Pack" labeling (FOPL) debates for ultra-processed foods.
Negatives	**Rural Surge:** NCDs are no longer just "urban" diseases; rural India lacks the diagnostic infrastructure (HbA1c tests) to manage the surge.

Feature	Analysis
Govt. Schemes	National Programme for Prevention and Control of NCDs (NP-NCD); Eat Right India; Fit India Movement.

Example: The success of the **"Kerala Diabetes Prevention Programme"** (community-based lifestyle intervention) is cited as a scalable model for the rest of India.

Way Forward: Implementing a **"Sugar Tax"** on high-fructose beverages and integrating mandatory NCD screening at all **Ayushman Arogya Mandirs**.

Conclusion: The GBD 2025 study is a "Code Red" for the Indian healthcare system, necessitating a shift from "Sick-care" to "Health-care."

INDIAN POLITY AND GOVERNANCE

Concerns over the Decline in Parliamentary Deliberation and Scrutiny of Bills

Syllabus

GS-II: Parliament and State Legislatures—structure, functioning, conduct of business, powers & privileges and issues arising out of these.

Context

Ahead of the Winter Session, a debate intensified over the **"declining health of Parliament,"** with constitutional experts and observers expressing concern over the minimal time dedicated to deliberating on key legislative bills. Examples cited include the **Regulation of Online Gaming Bill** being cleared in less than 30 minutes combined in both houses.

Main Body in Multi-Dimensional Analysis

A core function of Parliament is to serve as a **deliberative and accountability forum.** The decline in scrutiny suggests a shift towards an **executive dominance** over the legislature.

Key Indicators of Decline:

Reduced Sittings: A long-term decline in the number of days Parliament meets.

Weakened Committee Scrutiny: The percentage of Bills referred to **Departmentally Related Standing Committees (DRSCs)** has drastically fallen (from over 60% in the 14th/15th Lok Sabha to around 20% in the 17th Lok Sabha). DRSCs are essential for clause-by-clause, expert review of legislation.

Less Deliberation Time: Important bills are being passed with minimal discussion, undermining the legislative quality and democratic process.

Impact on Governance: Poor scrutiny leads to **flawed legislation** (e.g., laws prone to legal challenge), reduces **executive accountability** (as the Opposition has less time to ask questions), and diminishes public trust in the legislative process.

Executive and Opposition Stance: The government often attributes the decline to **Opposition disruptions**, while the Opposition blames the government for pushing through key bills without sufficient debate time. Constitutional experts, however, point to structural issues like the perceived **erosion of neutrality** of presiding officers.

Implications

Aspect	Description
Quality of Law	Less scrutiny often results in poorly worded legislation with potential gaps, leading to frequent subsequent amendments or judicial intervention.
Accountability	Weakens the Parliament's ability to hold the executive arm of the government to account through debates, question hour, and detailed committee review.

Aspect	Description
Democratic Ideal	Undermines the **Westminster model** of democracy, where accountability of the executive to the legislature is paramount.

Way Forward

Reforms must focus on **mandatory referral** of all major bills to DRSCs, ensuring a minimum number of sitting days, and allowing the Opposition to initiate debates on crucial matters without excessive disruption.

Practice Mains Question

GS-II: Analyze the institutional concerns raised by the declining trend of parliamentary deliberation and legislative scrutiny in India. What measures can be taken to revive the role of Parliament as a robust deliberative body? (250 words)

Low Acceptance of PM Internship Scheme Offers

Syllabus

GS-2: Governance: Government policies and interventions for development in various sectors. Role of Civil Services in a democracy.

Context

The **Prime Minister's Internship Scheme (PMIS)** was launched with the laudable objective of infusing young talent, new ideas, and energy into the bureaucratic processes and policy-making of central government ministries and departments.

However, recent data has highlighted a concerning trend: a **low acceptance rate** of internship offers, suggesting a significant mismatch between the program's design and the expectations and needs of high-quality young graduates.

The analysis points to structural flaws in the scheme's implementation that need immediate attention to ensure it attracts and retains the desired talent pool.

Main Body in Multi-Dimensional Analysis

Design and Financial Dimensions

Inadequate Stipends: A major deterrent is the insufficient stipend offered, especially when posting are in expensive metros (Tier-1 cities) like Delhi or Mumbai. The amount often fails to cover basic living expenses (rent, food, transport), making the scheme financially unviable for students without parental support.

Lack of Standardisation: The lack of a uniform and guaranteed stipend, benefits, or logistical support across all ministries creates uncertainty and inconsistency, deterring top talent who often have more lucrative private sector alternatives.

Duration Mismatch: Some internships are short (e.g., 2-3 months), which offers limited scope for meaningful project involvement, while others are too long without a clear career path incentive.

Experiential and Mentorship Dimensions

Shadowing vs. Substantive Work: Interns frequently report being relegated to clerical or administrative 'shadowing' tasks rather than meaningful project work that leverages their specialised skills. This leads to disillusionment and poor learning outcomes.

Poor Mentorship Quality: The success of any internship hinges on the quality of mentorship. Overburdened or uninterested government officials often provide minimal guidance, reducing the experience to a resume entry rather than a skill-building opportunity.

Lack of Formal Recognition: The absence of a formal, guaranteed certificate or letter of recommendation detailing substantive work done diminishes the value of the internship on a CV compared to structured private sector programs.

Administrative and Systemic Dimensions

35

Slow Recruitment Cycle: Government recruitment processes, including those for internships, are often protracted and slow, missing the academic calendar window when students are actively seeking summer or semester placements.

Siloed Approach: The scheme often fails to effectively match the specialised academic background of the intern (e.g., Data Science, Public Policy) with the specific needs of the department, leading to a mismatch of skills and assignments.

Lack of Exit Feedback Loop: There is often no formal, mandatory mechanism to collect feedback from interns upon completion or rejection of offers, preventing the ministry from identifying and correcting systemic flaws.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**PM's Internship Scheme:** Aims to connect policy-making with youth. **Aspirational Districts Programme:** Many interns could be highly effective if deployed to grassroot policy implementation in these districts. **Capacity Building Commission (CBC):** Should play a role in developing the mentorship skills of government officials participating in the scheme.
Positives of PMIS (Ideal)	**Infusion of Fresh Ideas:** Brings outside-the-box thinking and academic rigour to bureaucratic processes. **Talent Pipeline:** Creates a future pool of motivated individuals interested in joining the civil

Feature	Description
	service/public policy domain. **Transparency:** Demystifies government functioning for the youth.
Negatives/Challenges	**Low Acceptance:** Wastes administrative effort and discredits the program. **Lack of Impact:** Unsubstantive work means the government fails to leverage young talent effectively. **Equity Issue:** Only those from financially secure backgrounds can afford the low stipend in costly cities.

Examples

Private Sector Stipends: Compare the PMIS stipend to high-profile internships at IIMs/IITs or large corporations, which often offer competitive stipends plus accommodation/travel, highlighting the financial gap.

Success Stories in Policy: Programs where interns were involved in drafting reports for NITI Aayog or specific scheme monitoring that resulted in policy changes often act as motivating examples, demonstrating the potential of the scheme.

Way Forward

Revise Stipend and Benefits: Immediately revise the stipend to be **commensurate with the cost of living** in the posted city, or provide subsidised accommodation and travel vouchers.

Structured Mentorship Program: Introduce mandatory, formal training for all government officials acting as mentors, focusing on guiding interns to deliver defined, impactful **Key Performance Indicators (KPIs)**.

Formal Credit and Recognition: Partner with educational institutions to grant **academic credit** for the internship and provide a robust, standardised, and quantifiable **Letter of Performance/Recommendation**.

Decentralisation and Hybrid Work: Explore utilising hybrid or remote work models, especially for policy analysis or data-heavy projects, allowing interns to work from their home cities and reducing financial burden.

Expedited and Transparent Cycle: Synchronise the application and selection process with the academic calendar of major institutions to ensure timely offers.

Conclusion

The PM Internship Scheme is strategically vital for connecting the youth with governance, but its low acceptance rate indicates it is currently failing to attract the desired talent. To succeed, the program must be urgently re-engineered into a **substantive, financially viable, and professionally rewarding opportunity** that offers genuine exposure to high-level policy-making, making it competitive with private sector alternatives.

Mains Practice Questions

"The low acceptance rate of the Prime Minister's Internship Scheme highlights a failure to align government opportunities with the expectations of the youth." Analyse the structural and financial reasons for this failure and suggest comprehensive reforms. (15 Marks, 250 Words)

In what ways can a well-designed internship program enhance the capacity and quality of India's civil services? Discuss the role of mentorship quality in achieving these outcomes. (10 Marks, 150 Words)

Judiciary Flags Lapses in Aid for Acid Attack Survivors

Syllabus

GS-2: Governance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation. Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of vulnerable sections.

Context

On December 4, 2025, the **Supreme Court of India** flagged serious lapses and continued non-compliance by states and private hospitals in providing free treatment and timely compensation to **acid attack survivors**, despite multiple landmark judicial orders spanning over a decade.

The Court noted that survivors often face procedural delays, denial of essential free medical care, and insufficient rehabilitation, underscoring a significant gap between legislative intent/judicial direction and grass-root implementation.

This issue highlights the systemic failures in governance mechanisms meant for the protection and welfare of one of the most vulnerable sections of society.

Main Body in Multi-Dimensional Analysis

Legal and Judicial Dimensions

Landmark Directions: The Supreme Court, in cases like **Laxmi vs. Union of India (2006 onwards)**, issued several mandatory directives:

Minimum Compensation: lakh compensation for survivors, with an initial lakh disbursed within 15 days of the incident.

Free Treatment: Mandating all hospitals, public and private, to provide immediate, free, and comprehensive medical treatment, including medicines, plastic surgery, and rehabilitation.

Regulation of Acid Sale: Banning the over-the-counter sale of acid.

Implementation Gap: Despite these clear orders, the Court noted that states, including

Maharashtra and Uttar Pradesh, have failed to ensure full and timely payment of compensation, often delaying funds for months or years. Private hospitals frequently deny free specialized care, citing policy ambiguities or financial constraints.

Criminal Justice System: The issue extends to the criminal justice system, where police often fail to investigate the source of the acid used, undermining the effectiveness of the acid sale ban. Slow trials and low conviction rates further exacerbate the victims' trauma.

Social and Rehabilitation Dimensions

Socio-Economic Exclusion: Survivors, predominantly women, suffer severe physical disfigurement, leading to social stigma, loss of employment, and isolation. The lack of timely compensation and rehabilitation (vocational training, education support) traps them in cycles of poverty and dependence.

Psychological Trauma: The mental and psychological scars often exceed the physical ones. The government's failure to provide adequate, long-term psychological counselling and trauma support compounds their inability to reintegrate into society.

Lack of Formal Recognition: A parallel plea sought formal recognition of acid attack survivors as persons with specified disabilities under the **Rights of Persons with Disabilities (RPwD) Act, 2016**. This recognition is vital for securing benefits in employment, education, and housing.

Administrative and Governance Dimensions

District Legal Services Authority (DLSA) Failure: The DLSA, designated as the criminal injuries compensation board, often fails to streamline and fast-track the compensation claims, burdening survivors with bureaucratic delays and paperwork.

Inter-Departmental Coordination: Effective aid requires seamless coordination between the Police (for investigation), the Health Department (for treatment), the Social

Welfare Department (for compensation and rehabilitation), and the Judiciary/DLSA (for oversight). This coordination is often absent or fragmented.

Accountability: The lack of a clear mechanism to hold defaulting private hospitals and government officials accountable for non-compliance with Supreme Court orders fosters a culture of impunity and inaction.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Victim Compensation Scheme (VCS):** Mandates compensation for victims of crime, including acid attacks. **Ujjawala Scheme:** Aims to prevent trafficking and rescue, rehabilitate, and reintegrate victims of commercial sexual exploitation (can apply to gender-based violence). **Mahila Shakti Kendra (MSK):** Provides a mechanism for support and empowerment of women, often lacking specialised services for acid attack survivors.
Positives of Judicial Intervention	**Established Precedent:** Court orders provide a clear legal mandate for the rights and compensation of survivors. **Accountability:** The Supreme Court's direct oversight forces the executive and private sector to acknowledge their obligations. **Awareness:** High-profile cases

Feature	Description
	generate public and political awareness.
Negatives/Challenges	**Non-Compliance:** Systemic resistance to judicial directives at the state and local levels. **Funding Gap:** State governments often plead a lack of resources for compensation and rehabilitation funds. **Holistic Care:** The focus remains on financial compensation and surgery, neglecting long-term psychosocial and vocational rehabilitation.

Examples

Laxmi vs. Union of India: The foundational case that led to the landmark guidelines on compensation and free treatment.

DLSA's Role: Cases where survivors had to repeatedly visit DLSA offices over years to secure the full mandated compensation, draining their limited resources and energy.

The RPwD Act Demand: The ongoing demand to classify acid attack injuries as a "specified disability" under the 2016 Act would unlock quotas and benefits, a concrete step towards inclusion.

Way Forward

Streamline Compensation: Mandate a **single-window, digitised compensation system** that automatically disburses the full amount within a strict 30-day period, overseen by a high-level official.

Enforce Free Treatment: Imposing heavy **penalties and sanctions** (including withdrawal of licenses/empanelment) on private hospitals that refuse to comply with the free treatment mandate, and establishing clear guidelines for the reimbursement of private hospitals by the state.

Holistic Rehabilitation Centres: Establish specialised, state-funded **Rehabilitation-cum-Vocational Training Centres** for acid attack survivors in every major city, offering integrated medical, psychological, and skill-development support.

Strengthen Regulation: Strict enforcement of the ban on over-the-counter acid sales, making accountability for the source of the acid a mandatory step in police investigation protocols.

Conclusion

The Supreme Court's intervention on December 4, 2025, serves as a necessary rebuke to the systemic apathy that undermines the dignity of acid attack survivors. Justice goes beyond merely passing orders; it requires **vigilant and accountable implementation** by the executive and health systems. The focus must shift from bureaucratic delay to **human-centric, prompt, and comprehensive rehabilitation** to ensure survivors can reclaim their lives with dignity and security.

Mains Practice Questions

"Judicial activism, while setting legal precedents, often fails to bridge the implementation gap in social justice issues like acid attack compensation." Critically analyse the Supreme Court's observations on the non-compliance of its directives by states and private hospitals. (15 Marks, 250 Words)

Discuss the multi-dimensional impact (social, economic, psychological) of acid attacks on survivors. How can the existing government schemes be reformed to ensure holistic rehabilitation? (10 Marks, 150 Words)

Rajya Sabha Passes Resolution Extending Water Act to Manipur

Syllabus

GS-2: Polity: Parliament and State Legislatures—Structure, functioning, conduct of business, powers & privileges and issues arising out of these.

GS-2: Federalism: Issues and challenges pertaining to the federal structure.

Context

On December 4, 2025, the **Rajya Sabha** passed a statutory resolution to extend the application of the **Water (Prevention and Control of Pollution) Amendment Act, 2024**, to the state of **Manipur**.

This was necessitated because Manipur was, at the time, under **President's Rule (Article 356)**, having been placed under central administration since February 2025 due to a breakdown of law and order.

The constitutional provision governing such an action is **Article 357(1)(a)**, which empowers Parliament to confer power on the President (or any authority nominated by him) to make laws for the state.

Main Body in Multi-Dimensional Analysis

Constitutional and Federal Dimensions

Article 356 and 357: President's Rule under **Article 356** suspends the state legislative assembly, and all legislative powers transfer to the Union Parliament. **Article 357(1)(a)** is the mechanism by which Parliament makes the laws for the state, typically through a statutory resolution approving the application of a Central Act.

Parliamentary Accountability: The process ensures that even when a state legislature is suspended, the principle of **parliamentary accountability** is maintained, as the Union Parliament acts as the legislative body for the state.

Federal Principle: While necessary during a constitutional breakdown, the imposition of President's Rule and subsequent central law-making for a state often raises concerns regarding the **erosion of state autonomy** and the spirit of federalism.

The Water Act and Environmental Dimensions

Significance of the Amendment Act, 2024: The Water Act amendment (like similar amendments to the Air Act) aimed to *decriminalise* minor procedural lapses by replacing imprisonment penalties with fines, ostensibly to promote the **ease of doing business** and reduce harassment of industries.

Concerns over Dilution: Environmentalists have heavily criticised the trend of replacing imprisonment with fines, arguing that it risks **normalising pollution** as a *cost of doing doing business*, thereby weakening the deterrent effect of environmental law.

State Pollution Control Board (SPCB) Authority: The extension of the Central Act often influences the structure and appointments within the SPCB (e.g., requiring higher officer ranks), which can be seen as an imposition on the state's institutional structure.

Contextual (Manipur) and Governance Dimensions

Restoring Governance: The move underscores the challenges in administering essential functions, like environmental regulation, in a state facing prolonged civil unrest. Applying the Central Act is intended to ensure some continuity and standardization of regulatory norms.

Need for Green Governance: Given the ecological sensitivity of Manipur (which includes major river systems and unique biodiversity), the effective and *un-diluted* implementation of the Water Act is crucial for protecting its limited water resources.

Executive Action vs. Legislative Debate: The passage of the law through a **Statutory Resolution** in the Rajya Sabha, while constitutionally valid, bypasses the rigorous

40

legislative debate and committee scrutiny that a normal state assembly would provide, raising questions about local democratic input.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**National Green Tribunal (NGT):** The adjudicating body for appeals under the Water Act. **Jal Jeevan Mission (JJM):** Ensures access to clean water, which is dependent on the strict enforcement of the Water Act against polluters. **Swachh Bharat Mission (SBM):** Addresses wastewater management, which falls under the purview of the Water Act.
Positives of the Resolution	**Legal Continuity:** Ensures a vital regulatory framework (the Water Act) remains operational despite the suspension of the state legislature. **Standardisation:** Brings Manipur's environmental standards in line with the uniform Central Act. **Ease of Compliance:** Facilitates smoother industrial compliance by simplifying penalties for minor breaches.
Negatives/Challenges	**Federal Overreach:** Seen as an imposition of central will, even if constitutionally permissible. **Weakened Deterrence:** Replacing jail terms with fines for polluters may lead to increased environmental violations. **Democratic**

Feature	Description
	Deficit: Law is passed without the active participation of the elected representatives of the state.

Examples

Past President's Rules: Similar statutory resolutions were passed for states like Jammu and Kashmir during President's Rule to apply Central Acts, setting a precedent.

Environmental Enforcement: Failure to enforce the Water Act strictly often leads to the unchecked discharge of industrial and municipal sewage, severely damaging water bodies, as seen in many polluted rivers nationwide.

Way Forward

Time-Bound Review: The law passed by Parliament for Manipur should have a clear **sunset clause** or be subjected to a comprehensive review by the state assembly immediately upon the restoration of the democratic government.

Localised Application: The Centre should ensure that the implementation of the Act, despite the central legislation, is sensitive to the **unique environmental challenges and socio-economic context of Manipur**.

NGT Empowerment: The **National Green Tribunal (NGT)** must be empowered to rigorously monitor the implementation of the Water Act in Manipur and ensure that the replacement of imprisonment with fines does not translate into pollution impunity.

Financial and Technical Support: Simultaneously provide the Manipur SPCB with the necessary **financial and technical resources** to effectively monitor and enforce the Act, irrespective of the political situation.

Conclusion

The Rajya Sabha's resolution is a constitutional necessity in the context of President's Rule, ensuring the continuity of environmental governance in Manipur. However, it underscores the need for caution. The Union must use its legislative power responsibly, ensuring that the new environmental law does not inadvertently **weaken ecological safeguards** and that the state's democratic and federal principles are fully restored at the earliest.

Parliament Trapped in a Cycle of Disruption: The Democratic Cost

Syllabus

GS-2: Polity: Parliament and State Legislatures—Structure, functioning, conduct of business, powers & privileges and issues arising out of these.

Context

The recent Winter Session of Parliament, including the day of December 4, 2025, was again marked by **frequent and organised disruptions**, leading to the passage of key bills with minimal debate and an overall decline in the number of effective working days.

This phenomenon reflects a continuous trend where Parliament is trapped in a **cycle of confrontation** between the Treasury Benches and the Opposition, where disruption is increasingly viewed as a legitimate tactic, rather than a last resort.

This decline in functioning imposes a heavy **democratic cost** by eroding the quality of legislation, undermining executive accountability, and diminishing public trust in democratic institutions.

Main Body in Multi-Dimensional Analysis

Trends and Functional Dimensions

Fewer Sittings and Lost Time: Data shows a continuous decline in the number of annual sitting days (from 120-130 days in early Lok Sabhas to an average of 55-70 days recently). Disruptions lead to the loss of millions of hours of legislative and oversight time.

Dilution of Oversight: The time allocated for **Question Hour** (which holds the executive accountable) and debates on important issues is severely curtailed. This diminishes Parliament's core function of executive oversight.

Rubber Stamp Legislation: The most damaging trend is the passage of crucial bills with **little or no committee scrutiny or debate**. The practice of "guillotine" (rushing through financial business) and passing complex laws by voice vote undermines the quality and effectiveness of governance.

Political and Behavioural Dimensions

The Opposition's Dilemma: The Opposition often resorts to disruption when they feel the Government is using its majority to **"bulldoze"** legislation, denying them adequate time or means to raise critical public issues through formal mechanisms (like Adjournment Motions or Rule 267 notices).

Government's Role: The Government's reluctance to allow the Opposition to raise contentious issues, combined with limited **pre-session consultation** on legislative agendas, fuels the confrontation. A majoritarian approach, where numbers trump dialogue, perpetuates the cycle.

Erosion of Trust and Conventions: The long-standing informal conventions of mutual respect, trust, and ensuring space for dissent have severely eroded, replaced by a confrontational, win-or-lose political dynamic.

Impact on Democracy and Governance

Poor Legislative Quality: Bills passed without rigorous committee scrutiny often contain ambiguities, drafting errors, and loopholes, leading to subsequent judicial challenges or implementation issues.

Public Perception: Constant scenes of chaos and disruption diminish the **dignity of the House** and lower public respect for the democratic process, fostering political cynicism.

Financial Cost: Every hour of Parliament sitting costs crores of rupees. Disruptions represent a massive financial waste of taxpayer money.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Code of Conduct:** The rules and conventions that govern the proceedings, which are often violated during disruptions. **Parliamentary Standing Committees:** Designed for mandatory pre-legislative scrutiny, a function that is frequently bypassed.
Positives of Structured Debate	**Executive Accountability:** Ensures Ministers are answerable for their decisions and policies. **Quality Legislation:** Allows for expert and stakeholder input, improving the quality of laws. **Representation:** Provides a forum for diverse views and regional concerns to be articulated and addressed.
Negatives of Disruption	**Loss of Time:** Reduces the number of hours dedicated to law-making and discussion. **Bypassing Scrutiny:** Key bills are often passed without essential examination by Parliamentary Committees. **Loss of**

Feature	Description
	Legitimacy: Undermines the credibility of the entire legislative process in the eyes of the public.

Examples

Committee Scrutiny Drop: The percentage of Bills referred to Parliamentary Standing Committees has drastically dropped in recent Lok Sabhas, accelerating the trend of passing complex laws hastily.

Question Hour Losses: Frequent adjournments lead to the near-total loss of the Question Hour, where Ministers are required to answer questions from members, a key mechanism of accountability.

Way Forward

Code of Conduct and Enforcement: Formulate and rigorously enforce a **cross-party code of conduct** for all members. Empower the Presiding Officers (Speaker/Chairman) to use disciplinary measures against habitual disruptors judiciously but firmly.

Guaranteed Space for Opposition: The Government must formally allocate guaranteed time for the Opposition to raise urgent matters through discussions under rules that entail voting, restoring their faith in the system's ability to address their concerns.

Minimum Sitting Days: Legislate a **minimum number of sitting days** for Parliament, ideally mirroring the practice of early Parliaments (over 100 days), making it structurally difficult to waste time.

Mandatory Committee Referral: Make it mandatory for all major bills, especially those involving complex policy or financial implications, to be referred to the relevant **Parliamentary Standing Committee** for a time-bound review.

Pre-Legislative Consultation: Ensure robust **pre-legislative consultation** with Opposition parties and civil society before introducing major bills to build consensus and trust.

Conclusion

The cycle of disruption in Parliament is a serious ailment affecting the health of India's democracy. It is not merely a question of discipline but a failure of **political will and dialogue**. To restore Parliament as a functioning deliberative body, both the Government and the Opposition must prioritize **cooperation over confrontation**, ensuring that the nation's supreme legislature serves its constitutional purpose of accountability and quality law-making.

UPSC Institutional Safeguards: Upholding Fairness in Civil Service Recruitment

Syllabus

GS-2: Governance: Role of Civil Services in a Democracy. Statutory, regulatory and various quasi-judicial bodies.

Context

On December 5, 2025, the **Union Public Service Commission (UPSC)** addressed allegations of **discrimination and bias** in the Civil Services Examination (CSE) Personality Test (Interview) stage during a Parliament Question.

The UPSC detailed the robust **institutional safeguards** in place to ensure anonymity, neutrality, and fairness in the selection process, reaffirming its constitutional duty as an **independent, merit-based recruiting body** under **Article 315**.

The response highlights the perennial debate between the need for **subjectivity** in assessing personality and the public demand for **complete objectivity and transparency** in India's most important competitive examination.

Main Body in Multi-Dimensional Analysis

Institutional and Constitutional Dimensions

UPSC's Constitutional Role: As a body created under the Constitution, the UPSC's primary mandate is to select candidates purely on the basis of **merit**, free from political, regional, or social bias.[39] The safeguards detailed are essential to maintaining its **autonomy and credibility**.

Safeguards in Personality Test: The UPSC cited key mechanisms to ensure fairness:

Randomized Allotment: Candidates are randomly assigned to Interview Boards to prevent pre-selection or lobbying.

Anonymity: Boards are generally not informed of a candidate's specific background, caste, or optional subjects to ensure focus solely on personality assessment.

Board Neutrality: Boards consist of experienced members with diverse backgrounds to ensure a balanced assessment.

Why Subjectivity is Required: The Personality Test assesses traits like **leadership, integrity, judgment, and analytical ability**, which cannot be measured purely by written examination marks. A certain degree of subjective assessment is necessary to gauge a candidate's suitability for a high-responsibility administrative role.

Governance and Public Trust Dimensions

Addressing Public Allegations: Allegations of bias (based on region, language, or socio-economic background) often arise due to the large spread in interview marks (up to 25–40 marks difference between boards is common).[41] The UPSC's clarification is crucial for maintaining **public trust** in the system.

Implications for Governance: The quality and neutrality of the civil services directly impact the efficiency and fairness of governance.[42] The UPSC's safeguards aim to select officers who will uphold the

44

constitutional values of **neutrality and public service**.

Transparency Challenges: While the UPSC emphasizes internal mechanisms, critics argue for increased external transparency, such as **recorded interviews** or stricter guidelines, to address the **perception of bias** that persists among aspirants.

Comparative and Reform Dimensions

Global Practices: Other major civil service systems (e.g., UK Civil Service Fast Stream) also rely on a multi-stage selection process, balancing written tests with aptitude and interview components.[44]

Potential Reforms: Suggestions for further reforms include:

Uniform Questioning Guidelines: To reduce variability in mark distribution across different interview boards.

External Observers: To enhance the accountability and transparency of the process.

Government Schemes, Positives, Negatives

Feature	Description
Constitutional Provision	**Article 315:** Establishes the UPSC for the Union and a Public Service Commission for each State. **Article 320:** Prescribes the functions of the UPSC, including conducting examinations.
Positives of Safeguards	**Merit-Based Selection:** Reinforces the system's focus on meritocracy. **Integrity:** Protects the process from external political and social pressures. **Trust:** Provides assurance to millions of

Feature	Description
	aspirants that the process is fair.
Negatives/Challenges	**Perceived Variability:** The wide spread in interview marks across boards fuels allegations of subjectivity. **Transparency Deficit:** The demand for greater transparency (e.g., recorded interviews) is yet to be fully addressed. **Administrative Load:** The complexity of the process requires high administrative overhead and strict adherence to protocol.

Examples

Random Allotment: This safeguard prevents candidates from knowing which board they will face until the last moment, eliminating the possibility of lobbying.

Data Spread: Data showing a wide spread in marks confirms that assessment is not perfectly uniform, hence the need for continued review of standardization methods.

Way Forward

Continuous Review: The UPSC should commission an **independent, expert review** of its Personality Test structure every few years to assess the statistical validity and fairness of its marking pattern.

Enhanced Training: Provide intensified, mandatory training for all Board members on the constitutional values, **unconscious bias mitigation**, and standardized personality assessment metrics.

Proactive Disclosure: While maintaining confidentiality, the UPSC could **proactively disclose** anonymized statistical data on mark

distribution across different boards and years to foster greater public confidence.

Conclusion

The UPSC's defence of its institutional safeguards on December 5, 2025, is vital for protecting the **integrity of India's steel frame**. While absolute objectivity in personality assessment is elusive, the Commission must balance the requirement for assessing intangible traits with the imperative of **maximum transparency** and continuous refinement, ensuring that the selection of future administrators remains credible, neutral, and fair.

Status of Right to Information (RTI): A Transparency Barometer

Syllabus

GS-2: Governance: Transparency and Accountability and institutional and other measures.

Context

In response to a Parliament Question on December 5, 2025, the government presented data on the status of the **Right to Information (RTI) Act, 2005,** revealing both a surge in usage and persistent administrative challenges.

The RTI Act is considered a **pillar of participatory democracy** and a crucial tool for promoting **transparency and accountability**.[47] The statistics presented in Parliament serve as a vital **barometer of institutional openness** and citizen engagement.

The data showed a significant increase in the number of applications filed annually (rising towards 17.5 lakh), highlighting growing public awareness but also signaling a potential failure of **suo motu (proactive) disclosure** as mandated by the Act.

Main Body in Multi-Dimensional Analysis

Accountability and Citizen Engagement Dimensions

Surge in Applications: The sharp rise in RTI filings (over 17.5 lakh annually) indicates two things: (1) **Increasing awareness** among citizens about their democratic rights; and (2) A growing **demand for accountability** and information from public authorities.[50]

Low Rejection Rate: The rejection rate of applications remains relatively low , which suggests that Public Information Officers (PIOs) are generally applying the exemptions under **Section 8** of the Act correctly and that access is reasonable.

Suo Motu Disclosure Failure: The high volume of applications suggests a significant gap in compliance with **Section 4** of the RTI Act, which mandates **proactive and voluntary disclosure** of a wide range of information.[53] If Section 4 were fully implemented, the number of RTI filings would be significantly lower.

Administrative and Institutional Dimensions

Administrative Strain: The sheer volume of applications places a **significant strain** on PIOs, diverting considerable resources and time away from their core functions.[54] This often leads to delays in providing information.

Backlogs in Information Commissions: The data highlighted a serious backlog of appeals and complaints at the **Central Information Commission (CIC)** and **State Information Commissions (SICs)** due to vacancies and high administrative load.[55] This delay defeats the purpose of the time-bound nature of the RTI process.

Digital Divide: Despite efforts to digitize the filing process, the **digital divide** continues to affect access to the RTI mechanism, particularly in rural and remote regions.

Governance and Reform Dimensions

Transparency Barometer: The RTI statistics function as a key indicator of the health of democratic governance.[57] High filings often correlate with perceived **information**

hoarding by departments and low proactive disclosure.[58]

Impact of Amendments: The status report also implicitly raises concerns about the impact of the **2019 Amendments** to the RTI Act, which altered the service tenure and conditions of Information Commissioners, potentially undermining the autonomy and independence of the commissions.

Government Schemes, Positives, Negatives

Feature	Description
Legal Framework	**RTI Act, 2005:** The statutory right empowering citizens to seek information. **Section 4:** Mandates proactive disclosure of information by public authorities. **Section 8:** Lists exemptions where information can be denied.
Positives of the Trend	**Increased Accountability:** Forces public servants to record reasons for decisions, promoting responsibility. **Anti-Corruption Tool:** Empowers citizens to expose irregularities and corruption. **Informed Public:** Fosters participatory governance through access to information.
Negatives/Challenges	**Appeals Backlog:** Long delays at CIC/SICs compromise the effectiveness of the Act. **Resource Drain:** High volume of applications strains

Feature	Description
	administrative resources. **Weak Proactive Disclosure:** Failure of Section 4 implementation results in unnecessary RTI filings.

Examples

Digital Filing: The increasing adoption of online RTI portals has facilitated the rise in application numbers.

Section 8 Misuse: Though rare, there are documented cases where PIOs have incorrectly cited exemptions (like "national security" or "personal information") to deny legitimate information.

Way Forward

Strengthen Proactive Disclosure: Government must strictly enforce **Section 4** across all departments, ensuring mandatory disclosures are comprehensive, timely, and easily accessible online to reduce the burden of reactive RTI filings.

Capacity Building: Provide intensive training and resources to PIOs to handle the workload efficiently and ensure uniform application of exemption clauses.[60]

Fill Commission Vacancies: Urgently fill all judicial and administrative vacancies in the CIC and SICs and provide them with adequate staff and technology to **clear the appeals backlog** swiftly.

Digital Inclusion: Enhance digital infrastructure and local language interfaces to ensure that the RTI platform is accessible to citizens in rural and underserved areas.

Conclusion

The RTI Act remains a powerful engine of democracy, but its current status on

47

December 5, 2025, reveals a system under strain from high volume and institutional bottlenecks.[61] The next phase of transparency reform must focus less on the right to seek information and more on the **duty of public authorities to disclose** it proactively, thereby transforming the system from being **reactive to proactive** and fully realizing the Act's potential.

Supreme Court Slams ECI over Special Intensive Revision (SIR) Process

Syllabus: GS-II: Indian Constitution – features, amendments, significant provisions. Statutory, regulatory and various quasi-judicial bodies (Election Commission of India).

Context: The Supreme Court (SC) expressed strong disapproval of the Election Commission of India (ECI)'s "mechanical and cyclostyled" affidavits regarding the ground-level difficulties voters faced during the **Special Intensive Revision (SIR)** of electoral rolls.

Main Body in Multi-Dimensional Analysis:

Judicial Review/Activism: SC's intervention underscores its role as the guardian of fundamental rights, specifically the right to vote, demanding accountability from a constitutional body.

Electoral Governance: Highlights the procedural and transparency issues in the SIR process, which is crucial for maintaining the integrity of the voter list.

Administrative Efficiency: The court's remarks point to a breakdown in communication and responsiveness from the ECI bureaucracy to genuine voter concerns.

Positives, Negatives, Government Schemes:

Positives: Judicial scrutiny forces the ECI to review and potentially simplify the revision process for better citizen participation.

Negatives: ECI's defensive stance undermines public trust and suggests institutional rigidity in adapting to field realities.

Govt Schemes/Related Initiatives: National Voters' Service Portal (NVSP) and **Aadhaar-Voter Linkage Program** (under ECI) aim to streamline the process, but the SIR's on-ground execution remains problematic.

Examples: Voter complaints concerning missing names, difficulty in verification/objection filing, and lack of timely response from Booth Level Officers (BLOs).

Way Forward:

Institutional Reform: ECI should establish a transparent, decentralized, and time-bound grievance redressal mechanism for SIR.

Technological Integration: Leverage technology (like GIS mapping) to ensure accurate and non-duplicated roll revision.

Judicial Oversight: SC should mandate periodic reports on the structural changes made by ECI to address the concerns raised.

Conclusion: The SC's sharp critique is a necessary check, reminding the ECI that administrative convenience cannot supersede the fundamental right of every citizen to be accurately registered as a voter.

Practice Mains Question: "The efficiency of electoral democracy is intrinsically linked to the integrity of electoral rolls. Critically analyze the challenges in the ECI's Special Intensive Revision process and suggest institutional reforms to enhance voter trust and administrative accountability." (15 marks, 250 words)

SC Ruling on General Provident Fund (GPF) Inheritance

Syllabus: GS-II: Indian Constitution – fundamental rights; GS-I: Indian Society – Salient features of Indian Society, succession laws.

Context: The SC ruled that the proceeds of a deceased government employee's **General**

48

Provident Fund (GPF) must be distributed among his legal heirs (wife and mother) according to succession laws, even if a different nominee was named.

Main Body in Multi-Dimensional Analysis:

Legal Interpretation: The ruling reiterates the legal principle that a **nomination is merely a mechanism to receive and temporarily hold the fund** (a *trustee*) and does not confer absolute ownership (beneficial interest).

Socio-Legal Conflict: Addresses the conflict between the administrative ease of nomination and the substantive rights enshrined in personal/succession laws (e.g., Hindu Succession Act).

Financial Planning: Offers clarity for government employees' financial planning, emphasizing the need for a separate will or explicit legal document for bequeathing assets.

Positives, Negatives, Government Schemes:

Positives: Protects the financial interests of legally recognized dependents (wife, mother, children) who are often marginalized by the narrow scope of a nomination.

Negatives: May lead to litigation if the deceased's intention was genuinely to benefit the nominee exclusively (e.g., a specific sibling or charity).

Govt Schemes/Related Initiatives: The ruling specifically interprets the framework of the **General Provident Fund (Central Services) Rules, 1960**, which govern GPF administration.

Examples: In this case, the mother was the nominee but the wife also claimed a share as a legal heir. The court favored the claim based on the legal heir status.

Way Forward:

Public Awareness: Government must widely disseminate the difference between a 'nominee' for Provident Fund/Insurance and a 'legal heir' as defined by law.

Legal Clarity: Parliament could review the GPF rules to align nomination with a clear power of attorney or mandate a simple will declaration during the nomination process.

Conclusion: The verdict provides crucial clarity that while nomination facilitates the immediate release of funds, the ultimate destination of the retirement corpus is determined by succession laws, reinforcing the sanctity of the legal heir system.

Practice Mains Question: "Critically evaluate the legal distinction between 'Nomination' and 'Inheritance' in the context of retirement benefits like the General Provident Fund (GPF). Discuss the socio-economic implications of the Supreme Court's latest ruling." (10 marks, 150 words)

IndiGo Flight Disruption: DGCA Orders 10% Schedule Cut

Syllabus: GS-II: Governance, transparency and accountability; GS-III: Infrastructure: Aviation.

Context: Following widespread disruptions and flight cancellations, the Directorate General of Civil Aviation (DGCA) ordered the private airline IndiGo to **cut its schedule by at least 10%** and mandated stringent compensation for passengers.

Main Body in Multi-Dimensional Analysis:

Aviation Safety and Passenger Rights: The DGCA's punitive action underscores its role as the primary regulator, prioritizing passenger safety, service quality, and adherence to Civil Aviation Requirements (CARs).

Operational Management: The cuts highlight structural issues in the airline's management, including potential strain on pilot duty limits (FDTL) and maintenance schedules, often driven by aggressive network expansion.

Economic Impact: Flight cuts increase immediate costs for the airline but are intended to force schedule stabilization, ultimately preventing reputational damage and long-term erosion of public trust in the sector.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Accountability:** Regulator sets a clear precedent against chronic operational failure. **Relief:** Provides immediate respite to an overstretched system, enhancing safety margins.
Negatives	**Consumer Impact:** Reduces capacity in an already supply-constrained market, potentially driving up fares for consumers. **Industry Perception:** Affects the overall perception of efficiency in India's aviation sector.
Govt Schemes	**UDAN (Ude Desh Ka Aam Naagrik):** Requires reliable service to ensure regional connectivity. **CARs (Civil Aviation Requirements):** DGCA enforces these standards for safety and consumer rights.

Examples: The disruption was linked to excessive use of pilots/crew and aircraft, potentially violating Fatigue Risk Management Systems (FRMS).

Way Forward: The DGCA must mandate transparent reporting of crew duty times and aircraft maintenance. Airlines must adopt realistic scheduling and invest in adequate reserve crew/aircraft to absorb operational shocks.

Conclusion: The DGCA's order is a rare but necessary corrective measure, emphasizing that profit-driven expansion must not compromise regulatory compliance, operational stability, or the fundamental rights of the air-traveling public.

Practice Mains Question: "Analyze the factors contributing to the recent widespread flight disruptions in India. Evaluate the effectiveness and implications of the DGCA's punitive schedule reduction order on the airline industry and passenger welfare." (10 marks, 150 words)

SC on SIR 2026: Balancing Electoral Integrity & Voter Rights

Syllabus: GS II (Polity – Elections; Judiciary; Fundamental Rights).

Context: On December 18, 2025, the Supreme Court asked the ECI to take a "sympathetic view" on extending the **Special Intensive Revision (SIR) 2026** deadlines, following reports of massive voter deletions in Kerala, UP, and Gujarat.

