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GENERAL STUDIES 1

1.1. CULTURE

1.1.1. HOW THE MAHAD SATYAGRAHA(S) SHAPED CONSTITUTIONAL DISCOURSE

Why in the News?

Recent historical reflections identify **Mahad in the Bombay Presidency** as the birthplace of one of India's earliest **assertions of human rights**, led by **Dr. B. R. Ambedkar** in **1927**. The two phases of the Mahad Satyagraha evolved from the **right to water access** to a broader **ideological challenge** against caste-based discrimination. These actions are seen today as laying the **foundation of constitutional principles of equality, dignity, and social justice**.

Historical Context

- **Caste-based denial of public rights**—Dalits were barred from accessing water from the **Chavdar (Chavdar) tank** despite it being a public resource.
- In **1923**, Bombay Legislative Council allowed access to public watering places for Depressed Classes — **law existed but was not enforced**.
- Mahad became the focal point where **legal rights were translated into lived rights**.

Core theme: From **legal permission** → to **social assertion** → to **normative transformation**

Mahad Satyagraha — Stages, Objectives & Impact

I. Mahad Satyagraha 1.0 (20 March 1927): Access to Water

- Ambedkar and followers **drank water publicly** to assert rightful access.
- **Direct challenge** to caste hierarchy governing public spaces.
- Demonstrated that **dignity** is inseparable from **essential resources**.

Message: Equality requires **practical access**, not just written permission.

II. Mahad Satyagraha 2.0 (25 December 1927): Burning of Manusmriti

- Continued resistance led Ambedkar to **target the ideological root** of untouchability.
- **Manusmriti**, associated with the caste system and patriarchy, was publicly burnt.
- Shift from **rights over resources** to **transformation of social morality**.
- Campaign expanded to include **gender dignity**, highlighting women's liberation within anti-caste struggle.

Message: True equality demands **ending the scriptural & moral sanction** behind discrimination.

Mahad → Constitutional Ethos: A Clear Linkage Table

Mahad Action	Principle Asserted	Constitutional Echo
Public use of Chavdar Tank	Equal access to public resources & dignity	Art. 14 (Equality), Art. 21 (Dignity), Art. 17 (Abolition of Untouchability)
Burning Manusmriti	Rejection of caste-based & patriarchal norms	Secular, egalitarian foundations; protections against discrimination (Art. 15 & 16)

Inclusion of women in mobilisation	Intersectional social justice	Gender justice provisions; DPSPs for marginalized upliftment (Art. 46)
Collective mobilisation + legal rights	Rights must be **enforced**, not symbolic	Constitutional mechanisms: reservations, anti-discrimination laws

Essence: Mahad acted as a **prototype** for India's future constitutional fight against entrenched inequality.

Major Themes for Analysis

1. **Substantive vs. Formal Equality** – Rights must ensure **dignity** and **access** — not mere legal symbolism.
2. **Symbolic Politics as Reform Catalyst** – Burning Manusmriti shaped **public morality** → essential for legal reform.
3. **Intersectionality in Reform** – Anti-caste movement integrated **women's rights** — social justice is not singular.
4. **Law + Social Mobilisation** – **People's struggle** transforms laws into **reality** — constitutional principle reinforced.

Timeline

Year	Event	Outcome
1923	Council allows access to public watering places	Legal foundation for rights
20 Mar 1927	Satyagraha for water access	Public assertion of equality
25 Dec 1927	Burning of Manusmriti	Ideological break from caste hierarchy

Conclusion

Mahad transformed the fight against untouchability from a demand for **welfare** into a struggle for **human rights**, influencing the very **soul of the Constitution** — **equality, dignity, and social justice**.

Q. *The Mahad Satyagraha was not merely a struggle for water access, but a pioneering movement that sought to bridge the gap between 'formal legality' and 'substantive equality'." In this context, analyze how the events at Mahad served as a conceptual prototype for the fundamental rights enshrined in the Indian Constitution.*

1.2. INDIAN SOCIETY

1.2.1. NEED FOR STRUCTURAL REFORMS IN CITY MANAGEMENT

Why in the News?

Recently, the rise of **Zohran Mamdani** as the **Mayor of New York City in the United States** has brought into sharp focus the prevalent **lack of visibility** of similarly elected civic officials in Indian cities, leading to a critical debate on the need for systemic change in **urban governance**.

- This discussion gains urgency from several administrative actions concerning **urban local bodies:**

- **Brihanmumbai Municipal Corporation (BMC)** elections are scheduled for **2026** after a lapse of several years.
- **Twenty-seven municipalities** in Telangana are being **merged** into the **Greater Hyderabad Municipal Corporation (GHMC)**.
- **Bruhat Bengaluru Mahanagara Palike** has been administratively **divided into five corporations**.

Background and Context

Structural and Historical Reasons for the Mayor's Limited Role

- **Chief Ministerial Supremacy:** Structurally, the **Chief Minister** is regarded as the **most powerful person** controlling **city affairs in India**, contrasting with the period until the **1960s** when Mayors were significantly more visible.
- **Centralization of Decision-Making:** The entire political system is organized around **State Assemblies**, consequently resulting in decisions about cities being taken in the **Chief Minister's office** (peshi), not in the Mayor's office.
- **Historical Shift:** During the **Independence struggle**, Mayors were highly visible, and several national-level politicians initially served as city Mayors; however, this prominence has since diminished.
- **Urban Local Government History: Urban local government in India** possesses a **long history**, predating the U.S., with the **Madras Municipality being the oldest in South Asia,** created in the **17th century** as a nominated body where presidency towns had fairly empowered municipalities.

The Paradoxical Impact of Constitutional Amendments

- **Deterioration Post-74th Amendment:** Paradoxically, the situation of urban governance **deteriorated** even after the **73rd and 74th Amendments** constitutionalized municipalities and corporations.
- **Underlying Factors:**
- **Severe political competition** is identified as a cause.
- **Apathy of citizens** is cited as a major contributing factor.
- **Supply-Driven Decentralisation: Democratic decentralisation** in India is regarded as a **supply-driven reform measure**, meaning it has **not been demanded by the people**, evidenced by the absence of parliamentary or State elections fought on the issue of strengthening or holding municipal elections.

Challenges in Responsive City Governance

Political Subordination and Financial Weakness of ULBs

- **Subordination to Political Bosses:** In many States, **MLAs and MPs** are made **ex-officio members** of the municipalities, which essentially reduces **corporators and Mayors** to **subordinates** of their bigger political party bosses.
- **Restricted Functions and Revenue:** Municipalities possess a **very small revenue base** and have **very limited actual functions**, with most civic work performed by other entities like **bureaucrats and state-run agencies** (parastatals).

- **Failure of the 74th Amendment:** The belief that the **74th Constitution Amendment** would solve these issues **failed** because the Amendment **ignored and bypassed the political reality**.
- **Citizen Ignorance:** Urban people are seen as **fairly ignorant** about the **nitty-gritties of government**, with insufficient recognition of the local government as a government, leading to indifference towards demands for strengthening it.

Administrative Restructuring and Malafide Intentions

- **Postponement of Elections:** Administrative changes, whether unifying civic bodies into a big bloc (Hyderabad) or dividing them into manageable blocs (Bengaluru), are viewed as **malafide justifications** intended **to create a fait accompli** and ensure that elections can be **postponed**.
- **Circumventing Judicial Review:** Politicians are found to use **delimitation** as a tactic to **neutralise courts**, which would otherwise be outraged and enforce the conduct of elections.
- **Territory Management:** The expansion, contraction, division, and subdivision of city administrations are primarily interpreted as **territory management by the Chief Minister's office** or the Assembly, and not as measures for governance or ease of governance.
- **Delhi's Structural Disaster:** The case of **Delhi** is cited as a **huge disaster** where the political space was not **decluttered**, resulting in a State-like structure with a Chief Minister compressing a municipal system in the same space, where actions were sometimes taken with **purely malafide intentions** to harass political opponents.

Way Forward for Decentralized Governance

- **Demand-Side Advocacy:** Making the governance of Indian cities more responsive is contingent upon the **people demanding it**, which is essential as politics responds to public demand for strengthening local governments and local corporations.
- **Reducing State Overreach:** The priority should be less about making the Mayor more powerful and more about **cutting back the power of the Chief Minister's Office** over city administration.
- **Financial and Decision-Making Decentralization:**
- **Financial allocations** need to be **decentralised**, including transferring monies to the **ward level** to ensure ward offices secure the funds they need.
- **Local-level decision-making structures** must be in place, otherwise power devolution will not happen even within municipal budgets.
- **Redesigning Governance:** It is imperative to acknowledge the **political reality of cities** and **redesign things** in each city, in each State, instead of imposing a uniform solution.
- **Institutional Clarity and Parastatal Reform:**
- **Clear delineation of roles** and responsibilities is required to fix the complicated mechanisms that currently control everything.
- It is extremely important to ensure that **parastatals** do not become excessively **big and powerful autonomous agencies**; fixing these issues is key for the Mayor to become visible and the municipal system to become active.

Conclusion

- **Indian urban governance** trapped in Chief Minister dominance, invisible Mayors, **financially starved municipalities, parastatal overreach, election delays** via restructuring, and citizen

indifference has rendered cities unaccountable despite **74th Amendment promise,** as evidenced by **Bengaluru/Hyderabad/Delhi experiments and Zohran Mamdani contrast.**

- Holistic transformation demands **citizen-led demands, power devolution, financial autonomy, institutional clarity,** and **political reality**-aligned reforms to elevate **local governments** as empowered democratic hubs addressing urban challenges effectively.

Q. *Lack of financial resources and independence in managing local funding is hindering the economic and social development of urban areas. Discuss.*

Q. *"The financial suitability of the Urban local bodies can become a reality only when they receive their due share of public finances." Explain.*

1.2.2. THE RISING WAVE OF INDIAN STUDENT MIGRATION

Context: The Current Landscape

- **Scale:** Over 12.5 lakh Indian students are currently in higher education institutions across 150+ countries.
- Canada remains the top host (~4.27 lakh), but fresh study permits for Canada saw a sharp **70-80% drop** in late 2024/2025 due to diplomatic tensions and housing caps.
- **Diversification:** Countries like **Germany** (doubled enrollment to ~60,000), **Uzbekistan, Georgia, and Russia** are emerging as major hubs for STEM and Medicine.

Reasons for Student Migration:

Push Factors

These are the internal constraints that motivate students to seek education outside the domestic system:

- **The "Seat Scarcity" Crisis:** Despite the growth of private universities, there is a massive deficit in seats at premier public institutions (IITs, IIMs, AIIMS). For instance, the acceptance rate at top IITs remains below 1%, compared to 5–10% at Ivy League schools.
- **Outdated Curricula:** Many Indian university syllabi are perceived as theory-heavy and slow to adapt to emerging fields like **Generative AI, Quantum Computing, or Sustainability Science**.
- **Competitive Stress:** The high-stakes nature of entrance exams (JEE, NEET, CUET) creates a "pressure cooker" environment, leading many families to view foreign education as a more holistic and less stressful alternative.
- **Lack of Research Infrastructure:** India's R&D expenditure remains **below 1% of GDP.** Students aspiring for high-end research find better-funded labs and more grants in the US, Germany, and South Korea.