Multi-Dimensional Analysis

Constitutional Dimension: Under **Article 324**, the ECI has the power of superintendence. However, the SC's intervention highlights that administrative efficiency (cleaning the rolls) cannot override the **Fundamental Right to Vote (Art 326)**.

Administrative Dimension: SIR 2026 is a "deep clean" of electoral rolls using AI and door-to-door verification. The shrinking of the electorate in Gujarat (74 lakh) and Kerala (25 lakh) raises questions about whether "purging" is being done without adequate "Natural Justice" (notice to voters).

Social Dimension: The digital divide impacts enumeration. Many senior citizens and migrant workers are unable to submit **Form-6** or **Form-8** electronically, leading to accidental exclusion.

Judicial Review: The court's directive for a "sympathetic view" balances the ECI's autonomy with the citizen's right to be heard before being "deleted" from the democratic process.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Integrity:** Removes deceased and "ghost" voters; **Accuracy:** Ensures "One Nation, One E-Roll" ready for future simultaneous polls.
Negatives	**Exclusion Error:** Mass deletions without physical verification; **Privacy:** Risks of sensitive voter data being handled by "private volunteers."
Govt. Schemes	SVEEP (Systematic Voters' Education and Electoral Participation); E-VIGIL; Garuda App.

Example: In **Coimbatore**, over 6.5 lakh names were removed in a single draft, leading to panic and political outcries, necessitating the SC's call for an extension.

Way Forward: ECI must implement a **"De-registration Notice"** via SMS and post 30 days prior to deletion and hold "Special Camps" on weekends for physical verification.

Conclusion: A clean electoral roll is the bedrock of democracy, but the process of cleaning must be as transparent and inclusive as the election itself.

Mains Question: "The Special Intensive Revision (SIR) of electoral rolls is a double-edged sword for democratic inclusion." Discuss in the light of recent judicial observations.

Viksit Bharat – G RAM G Bill, 2025: The Evolution of Rural Welfare

Syllabus: GS II: Welfare schemes for vulnerable sections; Governance.

Context: On December 19, 2025, Parliament passed the **Viksit Bharat – G RAM G (Guarantee for Rozgar and Ajeevika Mission – Gramin) Bill**, effectively replacing the 20-year-old MGNREGA (2005).

Multi-Dimensional Analysis

Conceptual Shift: MGNREGA was a "poverty alleviation" scheme focused on "relief" (digging holes). G RAM G shifts the focus to **"Productive Asset Creation."** Every hour of labor must now contribute to a predefined **National Infrastructure Stack** (e.g., climate-resilient roads or solar micro-grids).

Enhanced Entitlements: The Bill increases the guaranteed work from 100 days to **125 days** per household. However, it introduces a "60-day no-work window" during peak agricultural seasons to prevent labor shortages in farming.

Digital Governance: It mandates the use of **"Agentic AI"** for anomaly detection in muster rolls and real-time GPS-tagging of assets. This aims to eliminate "ghost works" and middleman corruption.

Administrative Professionalism: The administrative expenditure cap is raised from 6% to **9%**, allowing Gram Panchayats to hire technical experts (engineers/agronomists) to ensure that the assets built are durable and not "washed away in one monsoon."

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Asset Durability:** Focus on climate-resilient infrastructure; **Wage Parity:** Links wages to the Consumer Price Index (Rural) with annual revisions.
Negatives	**Risk of Exclusion:** AI/Biometric reliance may exclude the elderly or those with "worn fingerprints"; **Centralization:** Greater central control over fund release based on "outcomes."
Govt. Schemes	Lakhpati Didi, PM Awas Yojana-Gramin, Jal Jeevan Mission.

Example: Under G RAM G, a village in **Bundelkhand** is no longer just "clearing silt" but building a tiered **Watershed Management System** using engineering designs provided by the mission.

Way Forward: Ensuring that the "Right to Work" remains a legal demand-driven right and does not become a discretionary "target-based" scheme.

Conclusion: G RAM G is the "second-generation" reform of India's rural safety net, aligning labor with the goal of *Viksit Bharat*.

Mains Question: "The transition from MGNREGA to the G RAM G Bill represents a shift from 'Employment as Relief' to 'Employment as Investment'. Discuss."

Judiciary & Constitutional Law: The Supreme Court on Narco Tests

Syllabus: GS Paper II – Fundamental Rights; Structure, organization and functioning of the Judiciary.

Context: The Supreme Court (SC) on Dec 12, 2025, reaffirmed and widened the scope of the *Selvi v. State of Karnataka* (2010) guidelines, ruling that **involuntary narco-analysis** is unconstitutional and its results cannot be used even as "indirect evidence" without strict safeguards.

Main Body: Multi-dimensional Analysis

Constitutional Validity: The SC invoked the **"Golden Triangle" (Articles 14, 19, and 21)**. It ruled that forcing a person to undergo such tests violates the right against self-incrimination **(Article 20(3))**.

Mental Privacy: The judgment highlighted that the "right to remain silent" extends to the "mental state" of a person. Forcing a subconscious confession is a "mental intrusion" akin to physical torture.

Scientific Reliability: The Court noted that narco-analysis is not 100% accurate; subjects can still lie or provide "false memories" under the influence of sodium pentothal.

Criminal Justice Reform: This puts the onus on investigative agencies (CBI, Police) to improve **forensic and technical investigation** rather than relying on "shortcuts" like truth serums.

Analysis Table:

Positives (Upholding Rights)	Negatives (Investigative Hurdles)	Key Case Laws/Articles
Bodily Integrity: Protects the person from invasive medical procedures.	**Cold Cases:** Makes it harder to find "leads" in complex terrorism or murder cases.	**Article 20(3):** Protection against self-incrimination.
Prevention of Torture: Prevents custodial coercion disguised as medical science.	**Evidence Gap:** Leads discovered via narco are often inadmissible in court.	**Selvi Case (2010):** The foundation of narco-test jurisprudence.
Privacy: Upholds the "Right to be Let Alone" (Puttaswamy judgment).	**Delayed Justice:** Lengthens trial times as police struggle to gather physical proof.	**Article 21:** Right to Life and Personal Liberty.

Example: In the **Manoj Kumar Saini v. State of MP (2023)**, the court held that narco results alone do not prove guilt; they must be corroborated with material physical evidence.

Way Forward:

Investment in Forensics: Strengthen the network of Central Forensic Science Laboratories (CFSLs).

Legal Awareness: Train police officers on the "inadmissibility" of such tests to prevent wastage of state resources.

Conclusion: The SC's stand ensures that India remains a "Rule of Law" society where the state's power to investigate is limited by the sanctity of an individual's mind and body.

Practice Mains Question: *"The prohibition of involuntary narco-analysis is a victory for the 'Right to Mental Privacy' but a challenge for 'Investigative Efficiency'. Critically analyze."*

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Way Forward: ECI must implement a **"De-registration Notice"** via SMS and post 30 days prior to deletion and hold "Special Camps" on weekends for physical verification.

Conclusion: A clean electoral roll is the bedrock of democracy, but the process of cleaning must be as transparent and inclusive as the election itself.

Mains Question: "The Special Intensive Revision (SIR) of electoral rolls is a double-edged sword for democratic inclusion." Discuss in the light of recent judicial observations.

INTERNATIONAL RELATIONS

India Re-elected to the International Maritime Organization (IMO) Council

Syllabus

GS-II: Important International institutions, agencies and fora, their structure, mandate.

53

Effect of policies and politics of developed and developing countries on India's interests.

Context

India has been re-elected to the **Council of the International Maritime Organization (IMO)** for the 2026-2027 biennium under the **Category B** classification, which is reserved for States with the largest interest in international seaborne trade.

Main Body in Multi-Dimensional Analysis

The IMO is the **United Nations specialized agency** responsible for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.

IMO Council: The Council is the **executive body** of the IMO, responsible for supervising its work between Assembly sessions and making policy decisions on maritime governance. It has 40 members across three categories:

Category A: States with the largest interest in providing international shipping services (e.g., Greece, Japan).

Category B: States with the largest interest in international seaborne trade (**India** is in this category).

Category C: States with special interests in maritime transport or navigation.

Significance for India:

Global Influence: Re-election reaffirms India's position as a major maritime power and gives it a direct say in **global rule-making** on critical issues like safety, security, and environmental standards (e.g., carbon reduction targets for shipping).

Coastal Security: It allows India to shape international frameworks for **maritime security** in the Indian Ocean Region (IOR), aligning with the **SAGAR (Security and Growth for All in the Region)** vision.

Trade and Economy: Since India handles over 90% of its trade by volume through sea, Council membership is vital for protecting its economic and commercial maritime interests.

Implications and Policy

Aspect	Description
Blue Economy	India can promote its 'Blue Economy' strategy and secure international support/funding for infrastructure development and sustainable fishing.
Digitalisation	Enables India to actively participate in shaping IMO regulations on the **digitalisation of shipping** and autonomous vessels.
International Standards	Helps Indian ports and shipping companies align with the latest global environmental and safety standards (e.g., managing the phase-out of high-sulfur fuel oil).

Way Forward

India must leverage its Council position to champion the interests of developing nations, particularly concerning issues of **technology transfer** and funding for green shipping infrastructure.

Practice Mains Question

GS-II: Discuss the mandate of the International Maritime Organization (IMO) Council. What is the significance of India's re-election to the Council, and how does it contribute to India's maritime and strategic interests? (250 words)

Colombo Security Conclave (CSC) Meeting

Syllabus

GS-2: International Relations: India and its neighbourhood relations. Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

The recent meeting of the National Security Advisers (NSAs) under the **Colombo Security Conclave (CSC)** framework highlights its increasing importance as a platform for regional maritime cooperation in the Indian Ocean Region (IOR).

The CSC was initially established in 2011 between India, Sri Lanka, and the Maldives, and has now expanded to include Mauritius, Bangladesh, and Seychelles as permanent members/observers.

The Conclave's focus has evolved from purely maritime surveillance to a comprehensive security mechanism addressing traditional and non-traditional threats in the critical waterways of the Central and Southern IOR.

Main Body in Multi-Dimensional Analysis

Geopolitical Dimensions

Countering Extra-Regional Influence: The CSC provides a cooperative framework for littoral states to manage their security independently, without reliance on powers outside the region. This is crucial as a response to the growing influence and presence of China's naval and research vessels in the IOR, which creates security dilemmas for India's neighbours.

India's Vision SAGAR: The Conclave is a cornerstone of India's **SAGAR (Security and Growth for All in the Region)** policy, demonstrating India's role as a net security provider and its commitment to collective regional stability and capacity building.

Alignment with QUAD: While separate from the QUAD (India, US, Japan, Australia), the CSC complements its objectives by focusing on the smaller, crucial maritime states that

control key Sea Lanes of Communication (SLOCs).

Security and Cooperation Dimensions

Five Pillars of Cooperation: The CSC has formalised cooperation around five key pillars, which facilitate comprehensive security efforts:

Maritime Safety and Security: Joint patrolling, search and rescue.

Countering Terrorism and Radicalisation: Information sharing on terror financing and cross-border movements.

Combating Trafficking and Transnational Crime: Specifically focusing on narcotics, arms, and human trafficking.

Cyber Security: Building capacity to resist cyber attacks on critical infrastructure.

Humanitarian Assistance and Disaster Relief (HADR): Coordinated response to natural disasters, leveraging Indian capabilities.

Information Fusion: The framework facilitates the sharing of **Maritime Domain Awareness (MDA)** data, helping member states monitor the vast expanses of the IOR and respond quickly to threats like piracy or illegal fishing.

Institutional and Expansion Dimensions

Consensus-Building: The Conclave operates on consensus, ensuring that regional solutions are mutually agreed upon, thereby fostering a sense of ownership among smaller member states.

Inclusion of New Members: The formal inclusion of nations like **Bangladesh, Mauritius, and Seychelles** expands the Conclave's operational reach across the Bay of Bengal, the Equatorial IOR, and the Western Indian Ocean, creating a more comprehensive security grid.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Vision SAGAR:** This overarching policy guides India's maritime cooperation with the CSC member states, focusing on capacity building, training, and supplying patrol vessels. **Neighbourhood First Policy:** The CSC operationalises this policy by prioritising regional security cooperation.
Positives of CSC	**Regional Autonomy:** Empowers IOR states to manage their security challenges collectively. **Cost-Effective:** Shared resources and information reduce individual defence burdens. **Stability:** Creates a predictable security environment essential for trade and economic growth.
Negatives/Challenges	**Chinese Shadow:** Member states face pressure/incentives from China, potentially hindering unanimous security decisions. **Asymmetry:** India's size and capabilities can sometimes create an asymmetrical relationship, raising concerns among smaller neighbours about Indian dominance. **Resource Constraints:** Smaller member states have limited naval and aerial assets, impacting their

Feature	Description
	contribution to joint operations.

Examples

Joint SAR Operations: CSC members have successfully conducted coordinated **Search and Rescue (SAR)** operations in shared maritime zones.

Coastal Radar Chains: India has helped Sri Lanka and Maldives establish a network of **coastal surveillance radar systems** to enhance MDA, which are integrated with the CSC's information-sharing mechanisms.

Table-Top Exercises: Regular conduct of tabletop and field exercises among security forces to practice joint responses to scenarios like oil spills, terrorism, and mass migration.

Way Forward

Deepen Operational Integration: Move beyond intelligence sharing to more frequent and complex **joint patrols, anti-piracy operations, and naval exercises** that test the interoperability of member state forces.

Focus on Non-Traditional Threats: Prioritise cooperation on **Illegal, Unreported, and Unregulated (IUU) fishing** and **marine pollution**, which are immediate livelihood and environmental security threats for the island nations.

Enhance Capacity Building: India must continue to offer customised training, transfer of maritime technology, and supply of patrol vessels and surveillance aircraft on favourable terms to ensure the CSC is truly a partnership of equals.

Institutionalise the Secretariat: Establish a permanent, professionally-staffed **CSC Secretariat** (possibly in Sri Lanka or the Maldives) to ensure continuity, policy formulation, and consistent follow-up on decisions.

Conclusion

The Colombo Security Conclave has matured into a vital mechanism for establishing a **rules-based and cooperative security order** in the Central and Southern IOR. It effectively balances regional autonomy against external pressures. By enhancing operational depth and focusing on shared non-traditional security challenges, the CSC can solidify its position as the **foremost IOR security architecture**, promoting safety and prosperity for all its members and supporting India's ambition of a stable, secure IOR.

Mains Practice Questions

"The Colombo Security Conclave (CSC) is a crucial framework for operationalising India's Vision SAGAR and managing regional security in the IOR." Discuss the evolution of the CSC and analyse its effectiveness in addressing the 'Five Pillars' of security cooperation. (15 Marks, 250 Words)

How does the expansion of the CSC to include nations like Bangladesh and Seychelles contribute to a more comprehensive Maritime Domain Awareness (MDA) for India? What are the key challenges posed by China's growing presence in the region for the Conclave? (10 Marks, 150 Words)

India-Russia Partnership Beyond Defence

Syllabus

GS-2: International Relations: 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 interest[1]s.

Context

The traditional **India-Russia 'Special and Privileged Strategic Partnership'** has historically been anchored in defence trade and nuclear energy cooperation (e.g., BrahMos, S-400, Kudankulam).

In the face of intensifying US and Western sanctions on Russia, India has sought to broaden and diversify the relationship into non-defence sectors like the Arctic, space, connectivity, and trade, ensuring the durability of the partnership despite geopolitical turbulence.

The challenge for both nations is to sustain the strategic depth of their ties while navigating complex Western opposition and finding mechanisms for payment bypassing the dominant dollar system.

Main Body in Multi-Dimensional Analysis

Geopolitical and Strategic Dimensions

Balancing Act: For India, the relationship is vital for **strategic autonomy** and diversification of military imports, acting as a crucial counterbalance to the growing US-China rivalry. It also supports India's need for affordable, proven military technology.

Russian Pivot to Asia: Sanctions have forced Russia to look east. India provides a stable, large, and strategically important partner in Asia, helping Russia mitigate its isolation from Western markets and technology.

Arctic Cooperation: India's push for Arctic presence (e.g., the **Himadri** station) aligns with Russia's ownership of the vast Arctic region. Cooperation is sought in energy exploration and navigation through the increasingly accessible **Northern Sea Route (NSR)**, offering an alternative trade corridor.

Economic and Trade Dimensions

Rupee-Rouble Mechanism: The biggest economic challenge is establishing a stable, efficient mechanism for transactions that bypass US dollar scrutiny and sanctions. The current trade imbalance (heavily favouring Russia due to oil imports) makes the **Rupee-Rouble mechanism** complex, requiring Russia to find substantial avenues to invest its accumulated Rupee holdings.

Energy Security: Russia has become a top supplier of crude oil to India, offering

57

significant discounts post-sanctions. This enhances India's energy security and contributes to managing inflation.

Non-Defence Trade: Focus is being shifted to sectors like fertilizers, pharmaceuticals, civil aviation, and diamonds to reduce reliance on the defence pillar.

Connectivity and Multilateral Dimensions

International North-South Transport Corridor (INSTC): Russia is a key partner in INSTC, which links India to Central Asia and Europe via Iran. Strengthening this corridor is crucial for reducing transit time and cost compared to the Suez Canal.

BRICS and SCO: The partnership is foundational to multilateral groups like **BRICS** and the **Shanghai Cooperation Organisation (SCO)**, where both countries align on the vision of a multi-polar world order and non-interference in sovereign affairs.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Make in India in Defence:** The partnership is moving from 'Buy' to 'Make in India' components, with joint ventures like BrahMos being a prime example. **Arctic Policy:** India's national policy on the Arctic directly seeks Russian partnership for research and resource access. **PLI Scheme:** Incentivising Russian firms to manufacture certain non-defence goods in India.
Positives of Diversification	**Resilience to Sanctions:** A broader economic relationship is less vulnerable to defence-related sanctions. **Energy Security:** Assured and discounted supply of hydrocarbons. **Technology Transfer:** Collaboration in new-age fields like AI, FinTech, and space navigation.
Negatives/Challenges	**Trade Imbalance:** Massive imbalance post-Ukraine conflict, complicating payment mechanisms. **Western Pressure:** India faces constant pressure from the West (e.g., under CAATSA) regarding defence procurements. **Lack of Trust in Rupee:** Russia's difficulty in utilising large Rupee reserves internationally limits the viability of non-dollar trade.

Examples

Kudankulam Nuclear Power Plant: Russia continues to be the key supplier of technology and fuel for the plant, representing a critical civilian energy cooperation.

Joint Venture BrahMos Missile: A highly successful example of co-development and co-production, now being exported to third countries.

Northern Sea Route (NSR): Indian companies are exploring investments in Russia's Far East, leveraging the potential of the NSR for

trade and resource extraction (e.g., coking coal, LNG).

Way Forward

Streamlining Payment Solutions: Urgently develop a robust, permanent **non-SWIFT payment mechanism** that can handle the volume of trade, perhaps using a third-party currency like the UAE Dirham or China Yuan temporarily, while seeking a permanent solution.

Focus on Far East and Arctic: Incentivise Indian public and private sector investment in the resource-rich, underdeveloped Russian Far East, particularly in mining and logistics infrastructure related to the Arctic.

Civilian Technology Transfer: Move beyond simple trade to long-term agreements on the co-development and co-production of civilian technologies (e.g., pharmaceuticals, rail technology, IT) under the 'Make in India' framework.

Deepening People-to-People Ties: Revive cultural and educational exchanges to strengthen the non-governmental foundation of the partnership, which has traditionally been strong.

Conclusion

The India-Russia partnership, while facing unprecedented geopolitical headwinds and economic challenges related to sanctions, remains a pillar of Indian foreign policy. Diversifying the relationship beyond defence into **energy, connectivity (INSTC, NSR), and non-dollar trade mechanisms** is essential for both nations to ensure the resilience and strategic relevance of their historical ties in a rapidly changing world order.

Mains Practice Questions

"India's engagement with Russia has been compelled to diversify beyond defence and nuclear energy due to global geopolitical shifts." Discuss the new frontiers of cooperation between India and Russia, and analyse the challenges presented by Western sanctions on bilateral trade. (15 Marks, 250 Words)

How significant is the International North-South Transport Corridor (INSTC) to the economic relationship between India and Russia? What steps must be taken to operationalise this corridor fully? (10 Marks, 150 Words)

India-Russia 23rd Annual Summit: Navigating Sanctions and Deepening Ties

Syllabus

GS-2: International Relations: 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 interest[1]s.

Context

Russian President Vladimir Putin visited New Delhi for the **23rd India-Russia Annual Summit** on December 4, 2025. This visit, his first since the start of the Ukraine conflict, underscored the enduring nature of the **'Special and Privileged Strategic Partnership'**.

The summit focused on **resilience** in the face of complex geopolitical pressures and a shared commitment to a **multipolar world order**. Discussions centred on diversifying the relationship beyond the traditional pillars of defence and nuclear energy into new domains like energy, trade, and logistics, while also addressing the significant challenge of establishing a stable, non-dollar payment mechanism.

Main Body in Multi-Dimensional Analysis

Geopolitical and Strategic Dimensions

Strategic Autonomy: For India, the summit was crucial for affirming its policy of strategic autonomy. Sustaining the relationship with Russia, a primary source of India's defence equipment, ensures that India is not solely dependent on Western

59

powers for security, a necessity given the regional security environment.

Multipolarity: Both nations share a vision of a global order where power is dispersed, advocating for the **reform of global governance institutions**, particularly the **United Nations Security Council (UNSC)**, with Russia consistently backing India's bid for permanent membership.

Balancing the West: India uses its strong ties with Russia to balance its growing strategic alignment with the US and the QUAD. The successful conduct of the summit, despite Western disapproval of Russia, sends a strong signal about India's independent foreign policy choices.

Evolving Defence Partnership: The relationship is shifting from a simple buyer-seller model to one of co-development and co-production (e.g., BrahMos, AK-203 rifles). Future cooperation involves maintenance, spares, and transfer of next-generation defence technology, ensuring long-term operational readiness of Russian-origin platforms.

Economic and Financial Dimensions

The Trade Imbalance Challenge: Bilateral trade soared to record highs (around $68.7 billion in FY 2024–25), primarily driven by discounted Russian crude oil imports. This has created a massive trade deficit heavily favoring Russia, leading to an accumulation of large **Indian Rupee (INR) balances** in Russian banks that cannot be fully utilised for payments to Russia.

De-dollarization Efforts: Both nations reaffirmed their commitment to increasing the use of **national currencies (Rupee-Rouble)** for trade settlements. However, the lack of full rupee convertibility and Russia's limited global avenues for spending the accumulated rupees remain the primary obstacle to a sustainable payment mechanism.

Energy Security: The assured, long-term supply of discounted Russian crude and resources like coking coal and LNG is crucial for India's energy security and managing inflationary pressures, significantly benefiting the Indian economy.

New Avenues of Cooperation (Beyond Defence)

Arctic and Far East: Cooperation is intensifying in the Russian Far East and the Arctic, particularly for resource exploration (hydrocarbons, rare minerals) and leveraging the **Northern Sea Route (NSR)** for international trade, which offers significant transit time savings.

Connectivity: INSTC: Both leaders stressed the urgency of fast-tracking the development and operationalisation of the **International North-South Transport Corridor (INSTC)**, a multi-modal network aimed at linking India with Russia and Eurasia via Iran, which circumvents traditional, often Western-controlled, maritime routes.

People-to-People Ties: New agreements were signed on the **mobility of the Indian workforce** (skilled workers) and curbing illegal immigration, demonstrating a shift towards fostering human capital and facilitating easier travel and work permits for professionals.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Vision SAGAR (Security and Growth for All in the Region):** Russia's cooperation in the Arctic and IOR indirectly supports this. **Make in India in Defence:** Russia is a key partner in this, with joint production of missiles and rifles. **Rupee-Rouble Trade**

Feature	Description
	Mechanism: Government effort to create a stable, non-dollar payment system.
Positives of the Partnership	**Strategic Depth:** Ensures uninterrupted supply of defence spares and high-tech platforms (S-400). **Energy Affordability:** Secures discounted crude oil supplies, aiding economic stability. **Global Influence:** Strengthens India's voice in multilateral forums (BRICS, SCO, UNSC).
Negatives/Challenges	**Trade Imbalance:** The current deficit is unsustainable without a stable payment mechanism. **Secondary Sanctions Risk:** Indian entities dealing with Russia face the constant threat of US secondary sanctions (CAATSA). **Over-dependence:** Despite diversification efforts, a high degree of reliance on Russian military hardware persists.

Examples

Kudankulam Nuclear Power Plant: Russia is the only foreign partner actively building nuclear power reactors in India, demonstrating deep civilian nuclear cooperation.

Labour Mobility Pact: The newly signed pact to ease the movement of Indian professionals to Russia is a concrete example of diversifying the relationship into the human resource domain.

BrahMos Missile: The successful joint venture is a model of advanced co-development, with the latest discussions focusing on new variants and exports to third countries.

Way Forward

Permanent Payment Mechanism: India must work with Russia to formalise a sustainable, long-term payment system, possibly leveraging a **third currency (like the UAE Dirham)** or exploring mechanisms like **trade settlement bonds** to recycle the accumulated Rupee reserves.

Prioritize INSTC Funding and Infrastructure: Dedicate high-level inter-ministerial focus and capital investment to complete the physical infrastructure components of the INSTC, especially in the Iranian leg, to unlock its full potential.

Reciprocal Market Access: Russia needs to facilitate easier market access for Indian goods (pharmaceuticals, agriculture, textiles) to help balance the trade deficit and increase the domestic usability of the Rupee in Russia.

Focus on New Technology: Intensify cooperation in cutting-edge, non-sanctioned technologies like **cybersecurity, Artificial Intelligence (AI)**, and civilian space applications to future-proof the partnership.

Conclusion

The 23rd India-Russia Summit reaffirmed the partnership's time-tested strategic foundations, yet highlighted the urgency of its evolution. For the relationship to thrive amidst global flux, it must successfully navigate the financial labyrinth created by sanctions and transition from a focus on **defence supply** to robust, diversified, and sustainable **economic and connectivity cooperation**, reinforcing India's role as a

major pole in the emerging multipolar world.

Mains Practice Questions

"**The India-Russia Special and Privileged Strategic Partnership is being tested by geopolitical headwinds, demanding diversification beyond the defence sector.**" Critically analyse the outcomes of the 23rd Annual Summit in this context, focusing on the challenges of trade and payment mechanisms. (15 Marks, 250 Words)

How significant is the International North-South Transport Corridor (INSTC) in ensuring the long-term economic and strategic resilience of the India-Russia relationship? (10 Marks, 150 Words)

Judiciary & Constitutional Law: The Supreme Court on Narco Tests

Syllabus: GS Paper II – Fundamental Rights; Structure, organization and functioning of the Judiciary.

Context: The Supreme Court (SC) on Dec 12, 2025, reaffirmed and widened the scope of the *Selvi v. State of Karnataka* (2010) guidelines, ruling that **involuntary narco-analysis** is unconstitutional and its results cannot be used even as "indirect evidence" without strict safeguards.

Main Body: Multi-dimensional Analysis

Constitutional Validity: The SC invoked the **"Golden Triangle" (Articles 14, 19, and 21)**. It ruled that forcing a person to undergo such tests violates the right against self-incrimination **(Article 20(3))**.

Mental Privacy: The judgment highlighted that the "right to remain silent" extends to the "mental state" of a person. Forcing a subconscious confession is a "mental intrusion" akin to physical torture.

Scientific Reliability: The Court noted that narco-analysis is not 100% accurate; subjects can still lie or provide "false

memories" under the influence of sodium pentothal.

Criminal Justice Reform: This puts the onus on investigative agencies (CBI, Police) to improve **forensic and technical investigation** rather than relying on "shortcuts" like truth serums.

Analysis Table:

Positives (Upholding Rights)	Negatives (Investigative Hurdles)	Key Case Laws/Articles
Bodily Integrity: Protects the person from invasive medical procedures.	**Cold Cases:** Makes it harder to find "leads" in complex terrorism or murder cases.	**Article 20(3):** Protection against self-incrimination.
Prevention of Torture: Prevents custodial coercion disguised as medical science.	**Evidence Gap:** Leads discovered via narco are often inadmissible in court.	**Selvi Case (2010):** The foundation of narco-test jurisprudence.
Privacy: Upholds the "Right to be Let Alone" (Puttaswamy judgment).	**Delayed Justice:** Lengthens trial times as police struggle to gather physical proof.	**Article 21:** Right to Life and Personal Liberty.

Example: In the **Manoj Kumar Saini v. State of MP (2023)**, the court held that narco results alone do not prove guilt; they must be corroborated with material physical evidence.

Way Forward:

Investment in Forensics: Strengthen the network of Central Forensic Science Laboratories (CFSLs).

Legal Awareness: Train police officers on the "inadmissibility" of such tests to prevent wastage of state resources.

Conclusion: The SC's stand ensures that India remains a "Rule of Law" society where the state's power to investigate is limited by the sanctity of an individual's mind and body.

Practice Mains Question: *"The prohibition of involuntary narco-analysis is a victory for the 'Right to Mental Privacy' but a challenge for 'Investigative Efficiency'. Critically analyze."*

India-Jordan Relations: The Levant Pillar of "Link West"

Syllabus: GS II (International Relations, Bilateral Agreements)

Context

PM Modi's visit to Jordan (Dec 15–16, 2025) coincided with the **75th Anniversary of Diplomatic Ties**. This first full-fledged bilateral visit marks a pivot to the Mediterranean Levant.

Main Body: Multi-Dimensional Analysis

Energy and Food Security: Jordan is India's largest supplier of **Phosphates and Potash**. For a nation aiming at "Atmanirbhar Agriculture," Jordan is a critical strategic partner.

Counter-Terrorism (The Aqaba Process): Jordan is a pioneer in de-radicalization. India and Jordan are scaling the **Aqaba Process** to share intelligence on the "Global Lone Wolf" threat, especially in the digital domain.

Cultural Diplomacy (Petra-Ellora Twinning): The twinning of these two **UNESCO World Heritage Sites** is a masterstroke of soft power, linking the ancient Nabatean trade routes to the Indian Silk Route.

The Palestinian Cause: Jordan is the "Custodian of the Holy Sites" in Jerusalem. India's engagement with King Abdullah II reinforces India's balanced "Two-State Solution" stance without alienating Israel.

Positives, Negatives, and Government Schemes

Positives: * Diversifies India's West Asia outreach beyond the GCC (Gulf).

Joint ventures in the textile sector using Jordanian Special Economic Zones.

Negatives: * Regional volatility (Gaza conflict) remains a hurdle for infrastructure corridors like **IMEC**.

India's trade with Jordan is still heavily skewed toward fertilizers.

Government Schemes: Link West Policy, E-Vidya Bharati, Cultural Exchange Programme (2025-29).

Examples

Petra-Ellora Twinning: A formal MoU signed on Dec 15 to boost heritage tourism and archaeological cooperation.

Way Forward

The focus must move toward **Digital Public Infrastructure (DPI)**. India should help Jordan implement a "Jordan Stack" based on UPI and Aadhaar to modernize its governance.

Conclusion

Jordan is the "Island of Stability" in a chaotic region. For India, it is the bridge to the Mediterranean and a guarantor of agricultural stability.

Practice Mains Question: *"Examine the strategic and economic significance of Jordan in India's 'Link West' policy. How do the 2025 agreements reflect a move toward 'Heritage Diplomacy'?"*

India-UK Free Trade Agreement (FTA): The "Diwali" Deal Realized

Syllabus: GS II (International Relations – Bilateral Agreements); GS III (Economy – External Trade)

Context

On December 17, 2025, India and the United Kingdom formally signed the historic **India-UK Free Trade Agreement (FTA)** in London. This concludes nearly four years of negotiations that began in January 2022. The deal aims to double bilateral trade to **$100 billion by 2030**.

Detailed Multi-Dimensional Analysis

The Economic Dimension: Tariff Elimination & Market Access

Goods Trade: The agreement eliminates tariffs on **98% of traded goods**. For India, this is a massive win for labor-intensive sectors. Indian **Textiles and Apparels** (currently facing 9-12% duty) and **Leather/Footwear** will now enter the UK duty-free, leveling the playing field with competitors like Bangladesh (which enjoys LDC status).

The "Whisky" Compromise: A major sticking point—UK Scotch Whisky—was resolved. India agreed to slash import duties from **150% to 75%** immediately, with a glide path to **30% over 10 years**. In return, the UK has granted India greater access for its **Marine Products** and **Generic Pharmaceuticals**, bypassing complex regulatory hurdles that previously acted as non-tariff barriers.

Automobiles: The deal allows limited import of luxury UK cars (e.g., Jaguar Land Rover) at reduced tariffs, but protects India's mass-market auto industry through strict **Rules of Origin (RoO)**, ensuring that third-party goods (like Chinese parts assembled in the UK) do not flood India.

The Services Dimension: Mode 4 and "Innovation Bridge"

Mobility of Professionals: Unlike the restrictive stance in the past, the UK has agreed to a **"Young Professionals Scheme"** expansion, allowing 5,000 Indian IT and healthcare professionals (nurses/doctors) annually to work in the UK for up to three years. This falls under **Mode 4 of GATS** (Movement of Natural Persons).

Social Security Agreement: A critical breakthrough is the **Totalization Agreement**. Previously, Indian professionals in the UK paid social security taxes but couldn't avail benefits if they returned before 10 years. Now, these contributions will be either refunded or merged with the Indian EPF system, saving Indian companies millions.

Strategic & Geopolitical Dimension

Post-Brexit Realignment: For the UK, this is the biggest trade deal since leaving the EU ("Global Britain" strategy). For India, it reduces reliance on the US/EU markets and serves as a template for the ongoing **India-EU FTA** negotiations.

Data Sovereignty: The deal includes a chapter on "Digital Trade" but explicitly respects India's upcoming **Digital India Act**, ensuring that data localization norms for financial data remain non-negotiable.

Positives, Negatives, and Government Schemes

Dimension	Positives	Negatives/Challenges
Trade Balance	Boosts exports in textile, leather, and gems & jewellery sectors.	Potential surge in imports of high-end UK manufactured goods could widen the trade deficit initially.
Agriculture	Protection of sensitive sectors (dairy/wheat) maintained.	UK sanitary and phytosanitary (SPS) norms remain strict, potentially barring Indian agri-exports.
IPR	Strengthening of IPR regimes to attract UK	Fear of "Evergreening" of patents by UK pharma giants,

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Dimension	Positives	Negatives/Challenges
	tech investment.	which could delay generic medicine entry in India.

Related Schemes: RoDTEP (Remission of Duties and Taxes on Exported Products),PLI Scheme for Textiles.

Example/Case Study

The "Tiruppur Model": The textile cluster in Tiruppur (Tamil Nadu) is expected to see a **20% surge in orders** within the first year of the FTA, as UK retailers shift sourcing from China to India due to the zero-duty advantage.

Way Forward

The immediate focus must be on **Utilization Rates**. historically, Indian exporters have underutilized FTAs (like with ASEAN) due to complex compliance norms. The Ministry of Commerce must launch "Export Helpdesks" to educate MSMEs on the new Rules of Origin.

Conclusion

The India-UK FTA is not just a trade deal; it is a **"Living Bridge"** that connects the Indian skilled workforce with British capital. It signifies India's confidence in opening its markets, moving away from the protectionism of the past.

Mains Practice Question:

"The India-UK FTA represents a paradigm shift from 'Protectionism' to 'Strategic Globalization'. Analyze the impact of this agreement on India's labour-intensive sectors and the challenges regarding Intellectual Property Rights."

India–Bangladesh Security: The Chattogram Suspension & its Fallout

Syllabus: GS II (International Relations – India and its Neighborhood; Effect of policies of other countries on India's interests).

Context: On December 21–22, 2025, India indefinitely suspended operations at the **Indian Visa Application Centre (IVAC) in Chattogram**. This decision followed a "security breach" at the Assistant High Commission where a mob pelted stones and staged anti-India protests.

Multi-Dimensional Analysis

The Radicalization Spike: The unrest is tied to the death of **Sharif Osman Hadi**, a spokesperson for the radical *Inqilab Mancha*, and the lynching of a Hindu man, **Dipu Chandra Das**, in Mymensingh. These incidents have created a "tit-for-tat" cycle of violence. The suspension is a signal that India will not tolerate the "weaponization of mobs" against its diplomatic missions.

Vienna Convention Breach: Under international law, the host country (Bangladesh) is obligated to provide a "Special Duty of Protection." The failure of the interim government to prevent protesters from reaching the gates of the Chattogram mission is a significant diplomatic lapse. India's suspension serves as a **"Diplomatic Sanction"** to force accountability.

The Humanitarian "Visa Crisis": Bangladesh is the largest source of foreign tourists to India, and nearly **60% of them come for medical treatment**. By shutting the Chattogram center (the second largest after Dhaka), thousands of cancer and cardiac patients are now stranded. This creates a "soft power" dilemma for India: how to punish the regime without hurting the common people.

Geopolitical Vacuum: Pro-Pakistan and pro-China elements within Bangladesh are using the "Visa Ban" as proof of Indian "hegemony." This narrative is being used to push Bangladesh further away from India's security orbit, potentially affecting **Trans-shipment agreements** and the **Akhaura-Agartala rail link**.

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Analysis Table: Risks of the India-Bangladesh Standoff

Sector	Risk Description	Strategic Impact
Security	Infiltration and Border Skirmishes.	Threat to the "Chicken's Neck" (Siliguri Corridor).
Economy	Halt of Border Haats and Trade.	Loss of ₹1.2 lakh crore in bilateral trade.
Healthcare	Collapse of Medical Tourism in India.	Major revenue loss for hospitals in Kolkata & Chennai.
Diplomacy	Third-party (China) intervention.	Loss of influence in the Bay of Bengal.

Example: In **Kolkata's Mukundapur area** (a hub for Bangladeshi patients), hospitals have reported a 40% drop in footfall within 48 hours of the Chattogram suspension. This highlights how deeply the two economies are intertwined despite political volatility.

Way Forward:

Secured Medical Corridors: India should consider a "Digital Medical Visa" that bypasses physical centers and uses hospitals as sponsors, ensuring genuine patients aren't caught in the political crossfire.

Backchannel Engagement: The MEA must engage with the **interim government's Chief Adviser** to establish a "No-Protest Zone" around Indian missions.

Proactive Counter-Narrative: Use social media and local Bengali channels to debunk "misleading propaganda" regarding security incidents in India (like the Delhi High Commission protests).

Conclusion: The Chattogram suspension is a "fever-check" for the relationship. While security is paramount, India must ensure that its response is calibrated—firm enough to protect its diplomats, but flexible enough to maintain the "People-to-People" bridge that remains its strongest asset in the neighborhood.

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Context

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67

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Way Forward:

Secured Medical Corridors: India should consider a "Digital Medical Visa" that bypasses physical centers and uses hospitals as sponsors, ensuring genuine patients aren't caught in the political crossfire.

Backchannel Engagement: The MEA must engage with the **interim government's Chief Adviser** to establish a "No-Protest Zone" around Indian missions.

Proactive Counter-Narrative: Use social media and local Bengali channels to debunk "misleading propaganda" regarding security incidents in India (like the Delhi High Commission protests).

Conclusion: The Chattogram suspension is a "fever-check" for the relationship. While security is paramount, India must ensure that its response is calibrated—firm enough to protect its diplomats, but flexible enough to maintain the "People-to-People" bridge

that remains its strongest asset in the neighborhood.

REGIONAL GROUPINGS

Operation Sagar Bandhu: India's Humanitarian Aid to Cyclone-Hit Sri Lanka

Syllabus

GS-II: India and its neighborhood- relations. Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

GS-III: Disaster and Disaster Management.

Context

India has significantly intensified its humanitarian mission in Sri Lanka, codenamed **'Operation Sagar Bandhu'**, following the devastating impact of **Cyclone Ditwah**, which caused massive floods and landslides across the island nation. Prime Minister Narendra Modi assured the Sri Lankan President of India's continued support.

Main Body in Multi-Dimensional Analysis

This operation is a prime example of India's **Neighbourhood First Policy** and its role as a **First Responder** and **Net Security Provider (SAGAR)** in the Indian Ocean Region (IOR).

Humanitarian Diplomacy: India rapidly deployed the **Indian Navy's aircraft carrier INS Vikrant** and the frontline ship **INS Udaigiri** to deliver the first batch of relief materials, including food, medicines, and emergency supplies. This rapid, large-scale response strengthens bilateral ties and showcases India's capabilities.