Pull Factors

These are the advantages offered by host countries that entice Indian talent:

- **Post-Study Work (PSW) Rights:** This is the #1 driver. Policies like the **UK's Graduate Route (2 years)** and the **US STEM-OPT (3 years)** allow students to earn in foreign currency, helping them repay massive education loans.
- **Higher Return on Investment (ROI):** Entry-level salaries in sectors like Nursing, Tech, and Data Science in countries like Canada or Australia are often **5–10 times higher** than equivalent roles in India.
- **Global Networking:** Studying in hubs like London, Boston, or Berlin provides access to a "Global Diaspora" and multinational recruitment pipelines that are harder to access from within India.
- **Pathways to Residency:** In countries like Canada and Australia, a local degree is a formal "bridge" to Permanent Residency (PR), making education a strategic migration tool.

Socio-Economic Drivers

- **Democratization of Loans:** The rise of FinTech lenders specifically targeting the study-abroad market has made it possible for middle-class students from Tier-2 and Tier-3 cities to afford international degrees.
- **The "Social Prestige" Factor:** In many Indian communities, an "Oxford" or "Harvard" tag is still viewed as a significant mark of social mobility and "marriage market" value.
- **Ease of Information:** The proliferation of "Ed-Tech" consultants and social media influencers sharing "Day in the Life" videos abroad has demystified the migration process.

Impact on India:

1. Economic Impact

The economic consequences are felt most directly in India's foreign exchange reserves and the banking sector.

- **Forex Outflow:** In the 2024-25 period, Indian families spent roughly **$17-20 billion** on overseas education. However, a recent trend in **late 2025** shows a **24% dip** in education remittances (down to $0.32 billion in August 2025), as families become more cautious due to stricter visa rules in Canada and the UK.
- **Remittances:** India remains the world's top recipient of remittances (~$118 billion in 2024). A large portion of this comes from high-skilled professionals who originally migrated as students.
- **Education Loan Market:** Student migration has fueled a massive boom in the **NBFC (Non-Banking Financial Company)** sector, which saw nearly **50-70% growth** in education loan assets over the last two years.

2. Intellectual Impact (Brain Drain vs. Brain Gain)

- **Brain Drain:** India loses the "cream" of its talent. Nearly **86%** of Indian students in STEM fields abroad tend to stay in their host countries for at least 5 years post-graduation. This deprives India of researchers and innovators during their most productive years.
- **Brain Gain (The "Feedback Loop"):** Interestingly, the *prospect* of migration encourages more students to take up STEM and IT subjects domestically. For every one student who migrates, several others acquire the same high-level skills but stay in India, bolstering the local tech ecosystem.

- **Reverse Brain Drain:** Since 2023, there has been a significant rise in "Returnees." Over **9 million Indians** returned to India in 2023-24, many being Silicon Valley veterans coming back to lead Indian deep-tech startups.

3. Social and Cultural Impact

- **Soft Power:** The "Great Indian Student Diaspora" acts as a cultural ambassador. The presence of 1.8 million students globally strengthens bilateral ties and increases the "brand value" of Indian workers.
- **Social Mobility:** For many middle-class families, an overseas degree is the fastest ticket to upward social mobility, often bridging the gap between "working class" and "global elite" in a single generation.
- **Family Fragmentation:** A negative social impact is the "Left-Behind" phenomenon, where elderly parents in states like Punjab and Kerala are left without immediate family support, leading to a rise in geriatric care needs.

Challenges:

1. The "Housing Crisis"

This has emerged as the single biggest challenge in 2024-25, particularly in Canada, the UK, and Australia.

- **Hyper-inflation in Rent:** In cities like Toronto and London, average rents for one-bedroom apartments have crossed **$2,400 (approx. ₹2 lakh)** per month.
- **Scams and Overcrowding:** Many Indian students are forced into "hot-bedding" (sharing a single bed in shifts) or become victims of rental scams on social media where non-existent properties are "leased" to them before they arrive.
- **Geographical Isolation:** To find affordable housing, students often live 1.5–2 hours away from campus, leading to a "commuter's burnout" that affects academic performance.

2. Economic & Financial Volatility

- **Currency Depreciation:** The Indian Rupee (INR) has depreciated against the USD and Euro. Even a **5-6% dip** translates to an additional **₹2–3 lakh** in annual expenses for a typical middle-class family.
- **Stagnant Loan Support:** While the Union Budget 2025 offered tax relief for middle-class families, it did not introduce new subsidies for international education loans. Interest rates for education loans now range between **9% and 13%**, creating a high debt-to-income ratio for fresh graduates.
- **TCS (Tax Collected at Source):** The **20% TCS** on non-loan-based foreign remittances above ₹7 lakh remains a significant upfront liquidity burden on parents.

3. Policy & Visa Volatility (The "Closed Door" Trend)

- **The "Canada Rejection" Wave:** In 2025, Canada implemented its most restrictive regime yet, rejecting nearly **74-80%** of Indian study permit applications to curb domestic housing pressure.
- **Dependent Bans:** The UK has restricted Master's students from bringing dependents, which has specifically impacted older Indian professionals (30+) looking to upskill with their families.
- **PSW Uncertainty:** Frequent "reviews" of Post-Study Work (PSW) visas in the UK and Australia create a climate of fear, as students are unsure if they will be allowed to stay long enough to recover their investment.

4. Safety & Mental Health

- **Anti-Immigration Sentiment:** In late 2025, several host countries have seen a "sharpest reversal" in public opinion on immigration. This has occasionally manifested as micro-aggressions or xenophobia toward international students, who are being blamed for local housing shortages.
- **Isolation & Loneliness:** According to recent health reports, nearly **20% of first-year Indian students** abroad show symptoms of mental health disorders like anxiety and depression, but less than 40% actually access campus support due to cultural stigma.

Government Initiatives:

1. Diplomatic & Institutional Agreements (Mobility Partnerships)

The government is signing "Migration and Mobility Partnership Agreements" (MMPAs) to formalize post-study work rights and ensure fair treatment of Indian students.

- **Mutual Recognition of Qualifications (MRQs):** India has recently operationalized MRQs with the **UK and Australia**. This means degrees obtained in these countries are automatically recognized for government jobs and higher studies in India, and vice-versa.
- **India-Germany Mobility Pact:** Facilitates easier academic exchange and grant of "job-seeker visas" for Indian STEM graduates.
- **Joint Declaration of Intent (JDI):** Recent pacts with **France and Italy** aim to increase Indian student enrollment to 30,000 and 10,000 respectively by 2030.

2. Digital Support & Welfare Frameworks

The Ministry of External Affairs (MEA) leverages technology to track and protect students.

- **Global Pravasi Rishta Portal:** A unified platform to connect the Indian diaspora, including students, with Indian Embassies for real-time communication during crises.
- **MADAD Portal:** A digital grievance redressal system where students can report issues ranging from visa delays to university fraud.
- **Indian Community Welfare Fund (ICWF):** Contingency funding available at all Indian Missions to provide emergency legal, medical, or repatriation assistance to students in distress.

3. Financial Initiatives & Scholarships

Specific schemes target underrepresented communities to ensure migration isn't limited to the wealthy.

- **National Overseas Scholarship (NOS):** A fully-funded scheme by the Ministry of Social Justice and Empowerment for students from **SC, ST, and Landless Labourer** categories to pursue Master's and Ph.D. abroad.
- **Padho Pardesh (Ambedkar Interest Subsidy):** Provides interest subsidies on education loans for students from Minority communities and OBCs.
- **Scholarship Programme for Diaspora Children (SPDC):** While primarily for PIO/OCI children, it facilitates a "reverse migration" by encouraging the diaspora to study in top Indian institutions like NITs and IIITs.

4. Internationalization of Domestic Education (NEP 2020)

To reduce the "push factor" of limited local seats, the government is bringing "foreign education to India."

- **GIFT City Regulations:** Allowing top 500 global universities (like **Deakin and Wollongong**) to set up independent campuses in Gujarat's GIFT City, free from domestic fee and curriculum regulations.
- **Study in India (SII) Portal:** While aimed at attracting foreign students to India, this initiative has forced Indian universities to improve their infrastructure to "global standards" to retain domestic talent.

Way Forward & Solutions:

1. Strengthening the "Education at Home" Ecosystem

- **Fast-track Foreign Campuses:** Accelerate the setting up of the **17 approved foreign universities** (like Southampton, Deakin) in GIFT City and beyond. This allows students to earn international degrees at **40-50% lower costs**, saving billions in forex.
- **Twinning & Dual Degrees:** Encourage Indian HEIs (Higher Education Institutions) to form "3+1" or "2+2" partnerships (2 years in India, 2 years abroad). This reduces the financial burden on families while still providing global exposure.
- **National Research Foundation (NRF) Scaling:** Increase public R&D spending from 0.64% to **at least 1.5% of GDP** to create high-end research jobs that make "staying in India" a viable intellectual choice for STEM graduates.
- **National Education Policy (NEP) 2020 Implementation:** Accelerating the internationalization of Indian higher education to retain top talent.

2. Safeguarding Student Interests Abroad

- **Bilateral "Housing Pacts":** India should negotiate with host governments (Canada, UK, Australia) to include student housing quotas in bilateral trade or mobility agreements, ensuring that universities do not admit more students than they can house.
- **Mandatory Insurance & Pre-departure Training:** Making standardized pre-departure orientations mandatory to educate students on **legal rights, rental laws, and mental health resources** in their host countries.
- **Standardized Credit Transfer:** Implementing a "Global Academic Bank of Credits" to allow students to return to India and finish their degrees if they face visa or financial issues abroad without losing academic years.

3. Turning "Brain Drain" into "Brain Circulation"

- **The "Returning Scientist" Scheme:** Launching repatriation grants (similar to China's 'Thousand Talents' program) to attract AI and Deep-Tech researchers back to Indian IITs and startups with competitive salaries and housing support.
- **Leveraging Diaspora Networks:** Creating a formal **"Student-Alumni Bridge"** where successful Indian professionals abroad mentor incoming students, reducing the reliance on predatory "consultants" and "agents."
- **Global Skill Mapping:** Aligning India's vocational training (Skill India) with the specific labor shortages of aging economies (e.g., healthcare in Japan, tech in Germany) to ensure purposeful, high-value migration rather than desperate "degree-seeking" migration.

Conclusion:

Student migration is no longer a crisis of "loss" but a strategic asset of **"soft power"** and **"economic link."** However, for India to truly benefit, it must balance the export of talent with the creation of a world-class domestic ecosystem that makes **"returning to India"** a preferred career choice.

Q. *"Is the rising migration of Indian students abroad a case of 'brain drain' or 'brain circulation'?" Analyse the economic and human capital dimensions of Indian student migration and suggest policy measures to maximise national gains."*

1.2.3. CAPTURING URBAN DYNAMISM IN THE 2027 CENSUS

Why in the News?

The **2027 Census** of India marks a significant milestone as the world's largest administrative exercise, delayed from 2021 due to the pandemic. It introduces innovative approaches to urban data collection, addressing the limitations of traditional methods.

Evolution of Census and Urbanization in India

- India's census has been a cornerstone of national planning since 1872, offering decennial snapshots of demographic, economic, and social realities. The **2011 Census** highlighted a 6% increase in urban population to 377 million, yet it exposed flaws in the existing classification system.
- Traditional definitions—based on population size (>5,000), density (>400 persons/sq km), and workforce composition (>75% non-agricultural)—often fail to capture transitional areas, leading to undercounted urban footprints and distorted planning.
- Building on this, the 2027 Census proposes transitional steps to maintain comparability with 2011 data while adopting global best practices. For instance, it aligns with the UN's "**Degree of Urbanisation**" framework, which views areas on a continuum rather than strict binaries.
- This evolution is essential because rapid urbanization has blurred boundaries, with peri-urban villages increasingly integrated into city economies. Historical data shows that official figures may miss up to 53 million urban dwellers, affecting everything from infrastructure funding to service delivery.

Key Features of the 2027 Census Approach

To overcome past limitations, the 2027 Census incorporates advanced technologies and methodologies, ensuring efficiency and accuracy in data capture. This builds a foundation for long-term trend analysis and policy integration.

Technological Innovations

- At the core are digital tools like mobile **geo-tagging apps**, which allow enumerators to map buildings in real-time using GPS. A centralized platform will handle data collection, validation, and open-access dissemination, minimizing errors from manual processes.
- These innovations not only enhance monitoring but also create visual dashboards for stakeholders, revealing the true spatial extent of urban agglomerations.

Spatial Grid Methodology

- A key shift is the use of static spatial grids (e.g., 1 km x 1 km cells) to transcend irregular administrative boundaries. This method offers several advantages: it enables longitudinal tracking of urban sprawl, protects privacy through aggregated data, and supports intersectional analysis by overlaying themes like housing, services, and climate hazards.
- Globally, similar approaches are seen in the **UK's grid-based environmental data** or Canada's geo-statistical surveys. In India, this aligns with the **2022 National Geospatial Policy's** 4m x 4m grid system, facilitating climate-proof investments and hazard mapping.

Focus on Urban Dynamism

- The census will emphasize agglomeration insights, such as **Delhi's projected rise to the world's fifth-largest urban area by 2027** (UN estimates). It extends beyond demographics to cover economic binaries (formal vs. informal), service gaps, and environmental indicators.
- Inclusivity is prioritized, with measures to enumerate marginalized groups like migrants, ensuring comprehensive coverage of blended urban-rural conditions.

Challenge	Impact on Urban Planning	Mitigation Strategy
Boundary Distortions	Underestimates peri-urban growth, leading to inequitable fund allocation.	Adopt UN-style agglomeration metrics with GIS overlays.
Privacy Risks	Potential misuse of geo-data, eroding public trust.	Implement differential privacy techniques and ethical guidelines.
Digital Divide	Tech gaps hinder accurate tagging in underserved areas.	Use hybrid models: digital for urban centers, manual for remote zones.
Inter-Sectoral Coordination	Siloed ministries delay scheme integration.	Establish a national data coordination body.

Analysis: Implications for India's Urban Future

The 2027 Census has far-reaching implications, serving as a tool for transformative governance. By providing dynamic data, it enables targeted actions that connect economic growth, social equity, and environmental resilience.

Policy and Governance Reforms

Granular insights will refine resource devolution, prioritizing high-density areas for initiatives like water and sanitation schemes. It supports inclusive growth by highlighting informal sectors, aligning with self-reliance goals. On sustainability, grid-based analysis can model resilient cities, integrating with national frameworks to meet global commitments like SDGs.

Opportunities for Innovation

This opens avenues for public-private partnerships in urban analytics, fostering data ecosystems similar to international models. Globally, it positions India as a leader in geospatial standards, enhancing monitoring of development goals.

Critical Evaluation

Success depends on balanced execution: over-reliance on technology risks excluding offline populations, while undercounting (as in 2011) could skew outcomes. Ultimately, the census redefines urban planning as predictive and equitable, paving the way for a resilient future.

Conclusion

The 2027 Census is far more than a headcount; it is a **foundational reimagination** of how India sees, governs, and plans its cities. By replacing static administrative silos with dynamic spatial grids and agglomeration lenses, it promises to resolve decades-old distortions in urban data and resource allocation. If executed with robust privacy safeguards, inclusive enumeration, and seamless inter-governmental coordination, this census can become the bedrock of equitable, climate-resilient, and economically vibrant urban India in the Amrit Kaal.

Q. *Why do large cities tend to attract more migrants than smaller towns? Give reasons with examples in support of your answer.*

Q. *Does urbanization lead to more segregation and/or marginalization of the poor in Indian metropolises? Give reasons with examples in support of your answer.*

***

Scan to attempt more questions...

GENERAL STUDIES 2

2.1. POLITY

2.1.1. A LANDMARK LAW IN 2013, IT NEEDS A SPINE IN 2025

Strengthening the POSH Act for Effective Workplace Gender Justice

Why in the news?

A recent case in Chandigarh, where a professor was dismissed following an ICC inquiry into a sexual harassment complaint filed by a student on September 12, 2024, has turned the spotlight once again on the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013** — commonly known as the **POSH Act**.

While the case is seen as a successful implementation of the Act, it also exposes the **persistent legal and institutional loopholes** that continue to deny timely and empathetic justice to women, particularly within educational institutions.

Significance of the POSH Act

- Enacted in response to the **Vishaka Guidelines** and the rising recognition of workplace harassment
- Aimed to ensure **safe spaces**, **institutional accountability**, and **swift redressal**
- Made Internal Complaints Committees mandatory to ensure **in-house adjudication**

However, a decade later, real-world cases highlight that the Act **has not evolved** to match the **changing nature of harassment** and the **power imbalances in academia**.

Key Issues and Gaps in the Current Framework

1. Concept of Consent: Narrow and Incomplete

The Act defines "consent" but fails to account for:

- **Emotional manipulation**
- **Abuse of power**
- **Fraud or coercion**

In campuses where power imbalance is inherent, consent initially assumed as voluntary can later prove **invalid and exploitative**. The law must acknowledge that harassment is not just physical or verbal, but also **psychologically abusive**.

2. Limitation Period: Justice With a Deadline

The Act requires filing a complaint **within 3 months** of the incident.

But in reality:

- Victims need time to process trauma
- Evidence of patterns may emerge only after years
- Hostel/campus environments often **hide prolonged exploitation**

A short expiry risks **emboldening perpetrators**.

3. Language of the Law: Diluting the Seriousness

Referring to the accused as ***"respondent"*** softens the perception of the misconduct. In workplaces outside academia, such actions may clearly constitute crimes. Thus, linguistic ambiguity leads to **normalisation of harassment**.

4. Burden of Proof: Heavier on the Woman Than the Law Acknowledges

The standard of proof under the Act often shifts responsibility entirely onto the complainant:

- Lack of witnesses
- Institutional hesitation
- ICCs ill-equipped to recognise **behavioural patterns**

Harassment is rarely a **one-off event**. It manifests through repeated actions over time — something the law must recognise.

5. Institutional Weakness: Hesitation and Inexperience

Many institutions lack:

- Properly trained ICC members
- Trauma-informed procedures
- Sensitivity toward complainants
- Accountability for inquiry delays

The process becomes **re-traumatising** instead of supportive.

6. Inter-Institutional Complaints: A Legal Blind Spot

In academia, teachers and students frequently move across:

- Universities
- Conferences
- Collaborative spaces

However, there is **no legal structure** to pursue complaints spanning multiple institutions. This often allows offenders to **repeat misconduct freely**.

7. Digital Harassment: Law Unable to Match Technology

With encrypted messaging platforms and disappearing evidence, ICCs face:

- Difficulty interpreting digital material
- Lack of technical protocol
- Challenges in verifying authenticity

Harassment has evolved — the law hasn't.

Impact of These Gaps

- Loss of faith in institutional justice
- Fear of complaining due to stigma or retaliation
- Repeat offences go unchecked
- Psychological and academic consequences for students

Gaps → Consequences → Required Reforms

Gap in POSH Act / Implementation	Consequences	What Needs to Change
Narrow understanding of consent	Normalisation of emotional coercion	Include psychological and power-based exploitation
Short complaint period (3 months)	Victims denied justice due to delayed reporting	Extend timelines; allow exceptions for delayed recognition
Soft terminology ("respondent")	Dilutes seriousness of offence	Clearer language emphasising accountability
Heavy burden of proof on woman	Genuine cases dismissed	Accept pattern-based and corroborative evidence
Weak ICC capacity	Biased or flawed inquiries	Standardised training, independence, external oversight
No provision for multi-institution cases	Offenders repeat harassment freely	Coordination mechanisms and jurisdiction clarity
Outdated approach to digital evidence	Crucial evidence missing	Legal SOPs for digital collection and preservation
Misuse of "malicious complaint" safeguards	Intimidation of complainants	Narrow and clearly defined thresholds

What Reforms Are Needed?

Legal Amendments

- Redefine consent with emphasis on **informed and voluntary participation**
- Extend limitation period with flexibility for special circumstances
- Establish protocols for **digital evidence**
- Limit misuse of "malicious complaint" clause

Strengthening ICCs

- Mandatory, periodic **training and certification**
- Include external subject-matter experts
- Ensure **time-bound** inquiry completion

Safeguarding Complainants

- Psychological counseling and academic continuity support
- Protection against retaliation
- Confidential processes to reduce trauma

Digital & Structural Modernisation

- Empower ICCs with technical expertise
- Mechanisms for **inter-institutional coordination**, especially in higher education
- Transparent reporting of institutional compliance

Conclusion

The Chandigarh case proves the **POSH Act has the potential** to ensure accountability. Yet, justice should not rely on **exceptional cases** alone.

To truly secure workplaces — especially universities where young women face systemic power disparities — the law must evolve:

- **Clearer language**
- **Stronger protections**
- **Modern evidence standards**
- **Robust institutional mechanisms**

Only then will the POSH Act move from being **symbolic on paper** to **effective in practice**, ensuring dignity, safety, and equity for women across India's workplaces.

Q. *What are the main socio-economic challenges faced by women in India?*

Q. *"The rights of persons with disabilities are human rights". In the light of this statement, discuss the challenges faced in exercising the rights of such persons.*

2.1.2. DECODING PERSONALITY RIGHTS IN THE AGE OF AI

Why in the news?

A recent legal action by well-known Indian actors against major platforms has thrust the question of **personality rights vs. generative AI** into public view. AI systems are now able to synthesize faces, voices and mannerisms so convincingly that they can create lifelike but fake content which can harm reputation, market value, dignity and privacy. The incident has exposed gaps in existing law and judicial practice and prompted urgent debate on how the law should treat personality (or publicity) rights, digital impersonation, platform responsibility and remedies in the era of deepfakes and large-scale AI training.

Background: what are personality rights and why they matter now

Personality rights protect a person's control over their image, name, voice and other identity markers. Historically grounded in privacy, dignity and property doctrines, they have two principal aspects:

1. **Personal dignity/privacy**: protection from misuse or humiliating depictions.
2. **Economic/publicity**: the right to monetise commercial uses of likeness or to prevent unauthorised commercial exploitation.