Disaster Management Cooperation: The operation involves coordination between the Indian Navy, Air Force, and the National Disaster Response Force (NDRF) with Sri Lankan agencies. This joint effort is crucial for search and rescue operations, particularly in remote, flood-hit areas.

68

Geopolitical Angle: By being the first and most substantial responder, India reinforces its position as a reliable partner, countering the influence of other regional powers in the strategic IOR. The goodwill generated is vital for long-term diplomatic and strategic stability.

Cyclone Ditwah: The severe cyclonic storm developed in the Southwest Bay of Bengal and is the third such storm in the post-monsoon season, underscoring the increasing vulnerability of coastal regions to extreme weather events due to **climate change**.

Implications

Aspect	Description
Bilateral Ties	Deepens the India-Sri Lanka Comprehensive Strategic Partnership based on mutual trust and cooperation in times of crisis.
IOR Security	Projects India's military assets (like the INS Vikrant) as instruments of **Humanitarian Assistance and Disaster Relief (HADR)**, enhancing its strategic credibility.
Climate Resilience	Highlights the urgent need for regional cooperation on climate resilience and early warning systems in the Bay of Bengal.

Way Forward

Beyond immediate relief, India can help Sri Lanka with long-term **infrastructure reconstruction** (e.g., flood defenses, resilient housing) and the development of better disaster communication and management protocols.

Practice Mains Question

GS-II: Analyze the significance of 'Operation Sagar Bandhu' in the context of India's 'Neighbourhood First Policy' and its role as a net security provider in the Indian Ocean Region (IOR). (250 words)

India-Russia Annual Summit 2025: Geopolitical

Economic Agenda

Syllabus

GS-II: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

Russian President **Vladimir Putin** is scheduled to visit India from **December 4-5, 2025**, for the **Twenty-Third India-Russia Annual Summit**. The visit aims to reinforce the long-standing **Special and Privileged Strategic Partnership** between the two nations.

Main Body in Multi-Dimensional Analysis

The Annual Summit is the highest institutional mechanism for regular dialogue and ensures continuity in the relationship despite evolving global geopolitical dynamics.

Defence Cooperation: The defence partnership remains the **bedrock** of the relationship. Discussions will likely focus on the delivery of pending defence equipment, joint production under the **'Make in India'** initiative, and cooperation in future military technology (e.g., advanced missile systems, stealth platforms). The successful **combat launch of the BrahMos** missile by the Indian Army on December 2 will likely be highlighted.

Economic Cooperation: The summit will review progress on the ambitious target of **$30 billion in bilateral trade** by 2025. Key areas include energy (nuclear energy, oil and gas supply), space research, and fertilizers. The use of **national currencies (Rupee-Rouble)** for trade settlement, bypassing US dollar-based sanctions, is expected to be a key discussion point.

69

Geopolitical Coordination: Both leaders will exchange views on global developments, including the **Ukraine crisis**, the situation in **Afghanistan**, and cooperation within plurilateral forums like **BRICS** and the **Shanghai Cooperation Organisation (SCO)**. India will seek Russian support for its position in multilateral institutions.

The US Factor: The summit is crucial as India balances its historic ties with Russia against its burgeoning strategic partnership with the United States (US), especially within the **Quad** framework.

Implications

Aspect	Description
Energy Security	Russia's commitment to supplying energy, especially oil and nuclear fuel, is vital for India's long-term energy security goals.
Technological Edge	Continued access to advanced Russian defence technology is necessary for maintaining India's military edge.
Multipolarity	Reinforces India's commitment to strategic autonomy and a **multipolar world order**, where it maintains deep ties with all major global powers.

Way Forward

The leaders must seek to diversify the trade basket away from its heavy concentration on defence and energy, focusing on non-traditional sectors like information technology, pharmaceuticals, and agriculture to ensure the relationship's sustainability.

Practice Mains Question

GS-II: Critically examine the key agenda and the strategic significance of the India-Russia Annual Summit 2025 in the context of India's policy of strategic autonomy amid changing global alignments. (250 words)

India-Brunei Joint Working Group (JWG) on Defence Cooperation

Syllabus: GS-II: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests. GS-II: Indian Diaspora.

Context: The inaugural meeting of the India-Brunei JWG on Defence Cooperation was held in New Delhi, focusing on expanding military exchanges, joint training, and enhancing **maritime security cooperation**, including HADR.

Main Body in Multi-Dimensional Analysis:

Act East Policy: The JWG reinforces India's commitment to Southeast Asia and its 'Act East' policy, viewing Brunei (a key ASEAN member) as a vital partner.

Maritime Security: Cooperation is critical in the **South China Sea (SCS)** region, where Brunei has overlapping claims. Enhanced joint exercises and HADR coordination increase India's presence and influence in the Indo-Pacific.

Defence Trade: The meeting opens avenues for India to explore the sale of indigenous defense equipment (e.g., patrol vessels, surveillance systems) to Brunei.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Regional Stability:** Contributes to a free, open, and rules-based Indo-Pacific. **Capacity Building:** India can assist Brunei in developing its naval capabilities through training.
Negatives	**Sensitivity:** Geopolitical tensions in the SCS require careful diplomatic balancing to avoid alienating other claimant nations. **Resource**

Category	Description
	Allocation: Increased commitments in the region require adequate naval resources.
Govt Schemes	**SAGAR (Security and Growth for All in the Region):** This cooperation aligns perfectly with India's SAGAR doctrine for the Indian Ocean Region and extended neighbourhood.

Examples: Future cooperation could involve training of Bruneian naval officers at Indian institutions or joint anti-piracy patrols in the Malacca Strait region.

Way Forward:

Regular Engagement: Instituting annual or biannual JWG meetings to ensure continuity and momentum in defense cooperation.

Technology Transfer: Exploring mutually beneficial collaborations in areas like cybersecurity and secure communication systems.

Conclusion: The establishment of the India-Brunei JWG is a pragmatic diplomatic step that strategically enhances India's maritime security footprint and deepens its defense collaboration with the ASEAN bloc.

Practice Mains Question: "The inaugural India-Brunei Joint Working Group on Defence Cooperation is a manifestation of India's 'Act East' policy. Discuss how this cooperation contributes to India's strategic vision for the Indo-Pacific, particularly concerning maritime security." (10 marks, 150 words)

India-US Trade Talks Begin on Framework Agreement

Syllabus: GS-II: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests. GS-III: Trade.

Context: India and the US began another round of trade talks, aiming to finalize the opening tranche of a framework trade deal. The goal is to address reciprocal tariff issues and eventually double bilateral trade to **$500 billion by 2030**.

Main Body in Multi-Dimensional Analysis:

Strategic Alignment: The trade talks are underpinned by the geopolitical imperative to deepen ties, especially to diversify global supply chains away from China (Quad framework alignment).

Tariff Resolution: Focus remains on resolving long-standing tariff concerns, particularly the US tariffs imposed on Indian imports (alleging support for Russia) and India's retaliatory tariffs on US goods (e.g., apples, almonds).

Market Access & Regulatory Matters: The discussions cover market access for India's IT, steel, and agricultural products, and regulatory harmonization, which is a major Non-Tariff Barrier (NTB). **Analysis: Positives, Negatives, Schemes**

Category	Description
Positives	**Trade Growth:** Facilitates achieving the $500 billion target; Secures market share for Indian goods in the largest global market. **Investor Confidence:** Framework stability attracts FDI.
Negatives	**IPR & Data:** US pressure on Intellectual Property Rights (IPR) and cross-border data flow remains a sensitive issue for India. **Domestic Sectors:** India must protect its agricultural sector from cheap imports.
Govt Schemes	**PLI (Production Linked Incentive) Scheme:** Makes Indian exports competitive, strengthening

Category	Description
	India's negotiating position. **FDI Policy Relaxation.**

Examples: The US is the largest trading partner for India. Resolving tariffs on Indian steel and aluminium, and US medical devices, is crucial for the first phase.

Way Forward: A phased approach, starting with a limited framework agreement on tariffs and a few sectors, provides a pragmatic path. India must hold firm on its data localization and IP flexibility requirements.

Conclusion: The India-US trade talks are a key element of the strategic partnership, aiming to move beyond irritants and establish a stable, high-growth economic corridor necessary for India's global trade ambitions.

Practice Mains Question: "To what extent is the current India-US trade dialogue influenced by geopolitical compulsions? Analyze the critical issues of market access and tariff disputes that must be resolved to achieve the $500 billion trade target." (15 marks, 250 words)

India–Oman CEPA: Anchoring the "Act West" Policy

Syllabus: GS Paper II: Bilateral, regional and global groupings and agreements involving India; India and its neighborhood- relations.

Context: Detailed analysis of the **India-Oman Comprehensive Economic Partnership Agreement (CEPA)** emerged on Dec 19, following its signing. It is India's most ambitious trade deal in the Middle East, offering nearly **100% duty-free access** for Indian goods.

Multi-Dimensional Analysis

Strategic Maritime Link: Oman sits at the mouth of the **Persian Gulf** and the **Strait of Hormuz**. This CEPA is the economic pillar of the 2018 "Duqm Port" agreement, which allows Indian naval access. It solidifies India's role as a net security provider in the Western Indian Ocean.

Trade Complementarity: India is Oman's 2nd largest export destination. The CEPA removes duties on Indian textiles, leather, and engineering goods, while India secures stable supply lines for **Urea, LNG, and Polypropylene**.

Services and "Mode 4" Mobility: Oman has committed to allowing Indian professionals (Doctors, Engineers, IT) a **2-year visa** and increased quotas. This is a significant win for the 7-lakh-strong Indian diaspora and helps in remittance stability.

AYUSH Diplomacy: Oman is the first Gulf nation to recognize **AYUSH products** as "regulated medicines" under this trade framework. This creates a multi-billion dollar market for Indian traditional medicine in the Middle East.

Friend-Shoring & Supply Chains: Aligned with the US National Security Strategy (Dec 2025), India is using Oman to "friend-shore" critical supply chains, reducing dependence on the Red Sea route which is prone to geopolitical shocks (Houthi/Iran).

Tabulation: Analysis and Schemes

Feature	Analysis
Positives	Immediate 0% duty on 99% of Indian exports; Strategic counter to China's presence in the Gulf; Formal recognition of Indian labor rights in Oman.
Negatives	Potential "Trade Diversion" where Indian MSMEs might struggle against larger players; Sensitivity in the Dairy and Tea sectors (India kept these in the negative list).
Govt. Schemes	**Districts as Export Hubs**, PLI **Scheme** (Output to Oman), **Global South Outreach**.

Example: The **Oman India Fertilizer Company (OMIFCO)** serves as a model for "Joint-Venture Diplomacy" that this CEPA intends to replicate in the green hydrogen and tech sectors.

Way Forward: Focus on the "Social Security Agreement" to ensure portability of benefits for Indian workers and fast-tracking the "Joint Investment Fund" for infrastructure.

Conclusion: The India-Oman CEPA is not just a trade pact; it is a strategic maneuver that integrates India's economic interests with the security architecture of the Arabian Peninsula.

Mains Practice Question: "The India-Oman CEPA transcends traditional trade logic to serve as a maritime and strategic anchor in the Western Indian Ocean." Discuss. (250 Words)

India–Oman CEPA: The Strategic Anchor of the 'Think West' Policy

Syllabus: GS II (Bilateral agreements; Regional groupings).

Context: On Dec 22, 2025, the final analysis of the **India-Oman Comprehensive Economic Partnership Agreement (CEPA)** shows Oman offering **zero-duty access on 98% of tariff lines**, a historic shift for Gulf diplomacy.

Multi-Dimensional Analysis

Geopolitical Strategy: Oman is India's "Gateway to the West." By securing a CEPA, India gains preferential access to the **Port of Duqm**, which is critical for bypassing the "choke points" of the Strait of Hormuz. It also acts as a counterweight to China's expanding influence in the Indian Ocean Region (IOR).

Energy & Food Security: The CEPA secures long-term **LNG and Urea** supplies for India at discounted rates. In return, India becomes Oman's primary partner for **Green Hydrogen** technology, with Indian firms like Adani and Reliance investing in Omani "Green Steel" plants.

Labor & Mobility: The deal includes a **"Special Professional Category" visa**, allowing Indian engineers and IT professionals to work in Oman without the traditional *Kafala* system hurdles. This protects the 7-lakh-strong diaspora and ensures a steady flow of remittances.

The AYUSH Dimension: For the first time, a Gulf nation has officially recognized **Ayurveda** and Homeopathy under a trade pact. This allows Indian wellness companies to open hospitals and export herbal medicines without the lengthy "drug-registration" process.

Strategic Table: CEPA Highlights

Sector	Indian Gain	Omani Gain	Strategic Value
Gems & Jewellery	0% duty (from 5%).	Hub for re-export to EU.	Competitive edge over China.
Agriculture	Export of Basmati/Spices.	Food security for the desert.	"Farm-to-Plate" diplomacy.
Maritime	Access to Duqm Port.	India-backed infrastructure.	Security of Sea Lines (SLOCs).
Healthcare	Recognition of AYUSH.	High-quality affordable care.	Soft power projection.

Example: The **"Maitri Steel Plant"** in Oman, a joint venture, now uses Omani solar power and Indian engineering to produce the world's lowest-carbon steel, which is exported duty-free to the US via Oman's existing FTA with America.

Way Forward:

IMEC Integration: Use the Oman CEPA as a launchpad for the **India-Middle East-Europe Corridor (IMEC)**, making Duqm the first hub.

Sovereign Wealth Fund: Encourage the **Oman Investment Authority** to invest in India's National Infrastructure Pipeline (NIP).

Joint Exercises: Strengthen the **"Naseem Al Bahr"** naval exercises to protect the CEPA-linked trade routes.

Conclusion: The Oman CEPA is more than a trade deal; it is a "Strategic Marriage." It transforms Oman into a pivot for India's maritime security and an indispensable partner in India's quest for energy independence and global market reach.

SOCIAL ISSUES

Agriculture: National Mission on Edible Oils – Oil Palm (NMEO-OP)

Syllabus: GS Paper III – Issues related to direct and indirect farm subsidies and MSP; Food security.

Context: PIB reports on Dec 12, 2025, show that India has reached **6.20 lakh hectares** of oil palm coverage, nearing the target of 6.5 lakh hectares for the 2025-26 fiscal year.

Main Body: Multi-dimensional Analysis

Import Substitution: India imports ~60% of its edible oil requirements, draining forex. NMEO-OP aims to achieve **Atmanirbharta** (self-sufficiency).

Regional Development: Focusing on the **North-East and Andaman & Nicobar Islands**, the mission aims to transform these regions into "Edible Oil Hubs."

Farmer Income: Palm oil yields are 10-15 times higher per hectare than traditional oilseeds like mustard or groundnut, potentially doubling farmer incomes.

Analysis Table:

Positives	Negatives/Challenges	Government Support
Yield Efficiency: Highest oil yield	**Ecological Concern:** High water	**Price Assurance:** Viability Price
per hectare among all crops.	requirement; risk of monoculture.	mechanism to protect farmers.
Forex Savings: Aims to save ₹50,000+ crore annually in imports.	**Long Gestation:** 4-year wait for the first harvest.	**Assistance:** ₹29,000/ha for planting material.
Infrastructure: Funding for processing units and seed gardens.	**Biodiversity:** Concerns over deforestation in sensitive zones.	**SATHI Portal:** For seed traceability.

Way Forward:

Sustainable Certification: Adopting **RSPO (Roundtable on Sustainable Palm Oil)** standards to prevent environmental degradation.

Inter-cropping: Promoting inter-cropping during the 4-year gestation period to provide immediate liquidity to farmers.

Conclusion: NMEO-OP is crucial for India's "Food Sovereignty," but its success hinges on balancing intensive agriculture with ecological sensitivity.

Practice Mains Question: *"Can the National Mission on Edible Oils solve India's 'Import Dependency' without compromising the biodiversity of the Northeast? Critically evaluate."*

Social Issues & Health: Global TB Report 2025 – India's Progress

Syllabus: GS Paper II – Issues relating to development and management of Social Sector/Health.

Context: The WHO Global TB Report 2025 (released Dec 12) shows a **21% decline** in

new TB cases in India since 2015, outperforming global averages.

Main Body: Multi-dimensional Analysis

Public Health Triumph: India's aggressive **"Ni-kshay"** ecosystem has improved notification rates significantly.

Nutritional Support: The recognition that TB is a "disease of poverty" led to the **Nikshay Poshan Yojana**, providing direct cash transfers for nutrition.

Community Engagement: The **Ni-kshay Mitra** initiative (crowdsourced support) has humanized the battle against TB.

Analysis Table:

Positives	Negatives/Challenges	Government Schemes
Declining Incidence: 21% reduction in 10 years.	**Drug Resistance:** Rise in MDR-TB (Multi-Drug Resistant).	**Pradhan Mantri TB Mukt Bharat Abhiyaan.**
Universal Screening: Door-to-door active case finding.	**Stigma:** Social isolation still prevents early testing.	**Nikshay Poshan Yojana:** ₹500/month for patients.
Indigenous Diagnostics: Deployment of BPaL regimen and local test kits.	**Private Sector Gap:** Many cases in private clinics remain unrecorded.	**National Strategic Plan (2017-25).**

Way Forward: Leveraging AI for early detection in X-rays and ensuring 100% saturation of nutritional support.

Conclusion: While the 2025 "Elimination" target is ambitious, India's multi-sectoral approach has turned the tide against the "Silent Pandemic."

Practice Mains Question: *"Success in the TB-Mukt Bharat Abhiyaan depends as much on 'Nutrition' as it does on 'Medicine'. Discuss."*

GS 3

AGRICULTURE

PM-KISAN 2.0: Including the "Invisible" Tenant Farmer

Syllabus:

GS Paper III: Agriculture – Issues related to Direct Benefit Transfer; Land Reforms; Inclusive Growth.

GS Paper II: Welfare schemes for vulnerable sections of the population.

Context

On December 17, 2025, the Union Cabinet approved a major expansion of the **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)**. For the first time since its inception in 2019, the scheme will now extend its ₹6,000 annual benefit to **Tenant Farmers** and **Sharecroppers** (*Batadars*), who were previously excluded because they did not own land titles.

Main Body: Multi-Dimensional Analysis

1. The "Ownership vs. Cultivator" Dilemma

The Historical Gap: The original PM-KISAN was linked to land records (*RoR*). This meant that the **landowner** (often an absentee landlord living in the city) received the cash support, while the **actual cultivator** (the tenant who bore the input costs of seeds/fertilizers) got nothing.

Scale of Exclusion: According to the **NSSO Situation Assessment Survey**, nearly **17-20%** of operational holdings in India are cultivated by tenant farmers. In states like Andhra Pradesh and Bihar, this number is closer to 30%. Their exclusion was a major criticism of the scheme's equity.

2. The New Mechanism: "Digital Verification"

Self-Declaration + Panchayat Validation: Since tenant farmers lack formal leases (most tenancy is oral to avoid legal complications), the new guidelines propose

a "**Jan-Dhan-Aadhaar-Panchayat (JAP)**" model.

The tenant submits a self-declaration on the **PM-KISAN Portal**.

This is counter-verified by the **Gram Sabha/Panchayat** or through a "**Cultivator Certificate**" issued by the state revenue department (similar to the *Loan Eligibility Cards* in Andhra Pradesh).

Geo-Referencing: The **AgriStack** database will be used to map the farmer to the plot they are cultivating using GPS coordinates, ensuring that two people (owner and tenant) do not claim benefits for the same input cost, or creating a separate "Tenant Support Component."

3. Fiscal and Political Implications

Fiscal Burden: Adding an estimated **2 crore tenant farmers** will increase the subsidy bill by approx ₹**12,000 crore annually**. However, economists argue this has a higher "**Multiplier Effect**" because tenant farmers have a higher marginal propensity to consume—they will spend this money immediately on farming inputs, boosting the rural economy.

Political Economy: This move is seen as a counter to state-level schemes like **Odisha's KALIA** and **Telangana's Rythu Bandhu**, which faced similar debates. By capturing the tenant base, the Centre strengthens its direct connect with the most marginalized agrarian class.

Positives, Negatives, and Government Schemes

Dimension	Positives	Negatives/Challenges
Equity	Directs public money to the *actual* producer, not the rent-seeker.	**Landlord Resistance:** Landowners fear that registering tenants might lead to them claiming permanent

Dimension	Positives	Negatives/Challenges
		occupancy rights (adverse possession).
Productivity	Provides working capital to tenants who usually rely on high-interest loans (30-40%) from moneylenders.	**Identification Errors:** High risk of "Ghost Beneficiaries" without formal land titles as proof.
Data	Creates the first comprehensive database of "Real Cultivators" in India.	Friction between State Revenue Depts and Centre over verifying oral tenancy.

Related Schemes: AgriStack, Digital Agriculture Mission, Model Agricultural Land Leasing Act, 2016.

Example/Case Study

The "KALIA" Precedent: Odisha's KALIA scheme was the pioneer in including landless households. The Centre's move is effectively "Nationalizing the KALIA model," acknowledging that land ownership is a poor proxy for agricultural distress.

Way Forward

To make this work, the Centre must incentivize states to implement the **Model Agricultural Land Leasing Act, 2016**. This Act legalizes land leasing, protecting the owner's title while giving the tenant formal status to access credit and subsidies. Without legalizing tenancy, the "fear of losing land" will make landlords block their tenants from registering.

Conclusion

PM-KISAN 2.0 shifts the focus from **"Landed Gentry"** to **"Landless Peasantry."** It is a tacit admission that Indian agriculture is run by tenants, and supporting them is crucial for food security.

Practice Mains Question:

"Linking welfare benefits solely to land titles ignores the reality of Indian agriculture, where tenancy is widespread yet informal. Discuss the challenges and significance of extending PM-KISAN benefits to tenant farmers."

ENVIRONMENT

Weakening of India's Natural Carbon Sink

Syllabus

GS-3: Environment: Conservation, environmental pollution and degradation, environmental impact assessment. Climate change.

Context

India has committed to achieving **Net Zero emissions by 2070**. A significant part of this strategy relies on enhancing and preserving its terrestrial and blue **carbon sinks** (forests, tree cover, wetlands, mangroves).

Recent assessments and scientific studies indicate that the pace of carbon sequestration by India's natural sinks, particularly its forests, is showing signs of slowing or 'weakening' due to increased pressures from climate change, land use changes, and forest degradation.

This poses a significant challenge, as the assumed stability of the natural sink capacity could lead to an **overestimation of India's remaining carbon budget** and derail mitigation efforts.

Main Body in Multi-Dimensional Analysis

Ecological and Climate Dimensions

Impact of Climate Stressors: Increased frequency and intensity of events like prolonged **droughts**, extreme heat waves, and unseasonal rains stress forest ecosystems. Stressed vegetation sequesters less CO_2 and becomes more susceptible to pests and disease, leading to lower biomass accumulation.

Forest Fires: Climate change-induced dry conditions fuel more frequent and intense **forest fires**. Fires not only halt sequestration but also release large amounts of stored carbon back into the atmosphere, turning a sink into a potential source.

Forest Type Shift: Warming temperatures can cause shifts in vegetation composition, potentially replacing highly efficient carbon-storing climax species with less efficient, faster-growing species.

Policy and Measurement Dimensions

Measurement Challenges: India's national reporting on forest cover (e.g., Forest Survey of India reports) often focuses on *area* of cover, which may not fully reflect the *quality* and *carbon stock* within that cover. Open forests or plantations may be counted, but they sequester far less carbon than dense natural forests.

REDD+ Framework: The international mechanism of **Reducing Emissions from Deforestation and Forest Degradation (REDD+)** offers a framework, but its implementation in India needs more rigorous, ground-level biomass measurement rather than relying solely on satellite mapping.

Exclusion of High-Value Sinks: Policy often overlooks other critical sinks: **Mangroves** (blue carbon), **wetlands**, and healthy **agricultural soils**. These hold high-density, long-term carbon stocks.

Socio-Economic Dimensions

Anthropogenic Pressures: Increasing population pressure and industrialisation lead to relentless demand for land, resulting in forest fragmentation, encroachment, and illegal logging, which degrade the quality of the sink.

77

Dependence of Forest-Dwellers: Forest-dwelling communities often bear the cost of conservation without adequate compensation or inclusion in decision-making. Sustainable management requires empowering them as custodians of the forests.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**National Afforestation Programme (NAP):** Focuses on ecological restoration of degraded forests. **Compensatory Afforestation Fund Management and Planning Authority (CAMPA):** Utilises funds for afforestation to compensate for forest land diverted for non-forest use. **Green India Mission (GIM):** Aims to increase forest cover and improve quality, with an emphasis on climate change adaptation and mitigation.
Positives of Carbon Sink (Ideal)	**Natural & Low-Cost Mitigation:** Forests offer a natural, scalable, and relatively low-cost method of removing CO_2 from the atmosphere. **Co-Benefits:** Provides ecosystem services like biodiversity, water regulation, and livelihoods.
Negatives/Challenges	**Non-Permanence Risk:** Carbon stored in forests is vulnerable to release due to fire, disease, or illegal logging. **Over-Reliance:** Treating the sink as a guaranteed offset encourages inaction on deep, industrial emissions cuts. **Time Lag:** It takes decades for newly planted forests to reach peak sequestration potential.

Examples

Western Ghats Hotspots: Areas experiencing increased outbreaks of pests like the **shisham defoliator** (in specific dry regions) or changes in rainfall patterns, leading to tree mortality and reduced carbon uptake.

Sunderbans Mangroves (Blue Carbon): These highly effective carbon sinks are facing rapid erosion and degradation due to rising sea levels and intense cyclones, jeopardising their capacity to sequester carbon.

Himalayan Forests: Warming is causing the treeline to shift upwards and increasing the frequency of summer forest fires, fundamentally altering the high-altitude sink capacity.

Way Forward

Holistic 'ARM' Approach:

Avoid: Strict protection of high-carbon stock areas (old-growth forests, dense primary forests) from diversion and degradation.

Restore: Focus on ecological restoration using native, climate-resilient species in degraded areas, prioritising **biodiversity-rich forests** over monoculture plantations.

Measure (Quantification): Implement a national system for **LiDAR-based biomass mapping** and soil carbon monitoring to accurately quantify the actual Net Ecosystem Exchange (NEE).

Policy Prioritisation: Elevate **Blue Carbon** (coastal mangroves and seagrasses) and **Soil Carbon** in agricultural policy (e.g., through incentives for zero-tillage farming) as durable, high-density carbon stores.

Community Integration: Strengthen the role of **Joint Forest Management (JFM)** committees and provide secure tenure and incentives to local communities to act as effective forest guardians.

Climate-Smart Forestry: Invest in research on tree species and forest management techniques that are resilient to future climate scenarios (e.g., drought-tolerant, fire-resistant varieties).

Conclusion

India's Net Zero goal cannot be achieved by solely relying on a potentially unstable natural carbon sink. While afforestation is vital, the core strategy must pivot towards **deep, industrial emissions reduction** complemented by aggressive **protection and restoration of high-quality, resilient ecosystems.** Only a policy based on accurate quantification and community stewardship can ensure the sink remains a reliable asset in India's climate strategy.

Mains Practice Questions

"A weakening carbon sink complicates India's climate action and requires a strategic shift from area-based afforestation targets to quality-based ecosystem restoration." Elaborate, giving reasons for the weakening trend and suggesting policy interventions. (15 Marks, 250 Words)

Analyse the role of 'Blue Carbon' ecosystems and soil carbon in strengthening India's overall carbon sequestration strategy. What are the key challenges in mainstreaming these in national climate policy? (10 Marks, 150 Words)

Bioremediation as a Solution for India's Pollution

Syllabus

GS-3: Environment: Conservation, environmental pollution and degradation.

GS-3: Science and Technology: Application of science in everyday life.

Context

India faces a colossal challenge in cleaning up polluted rivers (e.g., Ganga, Yamuna), industrial effluent discharge, and massive heaps of legacy waste (landfills), which threaten public health and ecosystems.

Bioremediation, the use of living organisms—primarily microbes, but also fungi and plants—to degrade, transform, or remove pollutants, is emerging as a sustainable, cost-effective, and environmentally friendly alternative to traditional physical or chemical clean-up methods.

The focus is now on scaling up this technology, particularly for challenging pollutants like heavy metals and persistent organic pollutants.

Main Body in Multi-Dimensional Analysis

Scientific and Technological Dimensions

Mechanisms of Action: Bioremediation operates through processes like **Biodegradation** (microbes break down organic contaminants), **Bioaccumulation/Biosorption** (microbes/plants absorb metals from the water/soil), and **Bioventing/Biostimulation** (injecting air or nutrients to accelerate native microbial activity).

Pollutant Specificity: Different indigenous or engineered microbes are needed for different pollutants—e.g., specific bacteria

79

for oil spills, fungi for breaking down complex plastics, and *Acidithiobacillus ferrooxidans* for heavy metal leaching.

Phytoremediation: The use of plants (hyper-accumulators) like sunflowers, Indian mustard, or certain grasses to extract heavy metals from the soil. This is particularly effective for large, diffuse contamination sites.

Economic and Sustainability Dimensions

Cost-Effectiveness: Compared to expensive 'dig and dump' operations or high-energy chemical treatment (like incineration or chemical oxidation), bioremediation offers significantly lower operational costs and requires less complex infrastructure.

Environmental Footprint: It is a 'green' technology that is non-disruptive, does not generate harmful by-products (as it converts toxins into harmless substances like water and enhances the natural ecological balance of the site.

Resource Recovery: In some advanced forms of bioremediation, valuable resources like certain metals or energy (biogas) can be recovered from the waste material.

Implementation and Regulatory Dimensions

Site Heterogeneity Challenge: Microbes are highly sensitive to environmental factors like pH, temperature, and pollutant concentration. The lack of standardisation means a solution that works on one section of a river may fail on another, requiring extensive site-specific research.

Regulatory Oversight: India's regulatory environment for the use of **Genetically Engineered Microorganisms (GEMs)** is extremely complex and slow. While GEMs offer the most potent and efficient clean-up solutions, fear of ecological consequences has stalled their approval for field use.

Lack of Skilled Manpower: Scaling up requires specialised knowledge in microbial ecology, environmental engineering, and geology, which is often lacking in local municipal bodies and pollution control boards.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**National Mission for Clean Ganga (NMCG):** Uses bioremediation techniques for *in-situ* river water treatment. **Swachh Bharat Mission (SBM):** The component addressing landfill remediation often employs bioremediation for waste stabilisation and volume reduction. **National Biogas and Organic Manure Programme:** Promotes anaerobic digestion, a form of bioremediation, for waste-to-energy conversion.
Positives of Bioremediation	**In-Situ Application:** Can treat contamination without excavating and moving the polluted material. **Complete Destruction:** Can break down organic contaminants completely, unlike chemical methods that might just transfer the pollutant. **Aesthetic Improvement:** Can

Feature	Description
	restore the natural look and function of the contaminated site over time.
Negatives/Challenges	**Time-Intensive:** Can take much longer than chemical methods, sometimes requiring months or years. **Limited for Heavy Metals:** Less effective in completely removing heavy metals compared to organic pollutants. **Monitoring Difficulty:** Hard to monitor and control microbial activity in complex, real-world conditions.

Examples

Landfill Remediation (Legacy Waste): Bioremediation is successfully used in several Indian mega-landfills (e.g., in Delhi and Mumbai) to stabilize the waste and reduce its height before final processing.

Oil Spill Clean-up: The use of oil-eating bacteria (e.g., *Pseudomonas* species) has been successfully demonstrated in Indian waters for cleaning up minor oil spills.

***In-Situ* River Treatment:** Bioremediation (microbial dosing) is being tested in certain severely polluted stretches of the Yamuna and its tributaries to enhance the water's self-purification capacity.

Way Forward

Establish National Protocols: The **Central Pollution Control Board (CPCB)** must immediately establish clear, standardised, and simplified **national protocols** for the use of indigenous microbial consortia and GEMs for different contamination types.

R&D Hubs and Commercialisation: Setup dedicated regional **Bioremediation Technology Hubs** that link premier research institutions (CSIR, IITs) with industry for field testing and commercialisation of proprietary microbial products.

Skill Development: Introduce specialized **Environmental Biotechnology/Bioremediation** modules in engineering and science curricula and offer certification programs for municipal workers.

Incentivise Green Clean-up: Provide **financial incentives** and faster regulatory clearances for industries and municipalities that choose bioremediation over conventional, polluting clean-up methods.

Conclusion

Bioremediation is an indispensable tool for tackling India's extensive and varied pollution legacy in a sustainable manner. For this green technology to move from laboratory success to large-scale national deployment, the government must address the current challenges of **regulatory complexity, standardisation, and skilled manpower development**, thereby unlocking its immense potential to clean the nation's soil and water resources.

Mains Practice Questions

"Bioremediation offers a sustainable and cost-effective pathway for India to address its colossal problem of industrial and legacy waste pollution." Elucidate the scientific mechanisms of bioremediation and discuss the regulatory and implementation challenges in scaling up this technology in India. (15 Marks, 250 Words)

Differentiate between the terms Bioremediation, Bioaugmentation, and Phytoremediation. How can India leverage these technologies to clean heavy metal contamination in its major river systems? (10 Marks, 150 Words)

81

Dismantling the Base of Environmental Regulation: The Legal Challenge

Syllabus

GS-3: Environment: Conservation, environmental pollution and degradation, environmental impact assessment.

GS-2: Governance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context

A recent Supreme Court ruling (e.g., **CREDAI vs Vanashakti**, November 2025) has significantly altered the landscape of India's environmental jurisprudence, raising concerns that the core structures of environmental regulation are being **dismantled or diluted** in favour of development.

Critics argue that the ruling, particularly by reducing the scope or necessity of public consultation and judicial oversight, risks normalising pollution and weakening the already fragile institutional mechanisms intended to protect natural resources.

This development comes at a time when India faces escalating threats from climate change, severe air/water pollution, and loss of biodiversity.

Main Body in Multi-Dimensional Analysis

Legal and Jurisprudence Dimensions

Dilution of Environmental Review: The ruling reportedly limits the grounds on which a project clearance can be challenged or reviewed, often favouring the concept of **"ease of doing business"** over the **"polluter pays principle"** and the **precautionary principle**.

Role of the National Green Tribunal (NGT): Weakening the scope of environmental review and appeal limits the crucial oversight function of the **NGT**, the specialist environmental judicial body established for swift and effective justice delivery in environmental matters.

Erosion of Public Trust: Judicial rulings that appear to compromise environmental safeguards erode public trust in the institutions responsible for environmental governance and may encourage industries to see environmental compliance as a negotiable cost rather than a legal necessity.

Governance and Institutional Dimensions

Environmental Impact Assessment (EIA) Process: The ruling's interpretation could further dilute the effectiveness of the **EIA process**, a foundational tool for assessing the potential environmental consequences of proposed projects. Weakening public hearing requirements (a key part of EIA) reduces democratic input and transparency.

Centralization of Power: Recent amendments or policies, often supported by such rulings, tend to **centralize power** in the hands of the Union government or its appointed committees, potentially weakening the oversight of State Pollution Control Boards (SPCBs) and local authorities.

Accountability: The primary risk is the loss of **institutional accountability**. If the legal framework allows for easier project clearances without robust scrutiny, it becomes harder to hold government bodies (like the Ministry of Environment, Forest and Climate Change – MoEF&CC) or project proponents accountable for future environmental damage.

Ecological and Climate Dimensions

Escalating Climate Risk: India is increasingly vulnerable to extreme weather events. Diluting environmental regulations for infrastructure projects in ecologically fragile zones (e.g., coastal areas, Himalayan regions) exponentially increases the risk of disasters like floods and landslides.

Biodiversity Loss: Unregulated construction, mining, and industrial expansion into forests and protected areas, made easier by relaxed

82

laws, will accelerate habitat destruction and biodiversity loss, undermining national conservation goals.

Normalising Pollution: The shift from stringent penalties to fines (e.g., in certain amendments to the Water Act, 2024, as noted in the news) risks **normalizing pollution** as a mere "cost of doing business," rather than a violation of law, fundamentally changing industrial behaviour.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**National Clean Air Programme (NCAP):** Aims for city-specific plans to reduce air pollution, which requires strict regulation of industries. **Namami Gange Programme:** Depends on stringent oversight of industrial effluents by state regulatory bodies. **National Afforestation Programme (NAP):** Protection of existing forests is key to this, which can be undermined by lax clearance processes.
Positives (Government View)	**Ease of Doing Business:** Expedites project clearances and reduces bureaucratic hurdles, attracting investment and boosting economic growth. **Infrastructure Push:** Enables faster execution of large-scale public and private infrastructure projects.
Negatives/Challenges	**Ecological Catastrophe:** Increased risk of large-scale, irreversible environmental damage. **Social Justice Issue:** Marginalised communities dependent on natural resources are often the first victims of environmental degradation. **International Image:** Undermines India's credibility at global climate change negotiations (e.g., UNFCCC, Paris Agreement commitments).

Examples

Wetland Destruction: Project clearances in urban areas leading to the destruction of wetlands for construction, resulting in severe waterlogging and flooding during monsoons (e.g., in Chennai or Mumbai).

Coastal Regulation Zone (CRZ) Violations: Erosion of regulations in CRZ areas to facilitate tourism and construction, increasing vulnerability to cyclones and sea-level rise.

Way Forward

Reaffirm Judicial Principles: The Supreme Court must clearly and consistently reaffirm the non-negotiable principles of sustainable development, the **precautionary principle**, and the **polluter pays principle** in all environmental judgments.

Strengthen EIA and Public Consultation: Mandate more rigorous and participatory **EIA** processes, ensuring that public hearing outcomes are genuinely integrated into project clearance decisions.

Empower State Regulators: Empower and adequately fund **State Pollution Control Boards (SPCBs)** with independent authority, human capital, and technology to conduct rigorous and surprise inspections, moving away from a command-and-control model to a compliance-oriented one.

Clear Accountability Framework: Establish a clear legal framework to hold government officials and project proponents **personally accountable** for non-compliance and environmental damage, backed by stringent penalties.

Conclusion

The foundation of India's environmental protection is its regulatory framework. Any perceived dismantling or dilution of this base, whether through legislative amendment or judicial interpretation, poses an existential threat to the nation's ecological and public health. A sustainable future requires **robust environmental law** and governance that treats the protection of natural capital as a **prerequisite for, not an obstacle to, economic development**.

India's Weakening Carbon Sink: The Risk to Net-Zero 2070 Goal

Syllabus

GS-3: Environment: Conservation, environmental pollution and degradation, environmental impact assessment.[68] Climate Change.

Context

A crucial report highlighted that **India's natural carbon sink is weakening,** posing a significant risk to the country's ambitious target of achieving **Net-Zero emissions by 2070** (Panchamrit commitment).

While forests and tree cover currently absorb substantial CO2 (about 150$ million tonnes per year), this absorption capacity is being threatened by factors like climate change-induced stress (fires, pests, drought) and degradation.

The analysis underscores the urgent need for policymakers to move beyond treating nature-based removals as a **stable backstop** and instead integrate **"sink weakening"** into all macroeconomic and ecological planning.

Main Body in Multi-Dimensional Analysis

Climate and Ecological Dimensions

Sink Weakening Phenomenon: Natural sinks (forests, wetlands, soils) absorb carbon from the atmosphere.[71] The report suggests that chronic stress from **higher temperatures, prolonged droughts, and increased forest fires** is reducing the net capacity of Indian forests to absorb Co2

Reversibility Risks: Unlike emissions cuts, carbon sequestration through nature is vulnerable to **reversal**.[72] A major forest fire or pest infestation can instantly release decades of stored carbon back into the atmosphere.[73] This risk must be quantified and integrated into climate plans.

Blue Carbon Ecosystems: The analysis stresses the importance of protecting **wetlands and "blue carbon"** (carbon stored in mangroves, seagrasses, and coastal soils). These ecosystems store carbon more durably and should be elevated in national climate policy, especially in vulnerable coastal states.

Policy and Economic Dimensions

Mispricing Mitigation: If policymakers overestimate the stable performance of natural sinks, they will **understate the true cost** of emissions reduction and misallocate scarce funds away from critical mitigation technologies (like renewable energy and carbon capture).

The ARM Framework: The recommended three-part strategy is crucial:

Avoid: Protect and manage existing **high-integrity forests** to prevent degradation.

84

Restore: Repair degraded ecosystems with **resilience-building interventions**.

Measure: Build **rigorous Monitoring, Reporting, and Verification (MRV)** systems to track actual carbon uptake and degradation rates.

Financial Model Shift: Forests and coasts must be treated as **"living infrastructure"** that requires recurrent and robust budgetary allocations for maintenance, protection, and restoration, rather than one-time project funding.

Global and Geopolitical Dimensions

NDC Commitments: India's Nationally Determined Contributions (NDCs) rely significantly on increasing its forest and tree cover. The weakening sink challenges the integrity of these commitments.

Global Ranking: While the FAO's GFRA 2025 report ranks India fifth among global carbon sinks, this strength is not guaranteed without intervention. Protecting the sink reinforces India's leadership on **climate action** in multilateral forums.

Government Schemes, Positives, Negatives

Feature	Description
Schemes/Targets	**Net Zero by 2070:** India's long-term climate commitment. **Forest Survey of India (FSI):** Collects data on forest and tree cover, which forms the basis for sink measurement. **CAMPA Fund (Compensatory Afforestation Fund Management and Planning Authority):** Funds afforestation and conservation, though its utilisation remains debated.

Feature	Description
Positives of the Sink	**Mitigation Capacity:** Provides a natural buffer against rising emissions. **Biodiversity:** Protection of sinks ensures habitat and ecosystem health. **Livelihoods:** Supports millions of forest-dependent communities.
Negatives/Challenges	**Climate Stress:** Fires, droughts, and pests reduce absorption capacity. **Accounting Risk:** Over-reliance on the sink leads to under-investment in technology-based emissions reduction. **Land Use Conflict:** Afforestation efforts often compete with other land uses (agriculture, development).

Examples

Forest Fires: Increased frequency and intensity of forest fires in the Himalayan regions and the North East are clear examples of sink reversal.

Mangrove Protection: The Sunderbans region exemplifies the importance of blue carbon—its mangroves act as a carbon sink and a natural barrier against cyclones.

Way Forward

Sink Stress-Testing: Mandate that all major infrastructure projects and climate models undergo **"sink stress-testing"** to assess their vulnerability to climate change-induced weakening.

Elevate Blue Carbon: Launch a **National Blue Carbon Mission** with dedicated funds and institutional capacity to strengthen coastal and wetland ecosystems.

Rigorous MRV: Invest heavily in **satellite monitoring, remote sensing, and ground-level validation** to build a transparent and scientifically rigorous system for measuring actual carbon uptake.

Community Stewardship: Empower and incentivize **local and tribal communities** with secure tenure rights and financial benefits to act as stewards of high-integrity forests, integrating conservation with local livelihoods.

Conclusion

The weakening of India's carbon sink, as highlighted on December 5, 2025, is a silent threat to its climate goals. Achieving **Net-Zero by 2070** requires treating natural sinks not as a passive given but as **active, living infrastructure** that needs sustained financial and policy protection. India must stress-test its climate strategy against ecological volatility and invest in an **ARM framework** to secure both its environment and its climate future.

SAF Blending Target and IGI's Water Positive Status: Green Aviation and Infrastructure

Syllabus

GS-3: Environment: Conservation, environmental pollution and degradation. Infrastructure (Energy).

Context

On December 5, 2025, the aviation sector saw two major announcements reflecting India's push for sustainability: (1) The Government approved a **5% Sustainable Aviation Fuel (SAF) blending target by 2030** for international flights; and (2) **Indira Gandhi International (IGI) Airport, Delhi,** was certified as **India's first high-capacity Water-Positive Airport**.

These developments underscore the increasing integration of **environmental stewardship** and **decarbonization mandates** within India's critical infrastructure and energy policy.

Main Body in Multi-Dimensional Analysis

Aviation and Energy Decarbonization Dimensions

The SAF Mandate: The 5% blending target for **Sustainable Aviation Fuel (SAF)** by 2030 (starting with international flights) is a significant step towards achieving **decarbonization in aviation**, a notoriously hard-to-abate sector.

SAF Production Challenge: SAF is derived from sources like used cooking oil, municipal waste, and agricultural residue. India faces a huge challenge in scaling up **domestic SAF production capacity** and ensuring a stable, cost-competitive supply chain for feedstocks.

Economic Viability: SAF is significantly more expensive than traditional jet fuel. The blending mandate will necessitate **policy support** (tax incentives, subsidies) to bridge the cost difference and prevent a negative impact on the competitiveness of Indian airlines.

Water Resource Management and Infrastructure Dimensions

Water-Positive Status: IGI Airport achieved water-positive status, meaning it replenishes more water into the ground/community than it consumes.[77] This was achieved through a combination of measures:

Rainwater Harvesting: Implementation of 625 rainwater harvesting structures.

Zero-Liquid-Discharge (ZLD): Operating a high-capacity (16.6 MLD) Sewage Treatment Plant (STP) to recycle and reuse water for non-potable uses.[78]

Significance for Urban Infrastructure: Achieving water positivity in a **high-capacity urban centre** like IGI, which is part of the stressed Delhi-NCR region, sets a critical benchmark for other large infrastructure projects (e.g., ports, industrial

parks) on efficient water management and resource security.

Technological and Regulatory Dimensions

Green Energy Transition: The fact that 93 airports in India have already transitioned to **100% green energy usage** highlights a broader commitment to shifting power consumption to renewables, reducing the carbon footprint of air travel operations.[80]

Public-Private Partnership (PPP): The success of IGI's water initiatives, managed by DIAL (a PPP), showcases the potential of private sector efficiency and investment in achieving public environmental goals.

Government Schemes, Positives, Negatives

Feature	Description
Schemes/Policy	**National Biofuel Policy, 2018:** Provides the framework for promoting advanced biofuels like SAF. **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):** Supports water and sewage infrastructure, relevant for urban water management efforts.
Positives of the Targets	**Global Compliance:** Aligns Indian aviation with international decarbonization goals. **Resource Security:** IGI's water positive status enhances water security for its operations and the local aquifer. **Innovation:** Drives R&D and investment in SAF

Feature	Description
	production technologies.
Negatives/Challenges	**Cost Barrier:** SAF is currently significantly more expensive, potentially increasing air fares. **Feedstock Supply:** Scaling up feedstock collection (e.g., used cooking oil) sustainably is a major logistical challenge. **Regulatory Complexity:** Ensuring compliance for international vs. domestic flights requires clear differentiation.

Examples

Rainwater Harvesting: The 625 structures and 9-million-litre reservoirs at IGI are concrete examples of local water conservation investment.[81]

Biofuel Feedstocks: Potential SAF feedstocks include *Jatropha* oil, algae, and farm waste, each presenting unique logistical hurdles.[82]

Way Forward

Financial Incentives for SAF: Introduce a **Viability Gap Funding (VGF)** or production-linked incentive (PLI) scheme specifically for domestic SAF production facilities to de-risk investment and lower costs.

Integrated Water Planning: Mandate a **"Water Positivity Audit"** for all upcoming greenfield airports and large infrastructure projects and integrate water resource planning with local municipal bodies.

R&D Focus: Direct national research grants towards developing cost-effective, **indigenous SAF conversion technologies** that can use abundant Indian agricultural residues.

Conclusion

The December 5, 2025, announcements signify a dual commitment: decarbonizing the skies through the **SAF blending target** and securing ground resources through **water-positive infrastructure.** By mandating green fuel and achieving resource independence in core infrastructure like IGI Airport, India is demonstrating that ambitious **economic growth can be pursued concurrently with strict environmental responsibility**.

Environment & Economy: The Green Credit Programme (GCP) 2.0

Syllabus: GS Paper III – Environmental Conservation; Indian Economy and Sustainable Development.

Context: On December 12, 2025, the Ministry of Environment, Forest and Climate Change (MoEFCC) issued updated guidelines for the **Green Credit Programme**, introducing a "credibility first" approach that prioritizes the survival of plantations over mere quantity.

Main Body: Multi-dimensional Analysis

Market-Based Mechanism: Unlike the traditional "Command and Control" approach, GCP uses a market-based incentive to reward voluntary environmental actions.

LiFE Movement Integration: The GCP is a key pillar of the **Lifestyle for Environment (LiFE)** initiative, aiming to transform environmental protection into a mass movement (Jan Andolan).

Corporate Accountability: Companies can now use Green Credits to meet their **ESG (Environmental, Social, and Governance)** obligations, creating a private-sector funding stream for afforestation.

Beyond Carbon: While Carbon Credits focus strictly on emissions, Green Credits cover 8 diverse sectors including water conservation, sustainable agriculture, and waste management.

Positives, Negatives, and Government Schemes:

Positives	Negatives/Challenges	Government Schemes/Initiatives
Holistic Restoration: Encourages water harvesting alongside tree planting.	**Greenwashing Risks:** Companies might claim credits without actual ecological impact.	**MISHTI Scheme:** For mangrove restoration under GCP.
Rural Livelihoods: Generates local employment in maintaining nurseries.	**Verification Issues:** Difficulty in auditing remote projects in real-time.	**Amrit Dharohar:** For wetland conservation.
Tradability: Credits can be traded on a domestic platform, providing a revenue model.	**Land Availability:** Identifying 58,000+ hectares of degraded land is an administrative hurdle.	**Ecomark Scheme:** For labeling environment-friendly products.

Example: States like **Madhya Pradesh and Chhattisgarh** have identified nearly 40% of the total land bank available for GCP, showcasing a proactive federal response.

Way Forward:

Digital Verification: Use satellite imagery and **Drone Technology** for a 5-year monitoring cycle to ensure sapling survival.

Standardization: Establishing a clear "Equivalency Scale" to define how many "Water Credits" equal one "Afforestation Credit."

Conclusion: The Green Credit Programme 2.0 transitions India from a "Carbon-centric"

to a "Nature-centric" economy, setting a global benchmark for voluntary environmental actions.

Practice Mains Question: *"Critically examine how the Green Credit Programme can bridge the gap between industrial growth and ecological conservation in India."* *(250 Words)*

Project Cheetah: Nauradehi as the New Frontier

Syllabus

GS Paper III: Conservation, environmental pollution and degradation, environmental impact assessment.

Context

Madhya Pradesh CM Mohan Yadav announced on Dec 15, 2025, that **Nauradehi (Veerangana Durgavati) Tiger Reserve** will be ready for cheetahs before the 2026 monsoon.

Multi-Dimensional Analysis

Ecological: Unlike Kuno, Nauradehi is a "predator-heavy" landscape. Cheetahs will have to coexist with an established tiger and wolf population.

Geography: Spanning 1,197 sq km, it provides the "landscape-scale" connectivity required for a viable cheetah metapopulation.

Economic: Development of "Eco-tourism circuits" connecting Khajuraho to Nauradehi, providing jobs to local tribal communities.

Positives, Negatives, and Government Schemes

Positives:

Diversifies the risk of disease/epidemic wiping out the entire population in one park (Kuno).

Restoration of open forest/grassland biomes.

Negatives:

High risk of inter-species conflict (Cheetah vs Tiger/Leopard).

Challenges in voluntary village relocation from the core area.

Related Schemes: Project Cheetah (NTCA), Green India Mission.

Examples

The success of "Mukhi" (first Indian-born cheetah) becoming a mother in late 2025 proves the biological suitability of the MP climate.

Way Forward

Implementing "Smart Fencing" and GPS-collaring for all released individuals.

Focusing on the "Prey-Base" augmentation (Chinkara and Nilgai) before the final release.

Conclusion

Nauradehi represents Phase II of the world's most ambitious rewilding project, shifting from "survival" to "expansion."

Practice Mains Question: *"Assess the challenges of reintroducing Cheetahs in a predator-rich habitat like Nauradehi compared to the predator-free enclosures of Kuno."*

3. Dynamic Ground Water Resources Assessment Report 2025

Syllabus: GS Paper I: Distribution of key natural resources; GS Paper III: Conservation, environmental pollution, and degradation.

Context: The Ministry of Jal Shakti released the 2025 Assessment on December 18, reporting a total annual recharge of **448.52 BCM**, showing stabilization but highlighting critical regional vulnerabilities.

Multi-Dimensional Analysis

Environmental Sustainability: While **73% of assessment units** are now "Safe," the report highlights a "quality crisis." Even where water levels are rising, the presence of **Arsenic and Fluoride** in 22 states makes the water unusable without expensive treatment.

Agricultural-Water Nexus: Agriculture continues to consume **87% of extracted groundwater**. The report notes that in states like Punjab and Haryana, the "Stage of Extraction" is still over 120%, meaning we are "mining" fossil water that cannot be replenished in our lifetime.

Urban Challenges: Rapid urbanization is leading to "concrete capping," preventing natural recharge. Cities like Bengaluru and Chennai are identified as "Groundwater Stress Hotspots" due to the destruction of traditional tank systems.

Technological Shift (NAQUIM 2.0): The transition to **High-Resolution Aquifer Mapping** using Heliborne surveys allows the government to identify "paleo-channels" (ancient dried-up rivers) that can serve as massive natural underground reservoirs.

Comparative Analysis Table

Aspect	Analysis
Positives	**Recharge Growth:** 54% of wells show rising levels due to good monsoons and *Jal Shakti Abhiyan*; **Decline in Over-exploitation:** Units decreased from 17% (2017) to 10.8% (2025).
Negatives	**Quality Deterioration:** Rising salinity in coastal areas and heavy metal contamination in the Gangetic plain; **Irrigation Inefficiency:** Low adoption of micro-irrigation in water-stressed blocks.

Aspect	Analysis
Govt. Schemes	**Atal Bhujal Yojana**, **PM Krishi Sinchayee Yojana (Per Drop More Crop)**, and **Mission Amrit Sarovar**.

Example: In **Rajasthan**, the *Mukhya Mantri Jal Swavlamban Abhiyan* has turned "Over-exploited" blocks into "Safe" ones by creating 4 lakh water harvesting structures using community participation.

Way Forward: Implementing **Water Accounting** at the Panchayat level and making "Rainwater Harvesting" a mandatory building code in all 4,000+ urban local bodies.

Conclusion: India's groundwater management is at a crossroads; we must move from "Supply-side engineering" (dams) to "Demand-side behavior change" (cropping patterns).

Mains Practice Question: "India's groundwater crisis is no longer just a problem of quantity, but increasingly one of quality and regional inequity." Examine. (250 Words)

SC Judgment on 'Environmental CSR': A New Corporate Jurisprudence

Syllabus: GS II: Judiciary; GS III: Environment (Conservation).

Context: In a landmark judgment on December 19, 2025, the Supreme Court ruled that corporations have a **"Fundamental Duty"** to protect ecosystems. Specifically, it held that renewable energy firms near **Great Indian Bustard (GIB)** habitats are "guests in the bird's abode" and must bear the cost of conservation.

Multi-Dimensional Analysis

Broadening CSR: The Court interpreted 'Corporate Social Responsibility' (CSR) to inherently include **'Environmental Responsibility'**. It moved beyond the Companies Act (2% profit) to a

constitutional mandate under **Article 51A(g)**.

The GIB vs. Green Energy Conflict: The judgment addresses the "Green vs. Green" dilemma. While solar power is good for the climate, overhead transmission lines are killing the critically endangered GIB. The SC mandated that companies must pay for **underground cabling** and *in-situ* conservation.

Legal Personhood of Ecosystems: By stating that corporations are "organs of society," the court suggested that their "social license to operate" depends on maintaining the biological integrity of the areas they occupy.

Precautionary Principle: The court applied the "Polluter Pays" and "Precautionary" principles, stating that "lack of scientific certainty" cannot be an excuse for not protecting an endangered species like the GIB.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Ecological Justice:** Apex predators/species get legal "standing"; **Sustainable Development:** Balances industrial growth with biodiversity.
Negatives	**Financial Viability:** Increased costs for solar/wind projects may slow down renewable energy targets; **Legal Uncertainty:** Could lead to a spate of litigation against any project near any sanctuary.
Govt. Schemes	**Project Great Indian Bustard**, **National Green Tribunal (NGT) Act**, **Business Responsibility and Sustainability Reporting (BRSR)**.

Example: This ruling mirrors the **"Rights of Nature"** movements in countries like Ecuador and New Zealand, but applies it through the lens of corporate obligation.

Way Forward: Creation of a **"National Biodiversity Fund"** where companies operating in ecologically sensitive zones contribute a "Biodiversity Cess."

Conclusion: This judgment marks the birth of "Ecological Jurisprudence" in India, where the rights of a species are balanced against the economic rights of a corporation.

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Positives, Negatives, and Government Schemes

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91

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Positives	**Ecological Justice:** Apex predators/species get legal "standing"; **Sustainable Development:** Balances industrial growth with biodiversity.
Negatives	**Financial Viability:** Increased costs for solar/wind projects may slow down renewable energy targets; **Legal Uncertainty:** Could lead to a spate of litigation against any project near any sanctuary.
Govt. Schemes	Project Great Indian Bustard, National Green Tribunal

92

Feature	Analysis
	(NGT) Act, Business Responsibility and Sustainability Reporting (BRSR).

Example: This ruling mirrors the **"Rights of Nature"** movements in countries like Ecuador and New Zealand, but applies it through the lens of corporate obligation.

Way Forward: Creation of a **"National Biodiversity Fund"** where companies operating in ecologically sensitive zones contribute a "Biodiversity Cess."

Conclusion: This judgment marks the birth of "Ecological Jurisprudence" in India, where the rights of a species are balanced against the economic rights of a corporation.

INDIAN ECONOMY AND ECONOMIC DEVELOPMENT

IMF's 'C' Grade Rating on India's GDP Data and Forthcoming New Series

1. Syllabus

GS-III: Indian Economy and issues relating to planning, mobilization of resources, growth, development. Government Budgeting.

2. Context

The **International Monetary Fund (IMF)**, in its latest Article IV review, assigned a **'C' grade** (the second-lowest) to India's national accounts and price statistics, flagging data-quality and methodological issues. This assessment comes despite India's reported strong economic performance, including an 8.2% GDP growth rate for the last quarter. In response, the Ministry of Statistics and Programme Implementation (**MoSPI**) confirmed it will launch a **new GDP series with 2022-23 as the base year** in February 2026.

3. Main Body in Multi-Dimensional Analysis

The IMF's grading, though not unusual for a developing economy, raises concerns about the reliability of key economic indicators used for global policy decisions and investment.

IMF Concerns: The 'C' grade indicates issues with the **coverage, methodology, and timeliness** of certain statistics. Specific recommendations include:

Regular and consistent revision of national accounts.

Conducting the overdue **Population Census** on priority.

Timely publication of combined Centre-State fiscal data.

Improvements in the consistency of key statistics.

India's Response (New GDP Series): The planned new GDP series (base year 2022-23) is intended to address these concerns by incorporating newer data sources, improving methodological standards, and aligning with global practices, potentially leading to a higher rating in future IMF assessments.

Paradox of Growth vs. Data Quality: The co-existence of high reported growth figures and a low data-quality rating creates a **paradox** that affects investor confidence, which relies heavily on accurate and timely data for capital allocation decisions.

4. Implications

Aspect	Description
Investor Confidence	Questions on data accuracy can temper foreign investor sentiment and potentially raise the risk premium for Indian assets.
Policy Formulation	Inaccurate data can lead to flawed policy prescriptions (e.g., miscalculating inflation or unemployment, resulting in sub-optimal fiscal/monetary policies).

Aspect	Description
Fiscal Transparency	Recommendations for timely publication of Centre-State fiscal data point towards the need for better transparency in cooperative federalism.

5. Way Forward

MoSPI's priority is the successful rollout of the new GDP and CPI series. Furthermore, accelerating the **Population Census** and improving the statistical infrastructure, especially at the State level, are critical long-term reforms.

6. Practice Mains Question

GS-III: Analyze the implications of the IMF's 'C' grade rating on India's GDP data. How can the forthcoming new GDP series and improved statistical governance address these concerns and enhance global confidence in the Indian economy? (250 words)

New Foreign Direct Investment (FDI) Cap on Insurance Sector

1. Syllabus

GS-III: Indian Economy and issues relating to planning, mobilization of resources, growth, development. Government Budgeting.

2. Context

The government is set to introduce the **Insurance Laws (Amendment) Bill, 2025**, in the Winter Session of Parliament. The key proposal is to raise the Foreign Direct Investment (FDI) limit in the insurance sector from the current **74% to 100%**.

3. Main Body in Multi-Dimensional Analysis

This policy move is part of the government's broader economic reform agenda aimed at **modernizing the financial sector** and attracting massive capital inflows.

Need for Capital: The Indian insurance sector (both life and non-life) requires huge capital

infusion to expand penetration, especially in rural areas, and to introduce innovative, tailored products (e.g., specialized health or weather insurance). The existing 74% cap acts as a barrier to complete ownership and control for foreign players.

Impact of 100% FDI:

Capital Availability: Full ownership will encourage large global insurers to commit more capital, leading to **greater competition** and potentially lower premiums for consumers.

Technology and Expertise: Foreign firms bring in advanced **actuarial science, risk management expertise, and digital technology**, which can rapidly modernize the domestic insurance industry.

Job Creation: Increased activity will lead to the creation of high-skilled jobs in underwriting, data analysis, and regulatory compliance.

Safeguards: The amendment is expected to include robust safeguards concerning the **safety of policyholders' funds**, ensuring that a certain percentage of the management board seats remain with Indian residents, and maintaining strict regulatory oversight by the **Insurance Regulatory and Development Authority of India (IRDAI)**.

4. Implications

Aspect	Description
Market Penetration	Crucial for expanding insurance coverage, which is currently low (around 4.2% penetration in 2024), especially health and life insurance for the middle and lower-income segments.
Financial Sector Reform	Signals India's commitment to liberalizing key financial sectors, enhancing its image as an attractive global investment destination.

Aspect	Description
Consumer Benefit	Increased competition and better technology can lead to more customized products and efficient claims settlement processes.

5. Way Forward

The IRDAI must strengthen its regulatory and supervisory capacity to effectively monitor the operations of foreign-majority owned insurance entities, ensuring they prioritize policyholder interest over profit repatriation.

6. Practice Mains Question

GS-III: Analyze the rationale behind raising the FDI limit in the Indian insurance sector to 100%. What are the anticipated benefits for the Indian economy and consumers, and what safeguards must accompany this liberalization? (250 words)

Widening Trade Deficit and Rupee Volatility (INR Breaches 90/USD)

Syllabus

GS-3: Indian Economy: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment. Foreign exchange rate.

Context

On December 4, 2025, the Indian Rupee (**INR**) breached the psychological mark of **90 to the US Dollar (USD)**, a significant event signaling increased pressure on the currency and the Indian economy.

This depreciation was primarily linked to the **widening merchandise trade deficit**, driven by cooling global demand for Indian exports and strong domestic demand for imports, exacerbated by a spike in gold imports.

The situation required immediate analysis of the underlying structural economic issues and the strategy of the **Reserve Bank of India (RBI)** in managing exchange rate volatility.

Main Body in Multi-Dimensional Analysis

Economic and Fiscal Dimensions

The Widening Trade Gap: The merchandise trade deficit widened significantly (e.g., to over $30 billion in recent months) due to two major factors: **Weak Export Competitiveness** (softening demand in key markets like the US and EU, higher US tariffs, and slowing global growth) and **High Import Demand** (driven by strong domestic consumption, capital goods imports for infrastructure, and high gold imports).

Current Account Deficit (CAD) Pressure: The widening trade deficit exerts severe pressure on the **Current Account Deficit (CAD)**, despite robust earnings from services exports and remittances. A high CAD requires increased foreign capital inflow to maintain balance, making the economy vulnerable to global capital flight.

Inflationary Impact: A weakening rupee makes imports, especially **crude oil** (India imports over 85% of its crude), more expensive in rupee terms. This directly feeds into higher domestic prices for fuel and essential goods, increasing imported inflation and undermining the RBI's efforts to maintain price stability.

Financial and Capital Account Dimensions

Foreign Portfolio Investor (FPI) Outflows: Despite strong domestic macro indicators (robust GDP growth, moderate inflation), FPIs have been net sellers in the Indian equity and debt markets. This withdrawal is often driven by the attractiveness of higher interest rates in developed economies (like the US) and heightened global risk aversion, directly reducing the dollar supply and weakening the rupee.

Behavioral Factors: The market sentiment often drives currency trading. Importers rush to buy dollars, while exporters hold

95

back dollar earnings in anticipation of further rupee depreciation, creating a self-fulfilling prophecy of volatility.

RBI's Strategy: The RBI has adopted a "soft-touch" strategy, intervening primarily to prevent disorderly volatility rather than defending a specific rupee level. This conserves the foreign exchange (forex) reserves but signals market acceptance of a gradually weaker rupee as a function of the trade deficit.

Structural and Policy Dimensions

Structural Export Weakness: India faces long-standing structural issues in exports, including high logistics costs, low product diversification, and difficulty in integrating into high-value global supply chains, limiting its ability to leverage global trade opportunities fully.

Gold Imports: The strong cultural and economic demand for gold contributes significantly to the import bill. This non-productive import acts as a perennial drag on the trade balance.

Trade Policy: Slow progress on key **Free Trade Agreements (FTAs)** and high tariffs on certain inputs may inhibit export growth, underscoring the need for aggressive trade diplomacy.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Production Linked Incentive (PLI) Scheme:** Aims to boost domestic manufacturing and exports by integrating India into global supply chains, thereby reducing import dependence. **Remission of Duties and Taxes on Exported Products (RoDTEP):** Provides refunds of non-creditable taxes to exporters to increase competitiveness. **National Logistics Policy:** Aims to bring down logistics costs from over 14% to single digits, a key factor in export competitiveness.
Positives of Moderate Depreciation	**Export Competitiveness:** A moderately weaker rupee makes Indian exports cheaper and more attractive to international buyers. **Incentive for Remittances:** Encourages Non-Resident Indians (NRIs) to remit more money, which boosts the services account and overall CAD position.
Negatives/Challenges	**Imported Inflation:** Directly raises the cost of crucial imports like oil and electronics. **External Debt Burden:** Increases the rupee cost of servicing dollar-denominated external debt for both the government and corporations. **Investor Confidence:** Extreme volatility can signal economic instability, deterring long-term foreign direct investment (FDI).

Examples

Gold Import Spike: A significant recent factor in the widening deficit was the sharp increase in gold imports, driven by festival demand and market uncertainty.

US Interest Rates: The continued high interest rates maintained by the US Federal Reserve (Fed) are a 'pull factor,' attracting FPI capital away from emerging markets like India.

Forex Reserves: Despite the rupee slide, the RBI's forex reserves remain robust (e.g., over $600 billion), giving it sufficient buffer to intervene if the depreciation becomes disorderly.

Way Forward

Fiscal Prudence and Gold Policy: Introduce measures to moderate non-essential imports, particularly gold, through higher duties or innovative financial instruments (Gold Monetisation Scheme). Maintain strict **fiscal discipline** to reduce the government's borrowing needs.

Structural Export Reform: Focus PLI and other incentive schemes on **high-value, technology-intensive manufacturing** (electronics, semiconductors) to increase the sophistication and value addition of India's export basket.

Diversify Trade Payments: Aggressively pursue bilateral trade agreements using **local currencies (e.g., with Russia, UAE)** to reduce demand for dollars and insulate a portion of trade from global currency fluctuations.

RBI Strategy: Maintain the current intervention strategy, using forex reserves judiciously to smoothen volatility, while addressing the root cause of the deficit through structural policy changes.

Conclusion

The Rupee's breach of the 90/USD mark is a wake-up call, primarily reflecting the structural vulnerability arising from India's persistent trade deficit. While the RBI can manage volatility, the long-term stability of the rupee rests on the government's ability to boost **export competitiveness**, curb non-essential imports, and solidify the country's position in global value chains, transforming the trade balance from a perpetual drag into a source of strength.

Mains Practice Questions

"A widening trade deficit, rather than FPI outflows, is the primary driver of the Rupee's sustained depreciation." Analyse the structural factors contributing to India's widening trade deficit and suggest policy reforms to stabilize the Indian Rupee. (15 Marks, 250 Words)

Discuss the dilemma faced by the Reserve Bank of India (RBI) in managing the exchange rate volatility in the current global economic scenario. What are the inflationary implications of a weakening rupee for the Indian economy? (10 Marks, 150 Words)

A Missing Link in India's Mineral Mission: The Processing Gap

Syllabus

GS-3: Indian Economy: Investment models; Infrastructure (Energy, Ports, etc.).

GS-3: Science and Technology: Developments and their applications and effects in everyday life.

Context

India's ambitious push toward **green transition** (EVs, solar, energy storage) and strategic self-reliance (defence, electronics) requires a massive supply of **Critical Minerals** (e.g., Lithium, Cobalt, Rare Earth Elements – REE).

While India has stepped up its efforts to secure these minerals through aggressive **mineral diplomacy** (e.g., agreements with Australia, Chile) and auctioning of domestic blocks, the missing

97

link is the **lack of domestic refining, processing, and manufacturing capacity**.

The core challenge is that value and geopolitical leverage lie not in extraction, but in the midstream and downstream value chains, which India has yet to fully develop.

Main Body in Multi-Dimensional Analysis

Economic and Value Chain Dimensions

The Value Creation Trap: Extracting the raw ore of a critical mineral (the upstream segment) provides minimal economic value. The majority of the profit and technological expertise resides in **refining, converting, and manufacturing** the finished component (the midstream and downstream), such as battery-grade lithium or rare earth magnets.

Refining Deficit: India currently lacks sufficient commercially scalable refining and processing capacity for several key minerals, including **Lithium, Graphite, and Rare Earths (REs)**, despite having domestic reserves of some of them. This forces India to export raw material and import high-value finished components, perpetuating dependence.

Geopolitical Leverage: The country that controls the **processing** (e.g., China currently dominates 80-90% of global REE processing) controls the supply chain. Building domestic processing capacity is an essential component of India's **economic security** and **geopolitical leverage** in the high-tech economy.

Technological and Investment Dimensions

Technology Gap: Processing critical minerals is a highly complex, capital-intensive, and often environmentally challenging process. India needs major investments in **advanced metallurgy** and chemical engineering to bridge the existing technological gap.

High Investment Risk: The private sector is hesitant to invest in these midstream processing units due to high setup costs, uncertain long-term supply agreements, and the time lag before commercial viability. **Government support** in de-risking the investment is essential.

Resource Recovery: A key component of modern mineral strategy is recovering critical minerals from **secondary resources** (e.g., electronic waste, fly ash). India needs to scale up pilot projects in urban mining and embed recovery units in proposed **Critical Mineral Processing Parks**.

Policy and Diplomatic Dimensions

Mineral Diplomacy Linkage: India's foreign policy efforts (e.g., joining the **Mineral Security Partnership (MSP)** and bilateral deals) must explicitly link the sourcing of raw ore to the requirement of **domestic processing capacity** in India, securing long-term supply for its own refineries.

Policy Consistency: The success of the **₹7,280-crore Rare-Earth Magnet Scheme** depends on a stable policy environment and guaranteed domestic demand assurance from manufacturers (e.g., in EVs and electronics) to encourage processors to set up shop.

Skilled Workforce: There is a need for a dedicated, specialised workforce trained in advanced chemical processing, metallurgy, and recycling technologies to manage these highly complex industrial operations.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**Production Linked Incentive (PLI) Schemes:** Can be explicitly extended to critical mineral processing and magnet/battery manufacturing to bridge the midstream gap. **National Mineral Policy, 2019:** Emphasises sustainable

Feature	Description
	development and resource efficiency. **Critical Minerals Auctions:** The auctioning of Lithium and REE blocks to private players is the first step toward upstream development.
Positives of Domestic Processing	**Economic Security:** Reduces dependence on volatile global supply chains dominated by a single country. **Value Addition:** Captures the highest share of the value chain domestically, boosting GDP. **Job Creation:** Creates high-skill jobs in technology and metallurgy.
Negatives/Challenges	**Environmental Cost:** Processing is highly polluting (e.g., rare earth processing generates significant hazardous waste). **High Capital Outlay:** Requires billions of dollars in initial investment for refineries and converters. **Time Lag:** It takes several years to build and certify a processing plant to meet international standards.

Examples

Rare Earth Magnets: The government's scheme targets boosting domestic manufacturing of these magnets, which requires a stable supply of refined rare earth oxides (a midstream product).

Battery Gigafactories: The planned establishment of **Lithium-ion battery gigafactories** creates a massive, assured downstream demand for battery-grade lithium and cobalt, providing a crucial incentive for midstream processors.

Way Forward

Targeted PLI for Processing: Launch a specific, high-outlay **PLI Scheme for Critical Mineral Processing** (Midstream), offering guaranteed subsidies or tax breaks for establishing refining and conversion units.

Government-Led De-Risking: Public Sector Undertakings (PSUs) or government-backed special purpose vehicles should initially invest in a few strategic processing facilities to de-risk the technology and supply chain before private players take over.

Regulatory Sandbox for Recycling: Create a simplified and supportive regulatory framework (sandbox) for **e-waste recycling** and urban mining, incentivising the recovery of critical minerals from secondary sources.

International Collaboration: Actively seek technology transfer and joint ventures with allies like the US, Japan, and Australia, who are also keen to diversify the global processing base away from current dominant players.

Conclusion

India's aspiration to become a global leader in the green economy is fundamentally tied to its mastery of the entire critical mineral value chain. Securing the raw material is merely the first step; the true measure of success will be the establishment of a robust **domestic processing ecosystem.** This

requires **strategic state intervention**, significant capital infusion, and a clear policy commitment to link upstream supply with midstream refining capacity, turning mineral assets into **economic and strategic power**.

RBI Monetary Policy Committee (MPC) Cuts Repo Rate to 5.25%: The 'Goldilocks' Window

Syllabus

GS-3: Indian Economy: Monetary policy, banking and financial sector reforms, growth and development.

Context

On December 5, 2025, the **Reserve Bank of India (RBI)**'s Monetary Policy Committee (MPC) concluded its three-day meeting by unanimously deciding to **cut the policy repo rate by 25 basis points (bps) to 5.25%**.

This decision came against the backdrop of an exceptional **"Goldilocks period"** in the Indian economy, characterized by **robust real GDP growth** (raised to [2]7.3% for FY26) and **record-low CPI inflation** (projected at [3]2.0% for FY26).

The rate cut, the fourth in the current easing cycle, signalled the MPC's comfort with the inflation trajectory and its shift in focus towards **reinforcing economic momentum** and improving policy transmission.

Main Body in Multi-Dimensional Analysis

Monetary and Financial Dimensions

The Rate Cut and Policy Stance: The 25 bps cut moved the repo rate to [6]5.25%, with the **Standing Deposit Facility (SDF)** at [7]5.00% and the **Marginal Standing Facility (MSF)** at [8]5.50%.[9] The MPC maintained a **neutral policy stance**, indicating that future decisions will remain flexible and data-dependent, rather than committing to an aggressive easing cycle.

Impact on Lending and Borrowing: The rate cut is expected to further reduce **External**

Benchmark-linked Lending Rates (EBLR), leading to **cheaper loans** for consumers and businesses (especially for home loans and car loans).[11] This supports **household consumption** and boosts **private sector investment**, which is crucial for sustainable long-term growth.

Liquidity Measures: The RBI announced supplementary measures, including a 1$ lakh crore **Open Market Operation (OMO)** to inject durable liquidity and a $1 billion **Forex Buy-Sell Swap** to stabilize the rupee while managing domestic liquidity.[14] This underscores the RBI's commitment to effective policy transmission.

Macroeconomic and Fiscal Dimensions

Growth and Inflation Dynamics: The MPC cited the **record-low inflation** in recent months (e.g., = in October 2025) and strong Q2 GDP growth as primary justifications. The "Goldilocks" scenario provides the ideal policy space to support growth without risking price stability.

External Sector Health: The RBI noted the **Forex Reserves** remain healthy at over $686 billion, providing ample import cover. [19]However, concerns remain over the **widening merchandise trade deficit** (due to contracting exports and rising imports), which requires continued monitoring.[20]

Fiscal Prudence: The rate cut is highly contingent on the Government maintaining **fiscal prudence**. Any significant deviation from the fiscal consolidation roadmap could stoke inflationary pressures, forcing the RBI to reverse its easing cycle.

Sectoral and Market Dimensions

Real Estate and Consumer Demand: The cumulative rate cuts in 2025 have significantly lowered home loan rates, making real estate more affordable and appealing compared to fixed-income investments.[21] This is a major boost to the **real estate sector** and associated industries (cement, steel).[22]

Corporate and Capital Market: Lower borrowing costs improve the cash flows of corporations and encourage capital expenditure, especially in **infrastructure and manufacturing**.[23] The move is generally positive for the equity and bond markets, reflecting confidence in the economic outlook.[24]

Government Schemes, Positives, Negatives

Feature	Description
Monetary Policy Tools	**Repo Rate, SDF, MSF:** The key levers used by the RBI to manage inflation and liquidity. **OMO (Open Market Operations):** Used for durable liquidity management. **Monetary Policy Framework** The formal basis for the MPC's decisions.
Positives of the Rate Cut	**Growth Support:** Provides a boost to consumption and private investment. **Lower Debt Cost:** Reduces the EMI burden for existing and new borrowers. **Policy Credibility:** Reinforces the RBI's commitment to the inflation target while supporting growth.
Negatives/Challenges	**Trade Deficit Risk:** Lower rates could increase import demand, further widening the trade deficit. **Policy Transmission Lag:** Banks may not immediately pass on

Feature	Description
	the full benefit of the rate cut to borrowers. **Global Volatility:** A continued **neutral stance** is required due to global interest rate uncertainties and geopolitical risks.

Examples

CPI Inflation Dip: The exceptional dip in inflation i October 2025, largely due to a sharp fall in food prices, created the policy window for the rate cut.

Real GDP Forecast Hike: The MPC's decision to raise the FY26 GDP growth forecast from 6.8%$ to $7.3 is a strong indicator of its confidence in the economic recovery trajectory.

Way Forward

Active Liquidity Management: The RBI must remain active in utilizing **OMO** and other tools to ensure that the policy rate cut effectively transmits to the real economy.

Strengthen Exports: Government policy must simultaneously focus on structural reforms to boost **merchandise exports** and services trade to address the widening deficit, complementing the RBI's accommodative stance.

Monitor Inflation Headwinds: Closely monitor potential risks like the **reversal of food price deflation**, rise in global crude oil prices, and currency volatility, which could necessitate a quick pivot in policy.

Conclusion

The December 2025 MPC decision marks a decisive step in leveraging the **benign inflation environment** to bolster economic activity. By cutting the repo rate, the RBI has delivered a timely stimulus to boost confidence, investment, and consumption,

confirming its commitment to the **growth-inflation balance** that defines this rare 'Goldilocks period' for the Indian economy.

Health Security & National Security Cess Bill: Debate on Cess Proliferation

Syllabus

GS-3: Indian Economy: Government Budgeting. Mobilization of resources.

GS-2: Governance: Parliament and State Legislatures.

Context

On December 5, 2025, the **Lok Sabha passed the 'Health Security se National Security Cess Bill, 2025'** by voice vote, proposing to levy a new cess on **demerit goods** like **pan masala and certain tobacco products**.

The Bill is intended to earmark funds for two critical, but unrelated, expenditures: **Public Health** (a State subject) and **National Defence** (a Central subject), raising major questions about fiscal federalism, the proliferation of cesses, and the quality of parliamentary scrutiny.

Main Body in Multi-Dimensional Analysis

Fiscal and Constitutional Dimensions

The Cess Mechanism: A **cess** is a tax levied for a **specific purpose**, which, unlike a tax, is **not required to be shared** with State Governments under **Article 280** of the Constitution (Finance Commission). It goes directly into the Consolidated Fund of India and is then transferred to the designated Reserve Fund (Public Account) for the specific use.

Erosion of Shared Revenue: The growing reliance on cesses (including Health and Education Cess, Road Cess, etc.) over basic taxes reduces the divisible pool of revenue, thereby **starving State Governments** of their legitimate share of funds, undermining **fiscal federalism**.

Mixing Objectives: The combination of "Health Security" (State domain) and "National Security" (Central domain) in a single cess is unprecedented and obfuscates the accountability and allocation framework.

Policy and Governance Dimensions

The 'Demerit Good' Rationale: The Finance Minister defended the move by arguing that cesses on demit goods ensure they are not affordable and serve the twin purpose of **revenue generation** and **discouraging harmful consumption**.

Accountability and Transparency: While the cess funds are intended for specific purposes, there is often a lack of **transparency** in their actual utilization. The Bill's success will depend on clearly defining the allocation rules, especially for State-level health spending.

Parliamentary Scrutiny: The Bill was passed through a **voice vote** with minimal debate, reflecting the broader issue of **reduced legislative scrutiny** in Parliament (see Topic 8 of the previous analysis). This affects the quality and acceptance of key financial legislation.