Why AI is a watershed:

- Generative models can produce **high-fidelity replicas** of an individual's face, voice or behaviour from limited data.
- Training data often includes public images, videos and audio that are scraped without consent.
- Synthetic content is **cheap to produce**, viral in distribution, and technically hard to attribute or remove once spread.

Legal landscape — current position and its limits

India: hybrid and evolving

- India recognises **privacy and dignity** (landmark judgment on the right to privacy), and courts have dealt with individual instances of personality-related harms.
- **No consolidated statutory right to publicity/personality**: enforcement relies on privacy jurisprudence, defamation law, certain intellectual property claims and intermediary rules.
- Result: **case-by-case remedies**, uneven protection, and enforcement gaps (especially for digital impersonation and cross-institutional harms).

Comparative snapshot

Jurisdiction	Legal focus	Strengths	Limits
United States	Right of publicity (state law); torts, IP	Robust commercial protection in many states; monetary remedies	Patchwork—varies by state; balancing First Amendment issues
European Union	Data protection (GDPR), dignity & personality	Consent and data-processing safeguards; emphasis on dignity	GDPR is process/data centric—not a dedicated personality right
China	Emerging regulation on synthetic content	Moves toward strict controls on deepfakes and authenticity	State-centric approach; human rights concerns
India	Privacy + torts + limited statutory rules	Strong privacy judgment precedents; flexible remedies	No single statutory right; enforcement and cross-border issues

Key legal and operational issues highlighted by recent event(s)

1. **Definition and scope of "consent"**

- **Under AI:** consent to use a person's data for model training or to reproduce their likeness must be **informed, specific and revocable**.
- **Problem:** content publicly available (performances, social media) is often treated as fair fodder for training; power asymmetries (e.g., student/teacher, celebrity/platform) make consent meaningful only with safeguards.

2. **Personality vs. privacy vs. copyright**

- Many cases sit at the intersection: is misuse a **copyright** issue (wrongful copying), a **privacy**/dignity violation, or an economic/publicity wrong?
- Courts sometimes apply different doctrines inconsistently; a statutory clarity would reduce friction.

3. **Attribution, provenance and technical evidentiary challenges**

- Synthetic content can be **anonymised and distributed globally**. Authenticating origin, proving training sources and demonstrating causation are technically demanding for courts and investigators.

4. **Platform liability and takedown mechanisms**

- Fast removal and transparency around content moderation are essential — current intermediary frameworks are partial and reactive.

- Platforms need protocols for detection, provenance tagging/watermarking and expedited notice-and-action for AI-generated abuse.

5. **Cross-institutional harms and jurisdictional gaps**

- In creative and academic ecosystems, actors and victims move across platforms and institutions. There is a policy void for **multi-institutional complaints** and for continuity of remedies.

6. **Digital evidence and forensic capacity**

- ICCs, tribunals and trial courts require technical SOPs and accredited forensic procedures to handle encrypted or ephemeral digital evidence.

Judicial trends and doctrinal pointers (what courts are doing)

- Courts globally are increasingly **recognising personality/publicity interests** distinct from privacy; some decisions protect voice and likeness from AI replication.
- Indian courts have been reactive—granting relief case by case—without a comprehensive statutory benchmark.
- **Practical lesson:** judicial attitudes are shifting toward **protection of identity as both dignity and property**, but the **legal framework must catch up**.

Policy and legislative gaps

Gap	Consequence	Recommended legal/administrative reform
No unified statutory personality/right to publicity	Fragmented remedies, inconsistent outcomes	Enact a statutory framework recognising personality rights (commercial + dignity aspects)
Shortage of platform obligations on provenance	Difficulty tracing and removing deepfakes	Mandatory watermarking /provenance tech; transparency reports; platform liability norms
Weak institutional capacity (ICCs, courts)	Re-traumatisation; poor evidence handling	Mandatory training; technical forensic cells; SOPs for digital evidence
Limitation periods not suited to psychological harms	Delayed recognition of abuse barred	Extend/expand limitation rules; allow exceptions for pattern/psychological abuse
No coordination across institutions	Perpetrators exploit jurisdictional gaps	Mechanism for inter-institutional complaints and cross-border cooperation
Ambiguity around "malicious complaint" provisions	Chill on genuine complaints	Clear, narrow definitions and safeguards against misuse

Recommended legal design

1. **Statute defining personality rights** — cover name, image, voice, likeness, distinctive style and algorithmic replicas; recognise both **non-economic (dignity)** and **economic (publicity)** dimensions.
2. **Consent & data-use rules** — informed, auditable consent for training data; special protection where power imbalance exists.

3. **Provenance & watermarking mandate** — AI-generated audiovisual content must carry robust, tamper-resistant provenance metadata.
4. **Platform duties** — detection, expedited takedown, human review, transparency; penalties for wilful non-compliance.
5. **Evidence & forensic protocols** — lab accreditation, chain-of-custody rules for digital proofs, training for adjudicators.
6. **Remedies** — interim injunctions, takedowns, damages (including reputational/market harm), correction orders, and criminal sanctions for fraud/blackmail.
7. **Inter-institutional & cross-border coordination** — formal channels for complaints across universities, media houses and platforms; bilateral cooperation with other jurisdictions.
8. **Safeguards** — carve-outs for satire, legitimate criticism, and freedom of expression with clear balancing tests.

Institutional measures and best practices (beyond law)

- **Capacity building**: mandatory training for complaint committees, judges and investigators in digital forensics and trauma-informed interviewing.
- **Model ICC protocols**: privacy-protective, time-bound inquiries, counselling and interim protection (no-contact orders).
- **Public awareness**: digital literacy campaigns to help users spot and report synthetic content.
- **Industry standards**: encourage AI developers to adopt "responsible datasets" and opt-in licensing for celebrities/creators.

How courts and regulators should balance rights

- **Freedom of expression vs. personality and dignity**: allow legitimate creative expression and reporting, restrict deceptive impersonation that causes harm.
- **Innovation vs. protection**: regulations should be **proportionate** and **technology-neutral** — avoid blanket bans that stifle research while ensuring accountability for commercial misuse.
- **Due process for platforms**: notice, an opportunity to contest takedowns, but with speed for harms that are time-sensitive.

Use-case scenarios and suggested remedies

Scenario	Harm	Immediate remedy	Longer term fix
Deepfake-enabled sexual harassment	Reputational trauma, career loss	Emergency takedown, interim injunction, counselling	Criminalisation of non-consensual intimate deepfakes; fast track tribunals
AI clone voice used for fraud	Financial loss	Freeze offending accounts, injunctive relief, financial restitution	Mandatory voice provenance standards; platform liability for marketplace misuse
AI-generated fake testimonial misusing celebrity image	Market dilution	Order to cease & desist; damages	Right to publicity statute; watermarking of synthetic ads
Academic advisor's voice replicated coercing student	Psychological harm, abuse of power	Institutional protective measures; inquiry	Multi-institution complaint mechanism; campus policies on AI misuse

Institutional Response and Safeguards

- Adopt **clear AUPs (Acceptable Use Policies)** for AI-generated content and explicit consent rules for use of student/employee data.
- Create an **AI misuse response team**: take down, notify victims, preserve evidence, coordinate with law enforcement.
- Mandate **ethical clauses** in conferences and collaborations — no unauthorised recording or modelling of participants.

Conclusion — the way forward

The episode that brought personality rights and AI into the headlines is not an isolated controversy; it is a symptom of a systemic mismatch between **fast evolving AI capabilities** and **slow, fragmented legal responses**. Protecting identity in the digital age requires a **coherent mix of law, technology standards and institution-building**:

1. **Statutory clarity** on personality rights and algorithmic impersonation.
2. **Robust platform accountability** and technical provenance.
3. **Capacity building** for institutions and the justice system to handle digital, cross-border harms.
4. **Balanced rules** that protect dignity and commerce without killing legitimate speech or innovation.

Only with this "spine" — coherent rules, institutions and technical standards — will societies be able to harness creative potential of AI while preventing exploitation of human identity.

Q. *What are the main socio-economic implications arising out of the development of Artificial Intelligence?*

Q. *Do you think that the Constitution of India does not accept principle of strict separation of powers rather it is based on the principle of 'checks and balances'? Explain.*

2.1.3. AIR QUALITY CRISIS: GOVERNANCE FRAGMENTATION AND INSTITUTIONAL RESPONSE

Why in the News?

- The **air quality index** in North India was recently observed hovering near **400** (Very Poor/Severe), prompting a small and peaceful crowd near **India Gate** to express concern.
- This citizen demonstration was confronted by the **Delhi government** with a **heavy police presence**, including deployment of **Rapid Action Force units**, signaling the state's approach of treating citizen engagement as a **law-and-order** rather than a **governance problem**, thereby attracting critical attention to the efficacy of the current administrative response to the persistent pollution issue.

Context and Scope of the Air Pollution Crisis

Air quality in North India during winter is commonly discussed as a Delhi issue, but monitoring stations have revealed a much wider crisis requiring a comprehensive, permanent institutional approach.

Geographical Extent and Shared Airshed

- **Continuous Zone of Foul Air:** Monitoring stations have revealed a continuous zone of **foul air** extending from areas around **Islamabad to Bihar**, indicating the pollution is not confined to the capital.
- **Shared Airshed:** Emissions from key sectors such as **industry, power generation, transport, and agriculture** circulate in this **shared airshed**, which must be recognized as the **primary unit of governance** for effective control.
- **National Crisis:** North India's winter **smog** is merely the most visible part of a **wider national crisis**, as long-term analyses, such as the **Air Quality Life Index**, have shown that **unsafe air** is now the **norm for most of India**.

Citizen Engagement and State Response

- **Shift in Public Response:** Delhi's **middle class** has historically responded to poor air quality primarily through personal measures like using **air purifiers**, closing windows, taking **vacations**, and expressing **private dissatisfaction**, but the recent protests suggest a shift in public engagement is occurring.
- **Governance Failure:** State response, characterized by **policing** rather than **engagement**, suggests that the government views these gatherings as a threat to **political embarrassment** rather than addressing the core issue of **public safety** and **governance inadequacy**.

Institutional Fragmentation and Inadequate Response

Present regulation, monitoring, and enforcement arrangements are demonstrably **insufficient across States and sectors**, largely due to a fragmented governance structure that treats the permanent condition as a seasonal emergency.

Fragmented Authority

- **Split Jurisdiction:** Authority is currently split among various bodies, including **central ministries, State departments, municipal bodies, and specialized regulators**.
- **Partial Authority:** Each of these bodies possesses **partial jurisdiction** and operates with **mixed incentives**, contributing to the fragmentation of the response mechanism.

Role of Commission for Air Quality Management (CAQM)

- **Mandate:** The **Commission for Air Quality Management (CAQM)** was specifically created to address this **fragmentation** of authority and is empowered to direct emissions control, coordinate among States and agencies, and impose sanctions.
- **Intervention Gap:** Despite its strong mandate, the CAQM's interventions have **not matched the scale or persistence of the problem**, encouraging only **bursts of action** instead of demanding **permanent institutions** to tackle the permanent condition.