Health and Economic Dimensions

Health Funding: Public health is a chronic funding deficit area.[34] Earmarking funds from this cess, if properly allocated and transferred to States, could provide a much-needed boost to **primary healthcare infrastructure** and pandemic preparedness.

Sin Tax Effectiveness: For a cess to be an effective sin tax, its rate must be high enough to significantly deter consumption. Frequent adjustments and clear communication are needed to avoid being treated merely as a source of revenue.

Government Schemes, Positives, Negatives

Feature	Description
Revenue Collection	**GST Compensation Cess:** A temporary cess

Feature	Description
	(recently extended) levied for compensating states for revenue loss post-GST implementation. **Health and Education Cess:** A long-standing cess on income tax for funding health and education schemes.
Positives of the Cess	**Targeted Funding:** Ensures a dedicated revenue stream for two critical, underfunded sectors (Health and Defence). **Discourages Harmful Consumption:** Aligns with the policy of raising taxes on 'demerit goods'.
Negatives/Challenges	**Erodes Fiscal Federalism:** Reduces the shareable tax pool for State Governments. **Lack of Transparency:** Risk of poor accountability in the allocation and utilization of cess funds. **Administrative Complexity:** Adds another layer of complexity to the already intricate tax structure.

Examples

GST Compensation Cess: The success and subsequent extension of this cess highlight the need for temporary, targeted levies, but also the dangers of their permanence.

Road and Infrastructure Cess: The funds are transferred to the Central Road and Infrastructure Fund (CRIF), demonstrating how a cess can be managed.[35]

Way Forward

Independent Oversight: Create an **independent, Parliamentary oversight mechanism** to annually review the collection, transfer, and utilization of all cess funds, ensuring they are used for the stated purpose.

Transparent Allocation Mechanism: Clearly define the formula for the allocation of the "Health Security" portion to State Governments, ensuring fair and timely transfer.

Tax Reform: The government should work towards **reducing the overall reliance on cesses** and instead increase the shareable general tax revenues, honouring the principles of fiscal federalism laid out by the Finance Commission.

Conclusion

The **Health Security se National Security Cess Bill, 2025**, addresses the urgent need for dedicated funding in defence and health by tapping into demerit goods.[36] While the intent is laudable, its passage underscores the problematic **proliferation of cesses** that circumvent revenue sharing with States. A financially robust federation requires a shift away from short-term cess solutions to **long-term structural tax reforms** that empower both the Union and the States.

IndiGo Flight Crisis and DGCA Scrutiny: The Regulatory and Market Cost

Syllabus

GS-3: Indian Economy: Infrastructure (Aviation); Liberalisation, industrial policy, and effects of changes on industrial growth.

GS-2: Governance: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

103

Context

The ongoing crisis involving **mass flight cancellations (estimated at over 650) and delays by IndiGo Airlines**, India's largest carrier, reached a peak on December 8, 2025, leading to significant regulatory action.

The **Directorate General of Civil Aviation (DGCA)** issued a final 24-hour extension to IndiGo's CEO to respond to the show cause notice, warning of *ex parte* action (decision without the other party).

Furthermore, the **Civil Aviation Ministry capped domestic airfares** for affected routes to prevent surge pricing during the crisis. The core issue is traced back to a **pilot and crew shortage** exacerbated by significant operational and planning lapses.

Main Body in Multi-Dimensional Analysis

Regulatory and Safety Dimensions

DGCA's Enforcement: The regulator's firm stance and the threat of *ex parte* action underscore its resolve to enforce passenger rights and operational compliance. Under DGCA's **Civil Aviation Requirement (CAR)**, passengers are entitled to compensation ranging from **₹5,000 to ₹10,000** if not informed of cancellations at least two weeks prior, a liability the airline cannot waive by claiming force majeure due to its own staffing failures.

Airfare Capping (Interventionism): The government's decision to cap airfares, though potentially temporary, signals a return to **market intervention** to protect consumers from exorbitant pricing during a crisis, raising questions about the balance between market freedom and consumer welfare.

Operational Overstretch: The crisis exposes the vulnerability of the **low-cost carrier (LCC) model** in India, showing a clear case of operational overstretch and inadequate risk management in scheduling and crew planning.

Economic and Consumer Dimensions

Monopoly Risk: IndiGo's market dominance (over 60% of the domestic market) means its failure severely impacts the entire national air travel ecosystem, validating concerns about **market concentration**.

Consumer Rights: The government directed the airline to clear all pending passenger **refunds** and barred the levy of any **rescheduling fees** for affected travellers. The **Consumer Protection Act, 2019**, provides an additional avenue for passengers to seek redressal for deficiency in service, including compensation for mental agony and litigation costs.

Economic Loss: The mass cancellations during the peak travel season disrupt both tourism and time-sensitive business travel, imposing a substantial **economic loss** across various sectors.

Government Schemes, Positives, Negatives

Feature	Description
Regulatory Bodies/Acts	**DGCA (Directorate General of Civil Aviation):** Apex safety and regulatory body. **Civil Aviation Requirement (CAR):** Specifies passenger compensation rules. **Consumer Protection Act, 2019:** Fortifies consumer rights against deficient service.
Positives of the Intervention	**Consumer Protection:** Airfare capping prevents predatory pricing. **Regulatory Wake-up:** Show cause notices enforce

Feature	Description
	accountability on top management.
Negatives/Challenges	**Market Distortion:** Price capping can disincentivize long-term investment. **Pilot Drain:** The chronic shortage of pilots is a systemic HR failure. **Reputational Damage:** The recurring crisis affects India's image as a reliable air travel hub.

Way Forward

Mandatory HR Plan: DGCA must mandate all airlines to submit and adhere to a **statistically rigorous Human Resource plan** correlated to their fleet expansion.

Strengthen Passenger Charter: Amend the Passenger Charter to impose **escalating, non-negotiable penalties** for large-scale, systemic cancellations.

Pilot Training Incentives: Incentivise and accelerate the training of pilots and maintenance staff through policy measures.

Conclusion

The IndiGo crisis forces a re-evaluation of the balance between rapid growth and regulatory oversight. The DGCA must impose **structural accountability** and ensure that the pursuit of market dominance does not come at the cost of passenger safety and consumer welfare.

India's Widening Merchandise Trade Deficit: A Capital Account Crisis Signal

Syllabus

GS-3: Indian Economy: Indian Economy and issues relating to planning, mobilization of resources, growth, development, and employment.

Context

Economic analysis on December 8, 2025, highlighted the alarming trend of **India's widening Merchandise Trade Deficit.** The deficit hit an **all-time monthly high of ₹3.47 lakh crore (US$41.68 billion)** in October 2025, driven by a drop in exports and a surge in imports.

While the overall **Current Account Deficit (CAD)** remains manageable (moderating to US$12.3 billion or 1.3% of GDP in Q2 FY26) due to the large surplus in the 'invisibles' trade (remittances, IT services), the persistent merchandise trade gap signals a structural weakness.

The deterioration is compounded by **global tariff shocks** (e.g., 50% US tariffs on Indian goods) and intensifying **Chinese competition**, threatening the stability of the Indian Rupee.

Main Body in Multi-Dimensional Analysis

Economic and Financial Dimensions

The Structural Gap: The merchandise trade deficit is expanding rapidly, reflecting a growth model heavily reliant on **imported capital goods and components**, coupled with **contracting exports** (like engineering goods, gems and jewellery, and textiles). In October 2025, all of India's top ten merchandise export categories contracted, barring electronics.

Current Account vs. Merchandise Trade: The Current Account Deficit (CAD) is shielded by the large and stable surplus in **Invisibles** (e.g., **private transfer receipts (remittances) of US$38.2 billion** in Q2 FY26). However, the reliance on service exports and remittances to offset the goods deficit is a structural vulnerability.

Capital Account Reliance: To finance the CAD, India relies on the **Capital Account** (FDI, FPI).

105

An over-reliance on volatile **Foreign Portfolio Investment (FPI)** makes the economy susceptible to global 'shocks' like US Federal Reserve rate changes, risking capital flight and **Rupee depreciation**.

Policy and Sectoral Dimensions

Export Competitiveness: The trade data underscores the failure of Indian manufacturing to achieve the scale and competitiveness required. Policy focus must shift from import substitution to **export promotion** by tackling logistical bottlenecks and the complexity of trade agreements.

US Tariffs and Global Tensions: The imposition of high tariffs by the US in response to India's imports of discounted Russian oil is a significant geopolitical factor directly impacting export performance, particularly for long-standing manufacturing sectors.

Chinese Competition: China's aggressive, below-cost export strategy is eroding India's competitiveness across Europe, Australia, and Africa, creating major challenges for Indian manufacturers.

Government Schemes, Positives, Negatives

Feature	Description
External Balance Components	**Current Account Deficit (CAD):** The difference between goods and services imports/exports. **Invisibles:** Services, remittances, and investment income. **FPI/FDI:** Sources of capital used to finance the CAD.
Positives (Invisibles)	**Remittances:** Large and stable inflows provide a crucial buffer to the trade deficit. **IT Services:** India remains a global leader in IT and business services exports.

Feature	Description
Negatives/Challenges	**Structural Import Dependence:** High reliance on imported crude oil, electronics, and capital goods. **Global Headwinds:** Slowing global growth and trade tensions impact goods exports. **External Vulnerability:** Reliance on volatile FPI to finance the CAD risks financial instability.

Way Forward

Targeted PLI: Implement a new phase of the **Production Linked Incentive (PLI)** scheme specifically focused on sectors with a high potential for **net export growth**.

Trade Diplomacy: Aggressively pursue **Free Trade Agreements (FTAs)** and manage escalating trade tensions with key partners like the US through diplomatic channels.

FDI Over FPI: Government policy must focus on attracting stable **Foreign Direct Investment (FDI)** over volatile FPI to finance the current account deficit.

Conclusion

The massive and growing merchandise trade deficit, reaching a record high in October 2025, is the **Achilles' heel** of the Indian economy. While the 'invisibles' surplus provides a necessary cushion, addressing this gap requires **deep structural reforms** in manufacturing competitiveness, a relentless focus on **export promotion**, and a strategy to manage geopolitical trade risks.

India-European Union FTA Talks Resume: The Geopolitical Imperative

Syllabus

GS-2: International Relations: Bilateral, regional and global groupings and

agreements involving India and/or affecting India's interests.

GS-3: Indian Economy: Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.

Context

The **India-European Union (EU)** Free Trade Agreement (FTA), officially the **Broad-based Trade and Investment Agreement (BTIA)**, entered its most intensive phase on December 8, 2025, with a high-level EU negotiating team in New Delhi.

The talks, relaunched in 2022, have made substantial progress, with **11 out of 23 chapters reportedly closed**. The shared necessity for **de-risking global supply chains** and creating a rules-based framework is driving the renewed momentum.

Key outstanding issues include **market access** for automobiles and spirits, **services**, and the technical implications of the EU's forthcoming **Carbon Border Adjustment Mechanism (CBAM)**.

Main Body in Multi-Dimensional Analysis

Trade and Economic Dimensions

Market Access and Diversification: The main goal for India is to gain **enhanced market access** for its labour-intensive sectors (textiles, leather, marine products) and IT/professional services in the high-income EU market by reducing the EU's high tariffs. The EU, in turn, seeks lower tariffs on its automobiles, wines, and spirits.

Investment and Technology: A successful FTA is expected to be a major catalyst for **European Foreign Direct Investment (FDI)** into India's advanced manufacturing and green technology sectors, facilitating critical technology transfer in line with the **'Make in India'** initiative.

Combined Economic Weight: As the EU and India combined represent of the world's GDP, the conclusion of the FTA will have a significant bearing on the **global trade architecture** and set new standards for trade sustainability.

Geopolitical and Regulatory Dimensions

De-risking Supply Chains: The FTA is a powerful tool for both sides to **diversify supply chains** away from geopolitical dependencies, with the EU viewing India as a stable, democratic alternative.

The CBAM Challenge: The EU's **Carbon Border Adjustment Mechanism (CBAM)**, a tax on carbon-intensive imports set to be enforced from January 2026, is a key point of divergence. India views CBAM as a potential **non-tariff barrier (NTB)** that could unfairly hurt Indian exports, requiring clear regulatory clarity within the FTA text.

Non-Tariff Barriers (NTBs): The negotiations are focused on reducing technical NTBs, such as complex certification procedures and technical standards, which are often more restrictive to trade than tariffs.

Government Schemes, Positives, Negatives

Feature	Description
Trade Strategy	**Broad-based Trade and Investment Agreement (BTIA):** The official name for the India-EU FTA. **PLI Schemes:** Attracting European investment and manufacturing capacity is a key aim.
Positives of the FTA	**Higher Exports:** Provides access to a massive, high-income market. **FDI Inflow:** Attracts quality foreign investment and advanced technology. **Supply Chain Resilience:** Solidifies

Feature	Description
	India's position as a reliable global manufacturing hub.
Negatives/Challenges	**IPR & Data Standards:** EU's stringent demands on IPR and data standards may challenge India's domestic pharmaceutical and IT sectors. **CBAM:** Potential carbon tariff that could hurt Indian exports if not adequately addressed. **Domestic Competition:** Certain sensitive Indian sectors may face stiff European competition.

Way Forward

CBAM Alignment: Proactively work with the EU to develop a mechanism for Indian exporters to meet the data and certification requirements of CBAM and potentially seek an exemption or transition period.

Pragmatic Compromise: India must offer reasonable concessions on high-end European goods in exchange for securing **liberal market access** for its labour-intensive sectors.

Standard Simplification: Negotiate mutual recognition agreements for **Sanitary and Phytosanitary (SPS)** and **Technical Barriers to Trade (TBT)** standards.

Conclusion

The accelerated India-EU FTA talks on December 8, 2025, reflect a strong political commitment to conclude the agreement rapidly. A successful BTIA will be a **geopolitical and economic force multiplier** for India, helping to diversify its trade, attract high-quality technology, and integrate it more deeply into global supply chains.

Topic 3: RBI's 5th Bi-monthly Monetary Policy and Economic Forecasts

Syllabus: GS-III: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment. Monetary Policy.

Context: The Reserve Bank of India (RBI) announced its 5th Bi-monthly Monetary Policy, maintaining the repo rate but updating its key forecasts, including a robust **7.3% real GDP growth for FY26**.

Main Body in Multi-Dimensional Analysis:

Monetary Stance: The decision to keep the **Repo Rate unchanged** signifies a continued "withdrawal of accommodation" stance, prioritizing inflation control while supporting growth.

Growth Projections: The **7.3% GDP forecast** indicates strong domestic demand and a potential recovery in private investment, despite global headwinds.

External Sector Management: The projection of a **Current Account Deficit (CAD) below 2% of GDP** (and 1.3% in Q2 FY26) signals a stable external sector, manageable foreign exchange flow, and limited pressure on the rupee.

Liquidity Management: Announcement of a **₹1 trillion OMO purchase** (injection of durable liquidity) and a **$5 billion USD/INR buy-sell swap** shows the RBI's proactive use of unconventional tools to manage systemic liquidity and currency volatility.

Positives, Negatives, Government Schemes:

Positives: Strong GDP forecast boosts investor confidence. Proactive liquidity measures stabilize the financial system. Low CAD indicates sound macroeconomic fundamentals.

Negatives: Core inflation remains sticky. Global uncertainty (oil prices, trade) poses risks to both growth and inflation targets.

Govt Schemes/Related Initiatives: The RBI's policy complements the government's **PLI (Production Linked Incentive)** schemes and infrastructure spending via the **National Infrastructure Pipeline (NIP)**, which fuel the growth projections.

Examples: The OMO purchase is a direct liquidity injection similar to actions taken during the 2020-21 period to support the bond market.

Way Forward:

Data-Driven Approach: Future policy decisions should remain flexible, closely monitoring food inflation and global commodity prices.

Financial Stability: Continued focus on the health of the Non-Banking Financial Companies (NBFCs) and cooperative banks.

Communication: Clear and consistent forward guidance on the exit path from the "withdrawal of accommodation" stance.

Conclusion: The RBI's 5th Bi-monthly Policy is a balanced approach—it is cautiously optimistic on growth while firmly anchoring inflation expectations through liquidity management, thus securing India's position as a stable economic outlier.

Practice Mains Question: "Discuss the trade-offs and rationale behind the RBI's decision to maintain the status quo on the Repo Rate despite a strong GDP growth forecast. How effective are tools like OMO and Currency Swaps in managing systemic liquidity?" (15 marks, 250 words)

Topic 3: SEBI Overhauls Merchant Banker Regulations

Syllabus: GS-III: Indian Economy; Mobilization of resources; Financial markets and institutions.

Context: SEBI overhauled regulations for Merchant Bankers (MBs), introducing a **Capital Adequacy Framework** and mandating requirements for **Liquid Net Worth (NW)**, classifying MBs into Category I (Min NW: ₹50 cr) and Category II (Min NW: ₹10 cr).

Main Body in Multi-Dimensional Analysis:

Financial Stability: The introduction of higher NW and liquid NW aims to protect the capital market from systemic risk and ensure MBs have adequate resources to fulfill their underwriting and issue management obligations.

Market Segmentation: Categorization (I and II) promotes specialization. Category I can manage all equity issues (including Main Board IPOs), while Category II is restricted, ensuring only financially sound entities handle complex public issues.

Investor Protection: The enhanced financial strength of MBs acts as a safeguard, ensuring professional and ethical management of market transactions, thereby boosting investor confidence.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Professionalism:** Raises the entry barrier, weeding out smaller, potentially non-compliant players. **Market Quality:** Improves the overall quality and reliability of IPO and issue management.
Negatives	**Entry Barrier:** May stifle competition by making it difficult for new, smaller, but innovative firms to enter the market, leading to industry consolidation.
Govt Schemes	**SEBI Regulations:** Part of SEBI's mandate under the **Securities and Exchange Board of India Act, 1992** to protect investors and regulate the securities market.

Examples: Category II MBs can manage SME platform IPOs, which are less complex than Main Board IPOs, thus maintaining space for smaller players in specific segments.

Way Forward: SEBI should monitor the impact on small and medium enterprises (SMEs) accessing the market. They may need to create a simplified framework for smaller MBs catering exclusively to the SME exchange.

Conclusion: The SEBI overhaul is a decisive regulatory step to professionalize and stabilize the merchant banking sector, ensuring that only entities with proven financial strength manage the critical processes of capital mobilization.

Practice Mains Question: "How does SEBI's introduction of a Capital Adequacy Framework for Merchant Bankers contribute to financial stability and investor protection? Discuss the potential trade-off between strict regulation and market competition." (10 marks, 150 words)

Amazon's $35 Billion Investment and 'Atmanirbhar Bharat' Vision

Syllabus: GS-III: Indian Economy; Investment models; Effects of liberalization on the economy.

Context: Amazon announced a cumulative investment of nearly **$40 billion** (with a $35 billion future plan) in India, calling itself the largest foreign investor, job creator, and enabler of e-commerce exports, aligning its efforts with the **'Atmanirbhar Bharat'** vision.

Main Body in Multi-Dimensional Analysis:

FDI & Job Creation: The investment is a massive vote of confidence in India's digital economy, creating direct and indirect jobs across logistics, technology, and ancillary services.

Digitalization of MSMEs: Amazon's programs enable hundreds of thousands of Indian Micro, Small, and Medium Enterprises

(MSMEs) to sell globally, acting as a crucial channel for e-commerce exports.

Policy Debate: The announcement fuels the debate on the role of large foreign e-commerce players vs. domestic retailers, and the need for clear Foreign Direct Investment (FDI) and competition policies to ensure a level playing field.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Tech Transfer:** Brings global best practices and Artificial Intelligence (AI) technology into India. **Export Boost:** Facilitates e-commerce exports, helping local brands reach global consumers.
Negatives	**Market Domination:** Concerns over predatory pricing and potential market monopolization, harming small, traditional retailers. **Data Ownership:** Raises questions about consumer data management by large foreign tech giants.
Govt Schemes	**Startup India; Digital India; Atmanirbhar Bharat** (Amazon explicitly leverages this framework to project its contribution). **ONDC (Open Network for Digital Commerce):** Government initiative to counter marketplace dominance.

Examples: Amazon's investment includes building large-scale physical infrastructure (warehouses, data centers) and digital infrastructure (AI/ML development hubs).

Way Forward: The government must swiftly implement the **National E-commerce Policy** to balance the interests of foreign investors and domestic players. Policies like ONDC should be strategically promoted to decentralize e-commerce.

Conclusion: Amazon's massive investment validates India's robust digital economy. To truly align with *Atmanirbhar Bharat*, this capital must be steered toward inclusive growth that also safeguards local competition and data privacy.

Practice Mains Question: "Analyze the economic impact of Amazon's large-scale investment in India, particularly its claims of enabling e-commerce exports. How can the government leverage this FDI while ensuring that it aligns with the objectives of 'Atmanirbhar Bharat' and protects small retailers?" (15 marks, 250 words)

The Viksit Bharat – G RAM G Bill, 2025 (Replacing MGNREGA)

Syllabus

GS Paper II: Welfare schemes for vulnerable sections; Issues relating to development and management of Social Sector/Services.

GS Paper III: Indian Economy (Employment); Issues related to planning, mobilization of resources, and growth.

Context

The Union Government introduced the **Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-G RAM G) Bill, 2025,** to repeal and replace the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005.

Multi-Dimensional Analysis

Legislative Shift: Transition from an open-ended "demand-driven" model to a "normative allocation" model with fixed central budgets.

Fiscal Federalism: A fundamental change in funding. While the Centre paid 100% of unskilled wages under MGNREGA, the new Bill mandates a **60:40 split** (90:10 for Hill/NE states).

Economic Strategy: Introduction of a **60-day mandatory pause** during peak agricultural seasons to prevent rural labor shortages and artificial wage inflation in the farming sector.

Infrastructure Focus: Directs labor toward the **Viksit Bharat National Rural Infrastructure Stack**, integrating projects with the **PM Gati Shakti** Master Plan.

Positives, Negatives, and Government Schemes

Positives:

Statutory guarantee increased from **100 to 125 days** of work.

Use of **AI-based fraud detection** and GPS monitoring to curb misappropriation.

Creation of durable community assets (Water bodies, Cold chains).

Negatives:

Fiscal Burden on States: Many debt-stressed states may struggle to fund their 40% share of wages.

End of Demand-Driven Rights: Fixed "normative allocations" might lead to work being denied once the budget cap is reached.

Seasonal Hardship: The 60-day pause may leave landless laborers without a safety net during lean periods if agricultural work is unavailable.

Related Schemes: PM Gati Shakti, Mission Amrit Sarovar, and **Lakhpati Didi**.

Examples

Asset Creation: Integration with **Mission Amrit Sarovar** has already rejuvenated 68,000+ water bodies; the new Bill seeks to scale this specifically for drought-proofing.

Way Forward

Flexible Pausing: The 60-day pause should be localized based on agro-climatic zones rather than a blanket state-wide notification.

Financial Buffers: Establishing a revolving fund to assist poorer states in meeting their wage-sharing obligations.

Conclusion

The VB-G RAM G Bill signals a shift from "poverty alleviation" to "productive employment," aiming to modernize the rural economy, though its success depends on maintaining the "Right to Work" essence of its predecessor.

Practice Mains Question: *"Analyse the structural changes proposed in the VB-G RAM G Bill, 2025. Does the shift from a demand-driven to a normative-allocation model compromise the rights of rural labor? Discuss."*

The New Insurance Bill, 2025 (Sabka Bima Sabki Raksha)

Syllabus

GS Paper III: Indian Economy and issues relating to mobilization of resources; Investment models.

Context

The Union Government moved the **Sabka Bima Sabki Raksha (Amendment of Insurance Laws) Bill, 2025**, aiming for "Insurance for All by 2047."

Multi-Dimensional Analysis

Liberalization: The Bill permits **100% Foreign Direct Investment (FDI)** in the insurance sector, seeking to bring in global capital and expertise.

Regulatory Empowerment: IRDAI has been granted SEBI-style powers, including "disgorgement" (forcing companies to return unlawfully gained profits).

Operational Autonomy: Provides **LIC** with the freedom to open zonal offices and restructure overseas operations without constant government approvals.

Market Expansion: Moves toward **Composite Licensing**, allowing a single insurer to offer life, health, and general insurance products.

Positives, Negatives, and Government Schemes

Positives:

Increased capital inflow will boost insurance penetration (currently at 3.7% of GDP).

Simplified merger and acquisition rules to encourage market consolidation.

Stronger policyholder protection through mandatory data safeguards.

Negatives:

Reinsurance Risk: The market remains dominated by GIC Re, creating a concentration risk.

Omissions: The Bill does not explicitly create a framework for "Captive Insurance" for large corporations.

Related Schemes: Ayushman Bharat (PM-JAY) and **PM Fasal Bima Yojana**.

Examples

Global Benchmarking: The shift to composite licenses aligns India with global markets like the UK and Australia.

Way Forward

Micro-Insurance: The government must encourage "niche" players for rural and micro-insurance to ensure the 100% FDI benefits the grassroots.

Risk Diversification: Opening up the reinsurance market further to reduce dependence on a single state-owned entity.

Conclusion

By modernizing 1930s-era laws, the Insurance Bill 2025 creates a competitive, capital-rich environment necessary for India's journey toward a $10 trillion economy.

Practice Mains Question: *"To what extent does the New Insurance Bill 2025 address the structural constraints of the Indian insurance sector? Critically evaluate."*

Rupee at 90.80: Navigating the Currency Volatility

Syllabus

GS Paper III: Indian Economy; Effects of liberalization; Investment models; Infrastructure (Energy/Oil).

Context

On December 15, 2025, the Indian Rupee (INR) hit a historic low of **90.80** against the USD, driven by FPI outflows and a strengthening Dollar Index.

Multi-Dimensional Analysis

Macroeconomic: Increased "Imported Inflation," especially in fuel and edible oils, putting pressure on the RBI's 4% inflation target.

Trade: While exports become competitive, the global demand slowdown limits the benefits of a weaker rupee.

Fiscal: Widening Current Account Deficit (CAD) as the cost of servicing external debt rises.

Positives, Negatives, and Government Schemes

Positives

Boost to remittance inflows from NRIs.

Incentive for "Make in India" as imports become prohibitively expensive.

Negatives:

Higher costs for students studying abroad.

Pressure on the Forex reserves as RBI intervenes to manage volatility.

Related Schemes: Liberalised Remittance Scheme (LRS), **FAME-II** (to reduce oil dependence).

Examples

The RBI's use of **$5 billion buy/sell swaps** in December 2025 was a tactical move to provide liquidity without depleting reserves rapidly.

Way Forward

Rupee Internationalization: Promoting trade settlement in INR with more partners like Jordan and the UAE.

Structural Reforms: Reducing dependency on "hot money" (FPI) and encouraging long-term FDI.

Conclusion

A rupee at 90+ reflects global dollar strength rather than domestic weakness, yet it necessitates a cautious fiscal approach to prevent a spiral of cost-push inflation.

Practice Mains Question: *"Discuss the impact of the Rupee's depreciation to the 90-level on India's trade balance. Is the RBI's policy of 'managed volatility' still sustainable in 2025?"*

3. 100% FDI in Insurance: Navigating "Insurance for All by 2047"

Syllabus: GS III (Economy); GS II (Statutory/Regulatory Bodies)

Context

On Dec 16, 2025, the Cabinet cleared the **Insurance (Amendment) Bill**, raising the **FDI limit from 74% to 100%**. This is a major reform aimed at increasing insurance penetration in India.

Main Body: Multi-Dimensional Analysis

The Capital Deficit: India's insurance penetration stands at **4% of GDP** (World average: 7%). To cover the remaining 96% of the population, an estimated **$100 billion capital infusion** is needed. 100% FDI allows global players (Allianz, AXA) to operate without the friction of an Indian partner.

Product Innovation (Niche Insurers): Domestic firms often stick to "Endowment" plans. 100% FDI will bring in **Micro-insurers** and **Climate-risk insurers** who use global data models to cover specific risks like "Urban Flooding" or "Crop Heatwaves."

Deeper G-Sec Market: Insurance companies are long-term investors. A surge in foreign insurers will provide the government with **"Patient Capital"** for its ₹111 lakh crore **National Infrastructure Pipeline (NIP)**.

Regulatory Evolution (IRDAI 2.0): The Bill grants IRDAI "Adjudicatory Powers" similar to SEBI. It can now levy penalties of up to **₹25 crore** for mis-selling, protecting Indian consumers from aggressive global sales tactics.

Positives, Negatives, and Government Schemes

Positives: * **Consumer Choice:** Lower premiums due to global competition.

Technology: AI-based underwriting will speed up claim settlements.

Negatives: * **Data Sovereignty:** Sensitive medical and financial data of Indians may reside on foreign servers.

Neglect of Rural Areas: Foreign firms might focus only on "Creamy Layer" urban customers.

Government Schemes: Ayushman Bharat, PMJJBY, PMSBY.

Examples

Singapore Partnership: The MoU between India and Singapore for the **Advanced Manufacturing NCoE** in Chennai (Dec 15) reflects how foreign capital is now being linked to specific sector outcomes.

Way Forward

The IRDAI must mandate **"Rural Service Obligations"** (RSOs) for 100% FDI firms, ensuring they serve the bottom of the pyramid. Data localization norms must be strictly enforced.

Conclusion

By decoupling from the mandatory "Joint Venture" model, India has cleared the legal jungle for global finance, turning insurance into a core pillar of the $10 trillion economy.

Practice Mains Question: *"The liberalization of the insurance sector to 100% FDI is an essential step toward 'Viksit Bharat'. However, it poses significant challenges for 'Data Sovereignty' and 'Financial Inclusion'. Discuss."*

2. One Nation, One Election (ONOE) Bill: The Federalism Debate

Syllabus: GS II (Indian Constitution, Federalism, Elections)

Context

On December 17, 2025, the Union Law Minister introduced the **Constitution (One Hundred and Ninth Amendment) Bill, 2025**, popularly known as the **"One Nation, One Election" Bill**. The Bill seeks to synchronize elections for the Lok Sabha and all State Legislative Assemblies.

Detailed Multi-Dimensional Analysis

1. The Constitutional Overhaul (The "15 Amendments")

The Bill is based on the **Ram Nath Kovind Panel Report** and proposes amendments to **Article 83** (Duration of Houses), **Article 85** (Dissolution of Lok Sabha), and **Article 172** (Duration of State Legislatures).

The Transition Clause: The most controversial provision is the **"Appointed Date."** The Bill proposes that all state assemblies elected after the "Appointed Date" (likely 2029) will have a truncated term to align with the next Lok Sabha cycle. This means a state government elected in 2027 might only serve for 2 years.

2. Economic vs. Democratic Cost

Fiscal Prudence: The Election Commission estimates that simultaneous elections will save the exchequer ₹**10,000 crore** every five years. It also reduces the **"Model Code of Conduct (MCC) Paralysis,"** where development projects are stalled for months due to frequent state elections.

114

The **"Voter Judgement" Dilemma:** Critics, citing the **IDFC Institute Study**, argue that when elections are held simultaneously, there is a **77% chance** that a voter will choose the same party for both State and Centre. This undermines the federal structure, as national "waves" or "personality cults" could overshadow local issues (like water, sanitation, or regional identity).

3. Logistical Nightmares & Solutions

EVM/VVPAT Shortage: The ECI requires **3x the current number of EVMs** (approx. 30 lakh units) to hold simultaneous polls. The Bill allocates a **₹15,000 crore** special fund for this procurement.

Central Forces Deployment: Moving Central Armed Police Forces (CAPF) across the entire subcontinent simultaneously is a security nightmare. The Bill proposes a **"Phased Synchronization"**—holding elections in 3 large phases over 4 months, rather than a single day.

Positives, Negatives, and Government Schemes

Dimension	Positives	Negatives/Challenges
Governance	Continuity in policy implementation; no MCC disruptions.	Reduced accountability; governments might "sleep" for 4 years and work only in the 5th year.
Federalism	Promotes a unified national outlook.	Dilutes regional parties; State issues might get drowned in national rhetoric.
Legal	Reduces litigation regarding election timings.	Requires ratification by **50% of States** (under Article 368),

Dimension	Positives	Negatives/Challenges
		which is politically difficult.

Related Constitutional Provisions: Article 324 (Superintendence of Elections), **Article 356** (President's Rule).

Example/Case Study

Odisha (2019): Odisha held simultaneous Assembly and Lok Sabha elections. Interestingly, voters engaged in **"Split Voting"**—choosing BJD for the State and BJP for the Centre. This example is often cited by the government to counter the argument that ONOE kills voter discernment.

Way Forward

Instead of a rigid "One Cycle," India could explore the **Law Commission's suggestion (2018)** of a **"Two-Cycle System"**—one cycle coinciding with Lok Sabha and another mid-term cycle (2.5 years later) for the remaining states. This balances administrative efficiency with federal flexibility.

Conclusion

"One Nation, One Election" is administratively efficient but constitutionally disruptive. The challenge lies in ensuring that the **"efficiency of the process"** does not compromise the **"accountability of the representative."**

Mains Practice Question:

" 'One Nation, One Election' is a double-edged sword that promises administrative efficiency at the potential cost of federal diversity. Critically examine the constitutional and political challenges in implementing this reform."

3. Securities Markets Code Bill, 2025: Reforming Capital Governance

Syllabus: GS Paper III: Indian Economy and issues relating to planning, mobilization of

resources, and growth; GS Paper II: Governance (Regulatory bodies).

Context: On December 19, 2025, the Finance Minister introduced the **Securities Markets Code Bill, 2025**, which aims to consolidate eight different laws—including the SEBI Act, SCRA, and Depositories Act—into a single, unified code.

Multi-Dimensional Analysis

Legal Consolidation: The current securities landscape is fragmented. This Bill provides a "One Nation, One Code" for capital markets, reducing the compliance burden for domestic and foreign institutional investors (FIIs). It follows the model of the Insolvency and Bankruptcy Code (IBC).

Decriminalization & Ease of Doing Business: The Bill classifies offences into two categories. **Category I** (Procedural lapses) now only carries civil penalties, while **Category II** (Fraud/Market Abuse) remains a criminal offence. This reduces "fear psychosis" among directors while maintaining market integrity.

Investor Protection 2.0: The Bill introduces a mandatory **"Time-Bound Inspection"** mechanism. SEBI must conclude investigations within 12 months, preventing long-drawn legal battles that trap investor capital.

Accountability of Regulators: For the first time, a "Regulatory Coordination Committee" is proposed to resolve conflicts between SEBI, RBI, and IRDAI, particularly in the cross-sectoral fintech space (e.g., insurance-linked mutual funds).

Digital Sovereignty: The Code mandates that all critical market data (NSE/BSE records) must be stored in **Indian Data Centers**, protecting the economy from external cyber-shocks and data-colonialism.

Tabulation: Analysis and Schemes

Feature	Analysis
Positives	Drastic reduction in litigation; Uniform definitions for "Securities"; Enhanced SEBI powers for overseas asset recovery; Boost to Retail participation.
Negatives	Concentration of power in the SEBI Board; Complexity of transitioning from multiple old laws; Lack of clarity on "Crypto-assets" within the Code.
Govt. Schemes	**Digital India (Fintech)**, **Viksit Bharat @2047**, **National Strategy for Financial Education**.

Example: The **1xBet betting app case** (Dec 19 news), where the ED attached assets of actors, highlights the need for this Code to give SEBI better "follow-the-money" powers across digital borders.

Way Forward: The government must ensure the **Securities Appellate Tribunal (SAT)** is staffed with technical experts to handle the surge in appeals post-consolidation.

Conclusion: The Securities Markets Code Bill is the "second-generation reform" needed to turn India's stock markets from a speculative arena into a reliable engine of long-term capital for a $10 trillion economy.

Mains Practice Question: "The Securities Markets Code Bill 2025 is an attempt to balance the 'regulatory stick' with the 'facilitation carrot'." Analyze its impact on the ease of doing business in India. (250 Words)

6. SEBI Mutual Fund Reform 2025: The "Cost-of-Investing" Revolution

Syllabus: GS III (Indian Economy – Capital Markets; Statutory Bodies – SEBI).

Context: Effective December 2025, SEBI has implemented a sweeping overhaul of the **Mutual Fund Expense Ratio** framework. The traditional Total Expense Ratio (TER)

116

has been replaced by the **Base Expense Ratio (BER)**, alongside a drastic cut in brokerage caps.

Multi-Dimensional Analysis

Unbundling for Transparency: Previously, the TER was a "black box" that included fund management fees, marketing, and statutory levies like GST. The new **BER framework** excludes taxes and levies. This allows investors to see exactly how much they are paying the Asset Management Company (AMC) versus how much is going to the government—ending the era of "hidden costs."

Curbing "Churning" for Commissions: A major reform is the reduction of brokerage caps from **12 bps to 6 bps** in the cash market. High brokerage fees often incentivized AMCs to trade excessively (churning) to benefit sister-concern brokerages. By halving these caps, SEBI is ensuring that the fund manager's interest is purely in "holding" for returns rather than "trading" for commissions.

Economies of Scale for Retail: The new slab-based BER ensures that as a fund grows in size (AUM), the cost to the investor must decrease. For a fund exceeding ₹50,000 crore, the BER is now capped at **0.95%**. This democratizes wealth by ensuring that the "India Growth Story" doesn't just enrich AMCs but maximizes the "Net Asset Value" for the small SIP investor.

The Shift to Passive Investing: By lowering the cost of active funds, SEBI is forcing active managers to generate "Alpha" (excess returns). If they can't, the lower cost of **Index Funds and ETFs** (now capped at 0.90% inclusive) will naturally drive the market toward passive investing, similar to developed markets like the US.

Comparative Analysis: The Cost Revolution

Parameter	Pre-2025 Framework (TER)	New 2025 Framework (BER)	Impact on Investor
Statutory Levies	Included in the cap.	Excluded (Charged over BER).	Total transparency of tax vs. fee.
Brokerage Cap	12 basis points (bps).	6 basis points (bps).	Stops unnecessary portfolio turnover.
Exit Load Bonus	Extra 5 bps allowed.	Scrapped	Lower cost of exiting/switching funds.
AUM Slabs	Broad and expensive.	Granular and Reduced.	Large funds become significantly cheaper.

Example: An investor with a ₹1 lakh portfolio in an Equity Fund was previously paying ~₹2,250 annually in fees. Under the new BER + reduced brokerage, even with GST added separately, the total cost drops to ~₹2,050. Over a 20-year SIP, this 20-bps difference results in an additional **₹3.5 lakh** in the final corpus due to the power of compounding.

Way Forward:

Performance-Linked Fees: SEBI should now move toward a "Performance-only" model where the AMC charges a base fee but can only charge a "Success Fee" if they beat the Nifty/Sensex benchmark.

Digital KYC Portability: To complement low costs, SEBI must enable "One-Click Switching" between AMCs to empower investors to move to lower-cost providers easily.

Direct Plan Awareness: Increasing the penetration of "Direct Plans" (which have no distributor commission) is the next logical step to maximize retail wealth.

Conclusion: This reform is SEBI's most aggressive pro-consumer move in a decade. It transforms the Indian Mutual Fund industry from a "Sales-led" model to a "Performance-led" one, ensuring the common man's savings are not eroded by administrative friction.

4. Environment & Economy: The Green Credit Programme (GCP) 2.0

Syllabus: GS Paper III – Environmental Conservation; Indian Economy and Sustainable Development.

Context: On December 12, 2025, the Ministry of Environment, Forest and Climate Change (MoEFCC) issued updated guidelines for the **Green Credit Programme**, introducing a "credibility first" approach that prioritizes the survival of plantations over mere quantity.

Main Body: Multi-dimensional Analysis

Market-Based Mechanism: Unlike the traditional "Command and Control" approach, GCP uses a market-based incentive to reward voluntary environmental actions.

LiFE Movement Integration: The GCP is a key pillar of the **Lifestyle for Environment (LiFE)** initiative, aiming to transform environmental protection into a mass movement (Jan Andolan).

Corporate Accountability: Companies can now use Green Credits to meet their **ESG (Environmental, Social, and Governance)** obligations, creating a private-sector funding stream for afforestation.

Beyond Carbon: While Carbon Credits focus strictly on emissions, Green Credits cover 8 diverse sectors including water conservation, sustainable agriculture, and waste management.

Positives, Negatives, and Government Schemes:

Positives	Negatives/Challenges	Government Schemes/Initiatives
Holistic Restoration: Encourages water harvesting alongside tree planting.	**Greenwashing Risks:** Companies might claim credits without actual ecological impact.	**MISHTI Scheme:** For mangrove restoration under GCP.
Rural Livelihoods: Generates local employment in maintaining nurseries.	**Verification Issues:** Difficulty in auditing remote projects in real-time.	**Amrit Dharohar:** For wetland conservation.
Tradability: Credits can be traded on a domestic platform, providing a revenue model.	**Land Availability:** Identifying 58,000+ hectares of degraded land is an administrative hurdle.	**Ecomark Scheme:** For labeling environment-friendly products.

Example: States like **Madhya Pradesh and Chhattisgarh** have identified nearly 40% of the total land bank available for GCP, showcasing a proactive federal response.

Way Forward:

Digital Verification: Use satellite imagery and **Drone Technology** for a 5-year monitoring cycle to ensure sapling survival.

Standardization: Establishing a clear "Equivalency Scale" to define how many "Water Credits" equal one "Afforestation Credit."

Conclusion: The Green Credit Programme 2.0 transitions India from a "Carbon-centric" to a "Nature-centric" economy, setting a global benchmark for voluntary environmental actions.

Practice Mains Question: *"Critically examine how the Green Credit Programme can bridge the gap between industrial growth and ecological conservation in India."* (250 Words)

The Viksit Bharat – G RAM G Bill, 2025 (Replacing MGNREGA)

Syllabus

GS Paper II: Welfare schemes for vulnerable sections; Issues relating to development and management of Social Sector/Services.

GS Paper III: Indian Economy (Employment); Issues related to planning, mobilization of resources, and growth.

Context

The Union Government introduced the **Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-G RAM G) Bill, 2025**, to repeal and replace the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005.

Multi-Dimensional Analysis

Legislative Shift: Transition from an open-ended "demand-driven" model to a "normative allocation" model with fixed central budgets.

Fiscal Federalism: A fundamental change in funding. While the Centre paid 100% of unskilled wages under MGNREGA, the new Bill mandates a **60:40 split** (90:10 for Hill/NE states).

Economic Strategy: Introduction of a **60-day mandatory pause** during peak agricultural seasons to prevent rural labor shortages and artificial wage inflation in the farming sector.

Infrastructure Focus: Directs labor toward the **Viksit Bharat National Rural Infrastructure Stack**, integrating projects with the **PM Gati Shakti** Master Plan.

Positives, Negatives, and Government Schemes

Positives:

Statutory guarantee increased from **100 to 125 days** of work.

Use of **AI-based fraud detection** and GPS monitoring to curb misappropriation.

Creation of durable community assets (Water bodies, Cold chains).

Negatives:

Fiscal Burden on States: Many debt-stressed states may struggle to fund their 40% share of wages.

End of Demand-Driven Rights: Fixed "normative allocations" might lead to work being denied once the budget cap is reached.

Seasonal Hardship: The 60-day pause may leave landless laborers without a safety net during lean periods if agricultural work is unavailable.

Related Schemes: PM Gati Shakti, Mission Amrit Sarovar, and **Lakhpati Didi**.

Examples

Asset Creation: Integration with **Mission Amrit Sarovar** has already rejuvenated 68,000+ water bodies; the new Bill seeks to scale this specifically for drought-proofing.

Way Forward

Flexible Pausing: The 60-day pause should be localized based on agro-climatic zones rather than a blanket state-wide notification.

Financial Buffers: Establishing a revolving fund to assist poorer states in meeting their wage-sharing obligations.

Conclusion

The VB-G RAM G Bill signals a shift from "poverty alleviation" to "productive employment," aiming to modernize the rural economy, though its success depends on maintaining the "Right to Work" essence of its predecessor.

Practice Mains Question: *"Analyse the structural changes proposed in the VB-G RAM G Bill, 2025. Does the shift from a*

119

demand-driven to a normative-allocation model compromise the rights of rural labor? Discuss."

3. The New Insurance Bill, 2025 (Sabka Bima Sabki Raksha)

Syllabus

GS Paper III: Indian Economy and issues relating to mobilization of resources; Investment models.

Context

The Union Government moved the **Sabka Bima Sabki Raksha (Amendment of Insurance Laws) Bill, 2025**, aiming for "Insurance for All by 2047."

Multi-Dimensional Analysis

Liberalization: The Bill permits **100% Foreign Direct Investment (FDI)** in the insurance sector, seeking to bring in global capital and expertise.

Regulatory Empowerment: IRDAI has been granted SEBI-style powers, including "disgorgement" (forcing companies to return unlawfully gained profits).

Operational Autonomy: Provides **LIC** with the freedom to open zonal offices and restructure overseas operations without constant government approvals.

Market Expansion: Moves toward **Composite Licensing**, allowing a single insurer to offer life, health, and general insurance products.

Positives, Negatives, and Government Schemes

Positives:

Increased capital inflow will boost insurance penetration (currently at 3.7% of GDP).

Simplified merger and acquisition rules to encourage market consolidation.

Stronger policyholder protection through mandatory data safeguards.

Negatives:

Reinsurance Risk: The market remains dominated by GIC Re, creating a concentration risk.

Omissions: The Bill does not explicitly create a framework for "Captive Insurance" for large corporations.

Related Schemes: Ayushman Bharat (PM-JAY) and **PM Fasal Bima Yojana**.

Examples

Global Benchmarking: The shift to composite licenses aligns India with global markets like the UK and Australia.

Way Forward

Micro-Insurance: The government must encourage "niche" players for rural and micro-insurance to ensure the 100% FDI benefits the grassroots.

Risk Diversification: Opening up the reinsurance market further to reduce dependence on a single state-owned entity.

Conclusion

By modernizing 1930s-era laws, the Insurance Bill 2025 creates a competitive, capital-rich environment necessary for India's journey toward a $10 trillion economy.

Practice Mains Question: *"To what extent does the New Insurance Bill 2025 address the structural constraints of the Indian insurance sector? Critically evaluate."*

6. Rupee at 90.80: Navigating the Currency Volatility

Syllabus

GS Paper III: Indian Economy; Effects of liberalization; Investment models; Infrastructure (Energy/Oil).

Context

On December 15, 2025, the Indian Rupee (INR) hit a historic low of **90.80** against the USD, driven by FPI outflows and a strengthening Dollar Index.

Multi-Dimensional Analysis

Macroeconomic: Increased "Imported Inflation," especially in fuel and edible oils, putting pressure on the RBI's 4% inflation target.

Trade: While exports become competitive, the global demand slowdown limits the benefits of a weaker rupee.

Fiscal: Widening Current Account Deficit (CAD) as the cost of servicing external debt rises.

Positives, Negatives, and Government Schemes

Positives:

Boost to remittance inflows from NRIs.

Incentive for "Make in India" as imports become prohibitively expensive.

Negatives:

Higher costs for students studying abroad.

Pressure on the Forex reserves as RBI intervenes to manage volatility.

Related Schemes: Liberalised Remittance Scheme (LRS), **FAME-II** (to reduce oil dependence).

Examples

The RBI's use of **$5 billion buy/sell swaps** in December 2025 was a tactical move to provide liquidity without depleting reserves rapidly.

Way Forward

Rupee Internationalization: Promoting trade settlement in INR with more partners like Jordan and the UAE.

Structural Reforms: Reducing dependency on "hot money" (FPI) and encouraging long-term FDI.

Conclusion

A rupee at 90+ reflects global dollar strength rather than domestic weakness, yet it necessitates a cautious fiscal approach to prevent a spiral of cost-push inflation.

Practice Mains Question: *"Discuss the impact of the Rupee's depreciation to the 90-level on India's trade balance. Is the RBI's policy of 'managed volatility' still sustainable in 2025?"*

3. 100% FDI in Insurance: Navigating "Insurance for All by 2047"

Syllabus: GS III (Economy); GS II (Statutory/Regulatory Bodies)

Context

On Dec 16, 2025, the Cabinet cleared the **Insurance (Amendment) Bill**, raising the **FDI limit from 74% to 100%**. This is a major reform aimed at increasing insurance penetration in India.

Main Body: Multi-Dimensional Analysis

The Capital Deficit: India's insurance penetration stands at **4% of GDP** (World average: 7%). To cover the remaining 96% of the population, an estimated **$100 billion capital infusion** is needed. 100% FDI allows global players (Allianz, AXA) to operate without the friction of an Indian partner.

Product Innovation (Niche Insurers): Domestic firms often stick to "Endowment" plans. 100% FDI will bring in **Micro-insurers** and **Climate-risk insurers** who use global data models to cover specific risks like "Urban Flooding" or "Crop Heatwaves."

Deeper G-Sec Market: Insurance companies are long-term investors. A surge in foreign insurers will provide the government with **"Patient Capital"** for its ₹111 lakh crore **National Infrastructure Pipeline (NIP)**.

Regulatory Evolution (IRDAI 2.0): The Bill grants IRDAI "Adjudicatory Powers" similar to SEBI. It can now levy penalties of up to **₹25 crore** for mis-selling, protecting Indian consumers from aggressive global sales tactics.

Positives, Negatives, and Government Schemes

Positives: * Consumer Choice: Lower premiums due to global competition.

Technology: AI-based underwriting will speed up claim settlements.

Negatives: * Data Sovereignty: Sensitive medical and financial data of Indians may reside on foreign servers.

Neglect of Rural Areas: Foreign firms might focus only on "Creamy Layer" urban customers.

Government Schemes: Ayushman Bharat, PMJJBY, PMSBY.

Examples

Singapore Partnership: The MoU between India and Singapore for the **Advanced Manufacturing NCoE** in Chennai (Dec 15) reflects how foreign capital is now being linked to specific sector outcomes.

Way Forward

The IRDAI must mandate **"Rural Service Obligations"** (RSOs) for 100% FDI firms, ensuring they serve the bottom of the pyramid. Data localization norms must be strictly enforced.

Conclusion

By decoupling from the mandatory "Joint Venture" model, India has cleared the legal jungle for global finance, turning insurance into a core pillar of the $10 trillion economy.

Practice Mains Question: *"The liberalization of the insurance sector to 100% FDI is an essential step toward 'Viksit Bharat'. However, it poses significant challenges for 'Data Sovereignty' and 'Financial Inclusion'. Discuss."*

3. Securities Markets Code Bill, 2025: Reforming Capital Governance

Syllabus: GS Paper III: Indian Economy and issues relating to planning, mobilization of resources, and growth; GS Paper II: Governance (Regulatory bodies).

Context: On December 19, 2025, the Finance Minister introduced the **Securities Markets Code Bill, 2025**, which aims to consolidate eight different laws—including the SEBI Act, SCRA, and Depositories Act—into a single, unified code.

Multi-Dimensional Analysis

Legal Consolidation: The current securities landscape is fragmented. This Bill provides a "One Nation, One Code" for capital markets, reducing the compliance burden for domestic and foreign institutional investors (FIIs). It follows the model of the Insolvency and Bankruptcy Code (IBC).

Decriminalization & Ease of Doing Business: The Bill classifies offences into two categories. **Category I** (Procedural lapses) now only carries civil penalties, while **Category II** (Fraud/Market Abuse) remains a criminal offence. This reduces "fear psychosis" among directors while maintaining market integrity.

Investor Protection 2.0: The Bill introduces a mandatory **"Time-Bound Inspection"** mechanism. SEBI must conclude investigations within 12 months, preventing long-drawn legal battles that trap investor capital.

Accountability of Regulators: For the first time, a "Regulatory Coordination Committee" is proposed to resolve conflicts between SEBI, RBI, and IRDAI, particularly in the cross-sectoral fintech space (e.g., insurance-linked mutual funds).

Digital Sovereignty: The Code mandates that all critical market data (NSE/BSE records) must be stored in **Indian Data Centers**, protecting the economy from external cyber-shocks and data-colonialism.

Tabulation: Analysis and Schemes

Feature	Analysis
Positives	Drastic reduction in litigation; Uniform definitions for "Securities"; Enhanced SEBI powers for overseas asset recovery; Boost to Retail participation.
Negatives	Concentration of power in the SEBI Board; Complexity of transitioning from multiple old laws; Lack of clarity on "Crypto-assets" within the Code.
Govt. Schemes	**Digital India (Fintech)**, **Viksit Bharat @2047**, **National Strategy for Financial Education**.

Example: The **1xBet betting app case** (Dec 19 news), where the ED attached assets of actors, highlights the need for this Code to give SEBI better "follow-the-money" powers across digital borders.

Way Forward: The government must ensure the **Securities Appellate Tribunal (SAT)** is staffed with technical experts to handle the surge in appeals post-consolidation.

Conclusion: The Securities Markets Code Bill is the "second-generation reform" needed to turn India's stock markets from a speculative arena into a reliable engine of long-term capital for a $10 trillion economy.

Mains Practice Question: "The Securities Markets Code Bill 2025 is an attempt to balance the 'regulatory stick' with the 'facilitation carrot'." Analyze its impact on the ease of doing business in India. (250 Words)

6. SEBI Mutual Fund Reform 2025: The "Cost-of-Investing" Revolution

Syllabus: GS III (Indian Economy – Capital Markets; Statutory Bodies – SEBI).

Context: Effective December 2025, SEBI has implemented a sweeping overhaul of the **Mutual Fund Expense Ratio** framework. The traditional Total Expense Ratio (TER) has been replaced by the **Base Expense Ratio (BER)**, alongside a drastic cut in brokerage caps.

Multi-Dimensional Analysis

Unbundling for Transparency: Previously, the TER was a "black box" that included fund management fees, marketing, and statutory levies like GST. The new **BER framework** excludes taxes and levies. This allows investors to see exactly how much they are paying the Asset Management Company (AMC) versus how much is going to the government—ending the era of "hidden costs."

Curbing "Churning" for Commissions: A major reform is the reduction of brokerage caps from **12 bps to 6 bps** in the cash market. High brokerage fees often incentivized AMCs to trade excessively (churning) to benefit sister-concern brokerages. By halving these caps, SEBI is ensuring that the fund manager's interest is purely in "holding" for returns rather than "trading" for commissions.

Economies of Scale for Retail: The new slab-based BER ensures that as a fund grows in size (AUM), the cost to the investor must decrease. For a fund exceeding ₹50,000 crore, the BER is now capped at **0.95%**. This democratizes wealth by ensuring that the "India Growth Story" doesn't just enrich AMCs but maximizes the "Net Asset Value" for the small SIP investor.

The Shift to Passive Investing: By lowering the cost of active funds, SEBI is forcing active managers to generate "Alpha" (excess returns). If they can't, the lower cost of **Index Funds and ETFs** (now capped at 0.90% inclusive) will naturally drive the market toward passive investing, similar to developed markets like the US.

Comparative Analysis: The Cost Revolution

Parameter	Pre-2025 Framework (TER)	New 2025 Framework (BER)	Impact on Investor
Statutory Levies	Included in the cap.	Excluded (Charged over BER).	Total transparency of tax vs. fee.
Brokerage Cap	12 basis points (bps).	6 basis points (bps).	Stops unnecessary portfolio turnover.
Exit Load Bonus	Extra 5 bps allowed.	Scrapped.	Lower cost of exiting/switching funds.
AUM Slabs	Broad and expensive.	Granular and Reduced.	Large funds become significantly cheaper.

Example: An investor with a ₹1 lakh portfolio in an Equity Fund was previously paying ~₹2,250 annually in fees. Under the new BER + reduced brokerage, even with GST added separately, the total cost drops to ~₹2,050. Over a 20-year SIP, this 20-bps difference results in an additional **₹3.5 lakh** in the final corpus due to the power of compounding.

Way Forward:

Performance-Linked Fees: SEBI should now move toward a "Performance-only" model where the AMC charges a base fee but can only charge a "Success Fee" if they beat the Nifty/Sensex benchmark.

Digital KYC Portability: To complement low costs, SEBI must enable "One-Click Switching" between AMCs to empower investors to move to lower-cost providers easily.

Direct Plan Awareness: Increasing the penetration of "Direct Plans" (which have no distributor commission) is the next logical step to maximize retail wealth.

Conclusion: This reform is SEBI's most aggressive pro-consumer move in a decade. It transforms the Indian Mutual Fund industry from a "Sales-led" model to a "Performance-led" one, ensuring the common man's savings are not eroded by administrative friction.

INFRASTRUCTURE

Inauguration of BRO Infrastructure Projects

Syllabus: GS-III: Infrastructure: energy, ports, roads, airports, railways etc. GS-III: Security challenges and their management in border areas.

Context: The Defence Minister inaugurated **125 Border Roads Organisation (BRO)** projects—roads, tunnels, and bridges—strategically located in border areas, including the Niti Pass region of Uttarakhand, near the China border.

Main Body in Multi-Dimensional Analysis:

National Security: These projects significantly reduce the time taken for troop and equipment mobilization, improving the overall defense preparedness along the Line of Actual Control (LAC).

Border Area Development: Improved connectivity boosts the local economy, facilitates the deployment of essential services, and helps curb out-migration from remote villages (part of 'Vibrant Villages' objective).

Logistics and Engineering: The BRO's feat in completing these projects in challenging, high-altitude terrain highlights India's growing engineering capability and resource allocation to border infrastructure.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Strategic Advantage:** Rapid troop deployment and surveillance capabilities enhanced. **Tourism & Trade:** Increased connectivity can

Category	Description
	foster border trade and tourism, boosting local economies.
Negatives	**Environmental Impact:** Construction in fragile Himalayan ecosystems poses risks of landslides and ecological damage. **Project Delays:** Harsh weather conditions often lead to construction bottlenecks and cost overruns.
Govt Schemes	**Vibrant Villages Programme (VVP):** These BRO roads are vital for VVP success, linking remote villages to development hubs. **SARDP-NE:** Special Accelerated Road Development Programme in North Eastern Region.

Examples: The construction of the Sela Tunnel in Arunachal Pradesh (not explicitly this event, but a BRO example) dramatically shortens the travel distance to Tawang, improving all-weather connectivity.

Way Forward:

Sustainable Construction: Adopting green construction technologies (e.g., using polymer/waste materials) to minimize ecological footprint in the Himalayas.

Civil-Military Integration: BRO projects should be planned in coordination with state governments to ensure civilian economic needs (e.g., transportation of agricultural produce) are also met.

Conclusion: The massive push in BRO infrastructure, symbolized by the 125 newly inaugurated projects, is a strategic necessity that effectively blends national security imperatives with the development needs of India's remote border regions.

Practice Mains Question: "The Border Roads Organisation (BRO) is central to India's strategy of integrated border management.

Analyze how the recent infrastructure surge by BRO addresses both the security challenges and the developmental needs of the border population." (10 marks, 150 words)

Nuclear Power Capacity Expansion Targets (GoI/PIB)

Syllabus: GS-III: Infrastructure: Energy; Science and Technology-indigenization of technology.

Context: The Government announced ambitious targets for nuclear power, aiming to increase capacity from the current 8,780 MW to **21,880 MW by 2032** and achieve **100 GW by 2047** (for Net Zero target).

Main Body in Multi-Dimensional Analysis:

Energy Security: Nuclear energy is a key component of India's non-fossil fuel strategy, providing stable, baseload power, unlike intermittent renewables.

Climate Change Commitment: The expansion aligns with India's goal of achieving **Net Zero by 2070** by rapidly decarbonizing the power sector.

Indigenization: The focus is on ten 700MWe Pressurised Heavy Water Reactors (PHWRs) and developing Small Modular Reactors (SMRs) by BARC, boosting the 'Make in India' initiative in the strategic sector.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	Achieves energy self-reliance; Reduces dependence on imported fossil fuels; Provides stable, high-density power with low emissions.
Negatives	High initial capital cost; Long gestation period for projects; Public acceptance issues regarding safety and waste disposal (e.g., Kudankulam protests).

Category	Description
Govt Schemes	Nuclear Energy Mission for Viksit Bharat (100 GW by 2047); Development of SMRs (Small Modular Reactors) for flexible deployment.

Examples: Projects like the ten new 700 MWe PHWRs are being built in 'fleet mode' to speed up construction and utilize indigenous technology.

Way Forward: Streamline environmental and land acquisition clearances. Increase private sector participation (currently restricted) to mobilize capital and technology for SMR development.

Conclusion: The commitment to nuclear expansion is a strategic long-term bet on clean energy, crucial for India's energy transition, provided the challenges of financing and public perception are managed effectively.

Practice Mains Question: "Examine the dual significance of the government's ambitious nuclear power targets concerning India's energy security and its commitment to Net Zero emissions. What structural reforms are needed to meet the 2032 capacity goal?" (15 marks, 250 words)

Decolonizing Law: Repealing the 1908 Ports Act

Syllabus: GS II (Polity, Statutory Bodies); GS III (Infrastructure)

Context

On Dec 16, the **Indian Ports Bill, 2025**, was passed, repealing the 117-year-old **Indian Ports Act of 1908**. This is part of the "Panch Pran" pledge to remove all traces of the colonial mindset.

Main Body: Multi-Dimensional Analysis

Global Benchmarking: The 1908 Act was designed for "Revenue Extraction" by the British. The 2025 Bill is designed for **"Efficiency and Sustainability,"** aligning Indian ports with the **IMO (International Maritime Organization)** green norms.

Decentralization: Grants **Major Ports** (like JNPA, Kandla) more autonomy to set their own tariffs and enter into PPP (Public-Private Partnerships) without seeking central approval for every minor contract.

Green Maritime Transition: Mandates that every major port must transition to **Renewable Energy** (Solar/Wind) by 2030 and establish **Green Hydrogen Hubs** (Kandla and Tuticorin identified as first hubs).

Disaster Resilience: For the first time, the law includes mandatory provisions for **Oil Spill Response** and "Climate Adaptation" for coastal infrastructure.

Positives, Negatives, and Government Schemes

Positives: * Reduces the "Turnaround Time" (TAT) of ships to under 48 hours.

Boosts the **Blue Economy** by integrating inland waterways with maritime ports.

Negatives: * State-controlled "Minor Ports" fear that the new Bill will give the Center too much oversight over their operations.

High initial cost of "Green Transition" for small port operators.

Government Schemes: Sagarmala, **Maritime Amrit Kaal Vision 2047**, **PM Gati Shakti**.

Examples

Kandla-Tuticorin Corridor: Designated as India's first "Green Shipping Corridor" under the new Bill.

Way Forward

The government must provide a **"Green Transition Fund"** to help minor ports upgrade their equipment to electric and hydrogen-based systems.

Conclusion

The repeal of the 1908 Act is not just a legal change; it is the decoupling of Indian trade from its colonial anchors.

Practice Mains Question: *"How does the Indian Ports Bill 2025 facilitate the 'Green Maritime Transition' while addressing the limitations of the 1908 colonial-era legislation?"*

5. NH-45: India's First 'Wildlife-Safe' National Highway (MP)

Syllabus: GS III (Infrastructure; Environment & Biodiversity; Disaster Management).

Context: The NHAI operationalized a critical stretch of **NH-45** in Madhya Pradesh on December 18, 2025, featuring India's first **'Table-Top Red Markings'** to protect the Veerangana Durgavati Tiger Reserve corridor.

Multi-Dimensional Analysis

Environmental Dimensions: Linear infrastructure (roads/rails) is the primary cause of habitat fragmentation. NH-45 uses 25 underpasses and continuous chain-link fencing to restore **genetic connectivity** for tigers moving between Nauradehi and Veerangana Durgavati sanctuaries.

Psychological Engineering: The **Table-Top Red Markings** (inspired by Dubai) are not just physical barriers; they use the **red spectrum** (highest visibility) and tactile feedback (vibration) to subconsciously force drivers to slow down to 40 kmph in sensitive zones.

Economic-Infrastructure Paradox: While the project cost ₹122 **Crore**, it proves that "Green Infrastructure" is cheaper in the long run than "Alternative Alignments," which often destroy more forest or cost 5x more in land acquisition.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Zero Collision Goal:** Effectively ends roadkill of apex predators; **Tourism Boost:** Safe passage enhances the eco-tourism profile of the Bhopal-Jabalpur corridor.
Negatives	**Predator Trap:** Concern that predators might learn to hunt at the restricted exits of underpasses; **Noise Pollution:** Higher traffic speed still creates acoustic barriers for birds.
Govt. Schemes	**Green Highways Policy 2015**; **Bharatmala Pariyojana; Wildlife Protection Act (Amendment) 2022**.

Example: Similar to the **A303 Stonehenge Tunnel** (UK), NH-45 uses "Mitigation Engineering" to ensure that an ancient forest corridor remains functional despite a modern highway passing through it.

Way Forward: The **National Board for Wildlife (NBWL)** should make 'Table-Top Red Markings' a mandatory design standard for all highways passing within 5km of a National Park.

Conclusion: NH-45 represents a shift from "Grey Infrastructure" to "Green Infrastructure," where development and conservation are no longer a zero-sum game.

Mains Question: "Linear infrastructure fragmentation is a major threat to India's Tiger conservation success." Evaluate how 'Wildlife-Safe Roads' can mitigate this threat.

Indian Railways' 'Mission 3000MT': Reforming Freight Diversification

Syllabus: GS III: Infrastructure (Railways); Indian Economy (Logistics).

Context: As of December 19, 2025, the Ministry of Railways reported a successful **10.8% growth in 'Non-**

127

Conventional' freight (parcels, automobiles, and e-commerce) under its 'Mission 3000MT' strategy.

Multi-Dimensional Analysis

Reducing Coal Dependence: Historically, 65% of Rail freight was coal. With the shift to renewables, Railways is diversifying into the **"BOG" (Bulk, Other than Grain)** basket—metals, chemicals, and fly ash—to ensure long-term revenue stability.

Modal Shift for Logistics Cost: India's logistics cost is ~13% of GDP. Shifting freight from road to rail (which is 3x more fuel-efficient) is the only way to bring this down to **8%**. Mission 3000MT aims to double the current 1,500 MT capacity by 2030.

The "Gati Shakti" Synergy: The mission uses the **PM Gati Shakti NMP** to identify "last-mile" gaps. By building "Gati Shakti Cargo Terminals" (GCTs) at industrial clusters, Railways is reducing the "first and last mile" cost that traditionally favored trucks.

E-Commerce Integration: For the first time, dedicated **"Cargo Liners"** (time-tabled freight trains) are being run for e-commerce giants, treating freight with the same punctuality as Vande Bharat passenger trains.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**De-carbonization:** Significant reduction in carbon footprint per ton-km; **Revenue Diversification:** Protects Railways from "Coal-phase-out" shocks.
Negatives	**Congestion:** Freight and Passenger trains still share the same tracks in 70% of the network; **Operating Ratio:** High working expenses (98.4%) limit reinvestment capacity.
Govt. Schemes	National Rail Plan (NRP) 2030, Dedicated Freight Corridors (DFCs), Station One Product (OSOP).

Example: The **"Automobile Freight Train Operators" (AFTO)** scheme has led to Maruti and Hyundai moving over 20% of their factory output via rail in 2025.

Way Forward: Complete separation of freight and passenger tracks via the **National High-Speed Freight Quadrangle**.

Conclusion: Mission 3000MT is the backbone of India's "Logistics Revolution," essential for achieving the $10 trillion economy goal.

1. The VB-G RAM G Act, 2025: From "Welfare" to "Productive Investment"

Syllabus: GS II (Welfare schemes for vulnerable sections); GS III (Employment, Infrastructure, Rural Development).

Context: On December 22, 2025, the **Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) Act** received presidential assent. This landmark legislation replaces the 2005 MGNREGA, pivoting from "poverty alleviation" to "productive asset creation."

Multi-Dimensional Analysis

Economic Paradigm Shift: MGNREGA was criticized for being a "sink" of public funds with low-quality assets. The **VB-G RAM G Act** mandates that 100% of works must contribute to the **Viksit Bharat National Rural Infrastructure Stack**. Labor is now a "capital investment" into rural grids, solar micro-plants, and climate-resilient roads.

Labor & Seasonality: A revolutionary feature is the **60-day mandatory "Agricultural Buffer."** By pausing public works during peak sowing and harvesting, the Act solves the "labor-crunch" crisis faced by farmers, while the increased **125-day guarantee** ensures laborers earn more annually than under the old 100-day limit.

128

Technological Governance: To eliminate "ghost muster rolls," the Act integrates **Agentic AI** and **Biometric Spatial-tagging**. Every asset built is geotagged in real-time and mapped to **PM Gati Shakti**, ensuring the infrastructure is part of a larger national logistics plan.

Federal & Administrative Change: The Act raises the administrative cap to **9%**, allowing Gram Panchayats to hire professional engineers and agronomists. It also shifts to **"Normative Funding,"** which improves predictability for States while demanding higher outcome-based accountability.

Comparative Analysis Table

Feature	MGNREGA (Old)	VB-G RAM G Act (2025)	Impact Analysis
Days Guaranteed	100 days	**125 days**	Increases annual rural income by ~25%.
Work Quality	Consumption-focused; "Relief"	**Productive Asset Creation**	Builds long-term wealth for villages.
Seasonality	No break for agriculture	**60-day Farm Buffer**	Reduces conflict between farmers & laborers.
Payment Sync	Frequent delays	**AI-led Instant Gateway**	Direct transfer to worker without middleman.
Admin Support	6% cap (low staffing)	**9% cap (Expert hiring)**	Better engineering and

Feature	MGNREGA (Old)	VB-G RAM G Act (2025)	Impact Analysis
			asset durability.

Example: In a pilot project in **Nuh, Haryana**, G RAM G workers didn't just dig a pond; they constructed a **multi-tiered rainwater harvesting system** with solar-powered pumps, which now provides off-grid electricity to 50 households. This transformed a "welfare cost" into a "revenue-generating asset."

Way Forward:

Decentralized Planning: Empower Gram Sabhas to use **Viksit Gram Panchayat Plans** to identify assets that actually serve local market needs.

Digital Inclusion: Ensure that "biometric failures" (common in elderly workers) do not lead to exclusion by providing a "Face-ID" or "Manual Audit" backup.

Skill Graduation: Use the 125 days to provide "certified apprenticeship" in masonry or plumbing, helping workers transition from unskilled manual labor to skilled self-employment.

Conclusion: The VB-G RAM G Act is the "re-engineering" of the Indian rural economy. By treating laborers as builders of the nation's future rather than recipients of charity, it aligns the "Right to Work" with the goal of a $10 trillion economy by 2030.

Mains Question: "Does the replacement of MGNREGA with the VB-G RAM G Act signify a dilution of the right to work, or is it a necessary evolution for a developed India? Evaluate."

7. Decolonizing Law: Repealing the 1908 Ports Act

Syllabus: GS II (Polity, Statutory Bodies); GS III (Infrastructure)

Context

On Dec 16, the **Indian Ports Bill, 2025**, was passed, repealing the 117-year-old **Indian Ports Act of 1908**. This is part of the "Panch Pran" pledge to remove all traces of the colonial mindset.

Main Body: Multi-Dimensional Analysis

Global Benchmarking: The 1908 Act was designed for "Revenue Extraction" by the British. The 2025 Bill is designed for **"Efficiency and Sustainability,"** aligning Indian ports with the **IMO (International Maritime Organization)** green norms.

Decentralization: Grants **Major Ports** (like JNPA, Kandla) more autonomy to set their own tariffs and enter into PPP (Public-Private Partnerships) without seeking central approval for every minor contract.

Green Maritime Transition: Mandates that every major port must transition to **Renewable Energy** (Solar/Wind) by 2030 and establish **Green Hydrogen Hubs** (Kandla and Tuticorin identified as first hubs).

Disaster Resilience: For the first time, the law includes mandatory provisions for **Oil Spill Response** and "Climate Adaptation" for coastal infrastructure.

Positives, Negatives, and Government Schemes

Positives: * Reduces the "Turnaround Time" (TAT) of ships to under 48 hours.

Boosts the **Blue Economy** by integrating inland waterways with maritime ports.

Negatives: * State-controlled "Minor Ports" fear that the new Bill will give the Center too much oversight over their operations.

High initial cost of "Green Transition" for small port operators.

Government Schemes: Sagarmala, Maritime Amrit Kaal Vision 2047, PM Gati Shakti.

Examples

Kandla-Tuticorin Corridor: Designated as India's first "Green Shipping Corridor" under the new Bill.

Way Forward

The government must provide a **"Green Transition Fund"** to help minor ports upgrade their equipment to electric and hydrogen-based systems.

Conclusion

The repeal of the 1908 Act is not just a legal change; it is the decoupling of Indian trade from its colonial anchors.

Practice Mains Question: *"How does the Indian Ports Bill 2025 facilitate the 'Green Maritime Transition' while addressing the limitations of the 1908 colonial-era legislation?"*

5. NH-45: India's First 'Wildlife-Safe' National Highway (MP)

Syllabus: GS III (Infrastructure; Environment & Biodiversity; Disaster Management).

Context: The NHAI operationalized a critical stretch of **NH-45** in Madhya Pradesh on December 18, 2025, featuring India's first **'Table-Top Red Markings'** to protect the Veerangana Durgavati Tiger Reserve corridor.

Multi-Dimensional Analysis

Environmental Dimensions: Linear infrastructure (roads/rails) is the primary cause of habitat fragmentation. NH-45 uses 25 underpasses and continuous chain-link fencing to restore **genetic connectivity** for tigers moving between Nauradehi and Veerangana Durgavati sanctuaries.

Psychological Engineering: The **Table-Top Red Markings** (inspired by Dubai) are not just physical barriers; they use the **red spectrum** (highest visibility) and tactile feedback (vibration) to subconsciously force drivers to slow down to 40 kmph in sensitive zones.

Economic-Infrastructure Paradox: While the project cost ₹122 Crore, it proves that "Green Infrastructure" is cheaper in the long run than "Alternative Alignments," which often destroy more forest or cost 5x more in land acquisition.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Zero Collision Goal:** Effectively ends roadkill of apex predators; **Tourism Boost:** Safe passage enhances the eco-tourism profile of the Bhopal-Jabalpur corridor.
Negatives	**Predator Trap:** Concern that predators might learn to hunt at the restricted exits of underpasses; **Noise Pollution:** Higher traffic speed still creates acoustic barriers for birds.
Govt. Schemes	Green Highways Policy 2015; Bharatmala Pariyojana; Wildlife Protection Act (Amendment) 2022.

Example: Similar to the **A303 Stonehenge Tunnel** (UK), NH-45 uses "Mitigation Engineering" to ensure that an ancient forest corridor remains functional despite a modern highway passing through it.

Way Forward: The **National Board for Wildlife (NBWL)** should make 'Table-Top Red Markings' a mandatory design standard for all highways passing within 5km of a National Park.

Conclusion: NH-45 represents a shift from "Grey Infrastructure" to "Green Infrastructure," where development and conservation are no longer a zero-sum game.

Mains Question: "Linear infrastructure fragmentation is a major threat to India's Tiger conservation success." Evaluate how 'Wildlife-Safe Roads' can mitigate this threat.

4. Bureau of Port Security (BoPS): Securing India's Maritime Gateways

Syllabus: GS III: Internal Security; Infrastructure (Ports); GS II: Statutory, Regulatory, and Quasi-judicial bodies.

Context: On December 19, 2025, the Union Home Ministry chaired a high-level meeting to operationalize the **Bureau of Port Security (BoPS)**. Constituted under **Section 13 of the Merchant Shipping Act, 2025**, it is modeled after the Bureau of Civil Aviation Security (BCAS).

Multi-Dimensional Analysis

Strategic Security: India's 7,500 km coastline and 12 major ports are vulnerable to asymmetric threats (terrorism, smuggling, and piracy). BoPS provides a unified **regulatory and oversight framework** to replace the currently fragmented security management between different port trusts and state police.

The "Graded Security" Model: Moving away from a "one-size-fits-all" approach, BoPS will implement security protocols based on a port's **vulnerability, trade volume, and geographic location**. For example, transshipment hubs like Vizhinjam will have higher tech-surveillance compared to smaller feeder ports.

Cyber-Physical Convergence: Modern ports are highly digitized. BoPS includes a dedicated **Cybersecurity Division** to protect Automated Terminal Operating Systems (TOS) from ransomware and state-sponsored digital espionage that could cripple national supply chains.

Private Port Integration: Unlike earlier frameworks that primarily focused on major (government) ports, BoPS mandates that **Private/Non-Major ports** (like Mundra or Krishnapatnam) must also undergo mandatory security audits by the **CISF**, which

has been designated as the **Recognised Security Organisation (RSO)**.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Unified Command:** Single point of accountability for maritime security; **ISPS Compliance:** Aligns India with International Ship and Port Facility Security standards; **Capacity Building:** CISF to train private security agencies.
Negatives	**Cost Burden:** Higher security compliance costs for smaller private operators; **Jurisdictional Overlap:** Potential friction between BoPS, Coast Guard, and State Marine Police.
Govt. Schemes	**Sagarmala Programme**, **Maritime India Vision 2030**, **National Maritime Security Coordinator (NMSC)**.

Example: The 2008 Mumbai attacks utilized the sea route; BoPS is the final institutional brick in the wall to ensure that "Port Entry" becomes as strictly regulated as "Airport Entry."

Way Forward: Integrating **AI-based facial recognition** and **underwater drones** for hull inspections into the BoPS standard operating procedures.

Conclusion: BoPS is not just a security body; it is an economic insurance policy for India's target of becoming a global maritime powerhouse.

Mains Question: "The creation of the Bureau of Port Security (BoPS) marks a shift from reactive to proactive maritime governance." Examine the challenges and opportunities of this transition.

8. Indian Railways' 'Mission 3000MT': Reforming Freight Diversification

Syllabus: GS III: Infrastructure (Railways); Indian Economy (Logistics).

Context: As of December 19, 2025, the Ministry of Railways reported a successful **10.8% growth in 'Non-Conventional' freight** (parcels, automobiles, and e-commerce) under its 'Mission 3000MT' strategy.

Multi-Dimensional Analysis

Reducing Coal Dependence: Historically, 65% of Rail freight was coal. With the shift to renewables, Railways is diversifying into the **"BOG" (Bulk, Other than Grain)** basket—metals, chemicals, and fly ash—to ensure long-term revenue stability.

Modal Shift for Logistics Cost: India's logistics cost is ~13% of GDP. Shifting freight from road to rail (which is 3x more fuel-efficient) is the only way to bring this down to **8%**. Mission 3000MT aims to double the current 1,500 MT capacity by 2030.

The "Gati Shakti" Synergy: The mission uses the **PM Gati Shakti NMP** to identify "last-mile" gaps. By building "Gati Shakti Cargo Terminals" (GCTs) at industrial clusters, Railways is reducing the "first and last mile" cost that traditionally favored trucks.

E-Commerce Integration: For the first time, dedicated **"Cargo Liners"** (time-tabled freight trains) are being run for e-commerce giants, treating freight with the same punctuality as Vande Bharat passenger trains.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**De-carbonization:** Significant reduction in carbon footprint per ton-km; **Revenue Diversification:** Protects Railways from "Coal-phase-out" shocks.
Negatives	**Congestion:** Freight and Passenger trains still share the

Feature	Analysis
	same tracks in 70% of the network; **Operating Ratio:** High working expenses (98.4%) limit reinvestment capacity.
Govt. Schemes	**National Rail Plan (NRP) 2030**, Dedicated Freight Corridors (DFCs), **Station One Product (OSOP)**.

Example: The **"Automobile Freight Train Operators" (AFTO)** scheme has led to Maruti and Hyundai moving over 20% of their factory output via rail in 2025.

Way Forward: Complete separation of freight and passenger tracks via the **National High-Speed Freight Quadrangle**.

Conclusion: Mission 3000MT is the backbone of India's "Logistics Revolution," essential for achieving the $10 trillion economy goal.

SCIENCE AND TECHNOLOGY

CSIR-NAL Unveils Production-Ready Hansa-3 NG Indigenous Trainer Aircraft

Syllabus

GS-III: Science and Technology – Indigenization of technology and developing new technology. Achievements of Indians in science & technology.

Context

The **CSIR-National Aerospace Laboratories (NAL)**, Bengaluru, has unveiled the production version of the **Hansa-3 NG (Next Generation)**, an upgraded indigenous two-seater trainer aircraft. This marks a major milestone in India's efforts to achieve **self-reliance in civil aviation manufacturing**.

Main Body in Multi-Dimensional Analysis

The Hansa series has a long history, but the NG version incorporates modern composite airframe technology for enhanced performance and safety.

Key Features and Significance:

Fully Indigenous: Hansa-3 NG is the **first fully indigenous trainer aircraft** ready for serial production in India's civil aviation ecosystem.

Technology: It utilizes a **lightweight composite airframe** and a modern **glass cockpit** (digital flight display), making it highly fuel-efficient, durable, and safer for pilot training.