Way Forward

Solutions leading to lasting changes require abandonment of temporary measures and a courageous political vision to mandate time-bound, structural reforms across major polluting sectors, backed by real enforcement.

Strengthening Institutional Mandate and Transparency

The **Commission for Air Quality Management (CAQM)** must decisively utilize its full mandate to enforce structural changes across the shared airshed.

- **Mandatory Time-bound Sectoral Plans:** The CAQM should immediately issue **binding directives** requiring all concerned governments and **major industrial emitters** to submit detailed, time-bound, and verifiable **sectoral action plans**. These plans must include specific, quantifiable emission reduction targets (e.g., in terms of PM2.5 and PM10 reduction) and clear milestones for implementation.
- **Continuous Monitoring and Public Data Access:** Compliance must be tracked through **continuous, real-time monitoring** of emissions data from all regulated sources. Furthermore, this comprehensive monitoring data must be made **publicly accessible** in a user-friendly format, ensuring transparency, facilitating academic scrutiny, and empowering citizens to hold authorities accountable.
- **Institutional Permanence:** The institutional framework must transition from viewing the issue as a **seasonal emergency** to a **permanent condition** requiring **permanent institutions**, ensuring resources, personnel, and enforcement mechanisms are available year-round, not just during the winter months.

Targeted Structural Interventions in Key Emission Sources

The focus must shift entirely from technical quick fixes that consume public funds to fundamental, structural interventions in the five main polluting sectors.

- **Power and Industry:**
  - **Tighter Emission Norms and Enforcement:** Regulatory agencies must impose significantly **tighter emission norms** for industrial units and thermal power plants. **Real enforcement** must follow, including stiff penalties and temporary or permanent closure orders for non-compliant entities.
  - **Retirement and Retrofitting:** A **time-bound plan** must be established for the mandatory **retirement** of old, highly polluting power plants and industrial facilities, or their comprehensive **retrofitting** with modern emission control technologies, such as Flue Gas Desulphurization (FGD).
- **Transport Sector:**
  - **Clean Fuel Transition: Robust support** for the accelerated transition to **cleaner fuels and technologies** (e.g., electric mobility, hydrogen fuel cells) must be provided through subsidies, tax incentives, and infrastructure development.
  - **Fleet Modernization and Public Transit:** Mandatory policies for **fleet modernization** and the expansion of efficient, non-polluting **public transport systems** must be pursued to reduce reliance on private vehicles, particularly older, more polluting ones.
- **Construction Sector:**
  - **Strict Dust Control: Tighter norms** for dust management at construction and demolition sites must be strictly enforced, including mandatory use of anti-smog guns, covering of materials, and disposal of waste as per guidelines.
- **Agriculture (Crop Residue Burning):**
  - **Credible Alternatives and Support:** Governments must provide **credible, accessible, and economically viable alternatives** to farmers for managing **crop residue**. This includes subsidized procurement of *in-situ* residue management machinery (e.g., happy seeders), promotion of *ex-situ* utilization (e.g., for bio-energy or packaging), and providing direct financial incentives for avoiding burning.

Governance and Citizen Engagement

- **Shifting State Mindset:** The state must shift its response from **policing** citizen gatherings to genuine **engagement** with public concerns, recognizing that the gatherings represent a legitimate **governance problem** demanding action, not a law-and-order threat.
- **Inters-State Coordination:** Given the nature of the **shared airshed**, **seamless and mandatory coordination** among all concerned State governments is essential, facilitated and enforced by the CAQM, to ensure a unified and consistent application of emission control policies across the entire geographical zone of foul air.

Conclusion

- The North India air quality issue, characterized by its extensive **airshed** and the permanency of the unsafe air condition, demands a profound shift from managing **political embarrassment** through policing to demonstrating **courageous political vision** through **governance engagement** and **structural reforms**.
- The systemic failure is rooted in **institutional fragmentation** and the reliance on **seasonal emergency measures**.
- Long-term solutions necessitate the **CAQM** using its full mandate to require **sectoral action plans** with **real enforcement** and **public transparency**, moving decisively towards fundamental interventions in **power, industry, transport, construction, and agriculture** to achieve lasting environmental change.

Q. *"Discuss in detail the photochemical smog emphasizing its formation, effects and mitigation. Explain the 1999 Gothenburg Protocol".*

Q. *"Describe the key points of the revised Global Air Quality Guidelines (AQGs) recently released by the World Health Organisation (WHO). How are these different from its last update in 2005? What changes in India's National Clean Air Programme are required to achieve these revised standards?".*

2.1.4. SUPREME COURT'S OPINION ON 16TH PRESIDENTIAL REFERENCE

Why in the News?

Recently, **Supreme Court of India** delivered an opinion in response to the **16th Presidential reference** concerning the **powers of Governors and President of India** regarding State legislation. This opinion has been criticized for potentially undermining the core philosophy of **federalism** ingrained in India's **Constitution** and endangering the **will of the people** as expressed through elected State Legislatures.

Context and Core Issue

- The **Presidential reference** was sought following a decision by a two-judge Bench in the **Tamil Nadu Governor's case**, which had previously prescribed **finite and reasonable timelines** for the exercise of the Governor's powers under **Article 200 of the Constitution**.

- The subsequent opinion by the Supreme Court, by stating that the **Judiciary cannot tie President and Governor to timelines**, is contended to have **eroded and buried** the core philosophy of federalism.

Apprehensions Regarding Constitutional Scheme

Concerns have been raised that this judicial opinion could lead to a situation where:

- **States** could gradually be reduced to **shadow Union Territories** with Legislatures, perpetually **dependent on the dictates of those in power in the central government**.
- The **constitutional scheme**, which establishes the Union and States as **equal partners**, with the Government of India being only **'first among equals'**, stands disrupted.
- **Governors** could effectively wield an **unbridled pocket veto**, holding States captive and perpetually embroiled in litigation to secure assent for legislation.

Critique of the Supreme Court Opinion

The core arguments against the judicial opinion revolve around the principles of democracy, federalism, and judicial review.

Violation of Democratic Principles

- **Governor's Veto over Elected Legislature:** If **Bills/laws passed by State Legislature** are kept pending by **Governor** for months, returned for **reconsideration**, and upon reaffirmation, reserved for **President's assent**, an **elected Legislature** is effectively mowed down before the **whims of an unelected Governor**. This is considered the very **anti-thesis of democracy**.
- **Role of Unelected Functionary:** Governors, being **appointees of ruling party at Centre**, are often perceived to be acting to accommodate the **political agendas** of the **Government of India**. Allowing an **unelected despot** (Governor) to overrule the **will of the people of the State** is seen as democratically indefensible.

Disregard for Basic Structure of Constitution

- **Necessity of Timelines:** A **timeline** on the exercise of powers by the Governor under **Article 200** had to be **read therein** to conform with the principle of **federalism**, which constitutes part of the **basic structure** of the Constitution.
- **Reasonableness and Non-arbitrariness:** The Governor's power must be tested on the **touchstone of reasonableness**, necessitating a **reasonable time** for decision. Failure to read this timeline permits the Governor to act as an unbridled monarch over an elected Government, violating the threads of **fairness, reasonableness, and non-arbitrariness** that run through the Constitution.

Immunity from Judicial Review

- **Judicial Review as Basic Structure: Judicial Review** is itself part of the **basic structure of Constitution**. No authority, including **Parliament**, can claim immunity from having its actions tested by judicial review.
- **Limited Direction Theory:** The Court's theory of **'limited direction'** goes against the **doctrine of judicial review**, the principle of **reasonableness enshrined in Article 14**, and the constitutional scheme, thereby granting Governors and President powers alien to judicial oversight.

Broader Context: Weakening of the Federal Structure

The opinion is viewed as another step in a series of **designed attacks by Centre on federal structure** in recent times.

Examples of Federal Overreach and Distortion

- **Fiscal Centralisation and Devolution:**
  - **Refusal** by the central government to provide **compensation** to producing States for **loss of Goods and Services Tax (GST)**.
  - **Cess collected exclusively by central government** being used as an excuse to **deny sharing of its revenue with States**.
  - **Refusal** by central government to fully implement the **devolutions recommended by the Finance Commission**.
- **Conditional Funding and Financial Pressure:**
  - **Forcing States to adhere** to a **'one-size-fits-all' conditions** for central schemes.
  - Making schemes conditionally applicable on States agreeing to **contribute up to 50% of the scheme's budgeted expenditure**, putting unprecedented pressure on already stressed finances.
- **Weaponisation of Central Funds and Agencies:**
  - **Weaponisation of money** in central kitty by providing **financial support as a quid pro quo** for advancing the political agenda of party at Centre.
  - **Misuse of Central Bureau of Investigation (CBI), Enforcement Directorate (ED), and Income-Tax Department** to raid, browbeat, arrest **Chief Ministers and Ministers**, and bring down **Opposition governments**.
- **Governor's Fiat:**
  - The proposed **central control through Governor's fiat** is feared to be the **'straw that broke the camel's back'** regarding federalism.

Way Forward

- **Timelines for exercise of gubernatorial powers are to be ensured** so that undue delay is prevented and democratic will is preserved, and such timelines were argued to be necessary to harmonise exercise of **Articles 200 and 201** with federal principle.
- **Judicial oversight** must be reaffirmed so that actions by **Governors and President** remain susceptible to review on grounds of reasonableness and non-arbitrariness, thereby protecting rights under Part III and preventing unchecked discretion.
- **Fiscal decentralisation** measures recommended by **Finance Commission** must be implemented in full so that States are not financially coerced into accepting conditionalities which undermine local governance and policy experimentation.
- **Revenue sharing arrangements**, especially pertaining to **cess and central levies**, must be revisited so that **revenue streams are not monopolised at Centre** to detriment of State functions and welfare responsibilities.
- **Mechanisms must be established to insulate enforcement agencies** from political misuse so that rule of law is upheld and investigations are not weaponised against political opponents.
- **Political practice of timed welfare transfers proximate to elections** must be discouraged by strengthening norms of non-partisan fiscal conduct and by empowering autonomous institutions to monitor and flag disproportionate fiscal actions aimed at influencing electoral outcomes.

- **Constitutional dialogue involving Centre, States and judiciary** must be promoted to restore institutional balance and to ensure that constitutional offices function as guardians rather than usurpers of democratic mandate.

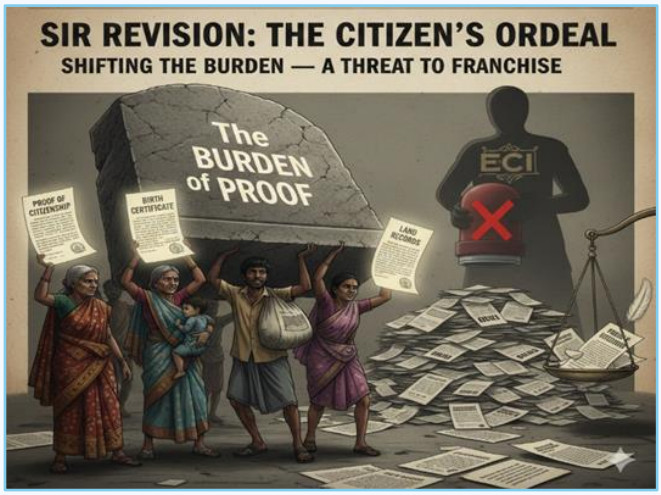
Conclusion

- The Supreme Court's response to the **16th Presidential reference**, by upholding the perceived **"unwritten and undefined powers"** of the Governor and President regarding State Bills without imposing a timeframe, is feared to sanction an **obliteration of core ideas** of the Constitution.
- Such a step, when compounded with various instances of the Centre's overreach into the federal sphere, weakens the constitutional edifice where the **will of the people is held hostage** to the whims of unelected functionaries, leading to the potential **crumbling of democracy**.