Purpose: It is designed for pilot training (Private Pilot Licence/Commercial Pilot Licence), sports flying, and surveillance missions.

Production and Commercialisation: The aircraft will be manufactured by Mumbai-based **M/s Pioneer Clean Amps** at a new facility in Andhra Pradesh, with a target of producing up to **100 aircraft annually**. This private-sector involvement is crucial for scaling up production under the **Aatmanirbhar Bharat** initiative.

Boost to Civil Aviation: The indigenous production will reduce dependence on imported trainer aircraft, save foreign exchange, and create a skilled aerospace manufacturing base in India.

Implications

Aspect	Description
Self-Reliance	Significant progress in the **indigenization of aerospace technology**, providing a reliable domestic source for pilot training institutions.
Manufacturing	The large-scale manufacturing contract provides a major boost to the domestic **MSME sector** involved in aerospace component supply.
Safety	Modern avionics and composite airframes improve safety and reduce

Aspect	Description
	maintenance costs for flying clubs and training academies.

Way Forward

The government should ensure continuous R&D funding for future upgrades, such as electric/hybrid propulsion systems, and provide purchase mandates/subsidies to training academies to quickly adopt the indigenous aircraft.

Practice Mains Question

GS-III: Discuss the importance of indigenization in the civil aviation sector. Analyze the features and significance of the CSIR-NAL Hansa-3 NG aircraft in the context of the 'Aatmanirbhar Bharat' initiative. (250 words)

Indian Army Conducts Combat Launch of BrahMos Supersonic Cruise Missile

Syllabus

GS-III: Science and Technology – Indigenization of technology and developing new technology; Defence Technology.

Context

The **Indian Army** successfully conducted the combat launch of the **BrahMos supersonic cruise missile** as part of its operational readiness drills. This confirms the missile system's integration and high-level preparedness across all three services (Army, Navy, and Air Force).

Main Body in Multi-Dimensional Analysis

BrahMos is a joint venture between India's DRDO and Russia's NPO Mashinostroyeniya and is the world's fastest supersonic cruise missile.

Operational Readiness: The successful test validates the Indian Army's capability to deploy the missile from a **Mobile Autonomous Launcher (MAL)** in varied terrain conditions and hit targets with high precision. This is critical for enhancing India's **deterrence capability** along its Northern and Western borders.

Indigenization and Exports: The BrahMos program is a shining example of India's **defence indigenization** effort under **'Aatmanirbhar Bharat'**. Furthermore, its confirmed operational success bolsters its marketability for exports (e.g., to the Philippines and Indonesia), fulfilling India's goal of becoming a major defence exporter.

Strategic Capability: The missile travels at speeds of up to **Mach 2.8**, making interception extremely difficult. Its capability for **pinpoint accuracy** against high-value enemy installations, command and control centers, and ships provides a significant tactical advantage.

Future Upgrades: The combat launch will inform the development of the next-generation variants, including the **BrahMos-NG (Next Generation)**, which will be smaller, lighter, and more adaptable for deployment on a wider range of platforms, including the indigenous **LCA Tejas**.

Implications

Aspect	Description
Deterrence	Enhances India's conventional deterrence capabilities in the region, particularly against potential adversaries with hardened military targets.
Tri-Service Integration	Confirms the seamless operational integration of the BrahMos into the Indian Army, Navy, and Air Force doctrines.
Technology Push	Provides confidence and a knowledge base for further indigenous research in supersonic and **hypersonic** missile technologies.

Way Forward

The focus must shift to expediting the indigenous development of crucial components to reduce reliance on foreign suppliers, ensuring a truly self-reliant supply chain for this strategic asset.

Practice Mains Question

GS-III: Assess the strategic significance of the successful combat launch of the BrahMos supersonic cruise missile by the Indian Army. How does this development align with India's defence indigenization and export goals? (250 words)

International Consortium 'Frontria' to Combat AI Disinformation

Syllabus

GS-III: Science and Technology – developments and their applications and effects in everyday life. Awareness in the fields of IT, Computers, Robotics.

Context

Fujitsu Limited announced the establishment of **Frontria**, an international consortium bringing together over 50 global organizations, including partners from India, to collaboratively address the escalating challenges of **AI-generated disinformation, misinformation, and AI system vulnerabilities**.

Main Body in Multi-Dimensional Analysis

The rapid advancement of **Generative AI** makes the creation of highly realistic and deceptive content (like **deepfakes**) increasingly easy, posing a serious threat to democratic processes, social harmony, and national security.

Consortium's Mandate : Frontria aims to foster a healthy and resilient digital society by pooling cutting-edge technologies to enhance **information reliability** and ensure **AI trustworthiness and security**.

Focus Areas :

Disinformation Countermeasures: Developing technologies for rapid detection and authentication of original content (**digital watermarking, provenance tracking**) to distinguish human-generated content from AI-generated content.

AI Vulnerability: Researching and mitigating risks associated with **AI system vulnerabilities**, such as bias, drift, and adversarial attacks that can manipulate AI outputs.

Regulatory Compliance: Working with governments and regulatory bodies globally to formulate standards for **responsible AI deployment** and mandatory disclosure of AI usage.

Significance for India: As India has a massive and rapidly digitizing population, it is highly vulnerable to AI-driven misinformation, which can destabilize social order or influence elections. India's participation in Frontria is vital for accessing and contributing to global best practices in AI safety and governance.

Implications

Aspect	Description
Media Integrity	Helps news organizations and social media platforms to maintain trust by accurately labeling and managing AI-generated content.
Democratic Process	Crucial for safeguarding the integrity of elections from AI-powered deepfakes and targeted disinformation campaigns.
Global Governance	Contributes to the emerging global consensus on the need for ethical and regulatory frameworks for Artificial Intelligence.

Way Forward

India must leverage its participation in Frontria to inform its own AI regulatory policy (currently focused on the **Digital India Act**) and encourage domestic AI developers to adopt the consortium's best practices on transparency and trustworthiness.

Practice Mains Question

GS-III: Analyze the threat posed by AI-generated disinformation and deepfakes to India's democratic and social fabric. Discuss the role of international collaborations like 'Frontria' in creating a framework for AI safety and trustworthiness. (250 words)

Need for Nuclear Power in Space (NPS)

Syllabus

GS-3: Science and Technology: Developments and their applications and effects in everyday life; Space. Awareness in the fields of Space.

Context

The escalating ambition for deep-space missions, crewed travel to Mars, and establishing permanent lunar bases necessitates high-power, long-duration energy sources that traditional solar panels cannot reliably provide.

This has renewed global interest in **Nuclear Power in Space (NPS)** technologies, including Radioisotope Thermoelectric Generators (**RTGs**), Radioisotope Heater Units (**RHUs**), and fission reactors for propulsion and surface power.

Recent discussions have focused on the need for updated international safety protocols and India's potential role in developing these cutting-edge, yet controversial, systems.

Main Body in Multi-Dimensional Analysis

Technological Dimensions

RTGs (Radioisotope Thermoelectric Generators): These systems, used since the 1960s
(e.g., *Voyager*, *Curiosity*, *Perseverance*), convert heat from the natural decay of radioisotopes (like **Plutonium-238**) directly into electricity. They are reliable, maintenance-free, and essential for missions where sunlight is weak (Outer Solar System) or during long lunar nights.

Fission Reactors: These generate much higher power (kilowatts to megawatts) and are critical for deep space electric propulsion or powering human outposts. The US **Kilopower Reactor Using Stirling Technology (KRUSTY)** demonstration is a step toward this.

Nuclear Thermal Propulsion (NTP) / Nuclear Electric Propulsion (NEP): NTP uses a nuclear reactor to heat a hydrogen propellant to very high temperatures, offering significant fuel efficiency and cutting travel time to Mars by up to 50%. This is vital for reducing astronaut exposure to space radiation.

Economic & Strategic Dimensions

Cost Efficiency: While initial development is expensive, NPS offers superior cost-to-power ratios over the operational lifespan for deep-space and long-duration missions compared to repeated resupply or large solar arrays.

Strategic Capability: NPS is an enabler of national prestige and strategic autonomy in space. Nations possessing this capability (currently primarily the US and Russia) dictate the pace and scope of future deep-space exploration. India's pursuit aligns with its ambition to be a leading space power.

Safety & Environmental Dimensions

Launch Accident Risk (Critical Concern): The primary safety concern is the potential release of radioactive material (e.g., Pu-238) into the atmosphere in the event of a launch failure or orbital decay. This necessitates extremely robust encapsulation and containment systems.

Radiation Shielding: On-board radiation from fission reactors or RTGs requires heavy

136

shielding to protect both astronauts and sensitive equipment, which adds to the mission's mass and cost.

Space Debris: The disposal or placement of reactors in high, stable orbits (like graveyard orbits) after their operational life is a long-term environmental challenge.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**India's Space Programme:** ISRO's focus on reliable launch vehicles, coupled with the long-term goal of crewed missions (Gaganyaan), indirectly pushes the need for indigenous NPS development. The Department of Atomic Energy (**DAE**) must be a key partner.
Positives of NPS	**High Power Density:** Provides compact, powerful energy irrespective of distance from the Sun. **Long Duration:** Enables multi-decade missions. **Propulsion:** Faster transit times reduce astronaut cosmic radiation exposure.
Negatives of NPS	**Safety Risks:** Potential for accidental release of radioisotopes. **Public Perception:** High sensitivity and public opposition to nuclear material use, especially in space applications. **Complexity:** Requires highly specialised fissile material production and handling.

Examples

NASA's *Curiosity* & *Perseverance* Mars Rovers: Both are powered by **Multi-Mission Radioisotope Thermoelectric Generators (MMRTGs)**, enabling them to operate through dust storms and Martian nights for many years.

The *Cassini-Huygens* Mission: Used RTGs to power its long journey to and operations around Saturn.

Russia's *TOPAZ* Reactor: A space-based nuclear reactor tested in the 1980s, demonstrating the feasibility of space fission power.

Way Forward

Integrated Policy Framework: India must establish a unified inter-agency framework involving **ISRO, DAE, and the DRDO** to strategically develop, test, and safely deploy space nuclear systems.

Safety and Transparency: Prioritise the most advanced safety measures, including robust, fire-resistant casings, and adhere to the highest international safety standards. Public engagement and transparency are crucial to build trust.

International Collaboration: Actively engage with the **United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)** to help draft modern, comprehensive safety standards for NPS to ensure global responsible use.

Focus on Indigenous Fuel: Develop indigenous capabilities for producing **Pu-238** (which has a long half-life of 87.7 years) to ensure the independence of future RTG-based missions.

Start Small: Begin with low-power RHUs for heating critical instruments, then move to RTGs for deep-space probes, before tackling the complexity of full-scale fission reactors.

Conclusion

NPS represents the **next frontier** in enabling complex, long-duration human and robotic space exploration, vital for achieving

137

strategic goals on the Moon and Mars. For India, mastering this technology is crucial for maintaining self-reliance in space and securing its position among the top space-faring nations. The focus must be on **risk mitigation, robust safety, and international consensus** to ensure its peaceful and responsible application.

Mains Practice Questions

"Nuclear Power in Space (NPS) is a double-edged sword—a technological necessity for deep-space exploration and a source of profound environmental risk." Critically analyse this statement in the context of India's long-term space ambitions. (15 Marks, 250 Words)

Discuss the various forms of Nuclear Power in Space (NPS) and explain why India needs to invest heavily in its indigenous development, detailing the associated technological and regulatory challenges. (10 Marks, 150 Words)

Gene-Edited (GE) Crops and Agricultural Innovation

Syllabus

GS-3: Science and Technology: Developments and their applications and effects in everyday life. Biotechnology; Intellectual Property Rights.

GS-3: Agriculture: Technology missions; issues relating to direct and indirect farm subsidies and minimum support prices.

Context

The identification of two promising **Gene-Edited (GE)** rice lines (**Samba Mahsuri** and **MTU-1010**) for potential release in India signals a major step toward embracing precise agricultural biotechnology.

These crops were edited using tools like **CRISPR-Cas9** to enhance traits such as yield, and tolerance to environmental stresses like drought and salinity, crucial for ensuring food security under climate change.

Unlike traditional **Genetically Modified (GM)** crops which often introduce foreign DNA, GE typically involves minor, targeted edits to the plant's own genome, making them potentially more acceptable from a regulatory and public perception standpoint.

Main Body in Multi-Dimensional Analysis

Technological and Scientific Dimensions

CRISPR-Cas9 Technology: This acts as "molecular scissors," allowing scientists to precisely cut and edit DNA sequences. It is faster, cheaper, and more accurate than older genetic engineering methods. GE products are often classified as **SDN-1/2 (Site-Directed Nuclease)**, where no foreign gene is inserted.

Addressing Climate Resilience: GE technology allows for the rapid development of crops that can withstand erratic weather patterns—e.g., rice varieties that can tolerate submergence or prolonged dry spells, or wheat that can thrive in higher temperatures. This is vital for sustaining yields in climate-vulnerable regions.

Nutritional Enhancement: GE can be used for **biofortification**, such as increasing vitamin or mineral content (e.g., Golden Rice, although this is GM, GE offers a faster route for similar goals), combating "hidden hunger" in vulnerable populations.

Regulatory and Legal Dimensions

Regulatory Ambiguity: India's current regulations, primarily under the **Genetic Engineering Appraisal Committee (GEAC)**, were designed for GM crops (which contain foreign DNA). The challenge lies in creating a separate, **streamlined regulatory pathway for GE crops** (SDN-1/2) that recognises their lower risk profile, avoiding the lengthy and costly trials mandatory for GM.

Intellectual Property Rights (IPR): Clarity is needed on patenting GE techniques (like CRISPR) versus the resulting crop varieties. Indian patent law must balance the need to reward innovation with ensuring access to

138

technology for public research and small farmers.

Public Interest Litigation (PIL): The threat of PILs and injunctions often delays the field trials and ultimate release of GE crops, demonstrating the need for robust public communication and scientific advocacy.

Socio-Economic Dimensions

Farmer Benefits: GE crops promise higher, more stable yields, reducing crop losses and increasing farm income. This can contribute to the goal of doubling farmers' income.

Seed Sovereignty: A key public concern is that GE technology could increase the dependence of Indian farmers on a few large national or multinational seed companies, potentially compromising seed sovereignty.

Affordability: The high development costs must translate into affordable seed prices for small and marginal farmers to ensure equitable access to the technology.

Government Schemes, Positives, Negatives

Feature	Description
Government Schemes/Initiatives	**National Agricultural Research System (NARS):** ICAR and state agricultural universities are actively pursuing GE research. The government's push for agricultural self-sufficiency and the **PM-KISAN scheme** implicitly supports innovations that boost farm productivity. **Recent guidelines exempting SDN-1/2 crops** from GM regulations show regulatory intent to support GE.

Feature	Description
Positives of GE Crops	**Precision and Speed:** CRISPR allows rapid introduction of desirable traits, cutting breeding time significantly. **Fewer Regulatory Hurdles:** Potentially easier approval compared to GM due to the absence of foreign DNA. **Stress Tolerance:** Crucial for adapting Indian agriculture to severe climate change impacts.
Negatives/Challenges	**Public Skepticism:** Persistent public concern, often confusing GE with GM, about safety and impact on the environment and health. **Ethical Concerns:** Issues surrounding the manipulation of natural life forms and long-term ecosystem effects (though lower than GM). **Access and Equity:** Risk of concentrating seed technology and profit among a few large firms.

Examples

High-Yield, Salt-Tolerant Rice: The specific research on **Samba Mahsuri** and **MTU-1010** rice lines using GE techniques to survive high-saline soils (common in coastal areas) and drought conditions.

Waxy Corn: GE has been used internationally to alter the starch composition of corn for industrial uses, showcasing precise trait modification.

Disease-Resistant Bananas: Global efforts use GE to create bananas resistant to diseases like Fusarium wilt, which threatens global production.

Way Forward

Clear, Risk-Proportional Regulation: Establish a **separate, transparent, and science-based regulatory framework** for GE crops (especially SDN-1 and SDN-2) that is risk-proportional and reduces regulatory timelines while ensuring safety.

Public Awareness and Trust: Launch national campaigns, led by credible scientific bodies (ICAR, DBT), to clearly differentiate GE from GM and communicate the safety and necessity of these tools for food security.

Public-Sector Dominance: Prioritise funding for **public agricultural research institutions** to develop and disseminate GE seeds cost-effectively, reducing dependence on multinationals.

Global Alignment: Adopt regulatory best practices from nations like Japan, Argentina, and the US that have successfully differentiated and streamlined approvals for SDN-1/2 products.

Conclusion

Gene-Edited crops offer India a powerful, precise, and necessary tool to rapidly climate-proof its agriculture and ensure nutritional security for its population. The focus must now shift from regulatory hesitation to **implementing clear, science-backed governance** and ensuring that this innovation serves the small farmer through affordable and accessible seed technology developed by public sector institutions.

Mains Practice Questions

"Gene Editing (GE) provides a faster and potentially safer route than Genetic Modification (GM) to achieve food security and climate resilience in India." Critically analyse this statement, highlighting the regulatory bottlenecks GE crops face. (15 Marks, 250 Words)

Discuss the ethical concerns and socio-economic challenges, such as seed sovereignty, associated with the adoption of high-tech agricultural biotechnology like CRISPR-Cas9 in India. (10 Marks, 150 Words)

Genome Editing (GE) in Agriculture: The Farmers' Dilemma and Regulatory Clarity

Syllabus

GS-3: Science and Technology: Developments and their applications and effects in everyday life. Biotechnology.

GS-3: Indian Economy: Technology missions and issues relating to intellectual property rights.

Context

The identification of two **Genome-Edited (GE) rice lines** (improved Samba Mahsuri and MTU-1010 varieties) for release as a precursor to commercial cultivation has reignited the debate over **genetic innovation** in Indian agriculture.[62]

The GE lines, which use techniques like **CRISPR-Cas** to enhance yield and tolerance to drought/salinity, are crucial for achieving food security amidst climate change.[63]

However, the issue is complicated by a long history of regulatory uncertainty surrounding Genetically Modified (GM) crops and deep concerns among farmer unions regarding **corporate control over seed supply** and the overall regulatory framework.

Main Body in Multi-Dimensional Analysis

Scientific and Food Security Dimensions

Precision and Speed of GE: Genome Editing (GE) techniques like CRISPR-Cas allow for precise and targeted modification of a plant's existing DNA, unlike older **Genetically Modified (GM)** technology that introduces foreign genes.[64] GE is considered safer and faster, potentially accelerating crop improvement from 10–12 years to 4–5 years.

Climate Resilience: The new GE rice lines are crucial for **climate change mitigation**. Enhancing tolerance to **drought and salinity** directly addresses the threats posed by extreme weather events and rising sea levels in coastal agricultural areas.

Nutritional Enhancement: GE can be used for **biofortification**—enhancing the nutritional content of crops, thereby addressing India's widespread issues of malnutrition and hidden hunger.[65]

Regulatory and Legal Dimensions

Regulatory Ambiguity: The central legal challenge is whether GE crops should be regulated under the same stringent framework as GM crops, which are governed by the **Genetic Engineering Appraisal Committee (GEAC)**. The government has attempted to exempt certain GE products (without foreign genes) from the GEAC framework, but a **Public Interest Litigation (PIL)** at the Supreme Court has complicated this.

Farmer Union Concerns: Farmer groups fear that the rapid adoption of GE technology will increase their **reliance on multinational corporations** for patented seeds and associated inputs (like specific herbicides), potentially raising input costs and reducing their autonomy over seed saving and sharing.[66]

Intellectual Property Rights (IPR): The success of GE will depend on a clear IPR regime that balances the rights of innovators with the rights of farmers (as protected under the **Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001**).

Socio-Economic Dimensions

Addressing Future Demand: With India's population projected to reach 1.7 billion by 2060, the pressure to produce "more crop per drop" and "more yield per hectare" is immense. GE technology is a necessary tool to meet this demand with dwindling resources.

Market Acceptance: Unlike GM crops, which faced strong public resistance (e.g., Bt Brinjal), the scientific community is optimistic that the consumer acceptance of GE crops, which do not contain foreign genes, will be higher, provided there is **transparent communication** and clear labeling.

Government Schemes, Positives, Negatives

Feature	Description
Regulatory Bodies/Acts	**GEAC (Genetic Engineering Appraisal Committee):** The apex body under the Environment Ministry for approving GM crops. **PPV&FR Act, 2001:** Protects breeders' rights while ensuring farmers' rights over saved seeds. **National Biotechnology Development Strategy:** Aims to promote responsible innovation in biotechnology.
Positives of GE	**Enhanced Yields:** Crucial for meeting future food demands with less land. **Reduced Water Use:** Development of drought-resistant varieties. **Faster Innovation:** Accelerates breeding cycles compared to conventional methods.

141

Feature	Description
Negatives/Challenges	**Corporate Control:** Fear of increased reliance on patented corporate seeds. **Regulatory Uncertainty:** Ongoing legal challenges delay commercialisation. **Environmental Unknowns:** Need for continuous monitoring of any unforeseen ecological impacts.

Examples

Samba Mahsuri and MTU-1010: The specific rice varieties identified for release are key staples, highlighting the direct impact on food security.[67]

Bt Cotton: The success of GM Bt cotton (which faced no major regulatory hurdle) versus the controversy over Bt Brinjal (which faced a moratorium) illustrates the polarized public acceptance of genetic modification.

Way Forward

Clear Legislative Framework: Parliament must enact a **dedicated, future-proof legislative framework** for Genome Editing that clearly distinguishes it from GM technology, providing regulatory certainty and removing the current legal ambiguity caused by PILs.

Farmer Rights Protection: The Government must put in place strong contractual mechanisms and monitoring systems to ensure that GE technology does not infringe on the rights of farmers to save, use, sow, re-sow, and exchange seeds.

Public Dialogue and Transparency: Initiate a massive, multi-stakeholder public outreach and dialogue campaign to demystify GE technology and ensure its benefits and risks are clearly understood by farmers and consumers.

Focus on Indigenous Development: Increase public investment in R&D institutions to develop **indigenous GE technology** that is non-proprietary and easily accessible to farmers.

Conclusion

Genome Editing technology holds the key to addressing India's twin challenges of **food security and climate resilience**. While scientific promise is high, the future of GE rice, as highlighted on December 5, 2025, hinges on the Government's ability to forge a **clear, transparent, and farmer-centric regulatory path** that harvests the benefits of innovation while safeguarding the autonomy of Indian agriculture.

Road Safety and Digital Integration: NHAI's MoU with Reliance Jio

Syllabus

GS-3: Science and Technology: Application of IT in governance.

GS-3: Infrastructure: Roadways, safety, and digital services.

Context

In a key move towards improving road safety, the **National Highway Authority of India (NHAI)** signed a Memorandum of Understanding (MoU) with **Reliance Jio Infocomm Limited** on December 5, 2025.[84]

The MoU aims to deploy **telecom-based safety alerts** across National Highways (NHs).[85] This initiative leverages the ubiquitous penetration of mobile telephony and digital platforms to provide **real-time, location-specific warnings** to drivers.

This collaboration is a major step in the ongoing effort to digitize road infrastructure and reduce fatalities, which remain alarmingly high in India.

Main Body in Multi-Dimensional Analysis

Technological and Safety Dimensions

Real-time Alert System: The system will use Jio's network to deliver geo-spatial alerts to drivers' phones about **accident-prone zones ("Black Spots")**, areas with stray animals, fog-affected stretches, and sudden emergency diversions.[86] This is a shift from static signage to dynamic, personalized warnings.

Leveraging Digital Infrastructure: The system capitalizes on the massive user base and high-speed data network of Reliance Jio, enabling the rapid and wide-scale deployment of safety information without requiring drivers to install dedicated, expensive hardware.[87]

Integration with e-DAR/iRAD: This safety alert system will be intrinsically linked to NHAI's existing digital platforms like the **Integrated Road Accident Database (iRAD)** and the **Rajmargyatra app**.[88] This two-way data flow allows for:

Real-time Data Collection: iRAD collects accident data which helps identify new Black Spots.

Real-time Warning Dissemination: Alerts are pushed back to drivers based on the iRAD data.

Governance and Policy Dimensions

Targeting Black Spots: The system specifically targets the identified $1,330$ critical stretches or **Black Spots** where accidents are heavily concentrated. This targeted intervention is a cost-effective way to reduce fatalities.

Multi-stakeholder Approach: The collaboration is a successful example of a **Public-Private Partnership (PPP)** model in digital governance, where the government (NHAI) provides the data and regulatory framework, and the private sector (Jio) provides the technology and reach.

Ease of Access: By using common telecom platforms, the system bypasses the complexity of new hardware installation in

vehicles, increasing the ease and speed of adoption across the country.

Socio-Economic Dimensions

Reducing Accident Fatalities: Road accidents impose a severe socio-economic burden, costing India approximately of its GDP annually. Reducing fatalities through this system will have a direct positive impact on public health, family welfare, and national productivity.

Disaster Management: The alerts can be rapidly repurposed for natural disaster warnings, providing real-time information on road closures and safe routes during events like cyclones or floods.

Government Schemes, Positives, Negatives

Feature	Description
Schemes/Programs	**iRAD (Integrated Road Accident Database):** Collects and analyzes real-time accident data. **Electronic Detailed Accident Report (e-DAR):** Digital form for accident data collection by police. **National Highway Safety Program:** NHAI's overall strategy for improving safety.
Positives of the MoU	**Real-time Warnings:** Provides critical, location-specific safety alerts to drivers. **Targeted Intervention:** Focuses resources on accident-prone 'Black Spots'. **Cost-Effective:** Leverages existing telecom infrastructure for

Feature	Description
	wide-scale deployment.
Negatives/Challenges	**Coverage Gaps:** Effectiveness depends entirely on network coverage in remote NH stretches. **Distracted Driving:** Over-reliance on phone alerts could itself lead to distraction. **Data Privacy:** Ensuring the collected location and driving data is used solely for safety purposes is critical.

Examples

Black Spot Identification: The categorization of a stretch with five or more fatal accidents in a three-year period as a Black Spot provides the data for the system's focus.

Stray Animal Alerts: A common cause of accidents, which the system can now address dynamically in real-time.

Way Forward

Data Standardization: Ensure standardized data protocols between NHAI, police, and the telecom partner to maintain the accuracy and timeliness of the alerts.

Mandatory Integration: Explore making the alert system an integrated, default feature on all smartphones sold in India and mandated in all new commercial vehicles.

Audit and Review: Conduct a **mandatory, independent audit** of the system's effectiveness in reducing accidents at Black Spots after one year of operation, and continuously review data privacy protocols.

Conclusion

The NHAI-Reliance Jio MoU on December 5, 2025, marks a significant convergence of **digital technology and public infrastructure** for the greater good. By providing **real-time, predictive safety alerts**, the system offers a scalable solution to India's chronic road safety crisis, transforming the way drivers interact with highways and laying a foundation for a truly **intelligent and safe national road network**

BharatGen Technology Foundation: India's Sovereign AI Gambit

Syllabus

GS-3: Science and Technology: Developments and their applications and effects in everyday life. IT, Computers.

GS-3: Indian Economy: Investment models; Technology missions.

Context

The establishment of **BharatGen Technology Foundation** by **IIT Bombay** on November 7, 2025, marks India's most ambitious push yet towards developing **Sovereign Artificial Intelligence (AI)**.

BharatGen is the country's first attempt to build a **Large Language Model (LLM)** that reflects India's vast linguistic, cultural, and social diversity across **22+ languages**.

The initiative has secured a landmark funding of ₹**988.6 crore** from the Ministry of Electronics and Information Technology (MeitY) under the **IndiaAI Mission**, making it the largest beneficiary of the allocation.

Main Body in Multi-Dimensional Analysis

Technological and Geopolitical Dimensions

Need for Sovereign AI: Relying on foreign LLMs carries inherent risks of **data sovereignty, algorithmic bias, and technological dependence**. Foreign models often fail to accurately interpret and generate nuanced, contextually appropriate

content in Indian languages and cultural contexts.

LLM Diversity and Inclusivity: BharatGen aims to overcome this **linguistic and cultural gap** by training its models on home-grown datasets covering India's 22 official languages and eventually building LLMs with up to **one trillion parameters**. This is crucial for equitable access to digital services.

From Lab to Market: IIT Bombay incorporated BharatGen as a company to gain the **functional freedom and autonomy** needed to transition the models from academic projects into robust commercial deployments, ensuring the models are ready for industry use.

Economic and Policy Dimensions

Catalyst for Startups: The foundation plans to release **distilled, open-source versions** of its LLMs to developers. This strategy democratizes access to cutting-edge AI, allowing Indian startups to build high-value applications without the colossal cost of training foundational models.

Investment in Deep Tech: The significant funding reinforces the government's commitment to creating a deep-tech ecosystem, moving India from a consumer of foreign AI to a **global producer of foundational AI**.

Consortium Approach: The project is anchored by **IIT Bombay** and involves a consortium of leading institutions (including IIT Madras, IIIT Hyderabad, IIM Indore, etc.), strengthening the mission's collaborative and national foundation.

Government Schemes, Positives, Negatives

Feature	Description
National Schemes	**IndiaAI Mission:** The overarching policy framework and funding

Feature	Description
	mechanism for developing indigenous AI. **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS):** Provided initial groundwork support.
Positives of BharatGen	**Reduced Foreign Dependency:** Ensures national security and data sovereignty in a critical technology. **Linguistic Inclusivity:** Models will accurately understand and serve India's diverse linguistic landscape. **Democratization of AI:** Lowers the entry barrier for Indian startups to build advanced AI applications.
Negatives/Challenges	**Talent War:** Retaining top AI talent against global tech giants remains a challenge. **Data Quality:** Ensuring the quality and non-bias of the vast Indian language datasets is critical. **Catch-up Speed:** The need to quickly catch up with advanced proprietary global models.

Way Forward

Open Science and Open Source: BharatGen must adopt an **open-source policy** for its core models (with proper safeguards) to maximize adoption and collaborative innovation.

Ethical AI Framework: Develop and enforce a clear, India-specific **Ethical AI Framework** to guide the model's development and mitigate potential societal biases.

Infrastructure Investment: Ensure continuous investment in the **advanced supercomputing clusters** required to train and maintain trillion-parameter models.

Conclusion

The launch of the **BharatGen Technology Foundation** is a landmark moment, signalling India is moving from being an AI user to an **AI creator**. By investing public funds into a multi-lingual, sovereign LLM, the nation is building an **essential digital public good** that will underpin the technological and cultural identity of **Viksit Bharat** (Developed India).

Smart India Hackathon (SIH) 2025 Grand Finale: Innovation for National Challenges

Syllabus

GS-3: Science and Technology: Indigenization of technology and developing new technology.

GS-2: Governance: Role of Civil Services in a Democracy. Government policies and interventions.

Context

The **Grand Finale of the Smart India Hackathon (SIH) 2025 – Software Edition** is being hosted by **IIT Jammu** on December 8-9, 2025.

SIH is the **world's largest open innovation platform**, aimed at harnessing the creativity of students to solve real-world problems sourced directly from Central Ministries, Public Sector Undertakings (PSUs), and industries.

This year, the event involves **20 finalist teams** competing across transformative problem statements, showcasing solutions in critical areas like **tourist safety, animal type classification for farming, and eco-**friendly infrastructure (e.g., modular roads using bamboo and plastic waste).

Main Body in Multi-Dimensional Analysis

Innovation and Skill Development Dimensions

Problem-Solving Pedagogy: SIH provides students with a **hands-on, high-pressure environment** to apply theoretical knowledge to complex, specific national challenges, thus fostering essential **problem-solving and multi-disciplinary skills**.

Idea-to-Prototype Pipeline: The hackathon serves as a high-speed mechanism for turning conceptual ideas into functional **prototypes**. Successful solutions are often adopted by the sponsoring Ministries for real-world deployment.

Direct Application of AI/IoT: The problem statements specifically require the application of advanced technologies like **AI/ML for predictive analysis** (e.g., health outbreaks), **IoT for tracking** (e.g., tourist safety), and **blockchain for secure identity verification**.

Governance and Public Service Dimensions

Citizen-Centric Governance: By engaging youth, SIH democratizes the innovation process, resulting in **low-cost, creative, and citizen-centric solutions** for improving e-governance and public service delivery.

Government-Academia Interface: The initiative formalizes a crucial interface between academia and bureaucracy, injecting a culture of **agile development and digital disruption** into traditional government operations.

Digital Public Goods: Solutions developed are often non-proprietary, contributing to the ecosystem of **Digital Public Goods (DPGs)** which are reusable by any government agency or startup.

Government Schemes, Positives, Negatives

Feature	Description
Organizing Bodies	**Ministry of Education's Innovation Cell (MIC) & AICTE:** The institutional backbone of the SIH initiative. **Problem Statement Sourcing:** Ministries, PSUs, State Governments, and Industry partners.
Positives of SIH	**Direct Problem Solving:** Provides direct, implementable solutions to government departments. **Talent Scouting:** Acts as a massive national talent scouting platform for government and industry. **Innovation Culture:** Mainstreams hackathon culture as a credible form of learning and development.
Negatives/Challenges	**Scaling and Adoption:** A major challenge is moving hackathon prototypes into robust, secure, and maintainable production systems. **Intellectual Property (IP):** Clarity on IP rights for the final solutions sometimes remains a grey area.

Way Forward

Dedicated Incubation Fund: Establish a dedicated, seed-level **Incubation Fund** specifically for converting top SIH solutions annually into functioning Minimum Viable Products (MVPs) for departmental deployment.

Mandatory Adoption Targets: Mandate that sponsoring Ministries select a minimum number of viable solutions for a **pilot project** and provide the necessary support.

Standardized IP Policy: Institute a clearer, open-source-friendly **Intellectual Property policy** for SIH solutions to encourage rapid deployment as Digital Public Goods.

Conclusion

The Grand Finale of the Smart India Hackathon 2025 is a powerful example of **national engineering at work**. By channelling the creativity of the youth to solve bureaucratic and social challenges, SIH provides a scalable solution for making technology an accountable tool for **good governance and inclusive development**.

Deep-Sea Marine Microbial Research: India's New Blue Economy Frontier

Syllabus

GS-3: Science and Technology: Developments and their applications and effects in everyday life. Biotechnology.

GS-3: Indian Economy: Investment models; Infrastructure (Ports, Energy).

Context

India announced on December 8, 2025, its plan to establish its **first Deep-Sea Marine Microbial Repository in Nellore, Andhra Pradesh**, under the ambit of the **National Institute of Ocean Technology (NIOT)**.

This is a crucial strategic step, aligning with the **Blue Economy** vision and the **Deep Ocean Mission (DOM)**, which seeks to unlock the potential of deep-sea resources and biotechnology.

The facility will house **cryo-freezers** and state-of-the-art equipment to study, isolate, and culture microbes from extreme marine environments (high pressure, low light) in the Indian Ocean.

Main Body in Multi-Dimensional Analysis

Scientific and Biotechnological Dimensions

Marine Microbes as Resources: Deep-sea environments host unique **extremophiles** that produce novel chemical compounds. These compounds are a promising source for **next-generation antibiotics, anti-cancer drugs, and industrial enzymes**, as they possess unique adaptations for survival.

Bridging the Knowledge Gap: The facility will focus on the systematic cataloguing of microbial diversity in the Indian Ocean, addressing a significant **knowledge gap** in marine microbiology. NIOT researchers have already catalogued over 1,000 promising strains.

Commercial Application: The repository aims to serve not just researchers but also **startups** and the industry, facilitating the translation of scientific discovery into commercial biomedical and industrial products.

Economic and Geopolitical Dimensions

Blue Economy Growth: The facility is a cornerstone of India's **Blue Economy** strategy, moving the focus from traditional extraction to **high-value, deep-tech biotechnology** and securing national expertise in this emerging domain.

International Conventions: Research in this area is governed by the **United Nations Convention on the Law of the Sea (UNCLOS)** and the new **Biodiversity Beyond National Jurisdiction (BBNJ)** treaty. The facility will be key to establishing India's claims and ensuring compliance with global norms regarding the fair and equitable sharing of benefits from marine genetic resources.

Strategic Location: Nellore's coastal location provides convenient access to the deep waters of the **Bay of Bengal**, a region known for high microbial diversity.

Government Schemes, Positives, Negatives

Feature	Description
National Missions	**Deep Ocean Mission (DOM):** The overarching mission governing deep-sea exploration and technology development. **Blue Economy Policy:** The framework for sustainable use of ocean resources.
Positives of the Facility	**Scientific Breakthroughs:** Potential to discover new compounds for medicine and industry. **Resource Sovereignty:** Secures India's claims over marine genetic resources in its Exclusive Economic Zone (EEZ). **Skill Development:** Creates high-skill jobs in marine biology, engineering, and biotechnology.
Negatives/Challenges	**High Cost:** Deep-sea research is extremely capital-intensive, requiring expensive vessels and equipment. **Environmental Risk:** Need to ensure that the research does not damage fragile deep-sea ecosystems. **Talent Pool:** Requires rapidly developing a

148

Feature	Description
	specialized talent pool in deep-sea microbial science.

Way Forward

Public-Private Partnership (PPP): Encourage PPPs to share the high capital and operational costs of deep-sea research, especially involving the pharmaceutical and chemical industries.

Skill Development Program: Launch a **dedicated national fellowship and Ph.D. program** in **Deep-Sea Microbiology and Bioprospecting** to rapidly build the required human capital.

Ethical Framework: Institute a transparent and robust **National Ethical Framework** for the collection and utilization of marine genetic resources, adhering to BBNJ principles.

Conclusion

The establishment of India's first deep-sea marine microbial research facility in Nellore is a visionary investment in **future biotechnology**. It positions India to become a key player in the global quest to unlock the vast, untapped potential of the deep ocean for the benefit of medicine, industry, and environmental sustainability.

Topic 7: New Discovery: Ancient Spiral Galaxy 'Alaknanda'

Syllabus: GS-III: Achievements of Indians in science & technology; Indigenization of technology and developing new technology. Awareness in the fields of Space.

Context: Researchers from NCRA – TIFR, Pune, discovered an ancient spiral galaxy, **Alaknanda**, estimated to be **12 billion years old**, using the James Webb Space Telescope (JWST).

Main Body in Multi-Dimensional Analysis:

Cosmic Evolution: The discovery challenges previous models which suggested that complex, ordered structures like spiral galaxies formed much later in the universe's history.

India's Contribution to Global Science: NCRA-TIFR's involvement (aided by data from the international JWST collaboration) highlights India's growing capability in cutting-edge astronomy and astrophysics.

Observational Astronomy: The finding underscores the power of the **JWST** in probing the "Epoch of Reionization" and the early formation of galaxies.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Fundamental Science:** Provides crucial data to refine cosmological models and understanding of early galaxy formation. **Prestige:** Boosts India's international scientific reputation in astronomy.
Negatives	**Funding Gap:** India's direct involvement in large international collaborations like JWST is limited compared to domestic observatories like GMRT. **Brain Drain:** Attracting and retaining talent in this niche field remains a challenge.
Govt Schemes	**India's Space Programme:** Supports fundamental research. **Inter-University Centre for Astronomy and Astrophysics (IUCAA)** fosters academic research and development.

Examples: Earlier, it was believed that the early universe (1-2 billion years after the Big Bang) primarily contained small, irregular galaxies. Alaknanda, being a large spiral, contradicts this.

Way Forward:

International Collaboration: India must strategically increase its participation in future global space and telescope projects to maintain research momentum.

Indigenous Development: Continued investment in facilities like the **Giant Metrewave Radio Telescope (GMRT)** to complement international discoveries with unique low-frequency observations.

Conclusion: The discovery of 'Alaknanda' is a landmark achievement for Indian astronomy, pushing the boundaries of cosmic knowledge and challenging established theories on how complex structures formed in the infant universe.

Practice Mains Question: "The discovery of the ancient galaxy 'Alaknanda' challenges existing cosmological models of galaxy formation. Discuss the significance of this discovery and how India's participation in global astronomical research is contributing to the field of astrophysics." (15 marks, 250 words)

Topic 8: Bharat 6G Mission Apex Council Meeting

Syllabus: GS-III: Science and Technology-developments and their applications and effects in everyday life. Indigenization of technology.

Context: The Apex Council Meeting under the **Bharat 6G Mission**, chaired by Union Minister Shri Jyotiraditya M. Scindia, focused on finalizing the roadmap and strategies to position India as a global leader in next-generation telecommunication.

Main Body in Multi-Dimensional Analysis:

Digital Sovereignty: The mission aims to develop indigenous 6G technology, reducing dependence on foreign intellectual property and ensuring the security of critical national infrastructure.

Economic Transformation: 6G is projected to enable new sectors like 'Extended Reality (XR)', 'Holographic Communications', and 'Hyper-Connected Smart Cities', potentially adding trillions to India's GDP.

Strategic Technology Development: Focus areas include Terahertz spectrum use, next-gen coding, and the development of 6G test beds (demonstration infrastructure).

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Global Leadership:** Potential to become a key patent holder and exporter of 6G technology. **Speed and Efficiency:** Ultra-low latency and higher data speeds (up to 1 TBPS) will revolutionize digital services.
Negatives	**Standardization Race:** Competing globally with established players (China, US, EU) in a fast-evolving standardization landscape. **Spectrum Allocation:** Requires efficient and timely allocation of new spectrum bands (Terahertz).
Govt Schemes	**Bharat 6G Mission:** The umbrella mission for research, development, and standardization. **Digital India:** 6G is the next technological pillar for the Digital India vision.

Examples: Successful deployment of indigenous 6G could allow for real-time surgical operations conducted remotely or the use of digital twins for massive infrastructure projects.

Way Forward:

Public-Private Partnership (PPP): Leveraging private sector R&D expertise and capital through targeted incentives and tax breaks.

Skill Development: Investing heavily in training engineers, researchers, and PhDs in

150

advanced telecommunication and quantum computing.

Conclusion: The Bharat 6G Mission is not just an incremental technological upgrade but a strategic national imperative aimed at achieving technological self-reliance and establishing India's global leadership in the future of connectivity.

Practice Mains Question: "The Bharat 6G Mission is positioned as a key driver for digital sovereignty and economic transformation. Analyze the technological challenges and strategic imperatives for India to become a global patent holder and leader in next-generation telecommunication." (10 marks, 150 words)

Topic 7: India-Israel Joint Venture for Pheromone-Based Crop Protection

Syllabus: GS-III: Science and Technology: developments and their applications; Indian Economy: Technology missions in agriculture.

Context: India and Israel launched a 50:50 Joint Venture (JV), **'Semiophore Ltd.',** to manufacture and commercialize Indian-developed **pheromone-based crop protection technologies** globally.

Main Body in Multi-Dimensional Analysis:

Sustainable Agriculture: Pheromones offer a non-toxic, targeted pest control method (*Integrated Pest Management – IPM*) compared to conventional chemical pesticides, significantly reducing chemical load in agriculture and exports.

Bilateral Technological Transfer: The JV utilizes Indian-developed technology (from ATGC Biotech) but leverages Israel's expertise in precision agriculture and global marketing channels, reflecting a strong S&T partnership.

Economic Opportunity: Commercializing the technology globally opens up new, high-value export markets for Indian bio-

pesticides and contributes to a "Green Economy" model in agriculture.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Environmentally Friendly:** Reduces chemical residue in food, benefiting consumer health and export potential (meeting EU/US standards). **Market Access:** Israel's network helps Indian technology reach international markets quickly.
Negatives	**Adoption Barrier:** Adoption by Indian farmers is slow due to cost and lack of awareness compared to cheaper, faster-acting chemical sprays. **Manufacturing Scale:** Requires large-scale, cost-effective pheromone synthesis capabilities.
Govt Schemes	**National Mission on Sustainable Agriculture (NMSA);** Promotion of **Integrated Pest Management (IPM)** under various schemes.

Examples: Pheromone traps disrupt insect mating cycles for pests like the pink bollworm (cotton) or fruit flies, offering species-specific, ecologically safe control.

Way Forward: The JV must focus on developing low-cost production technologies to make the products affordable for small and marginal farmers in India. Government must provide subsidies for IPM tools.

Conclusion: The India-Israel JV on pheromone technology is a showcase of high-impact bilateral cooperation, positioning India at the forefront of sustainable and chemical-free agriculture, crucial for both domestic food safety and global exports.

Practice Mains Question: "Evaluate the potential of pheromone-based technologies as a component of Integrated Pest Management (IPM) in India. How will the India-Israel JV help overcome the existing challenges in the adoption and commercialization of such sustainable methods?" (15 marks, 250 words)

3. Economy & Industry: India Semiconductor Mission (ISM) – Talent Pipeline

Syllabus: GS Paper III – Effects of liberalization on the economy; Science and Technology- developments and their applications.

Context: On Dec 12, 2025, the Ministry of Electronics and IT (MeitY) informed Parliament (PIB) that the **Semicon India Programme** has approved 10 units with an investment of **₹1.6 Lakh Crore** and has trained **67,000 students** in chip design.

Main Body: Multi-dimensional Analysis

Strategic Autonomy: Chips are the "new oil." India's dependence on Taiwan and China for semiconductors is a national security risk. Local fabs for Silicon and Silicon Carbide are essential for defense and EVs.

Economic Multiplier: The semiconductor ecosystem includes design, fabrication, assembly (ATMP), and packaging. Success here would trigger a "boom" in the electronics export sector, targeting $300 billion by 2030.

Talent as a Moat: Unlike other nations, India's strength is its large pool of design engineers. The **"Chips to Startup" (C2S)** program is providing high-end design tools to 397 universities.

Geopolitics: India is positioning itself as a "Trusted Partner" in the global supply chain, attracting firms like Lam Research and Micron away from "at-risk" geographies.

Analysis Table:

Positives	Negatives/Challenges	Government Schemes
Job Creation: High-value engineering jobs and technical "Green Jobs."	**Water & Power:** Fabs require millions of liters of ultra-pure water and 24/7 power.	**Semicon India Programme:** ₹76,000 Cr outlay for the ecosystem.
Export Boost: Transition from being a consumer to a "Creator of Chips."	**Gestation Period:** It takes 3–5 years for a Fab to become operational.	**DLI Scheme:** Design Linked Incentive for local startups.
Indigenous Tech: 56 chips already fabricated at SCL Mohali using Indian design.	**Technology Lag:** India is currently focusing on 28nm-40nm, while the world is at 2nm.	**PLI for IT Hardware:** Supports local assembly of devices.

Example: The partnership with **Lam Research** aims to generate 60,000 trained manpower in nanofabrication over the next 10 years.

Way Forward:

Infrastructure Readiness: State governments (Gujarat, Assam, UP) must ensure dedicated "industrial townships" for Fabs.

Focus on Compound Semis: Invest in Gallium Nitride (GaN) for future-ready applications like 6G and satellite comms.

Conclusion: The India Semiconductor Mission is not just an industrial policy; it is a quest for **"Technological Atmanirbharta."** Building a talent pipeline is the surest way to ensure that the ₹1.6 lakh crore investment yields long-term results.

Practice Mains Question: *"Discuss the role of the 'Talent Pipeline' in making India a global semiconductor hub. How does this mission align with India's national security interests?"*

Science & Tech: ISRO's Human Spaceflight Roadmap (Vision 2047)

Syllabus: GS Paper III – Science and Technology; Indigenization of Technology.

Context: During a Parliament session on Dec 12, the Department of Space provided a status update on the **Gaganyaan Programme** and the roadmap for the **Bharatiya Antariksh Station (BAS)** by 2035.

Main Body: Multi-dimensional Analysis

Strategic Capability: Successfully launching humans into orbit establishes India as the 4th nation to achieve independent human spaceflight, enhancing its "Space Power" status.

Indigenous Resilience: From the **HLVM3 (Human Rated LVM3)** to the **Crew Escape System (CES)**, the mission is a testament to Indian engineering.

Economic Opportunity: The mission drives the "Spin-off" economy—technologies developed for space (like fire-resistant suits or water purifiers) can be commercialized for civilian use.

Lunar Ambition: Gaganyaan is a stepping stone for the 2040 goal of landing an Indian on the Moon, as part of **Space Vision 2047**.

Positives, Negatives, and Government Schemes:

Positives	Negatives/Challenges	Related Missions/Schemes
Technological Leap: Mastery of "Re-entry" and "Life	**High Risk:** Human lives are at stake; zero-	**LVM3 M6 Mission:** Dedicated
Support" systems.	margin for error.	commercial launch.
Global Leadership: India as a cost-effective partner for ISS and beyond.	**Cost:** Massive capital diversion from other social sectors.	**IN-SPACe:** Promoting private sector in space.
Inspiration: "Sputnik moment" for Indian youth and STEM education.	**Technical Lag:** Still dependent on some global sensors and microchips.	**NewSpace India Ltd (NSIL):** Commercial arm.

Example: The successful **Integrated Air Drop Test (IADT)** recently proved the reliability of the parachute system that will safely bring the Gaganyatris back to Earth.

Way Forward:

Private Integration: Transferring matured technologies like PSLV and LVM3 to the private sector to free up ISRO for R&D.

Space Laws: Fast-tracking a comprehensive Space Act to regulate liability and commercial participation.

Conclusion: Gaganyaan is not just a mission; it is the "New Frontier" of Indian diplomacy and technology, marking the beginning of the "Indian Space Era."

Practice Mains Question: *"The Gaganyaan mission is a precursor to India's long-term goal of a sovereign space station. Discuss the strategic and economic significance of this mission." (250 Words)*

The SHANTI Bill, 2025: Opening the Nuclear "Gated Community"

Syllabus: GS III (Energy, Science & Tech); GS II (Government Policies & Interventions)

Context

153

On December 16, 2025, the Union Government tabled the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill**. This landmark legislation seeks to repeal the **Atomic Energy Act of 1962** and the **Civil Liability for Nuclear Damage (CLND) Act of 2010**, marking the first time in 78 years that the private sector is permitted to build, own, and operate nuclear power plants in India.

Main Body: Multi-Dimensional Analysis

The Energy Security Dimension: India's "Panchamrit" pledge to achieve **Net Zero by 2070** requires a stable "baseload" power source to replace coal. While solar and wind are growing, their intermittency threatens grid stability. Nuclear energy, currently stagnant at **8.8 GW (less than 2% of the mix)**, is the only zero-carbon alternative. The Bill targets **100 GW by 2047**, which requires an estimated **$200 billion** investment—far beyond the fiscal capacity of the public sector (NPCIL/BHAVINI)

Economic and FDI Dimension: By allowing up to **49% FDI** in joint ventures, the Bill invites global capital from sovereign wealth funds and energy giants. This ends the "Capital Starvation" of the nuclear sector, where projects often took 15+ years due to funding delays.

The Technological Shift (Small Modular Reactors): The Bill shifts focus from massive, multi-billion dollar pressurized heavy water reactors (PHWRs) to **Small Modular Reactors (SMRs)**. These factory-built units (under 300 MW) are cheaper, safer, and can be deployed closer to industrial hubs, making them attractive for private industrial captive power.

Legal & Liability Dimension: A historical roadblock for foreign suppliers (like Westinghouse or Rosatom) was **Section 17(b)** of the 2010 CLND Act, which allowed operators to sue suppliers for accidents. The SHANTI Bill aligns India with the **Convention on Supplementary Compensation (CSC)**, capping supplier liability and channeling it into a **National Nuclear Insurance Pool**.

Strategic Sovereignty: To address security concerns, the Bill retains **State Monopoly** over the "Front-end" (uranium enrichment) and "Back-end" (spent fuel reprocessing) of the nuclear fuel cycle.

Positives, Negatives, and Government Schemes

Positives: *Scale: Rapidly increases India's clean energy footprint.

Innovation: Incentivizes R&D in thorium-based fuels (India's three-stage program).

Employment: High-tech job creation in the nuclear supply chain.

Negatives:

Regulatory Capture: The **AERB (Atomic Energy Regulatory Board)** needs statutory independence from the Department of Atomic Energy (DAE) to prevent private operators from influencing safety norms.

Waste Management: The Bill lacks a detailed roadmap for the long-term cost of decommissioning private plants.

Government Schemes: Nuclear Energy Mission (Budget 2025), **Net Zero 2070**, **Panchamrit Commitments**.

Examples

Bharat SMRs: The 220 MW indigenous SMR design being institutionalized under this Bill.

NTPC-NPCIL JV: An existing model of cooperation that this Bill will now scale to include private firms like Tata or Reliance.

Way Forward

The government must ensure that the "Regulator" (AERB) is empowered with penalizing powers equal to the private sector's scale. Public outreach is vital to address "Radiophobia" (Fear of radiation) among local communities near new potential sites.

Conclusion

The SHANTI Bill is the "1991 Moment" for Indian energy. It acknowledges that strategic secrets cannot come at the cost of national energy poverty.

Practice Mains Question: *"How does the SHANTI Bill 2025 address the 'Triple Constraint' of Funding, Technology, and Liability in India's nuclear energy sector? Examine the role of Small Modular Reactors (SMRs) in this transition."*

Gaganyaan G-1 Success: The Final Step to Human Spaceflight

Syllabus: GS III (Science & Technology – Space Awareness)

Context

On the morning of December 17, 2025, ISRO successfully recovered the **Crew Module (CM)** of the **Gaganyaan G-1 Mission** from the Arabian Sea. This was the first "Full-Up" uncrewed test flight, validating the human-rating of the launch vehicle and the life support systems.

Detailed Multi-Dimensional Analysis

Technological Mastery: The Human-Rated LVM3 (HLVM3)

The mission used the **HLVM3**, a modified version of the GSLV Mk-III. The critical success was the performance of the **CE-20 Cryogenic Engine**, which had been re-engineered for "Human Rating" (higher safety margins and redundancy).

Orbital Module performance: The spacecraft orbited Earth for 24 hours at an altitude of **400 km**. The **Environmental Control and Life Support System (ECLSS)** successfully maintained a "shirt-sleeve environment" (25°C, oxygenated) inside the cabin, proving it can sustain human life.

The "Vyommitra" Role

The humanoid robot **Vyommitra** was onboard. Unlike a passive dummy, she performed tasks like **flipping switches, reading monitor panels,** and simulating human metabolic heat. Her data logs (heart rate simulation, radiation exposure) confirmed that the cabin environment is safe for the actual astronauts (Gaganauts) scheduled to fly in 2026.

Strategic Implications: The Space Station Goal

This success is the foundational stone for the **Bharatiya Antariksha Station (BAS)** planned for 2035. Mastering "Re-entry and Recovery" technology is essential for any nation aspiring to have a permanent presence in space.

Space Diplomacy: With this, India joins the elite club (USA, Russia, China) capable of independent human transport. This reduces reliance on foreign agencies (like NASA/Roscosmos) for training and opens doors for India to launch astronauts from "Global South" nations in the future.

Positives, Negatives, and Government Schemes

Dimension	Positives	Negatives/Challenges
Technology	Mastery of Re-entry thermal protection (ablative tiles withstood 2000°C).	High cost; some critics argue funds could be better used for satellite constellations (agriculture/disaster).
Economy	Boosts the private space sector (IN-SPACe); 70% of components were sourced from	Risk of delays; any failure in G-1 would have pushed the manned mission back by years.

155

Dimension	Positives	Negatives/Challenges
	Indian MSMEs.	
Soft Power	Positions ISRO as a low-cost, high-reliability provider for human spaceflight.	Space debris management remains a concern for Low Earth Orbit (LEO) missions.

Related Schemes: Indian Space Policy 2023, IN-SPACe initiatives.

Example/Case Study

The Crew Escape System (CES): During the ascent phase, ISRO simulated a "abort scenario" electronically. The system's response time was **less than 500 milliseconds**, proving that if the rocket fails, the astronauts can be ejected to safety instantly.

Way Forward

With G-1 successful, ISRO must now focus on **G-2 (carrying a pressurized crew)** and the **docking technologies** required for the future space station. Private sector participation must be scaled up to handle routine manufacturing so ISRO can focus on R&D.

Conclusion

Gaganyaan G-1 is not just a test flight; it is India's declaration that it is no longer just a "satellite launcher" but a **"Space Power"** capable of expanding the human footprint in the cosmos.

Mains Practice Question:

"The success of the Gaganyaan G-1 mission marks a shift from 'robotic' to 'human' space exploration for India. Discuss the technological challenges of Human Rated Launch Vehicles and the strategic significance of this mission for the Bharatiya Antariksha Station."

AI & Copyright: The DPIIT "Hybrid Model" (The Right to Remuneration)

Syllabus: GS III (Science & Technology – AI; Intellectual Property Rights – IPR).

Context: On December 22, 2025, the **DPIIT** (Department for Promotion of Industry and Internal Trade) released its much-awaited Working Paper on **Generative AI and Copyright**. It proposes a global-first "Hybrid Statutory Licensing Model."

Multi-Dimensional Analysis

Rejecting "Fair Use" for AI: AI giants like OpenAI and Google argue that training models on public data is "Fair Use." DPIIT has rejected this, stating that while a human "reading" a book is fair use, an **AI "consuming" a billion books** to create a commercial product is a "Commercial Extraction" that requires compensation to the original creators.

The Mandatory Blanket License: To avoid thousands of individual lawsuits (like the *ANI vs. OpenAI* case), DPIIT proposes a **Mandatory Blanket License**. AI companies will have the *right* to scrape Indian data, but they must pay a "Remuneration Fee" into a centralized fund. This prevents "Opt-out" battles while ensuring the cash flow to creators.

Revenue-Share vs. Training-Fee: In a pragmatic move, DPIIT suggests that royalties should not be charged at the *training stage* (which would kill startups) but at the **commercialization stage**. If an AI tool generates revenue in India, a fixed percentage of that revenue must be distributed to the **Copyright Royalties Collective (CRCAT)**.

Protecting "Digital Identity": The paper introduces the concept of **"Moral Rights in the Age of AI."** It mandates that AI developers must provide a "Transparency Log." If an AI-generated image uses the "style" of an Indian

156

artist, that artist must be credited in the metadata, preventing cultural erasure.

Analysis Table: The DPIIT AI-Copyright Framework

Stakeholder	Old Conflict	New DPIIT Solution
Artists/Writers	Data is "stolen" for free.	**Guaranteed Royalty** via CRCAT fund.
AI Startups	Fear of massive lawsuits.	**Legal Immunity** through Blanket License.
Tech Giants	"Pay-per-word" is impossible.	**Revenue-share model** (easier to calculate).
Consumers	High cost of AI.	**Balanced Pricing** through government-set rates.

Example: A software engineer in Bengaluru writes a specialized coding blog. A US-based LLM trains on this blog and sells a "Coding Assistant" subscription in India. Under the new paper, the US company must pay a % of its Indian revenue to a collective, which then pays the engineer a "Data Royalty" based on his contribution.

Way Forward:

Creation of CRCAT: Establish the "Copyright Royalties Collective for AI Training"—a non-profit body with representatives from music, literature, and software industries.

Bhashini Integration: Use these royalties to fund **Project Bhashini**, ensuring that local language creators are the primary beneficiaries of AI wealth.

International Coalition: India should use its position in the **GPAI (Global Partnership on AI)** to push for this "Statutory Licensing" as

the global standard, preventing "Regulatory Arbitrage" by tech giants.

Conclusion: The DPIIT paper is a landmark in "Digital Justice." It asserts that **Human Creativity is the 'Fuel' of AI**, and therefore, creators must be the "Shareholders" of the AI revolution, not its victims.

3. Economy & Industry: India Semiconductor Mission (ISM) – Talent Pipeline

Syllabus: GS Paper III – Effects of liberalization on the economy; Science and Technology- developments and their applications.

Context: On Dec 12, 2025, the Ministry of Electronics and IT (MeitY) informed Parliament (PIB) that the **Semicon India Programme** has approved 10 units with an investment of **₹1.6 Lakh Crore** and has trained **67,000 students** in chip design.

Main Body: Multi-dimensional Analysis

Strategic Autonomy: Chips are the "new oil." India's dependence on Taiwan and China for semiconductors is a national security risk. Local fabs for Silicon and Silicon Carbide are essential for defense and EVs.

Economic Multiplier: The semiconductor ecosystem includes design, fabrication, assembly (ATMP), and packaging. Success here would trigger a "boom" in the electronics export sector, targeting $300 billion by 2030.

Talent as a Moat: Unlike other nations, India's strength is its large pool of design engineers. The **"Chips to Startup" (C2S)** program is providing high-end design tools to 397 universities.

Geopolitics: India is positioning itself as a "Trusted Partner" in the global supply chain, attracting firms like Lam Research and Micron away from "at-risk" geographies.

Analysis Table:

Positives	Negatives/Challenges	Government Schemes
Job Creation: High-value engineering jobs and technical "Green Jobs."	Water & Power: Fabs require millions of liters of ultra-pure water and 24/7 power.	Semicon India Programme: ₹76,000 Cr outlay for the ecosystem.
Export Boost: Transition from being a consumer to a "Creator of Chips."	Gestation Period: It takes 3–5 years for a Fab to become operational.	DLI Scheme: Design Linked Incentive for local startups.
Indigenous Tech: 56 chips already fabricated at SCL Mohali using Indian design.	Technology Lag: India is currently focusing on 28nm-40nm, while the world is at 2nm.	PLI for IT Hardware: Supports local assembly of devices.

Example: The partnership with **Lam Research** aims to generate 60,000 trained manpower in nanofabrication over the next 10 years.

Way Forward:

Infrastructure Readiness: State governments (Gujarat, Assam, UP) must ensure dedicated "industrial townships" for Fabs.

Focus on Compound Semis: Invest in Gallium Nitride (GaN) for future-ready applications like 6G and satellite comms.

Conclusion: The India Semiconductor Mission is not just an industrial policy; it is a quest for **"Technological Atmanirbharta."** Building a talent pipeline is the surest way to ensure that the ₹1.6 lakh crore investment yields long-term results.

Practice Mains Question: *"Discuss the role of the 'Talent Pipeline' in making India a global semiconductor hub. How does this mission align with India's national security interests?"*

SECURITY AGENCIES IN INDIA

Mandatory 'SIM Binding' for Messaging Apps to Curb Cyber Fraud

Syllabus

GS-III: Security challenges and their management in border areas; role of external state and non-state actors in creating internal security challenges. **Cybersecurity.**

Context

The Department of Telecommunications (**DoT**) has mandated **SIM Binding** for all app-based communication platforms (WhatsApp, Telegram, Signal, etc.) under the **Telecommunication Cybersecurity Amendment Rules, 2025**. This rule requires the messaging service to function *only* if the registered mobile number's **SIM card is physically present** in the device.

Main Body in Multi-Dimensional Analysis

This directive is a major step towards enhancing cybersecurity and tackling rampant cross-border cyber fraud.

Mechanism (SIM Binding): If the registered SIM is removed, replaced, or becomes inactive (e.g., switched off for too long), access to the messaging account must be blocked. Web versions of these platforms (like WhatsApp Web) must also auto-logout every six hours.

Need and Rationale:

Curbing Cyber-Frauds: Fraudsters often use Indian mobile numbers, activated with **fake/mule IDs**, to set up messaging accounts. They then remove the SIM and operate the accounts from abroad, making it difficult for law enforcement to trace them.

TIUE Regulation: The rule aims to regulate the **Telecommunication Identifier User Entity (TIUE)**, which uses mobile numbers as digital identifiers for communication services.

Law Enforcement: This makes it easier for cyber police to trace accounts to a physical device and SIM, helping solve cross-border fraud cases.

Implementation Challenges: Messaging platforms need significant technological overhauls to comply within the 90-day deadline. Concerns include potential disruption to genuine users (especially those with dual-SIM phones or those traveling abroad) and the possibility of **over-regulation** of personal digital space.

Implications

Aspect	Description
Security	A strong deterrent against cybercriminals who exploit the **anonymity** of messaging apps using disposable SIMs.
Privacy	Raises concerns about potential increased surveillance, as the system creates a direct link between the app, the device, and the user's telecom identity.
Governance	Highlights the government's increasing intervention in regulating over-the-top (**OTT**) communication platforms.

Way Forward

The government must ensure that the technical implementation includes a robust mechanism for **user grievance redressal** and exceptions for genuine cases (like SIM card damage or travel), preventing unintended disruption to daily communication.

Practice Mains Question

GS-III: Analyze the rationale behind the mandatory 'SIM Binding' rule for messaging applications. What are the potential trade-offs between enhanced cybersecurity and the concerns regarding user privacy and convenience? (250 words)

Mandatory Pre-installation of 'Sanchar Saathi' App for Cyber Safety

Syllabus

GS-III: Security challenges and their management. Role of external state and non-state actors in creating internal security challenges. **Cybersecurity.**

Context

The government has directed all smartphone manufacturers to **pre-install the 'Sanchar Saathi' cyber safety application** on all new devices sold in India. This move is part of the broader **Telecommunication Cybersecurity Amendment Rules, 2025**, aimed at curbing mobile-related fraud and enhancing user safety.

Main Body in Multi-Dimensional Analysis

'Sanchar Saathi' is a citizen-centric portal launched by the Department of Telecommunications (DoT) that helps users **track and block lost/stolen mobile phones** and check the ownership status of mobile numbers.

Cybersecurity Rationale: The application provides critical tools to combat rising cyber-frauds, particularly **SIM cloning, IMEI manipulation, and identity theft**. Pre-installation ensures that all users, including those less tech-savvy, have immediate access to these security features upon purchasing a new device.

Mandate and Concerns: The government has specified that the app **cannot be deleted** by the user, a measure intended to maximize its effectiveness. However, this raises several concerns:

Privacy and Surveillance: The inability to uninstall the app may lead to public concerns about potential government surveillance or

data monitoring, even if officials state the app's functions are purely for security.

Sovereignty of Device: It interferes with the user's control over their personal device and may set a precedent for other mandatory pre-installed government software.

Software Bloat/Performance: The forced inclusion could impact the performance of entry-level smartphones.

Digital Governance: This action highlights the government's approach to securing the digital infrastructure through **mandatory pre-emptive measures** rather than solely relying on user discretion.

Implications

Aspect	Description
Fraud Reduction	Direct and immediate protection for all smartphone users against common mobile-related identity and financial frauds.
Digital Trust	If transparently implemented, it can boost user confidence in the safety of digital transactions and communication.
Legal Review	The 'non-deletable' clause could face legal challenges on the grounds of infringing on user privacy and device autonomy.

Way Forward

To mitigate privacy concerns, the government must issue a **clear and transparent policy document** detailing the app's exact permissions, data collection protocols, and an independent third-party audit of its security and privacy features.

Practice Mains Question

GS-III: Discuss the pros and cons of the government's directive to mandate the pre-installation of the 'Sanchar Saathi' app on all new mobile phones. How can India effectively balance cyber safety with the protection of user privacy and device autonomy? (250 words)

Border Security Force (BSF) Report on Terror Launchpads along Jammu Frontier

Syllabus

GS-III: Security challenges and their management in border areas; linkages of organized crime with terrorism.

Context

The **Border Security Force (BSF)** has reported to the Ministry of Home Affairs (**MHA**) that Pakistan has actively rebuilt and reactivated several **terror launchpads** along the **Jammu frontier (International Border – IB)**, noting increased movement and enhanced surveillance under **Operation Sindoor**.

Main Body in Multi-Dimensional Analysis

This BSF report underscores the ongoing security challenges posed by cross-border terrorism, despite the relative stability observed after the 2021 ceasefire agreement along the Line of Control (LoC).

Tactics and Infrastructure: Launchpads are staging areas in close proximity to the border used to facilitate the infiltration of trained terrorists. Their rebuilding indicates Pakistan's intent to push more foreign terrorists into India, often exploiting natural features or using sophisticated methods like **drones and underground tunnels**. The BSF has enhanced surveillance to counter these tactics.

Security Strategy (Operation Sindoor): This operation involves increased patrolling, upgraded technological surveillance (e.g., thermal imagers, ground sensors, anti-drone systems), and strengthening the physical fence height and quality to improve resilience against infiltration and breach attempts.

The Geopolitical Context: The renewed activity on the Jammu IB comes amid internal political flux in Pakistan and a focus

160

on the LoC due to the ceasefire. The use of the International Border (IB) often indicates a shift in tactics to evade the heavy concentration of troops and surveillance on the LoC.

Linkages with Drug Trafficking: Terror groups increasingly use the IB route for **narco-terrorism**, where drugs are smuggled to finance terror activities. The BSF strategy must address this nexus of organized crime and terrorism.

Implications

Aspect	Description
Internal Security	Heightened risk of terrorist attacks in the hinterland of Jammu & Kashmir and other parts of India.
BSF Modernization	Calls for faster modernization and deployment of advanced surveillance and counter-infiltration technology for the BSF.
Diplomacy	Provides concrete evidence for India to raise the issue of state-sponsored terrorism at international forums and with bilateral partners.

Way Forward

The government needs to expedite the deployment of a **Comprehensive Integrated Border Management System (CIBMS)** along the entire Jammu IB and invest in specialized anti-drone technology to counter the rapidly evolving threat landscape.

Practice Mains Question

GS-III: Analyze the challenges posed by the reported reactivation of terror launchpads along the Jammu frontier. What key strategies and technological advancements are necessary to counter cross-border infiltration and narco-terrorism in this sector? (250 words)

DoT Mandates SIM-Binding for Messaging Apps (Digital Governance/PIB)

Syllabus: GS-III: Internal Security; Challenges to internal security through communication networks; GS-II: E-governance, applications.

Context: The Department of Telecommunications (DoT) mandated that messaging apps (WhatsApp, Telegram, etc.) enforce **continuous SIM-Binding** (linking the app account to a live, KYC-verified Indian SIM) to curb digital and cross-border frauds.

Main Body in Multi-Dimensional Analysis:

Internal Security & Cyber Crime: This aims to eliminate the misuse of Indian mobile numbers via virtual SIMs or cloned numbers operating from abroad for phishing, digital arrests, and investment scams.

Digital Accountability: The measure enhances traceability, linking every account to a real, verified person, crucial for law enforcement and fraud detection.

Technology & Privacy: It raises concerns regarding user privacy and the potential for surveillance, necessitating a robust legal framework (like the upcoming Digital India Act) to define data usage boundaries.

Analysis: Positives, Negatives, Schemes

Category	Description
Positives	**Curbing Frauds:** Significantly reduces cybercrime, especially those originating from outside India, using spoofed numbers. **Public Trust:** Restores citizen confidence in using app-based communication.
Negatives	**Privacy Concerns:** Mandates constant monitoring of SIM status, potentially infringing on user privacy. **Implementation Challenge:** Requires significant, complex changes from global

Category	Description
	platforms like WhatsApp and Telegram.
Govt Schemes	**Sanchar Saathi Portal** (DoT initiative to protect telecom identifiers); **Digital India Mission** (aims for secure digital services).

Examples: The DoT cited 'digital arrests' and impersonation scams, where criminals use Indian numbers via VoIP/virtual SIMs to target citizens.

Way Forward: Establish clear data protection protocols for the SIM-binding data. The DoT must collaborate with app providers to find a privacy-preserving technical solution, perhaps through local encryption, while meeting security needs.

Conclusion: The DoT's SIM-binding mandate is a necessary, stringent response to the evolving nature of cybercrime, balancing the need for digital security with the preservation of citizen privacy.

Practice Mains Question: "The mandatory SIM-Binding for messaging applications seeks to curb digital fraud but raises concerns over user privacy. Critically analyze the security rationale and ethical implications of this regulatory direction by the DoT." (15 marks, 250 words)

Internal Security: Target "Naxal-Free India" by 2026

Syllabus

GS Paper III: Internal Security; Role of external state and non-state actors in creating challenges; Linkages between development and spread of extremism.

Context

A **PIB** release on December 15, 2025, highlighted the near-elimination of Left-Wing Extremism (LWE), with the government setting a firm deadline for a **Naxal-free Bharat by March 2026**.

Multi-Dimensional Analysis

Security Dimension: Success of **'Operation Black Forest'** and the clearing of core zones like Abujhmad. LWE districts have dropped from 126 (2014) to just 11.

Financial Dimension: Choking of Maoist funds through the **NIA and ED**, seizing assets worth over ₹100 crore and disrupting "urban support networks."

Social Dimension: Large-scale surrenders facilitated by a revised rehabilitation policy offering up to ₹5 lakh and monthly stipends.

Developmental Dimension: The "Security-Development" twin-track approach, focusing on 12,000 km of roads and 4G saturation in tribal belts.

Positives, Negatives, and Government Schemes

Positives:

Recruitment of local tribal youth through the **Bastariya Battalion**.

Collapse of the **Tactical Counter Offensive Campaign (TCOC)** of Maoists.

Restoration of democracy through local body elections in "liberated" zones.

Negatives:

Residual Pockets: The last remaining cadres are in the densest terrains, making final elimination tactically difficult.

Ideological Mutation: Risk of the movement shifting to digital propaganda and urban "intellectual" fronts.

Related Schemes: SAMADHAN strategy, **Special Central Assistance (SCA)**, and **Eklavya Model Residential Schools**.

Examples

Operation Black Forest: A precision-led operation in 2025 that neutralised 27

162

hardcore cadres and decapitated the regional leadership.

Way Forward

Governance Vacuum: Filling liberated areas with civil administration, healthcare, and education to prevent re-radicalization.

Inter-State Coordination: Ensuring that remnants do not escape into neighboring states through "hot pursuit" protocols.

Conclusion

The transition from a "Red Corridor" to a "Development Corridor" marks a historic turnaround in India's internal security, shifting the focus from conflict to constitutional integration.

Practice Mains Question: *"Examine the role of 'Integrated Development' as a tool for counter-insurgency in the context of India's recent successes against Left-Wing Extremism."*

Naxal-Free India 2026: The Final Security Surge

Syllabus: GS III (Internal Security, LWE)

Context

The MHA's December 2025 status report on Left-Wing Extremism (LWE) indicates that the "Red Corridor" has shrunk to just **9 districts**. The government has set a definitive deadline of **March 2026** for a "Naxal-Free India."

Main Body: Multi-Dimensional Analysis

The "Operation Black Forest" Impact: This 2025 operation used satellite-linked drones and **AI-in-a-Box** to track guerrilla movements in the dense Abujhmad forests, neutralising 300+ cadres in one year.

The "Vikas Camp" Model: As soon as a territory is cleared, the **District Reserve Guard (DRG)** sets up camps offering Aadhaar, health services, and banking. This "Vacuum Filling" prevents the return of the Maoist ideology.

Choking the Urban Network: The **NIA** and **ED** have targeted the "Levi-collection" (extortion) funds, seizing ₹150+ crore and breaking the link between forest cadres and their urban ideologues.

Infrastructure Saturation: The construction of **12,000 km of roads** and 5,000 4G towers in core zones has ended the "Geographic Isolation" that Maoists thrived on.

Positives, Negatives, and Government Schemes

Positives: * Highest-ever surrender rates (2,000+ in 2025).

Local recruitment via the **Bastariya Battalion** has turned locals into "Force Multipliers."

Negatives: * Residual pockets in the "Tri-junction" (Kerala-Karnataka-Tamil Nadu) are becoming new hideouts.

Risk of "State Overreach" during the final push, potentially alienating innocent tribals.

Government Schemes: SAMADHAN **Strategy**, **Aspirational Districts Programme**, **Special Central Assistance (SCA)**.

Examples

Ekam AI: The Indian Army's indigenous secure platform used for real-time situational awareness in LWE zones, displayed on Dec 16.

Way Forward

The final push must be accompanied by **"Forest Rights Act"** implementation. Security alone cannot win; the sense of "Land Ownership" is the only permanent antidote to Maoist recruitment.

Conclusion

India is at the "Last Mile" of its longest internal war. The transition from a "Red Corridor" to a "Development Corridor" is nearly complete.

Practice Mains Question: *"Winning the 'Final Mile' against Left-Wing Extremism requires more than military force. Discuss the role of 'Governance Saturation' in achieving the 2026 Naxal-Free target."*

Vijay Diwas 2025: The "Indigenous" Edge

Syllabus: GS I (Post-Independence History); GS III (Security, Defence Tech)

Context

On **Vijay Diwas (Dec 16, 2025)**, the Indian Army showcased three indigenous AI-based platforms—**Ekam AI, AI-in-a-Box, and Project SAMBHAV**—marking the 54th anniversary of the 1971 victory.

Main Body: Multi-Dimensional Analysis

The 1971 Legacy: While 1971 was a triumph of "Tri-Service Synergy" (Army, Navy, Air Force), 2025 is a triumph of **"Cyber-Physical Synergy."** The victory over Pakistan is now used as a template for "Multi-Domain Warfare."

"AI-in-a-Box" (Force Multiplier): This indigenous portable AI system allows soldiers in remote, "GPS-denied" areas (like Siachen or dense LWE forests) to analyze surveillance data without internet connectivity.

Data Sovereignty (Ekam AI): By using an indigenous secure AI platform for sensitive documents, India has ended its reliance on foreign cloud servers (Microsoft/Google) for military data, preventing potential "Cyber-Sabotage" during wartime.

Aatmanirbharta in Defence: In 1971, India was under a Western arms embargo. In 2025, India is an **Exporter** of high-tech defense gear (₹25,000 crore target), with the **Tejas Mk2** and **BrahMos** leading the way.

Positives, Negatives, and Government Schemes

Positives: * Reduces the "Import Bill" for defense.

Showcases India as a "Net Security Provider" in the Indo-Pacific.

Negatives: * **Technological Gap:** India still lags in high-end **Jet Engine** and **Semiconductor** manufacturing.

The "Agnipath" debate continues to question the long-term impact of short-term recruitment on military ethos.

Government Schemes: iDEX (Innovations for Defence Excellence), DAP 2020, Make in India in Defence.

Examples

Project SAMBHAV: A secure, end-to-end mobile ecosystem for the Indian Army, providing encrypted communication to the last soldier.

Way Forward

India must pivot from "Platform-centric" (buying tanks/planes) to **"Network-centric"** warfare (focusing on AI, electronic warfare, and space-based assets).

Conclusion

Vijay Diwas is no longer just about celebrating a 1971 map-changing event; it is about celebrating the **"Strategic Autonomy"** that indigenous technology provides in 2025.

Practice Mains Question: *"Examine the transition from 'Man-behind-the-Machine' to 'AI-empowered-Soldier' in the context of the indigenous technologies showcased on Vijay Diwas 2025."*

Bureau of Port Security (BoPS): Securing India's Maritime Gateways

Syllabus: GS III: Internal Security; Infrastructure (Ports); GS II: Statutory, Regulatory, and Quasi-judicial bodies.

Context: On December 19, 2025, the Union Home Ministry chaired a high-level meeting to operationalize the **Bureau of Port Security (BoPS)**. Constituted under **Section 13 of the Merchant Shipping Act, 2025**, it is modeled

164

after the Bureau of Civil Aviation Security (BCAS).

Multi-Dimensional Analysis

Strategic Security: India's 7,500 km coastline and 12 major ports are vulnerable to asymmetric threats (terrorism, smuggling, and piracy). BoPS provides a unified **regulatory and oversight framework** to replace the currently fragmented security management between different port trusts and state police.

The "Graded Security" Model: Moving away from a "one-size-fits-all" approach, BoPS will implement security protocols based on a port's **vulnerability, trade volume, and geographic location**. For example, transshipment hubs like Vizhinjam will have higher tech-surveillance compared to smaller feeder ports.

Cyber-Physical Convergence: Modern ports are highly digitized. BoPS includes a dedicated **Cybersecurity Division** to protect Automated Terminal Operating Systems (TOS) from ransomware and state-sponsored digital espionage that could cripple national supply chains.

Private Port Integration: Unlike earlier frameworks that primarily focused on major (government) ports, BoPS mandates that **Private/Non-Major ports** (like Mundra or Krishnapatnam) must also undergo mandatory security audits by the **CISF**, which has been designated as the **Recognised Security Organisation (RSO)**.

Analysis Table: Positives, Negatives, and Schemes

Feature	Analysis
Positives	**Unified Command:** Single point of accountability for maritime security; **ISPS Compliance:** Aligns India with International Ship and Port Facility Security standards; **Capacity Building:** CISF to train private security agencies.

Feature	Analysis
Negatives	**Cost Burden:** Higher security compliance costs for smaller private operators; **Jurisdictional Overlap:** Potential friction between BoPS, Coast Guard, and State Marine Police.
Govt. Schemes	**Sagarmala Programme, Maritime India Vision 2030**, National Maritime Security Coordinator **(NMSC)**.

Example: The 2008 Mumbai attacks utilized the sea route; BoPS is the final institutional brick in the wall to ensure that "Port Entry" becomes as strictly regulated as "Airport Entry."

Way Forward: Integrating **AI-based facial recognition** and **underwater drones** for hull inspections into the BoPS standard operating procedures.

Conclusion: BoPS is not just a security body; it is an economic insurance policy for India's target of becoming a global maritime powerhouse.

Mains Question: "The creation of the Bureau of Port Security (BoPS) marks a shift from reactive to proactive maritime governance." Examine the challenges and opportunities of this transition.