Q. *Though the federal principle is dominant in our Constitution and that principle is one of its basic features, but it is equally true that federalism under the Indian Constitution leans in favour of a strong Centre, a feature that militates against the concept of strong federalism.*

Q. *Starting from inventing the 'basic structure' doctrine, the judiciary has played a highly pro active role in ensuring that India develops into a thriving democracy. In light of the statement, evaluate the role played by judicial activism in achieving the ideals of democracy.*

2.1.5. THE BURDEN OF PROOF IN THE SPECIAL INTENSIVE REVISION OF ELECTORAL ROLLS



Introduction: The **Special Intensive Revision (SIR) of Electoral Rolls** is an exercise undertaken by the **Election Commission of India (ECI)**, primarily under the constitutional power granted by **Article 324** and the statutory mandate of **Section 21(3) of the Representation of the People Act, 1950 (RP Act)**.

The stated goal of the SIR, as per the ECI, is to clean up long-standing inaccuracies in the voter list, which may include:

- **Duplicate** entries (voters registered in multiple places).
- **Deceased** voters whose names were not removed.
- **Migrated** voters (permanently shifted).
- Inclusion of **ineligible persons** (e.g., non-citizens).

The Burden of Proof Inversion:

The central issue highlighted by petitioners is that the SIR methodology reverses the traditional, inclusive principle of universal adult franchise.

1. Traditional Principle (Inclusionary)

The established principle dictates that once a person's name is on the electoral roll, there is a **presumption of validity**. The **onus to prove ineligibility** for deletion lies squarely with the **State/ECI**.

This is executed through a statutory process involving Form 7 (Objection to inclusion), mandatory notice to the elector, and a quasi-judicial hearing by the Electoral Registration Officer (ERO).

2. The SIR Inversion (Exclusionary Concern)

In the SIR, the ECI introduced a mandatory **Enumeration Form (EF)** for all existing voters, particularly for those whose details could not be matched/linked with the last SIR's data.

- **The Shift:** The act of requiring *every* elector to re-prove their eligibility through a new form and document matching process shifts the burden of proof from the ECI (to prove ineligibility) to the **elector (to prove eligibility/citizenship)**.
- **Vulnerability:** This is deemed highly problematic for **vulnerable sections** (e.g., illiterate citizens, daily wage migrants, and women who lack old, specific documents like parent's records) who may be unable to comply with the procedural requirements, leading to *de facto* disenfranchisement.

ECI Guidelines and Judicial Perspective:

The ECI, in its defense before the Supreme Court, has stressed its **constitutional mandate** and the necessity of the SIR exercise, but the judicial process has forced refinements concerning the burden of proof.

Aspect	ECI Guidelines/Arguments	Judicial Concern
Legal Basis	ECI cites **Article 324** (broad supervisory powers) and **Section 21(3) of RP Act** (power to order a special revision) to justify the pan-India exercise.	Petitioners argue the power under Section 21(3) is limited to a **constituency or part of it**, not an en masse exercise, and that Article 324 cannot "supplant" the statutory process.
BLO's Role & Burden	ECI guidelines state that **Booth Level Officers (BLOs)** must make **at least three visits** to collect the filled-up Enumeration Forms (EFs). EROs must **issue a notice and hear cases** for electors whose names could not be linked/matched before deletion.	Specialist argue that tasking a BLO (often a school teacher) with a verification process that effectively determines **citizenship** (by demanding complex documents) is ultra vires and places an unreasonable burden on the voter.
Use of Documents	The ECI initially had a restrictive list of documents. The Supreme Court had to intervene to ensure that **widely accepted documents** like Aadhaar, Voter ID, and Ration Cards are considered to ensure an inclusive process, though it clarified **Aadhaar is not proof of citizenship.**	Petitioners argue that demanding documents beyond the scope of the RP Act and the Registration of Electors Rules (like parent's legacy records for certain birth years) is an illegal imposition of the citizenship burden.

Conclusion: The Conflict of Objectives

The discourse on the SIR is a classic tension between two vital democratic objectives:

1. **Purity of the Roll:** The ECI's objective to maintain an accurate electoral roll (**one person, one vote**) to prevent electoral fraud.

2. **Inclusivity of Franchise:** The constitutional objective of ensuring that **no eligible citizen is left out** (universal adult franchise).

The method of shifting the burden of proof to the elector—thereby treating every registered voter as a potential 'presumptive guest'—**endangers the principle of inclusivity** and risks widespread, unfair disenfranchisement of India's poor and marginalised citizens. The argument is that the ECI must use its extensive institutional power to proactively verify and delete ineligibles, not rely on procedural default (non-submission of the form) to exclude citizens.

Q. *"While Article 324 grants the Election Commission of India (ECI) broad supervisory powers, these powers cannot be used to supplant established statutory processes." Discuss this statement with reference to the procedural requirements under the Representation of the People Act, 1950, and the concerns regarding the de facto disenfranchisement of vulnerable sections.*

2.1.6. THE KAMALESAN CASE AND ITS SIMPLE LESSON

Why in the News?

The **Kamalesan case** has emerged as a significant judicial ruling on the balance between military discipline and religious freedom in India. On November 25, 2025, the Supreme Court, led by **Chief Justice Surya Kant** and **Justice Joymalya Bagchi**, dismissed a special leave petition by **Lieutenant Samuel Kamalesan**, a Protestant officer dismissed from the Army in 2021 for "**gross indiscipline**" under Section 19 of the Army Act, 1950. Upholding the Delhi High Court's May 2025 decision, the Court reinforced that individual religious freedoms under Article 25 cannot override the core requirement of discipline and cohesion in the armed forces.

Background of the Case

The **Kamalesan case** originates from a **2019** incident involving Lieutenant Samuel Kamalesan, a commissioned officer in the 3rd Cavalry Regiment of the Indian Army, posted as a troop leader commanding **Sikh**, **Jat**, and **Rajput jawans**. The regiment, a fixed-class unit with a historical composition dominated by **Hindu** and **Sikh personnel,** mandates weekly religious parades at its regimental religious sites—specifically a **temple (mandir)** and **gurdwara**—collectively referred to as the "**Sarva Dharma Sthal**" (place of all faiths). These rituals, including entry into the sanctum sanctorum for aarti or pooja, are integral to fostering esprit de corps and troop morale.

- **The Incident**: In March 2019, Lt. Kamalesan politely refused a direct command from his superior to enter the innermost sanctum of the temple/gurdwara to perform the ritual, citing his monotheistic Protestant Christian beliefs, which he argued prohibited worship in non-Christian sacred spaces. He participated in the outer parade and shared meals/exercises with troops but drew a line at the inner ritual, emphasizing mutual respect based on "**Indianness**" rather than religious conformity.
- **Initial Response and Inquiry**: The Army issued a show-cause notice, viewing the refusal as a breach of lawful command under Army Rule 14, undermining officer-troop camaraderie. An internal inquiry, including consultations with his pastor (who advised participation as non-

worshipful), concluded that his stance eroded trust, particularly among Sikh jawans who perceived it as disrespect. No evidence of widespread troop resentment was cited, but the Army prioritized regimental harmony.

- **Dismissal Proceedings**: In 2021, following the inquiry, Lt. Kamalesan was terminated under Section 19 of the Army Act for misconduct, without court-martial, as it was deemed a minor disciplinary issue. He challenged this via writ petition in the Delhi High Court, arguing violation of Articles 14 (equality), 19(1)(a) (free speech), and 25 (religious freedom).

This background highlights the tension in class-based regiments, where traditions evolved from colonial-era structures but are justified today for operational cohesion.re

Key Judicial Proceedings and Observations

The case traversed multiple judicial layers, with courts consistently prioritizing military discipline over individual religious interpretation. This deference aligns with precedents like ***Union of India v. Major General Manomohan Singh*** **(2014)**, where the Supreme Court emphasized the Army's autonomy in discipline.

Delhi High Court Ruling (May 30, 2025)

- **Core Holding**: Upheld dismissal, ruling that Lt. Kamalesan's refusal constituted "**clear indiscipline**" by placing personal faith above a lawful superior command, breaching "**essential military ethos**."
- **Key Observations**:
  - Refusal negatively impacted traditional camaraderie, especially in a regiment with no dedicated Christian space.
  - **Article 25** rights are subject to "**public order, morality, and health**," extendable to military exigencies under Article 33 (power to modify rights for armed forces).
  - No violation of essential religious practice (as per *Shirur Mutt* test, 1954); entry was symbolic, not worship.
- **Dissenting Note**: The court acknowledged his otherwise exemplary service but stressed that leadership demands example-setting.

Supreme Court Dismissal (November 25, 2025)

- **Bench Composition**: CJI Surya Kant and Justice Joymalya Bagchi.
- **Dismissal Order**: Refused interference with High Court judgment, terming it a "**misfit**" case for the disciplined forces. Petition dismissed after hearing senior advocate Gopal Sankaranarayanan.

Court	Date	Key Ruling	Constitutional Articles Invoked	Precedents Cited
Delhi High Court	May 30, 2025	Upheld dismissal as indiscipline; religion subordinate to command.	Art. 14, 25, 33	*Shirur Mutt* (1954) on essential practices; *Army Act* Sec. 19.
Supreme Court	Nov. 25, 2025	No interference; "misfit for Army."	Art. 25 (restrictions), 33 (armed forces modification).	*Manomohan Singh* (2014) on military autonomy; *Bijoe Emmanuel* (1986) on Jehovah's Witnesses (limited analogy).

Constitutional and Legal Dimensions

Fundamental Rights vs. Military Discipline

- **Article 25 (Freedom of Religion)**: Protects conscience and free practice, but subject to restrictions for public order. **Courts clarified**: Refusal stemmed from personal interpretation, not "**essential feature**" (e.g., no doctrinal prohibition on entering temples). Contrast with ***Bijoe Emmanuel v. State of Kerala*** **(1986),** where school anthem refusal was protected as non-coercive.
- **Article 33**: Empowers Parliament to abridge rights for armed forces; Army Act operationalizes this, prioritizing cohesion over individual liberties.
- **Article 14 (Equality)**: Claim of discrimination in class regiments rejected; structure upheld as rational for recruitment/morale, not arbitrary.

Secularism in the Armed Forces

India's secularism (**negative model**: state equidistant from religions) is uniquely embodied in the Army, which integrates diverse faiths without proselytization. The case critiques potential majoritarian tilt in regiment traditions (e.g., temple/gurdwara focus excluding monotheists). However, courts viewed it as symbolic unity, not coercion.

Sub-Heading: Implications for Class-Based Regiments

- **Historical Context:** Inherited from British "martial races" (Sikhs, Gurkhas); post-1947, aimed at regional balance but criticized for caste linkages (e.g., Kargil Review Committee, 2000, recommended abolition, unimplemented).
- **Pros**: Enhances loyalty/morale in combat (e.g., 1965/1971 wars).
- **Cons**: Risks exclusion; case highlights need for inclusive "Sarva Dharma Sthals" with neutral spaces.

Analysis: Balancing Rights, Discipline, and Unity

Strengths of the Judicial Approach

- **Preservation of Esprit de Corps**: The ruling safeguards the Army's "**secular ethos**" by mandating symbolic participation, preventing fragmentation. As Lt. Gen. Rakesh Sharma (former Adjutant General) noted, exemptions could "open floodgates"—e.g., Hindu officers refusing Ramzan fasts or Muslim soldiers avoiding Holi.
- **Judicial Restraint**: Deference to executive (Army) under Article 33 avoids micro-managing discipline, aligning with ***Nandini Sundar v. Union of India*** **(2011)** on AFSPA.
- **Promotion of Broader Secularism**: Reinforces that military secularism is "unity in diversity," not uniformity, echoing Nehru's vision.

Critiques and Broader Ramifications

- **Potential for Majoritarianism**: Critics argue the verdict indirectly endorses Hindu-Sikh dominant rituals, marginalizing minorities (Christians: ~2.3% of forces). The Hindu editorial laments: "Courts may not have intended this message," risking alienation in multi-faith units.
- **Human Rights Lens**: Amnesty International parallels draw to global cases (e.g., US Army exemptions under RFRA, 1993), questioning if India's framework adequately accommodates conscientious objection.
- **Policy Gaps**: No uniform guidelines for religious accommodations; post-ruling, demands for neutral prayer halls or opt-outs in non-combat rituals.

- **Societal Mirror**: Reflects rising religious assertions (e.g., Sabarimala, Hijab bans); tests constitutional morality amid polarization.

Pros of Ruling (Discipline-Centric)	Cons (Rights-Centric)	Policy Recommendations
Maintains command hierarchy; prevents morale erosion.	Risks minority alienation; questions "essential practice" test's rigidity.	Mandate inclusive Sarva Dharma Sthals; training on interfaith sensitivity.
Upholds Article 33; aligns with war-time exigencies.	Overlooks personal faith nuances; potential equality violation in class regiments.	Review class composition (e.g., via CDS reforms); codify exemptions for symbolic acts.
Sends strong message on leadership.	Judicial overreach in faith interpretation (e.g., pastor's advice dismissal).	Parliamentary committee on military secularism.

Conclusion: A Simple Lesson for Complex Times

The Kamalesan case underscores a crucial principle: within the armed forces, the relationship between **duty** and **personal conscience** must be managed through thoughtful balance, not blanket exemptions. The Supreme Court's firm stance on discipline reaffirms the **paramountcy of unit cohesion**, yet it also draws attention to the responsibility of institutions to foster an environment where diverse faiths coexist without conflict. Strengthening inclusivity within the ranks is not a compromise on discipline—it is a means to reinforce the secular and unified character of the Indian Army.

Q. *"The 'Sarva Dharma Sthal' in the Indian Army symbolizes a unique brand of secularism that prioritizes collective unit cohesion over individual religious manifestations." In light of the Kamalesan case, evaluate how Article 33 of the Constitution creates a distinct legal paradigm for Fundamental Rights within the armed forces.*

2.1.7. THE 'IMPARTIALITY' OF A NOMINATED GOVERNOR

Why in the News?

- The Supreme Court of India recently gave a judgment clarifying the role of Governors in India, especially their discretion and impartiality.
- The debate has been reignited by the advisory given by the Supreme Court Constitutional Bench on the 16th Presidential reference.
- Concerns over the neutrality and powers of Governors have become relevant in the context of opposition-ruled states and the Governor's discretionary powers.

Background

- The role of Governors has been debated since the Constituent Assembly days.

- B.R. Ambedkar, while framing the Constitution, emphasized that a Governor is a **purely constitutional authority**, not an agent of the Centre.
- The 1935 Government of India Act influenced some provisions regarding Governors, but the Constitution deliberately limited their discretionary powers to prevent misuse.

Key Issues Discussed

1. Appointment and Alleged Bias

- Governors are **nominated by the central government**, leading to apprehensions about potential partisanship.
- Members of the Constituent Assembly feared that Governors could act as "replicas of the Viceroy's nominees" if their impartiality is compromised.
- Ambedkar clarified that the Governor **must act on the advice of Ministers** and is not a "**remote-controlled**" agent of the Centre.

2. Role as a Constitutional Authority

- A Governor is **required to act on the advice of the Council of Ministers**.
- The Governor has **limited discretion** in specific matters such as:
  - Formation of a new government after elections.
  - Situations explicitly mentioned in the Constitution.
- The Governor **does not have overriding powers** over the elected government; the Constitution envisages a ceremonial and supervisory role.

3. Contemporary Relevance

- Today, concerns revolve around:
  - Use of Governor's discretionary powers to reserve Bills for President's assent.
  - Potential interference in opposition-ruled states.
- **N.G. Ranga's 1935 Act reference:** Bills passed by elected legislatures should **not be at the mercy of a nominated Governor**, which underlines the dangers of discretionary overreach.

4. Misinterpretation of Powers

Aspect	Constitutional Provision	Misinterpretation / Issue
Reservation of Bills	Only required for limited cases affecting Centre or violating constitutional provisions	Sometimes treated as general overriding power
Discretionary Powers	Limited to formation of government, dissolutions, emergencies	Perceived as authority to influence daily administration
Neutrality	Must act on advice of Ministers	Fear of Governor siding with Centre or ruling party

5. Corrective Observations by Ambedkar

- The Governor is **not a rival authority**; they do not enjoy special powers even during emergencies.
- Courts should **interpret the Constitution in light of its original spirit**: Governor as a ceremonial, constitutional, and impartial figure.
- Misuse arises when individuals fail to **act as envisaged by the Constitution**, not due to structural flaws.

Implications for Governance

- **Centre-State Relations:** Excessive discretionary actions by Governors can strain federal balance.
- **Legislative Functioning:** Misuse in reserving Bills delays legislative intent.
- **Judicial Review:** Courts may intervene to ensure Governors respect constitutional limits.
- **Democratic Norms:** Maintaining the impartiality of Governors reinforces parliamentary supremacy and federal democracy.

Way Forward / Recommendations

- Strengthen **conventions around Governor appointments** to ensure impartiality.
- Clearly define and communicate **limits of discretionary powers**.
- Increase **judicial oversight** for situations where discretion is exercised.
- Promote awareness of **original Constitutional intent** among elected representatives, officials, and civil society.

Conclusion

- The debate over the role of Governors reflects the **delicate balance between Centre and States** in India.
- Ambedkar's vision ensures that Governors act as **constitutional custodians**, not agents of political power.
- Upholding the impartiality of Governors is essential for:
  - Preserving federalism
  - Strengthening parliamentary democracy
  - Maintaining legislative efficiency and constitutional fidelity

Q. *Discuss the essential conditions for exercise of the legislative powers by the Governor. Discuss the legality of re-promulgation of ordinances by the Governor without placing them before the Legislature.*

Q. *Critically evaluate the discretionary powers of the Governor and their impact on state politics. How can these powers be regulated to ensure federal integrity?*

2.1.8. PROTECTING CONSTITUTIONAL VALUES IN THE ALGORITHMIC ERA

Why in the News?

- Recently, central government's order directing mobile phone manufacturers to **pre-install** the **'Sanchar Saathi' app** from 2026 was **revoked** within 48 hours.
- The **rollback** followed widespread concerns raised by most stakeholders regarding **ambiguous data collection methods**, **lack of consent**, potential for **surveillance**, and **unlimited data storage**.
- The policy reversal occurred after Reuters broke the story and **Apple refused to implement** the policy, suggesting foreign entities may have played a significant role given the government's interest in retaining Apple and its manufacturing presence in India.

Background or Context

- The government's move to mandate the app installation was ostensibly aimed at **cybercrime safety**, as cybercrimes increased from **15.9 lakh cases in 2023 to 20.4 lakh in 2024**.
- However, the strong pushback against the order brought forth legitimate questions concerning **surveillance, state power, and data misuse**. These issues underscore the **urgent need** for the concept of **digital constitutionalism** to be properly understood and implemented.

Understanding Digital Constitutionalism

Core Tenets of Digital Constitutionalism

Digital constitutionalism is signified by the **extension of constitutional principles** into the **digital space**. These principles, such as liberty, dignity, equality (including non-arbitrariness), accountability, and the rule of law, are perceived as being under threat where **data collection, Artificial Intelligence (AI), and surveillance technologie**s are becoming dominant.

Threat to Constitutional Values

Modern governance increasingly operates as an **invisible system**, utilising technologies such as **biometric databases** and **predictive algorithms**. In the absence of **strong constitutional protection** within these systems, citizens are likely to be **exposed to abuse of authority**.

Challenges Posed by Digital Governance

Concentration of Power and Erosion of Rights

Everyday life is now being significantly influenced by **digital governance**, as automated processes mediate critical functions:

- **Mediation of Essential Services:** Automated processes mediate services such as **Know Your Customer (KYC) verification, welfare distribution, job applications, health-care records**, and even **political expression** on social media.
- **Non-Consensual Operation:** These technologies often operate without any significant **revelation or approval** from people.
- **Unequal State Creation:** Power becomes **concentrated** in the hands of **tech designers, law enforcement agencies, and private companies**. This generates an **unequal state** where citizens are reduced to **passive data subjects** rather than remaining **active right-holders**, as expected in liberal democracies.

Problem of Modern Surveillance

Surveillance has evolved into a worrisome, modern form that is neither visible nor immediate, being performed through sophisticated means:

- **Surveillance Mechanisms:** Modern surveillance is performed with the help of **metadata gathering, location tracing, biometric identification, behavioural modelling, and predictive analytics**.
- **Chilling Effect on Democracy:** This constant, **silent surveillance** can **chill free speech, discourage dissent**, and disrupt democracies, leading to **self-censorship** becoming the new normal for individuals aware they are under observation.

Inadequacy of Current Legal Frameworks

The **Right to Privacy** was affirmed as a basic right in India by the Supreme Court in the landmark **Justice K.S. Puttaswamy (Retd.) And Anr. vs Union of India And Ors. (2017)** case. However, the more recent **Digital Personal Data Protection Act, 2023**, is considered inadequate due to significant flaws:

- **Broad Governmental Exemptions:** Law gives **broad exemption to the government**.
- **Weak Oversight and Remedies:** Law is **not well overseen** by an independent body and contains **weak remedies** for individuals.
- **Prioritisation of Convenience:** Law places **administrative convenience and national security** over individual autonomy and dignity, rendering it insufficient for **constitutional protection**.

Data-fication and Algorithmic Bias

Efficiency at the Cost of Personal Control

Data-fication has permeated every sector, from banks relying on **behavioural analytics** to hospitals using **digital medical records**. While these developments create **efficiency**, they simultaneously **reduce personal control** over information:

- **Diluted Consent: Consent** has been reduced to a routine **"click-through" process**, not representing a genuine voluntary choice.
- **Purpose Limitation Ignored:** The principle of **purpose limitation** is often ignored.
- **Erosion of Identity:** Privacy loss is now understood as the **gradual erasure of personal control** over identity and decision-making, moving beyond isolated breaches.

Discrimination via Surveillance Technologies

The use of surveillance technologies in public places, such as **closed circuit cameras, biometric scanners, and digital identifiers**, leads to constant monitoring.

- **Facial Recognition Issues:** Facial recognition, which is prohibited or severely limited in some United States cities, is linked to **racial discrimination, surveillance**, and a risk of **false identification**, which has led to **wrongful arrests abroad**. Research has found these systems at times adversely work against **people of colour, women, and minority groups**.
- **Lack of Legal Scrutiny:** Such technologies are growing in India despite a **lack of comprehensive law on surveillance**, effective **judicial control**, and **rare transparency**. This unchecked surveillance may transform a democratic state into a **monitoring state** like **Big Brother**.

Black Box of Algorithmic Governance

Algorithms are increasingly determining crucial life outcomes: **who receives welfare, is profiled by police, has content removed, and who gets a job or a loan application shortlisted**.

- **Obscure Decision-Making:** These systems are commonly known as **black boxes** because their decision-making functions are **obscure**.
- **Lack of Redressal:** When a benefit is denied or a person is suspected, there is **no explanation** and a **clear-cut mechanism of appeal** is lacking.

- **Constitutional Violations:** Algorithmic failures have had real consequences, such as **excluding deserving families from welfare schemes** and **silencing legitimate voices**. Technology can quietly violate the constitutional principles of **equality, reasonableness, and natural justice**.

Way Forward

The appropriate model of **digital constitutionalism** must extend beyond mere theory to develop **institutional protection**.

Institutional and Legal Reforms

Area of Reform	Action Points
Establishing Accountability	An **independent digital rights commission** should be created with the mandate to **inquire into violations** of digital rights and ensure effective **accountability** for data misuse or abuse of digital authority.
Restricting Surveillance	Law must be reformed to **strictly restrict surveillance** and allow it only in **grave situations of national security**, which must be determined by the constitutional principles of **necessity and proportionality**.
Ensuring Transparency and Judicial Control	For all surveillance orders, **judicial warrants** must be made **obligatory**. Furthermore, **public transparency reports** and increased **parliamentary scrutiny** should be enforced to prevent unchecked power.
Auditing High-Risk AI	**Risky AI devices** and automated decision systems should be subjected to **regular auditing** and **bias-testing** to ensure they operate fairly and do not result in discrimination.
Enforcing Data Protection	Enhanced data protection must be ensured by reinforcing a **tight control of purpose**, mandating **limited collection** of personal data, and stipulating **severe punishment of abuse** to protect individual autonomy.

Citizen-Centric Empowerment

Area of Empowerment	Action Points
Right to Redressal	Citizens must be guaranteed the **right to explanation** regarding automated decisions that affect them, alongside the **right to appeal** these decisions through clear-cut mechanisms, especially when benefits are denied or suspicion is cast.
Constitutional Empowerment through Literacy	**Digital literacy** is to be considered a form of **constitutional empowerment**. Individuals should be put in a position to **criticise, challenge, and oppose** prevailing digital power structures, recognising that rights are mere theories without adequate knowledge.

Conclusion

- Digital technologies have become **integral to citizenship**, determining access to services, political participation, and identity.
- With governance increasingly being **data-driven**, **constitutional values** must serve as the **starting point** for this shift. **Freedom, equality, and privacy** are too precious to be mute victims of mere efficiency.

- Digital constitutionalism is framed not just as a change in law but as the **defence of the democratic era** in the **algorithmic era**, with the promise of ensuring that technology remains a **servant of the people** and not a silent, authoritarian master.

Q. *"While the Digital Personal Data Protection Act, 2023, aims to regulate India's data ecosystem, concerns persist regarding broad governmental exemptions and weak oversight mechanisms." Critically analyze the adequacy of India's current legal framework in balancing administrative convenience with the Right to Privacy as established in the Puttaswamy judgment.*

2.1.9. CIVIL AVIATION SAFETY CONCERNS: FLIGHT DUTY TIME LIMITATIONS (FDTL) NORMS

Why in the News?

- Recently, **India's aviation authorities** faced severe criticism for actions favouring a **private airline** following extensive flight cancellations, resulting in chaos and stranded passengers.
- The **Minister of Civil Aviation** posted on X that the **Flight Duty Time Limitations (FDTL)** orders issued by the **Directorate General of Civil Aviation (DGCA)** had been **placed under abeyance with immediate effect**.
- These actions, alongside a subtle direction from the DGCA to dilute the **Civil Aviation Requirement (CAR)** on FDTL, were argued to make a **mockery of flight safety**.

Background and Context

Crisis and Regulatory Response

The crisis began in India's aviation sector after **private airline Indigo cancelled flights**, leading to chaos and thousands of passengers being stranded.

- **Minister's Order**: The Minister of Civil Aviation ordered that the **FDTL CAR** be placed **under abeyance** to **stabilize operations** and **prioritize relief for affected passengers**.
- **DGCA's Action**: Prior to the Minister's order, the DGCA issued an **appeal to pilots' associations and pilots** to cooperate and ensure flights were back without delays, with an apparent direction to **dilute the FDTL** norms.

These actions were stated to have prioritized the **commercial interests of the airline** over **crew fatigue** and the **safety of passengers**, suggesting that CARs had been modified to suit commercial aviation's requirements.

History of FDTL Dilution

The dilution of FDTL norms reflects a consistent pattern of prioritizing commercial interests over safety standards.

- **2007 CAR**: The DGCA issued a **very good CAR** addressing **crew fatigue** and the **rest period** of operating crew.

- **2008 Abeyance**: Following complaints from **airline owners** to the Minister, the Minister ordered the DGCA to keep the CAR in abeyance. An order dated May 29, 2008, confirmed the abeyance of **CAR Section 7, Flight Crew Standards, Series J, Part III dated 27th July, 2007**.
- **Mindset Continuation**: The mindset, persisting for **18 years**, continues to favour **commercial interests** of airlines, ignoring the dangers of **fatigue** and **inadequate rest periods**.

Judicial Intervention and Reversal

The historical dilution of safety standards led to judicial intervention:

- **Bombay High Court Writ**: The **pilots association filed a writ** (Writ petition 1687 of 2008) against the 2008 abeyance order.
- **Interim Relief and Court Observations**: The High Court **granted interim relief** and **slammed the aviation authority** for putting lives of pilots and passengers at risk. The Court pulled up the **Aviation Ministry and the DGCA** for arbitrarily playing with duty hours, observing that authorities should **decrease the number of flights** instead of increasing pilot duty hours to overcome the **acute shortage of pilots**. The Court stated that **safety of flights** had been overlooked for protecting **financial interests** of a few airline operators.
- **Subsequent Reversal**: Strangely, the **same High Court reversed the order** and upheld the action of the Civil Aviation Ministry.

Systemic Lapses and Lack of Accountability

The chaos and the subsequent abeyance order were attributed to a systemic failure involving both the private airline and the regulatory body.

Deadline Disregard

- The owner of **Indigo** and the **DGCA** both knew for **more than a year** that the **new regulations** (mandated by the High Court) would take effect from **November 1, 2025**.
- Failure to prepare resulted in **chaos** and **thousands of passengers stranded**, who may get refunds but not compensation for incurred expenses such as hotels and transportation.

Underemployment of Crew

The malaise is directly linked to the **DGCA's CAR Series 'C' Part II Section 3 Air Transport dated April 19, 2022**, which states:

- Applicant shall have on his regular employment **sufficient number of flight crew and cabin crew**.
- Requirement is **not less than three sets of crew per aircraft**.
- **Misuse of Norms**: Even with existing (and considered unsafe) FDTL and rest period rules, a minimum of **six sets of pilots an aircraft** for domestic operation and **not less than 12 sets of pilots an aircraft** for widebody, long haul operations are needed.
- **Airline Arrogance**: Airlines appear to have deliberately **underemployed qualified sets of crew**, taking advantage of the CAR, with **Indigo** being identified as a major player in this misuse.

Regulatory and Judicial Deficiencies

- **DGCA's Lack of Oversight**: The current situation proved the **complete lack of safety oversight** by the DGCA over the past few years, with airline owners confident that the government and the DGCA would ignore **safety norms**.

- **Judiciary's Role**: The judiciary has been accused of showing a **total disregard for aviation safety** and playing **second fiddle to the government** for over 20 years.

International and National Safety Parallel

ICAO Audit Observation

- In **2006**, the **International Civil Aviation Organization (ICAO)** identified in its audit report the need for India to have an **independent civil aviation authority** and **not a puppet regime** under government control.
- The recent actions were seen as graphic proof of this observation, with the DGCA first appealing for **pilot cooperation** and the Aviation Ministry then ordering the abeyance of the **Court-mandated CAR**.

Compromise on Safety

- Dilution of safety norms to this extent was stated to be an action not expected even from **third world countries**.
- The order setting **February 10, 2026** as the outer limit for the abeyance was dismissed, as the airline has not complied with the earlier CAR for **more than a year**, suggesting further extensions and compromise on safety can be expected.

Lessons Not Learnt

Despite the rhetoric that **safety is paramount**, actions prove otherwise.

- **Major Accidents**: Three major aircraft accidents have occurred in India since 2010 (**Mangaluru, Kozhikode, and Ahmedabad**).
- **Delayed Findings**: Findings of the **Air India AI 171 crash in Ahmedabad** are being delayed by the Ministry.
- **Plummeting Safety**: While the CEO of Indigo expects operations to normalize in 10 to 15 days, safety is perceived as plummeting to its **nadir**, suggesting future flights will rely on the saying **"on a wing and prayer"**.

Way Forward

- **Reinforce Flight Safety as Priority**
- Regulatory bodies must **ensure crew duty hours, rest periods, and operational safety** are strictly enforced, without dilution for commercial convenience.
- **Strengthen DGCA Oversight**
- DGCA must be **empowered and independent**, with **transparent accountability mechanisms**.
- Audit and monitor **compliance with CARs, FDTL rules, and licensing standards** consistently.
- **Enforce Minimum Crew Requirements**
- Airlines must maintain **minimum six sets of pilots per domestic aircraft** and **twelve sets per widebody long-haul aircraft**, with no exceptions.
- **Judicial and Governmental Accountability**
- Government and judiciary should **prioritize aviation safety over commercial interests**, ensuring **High Court directives are fully implemented**.
- **Passenger Rights and Compensation Mechanism**

- Develop **standardized compensation framework** for passengers affected by **flight cancellations and delays**, including **incidental expenses**.
- **Independent Civil Aviation Authority**
- ICAO recommendations should be implemented, creating **autonomous regulatory body** free from airline and political influence.
- **Safety Culture in Airlines**
- Encourage **corporate adherence to safety norms**, with **penalties for violations**.
- Focus on **crew fatigue management, operational readiness, and continuous training**.

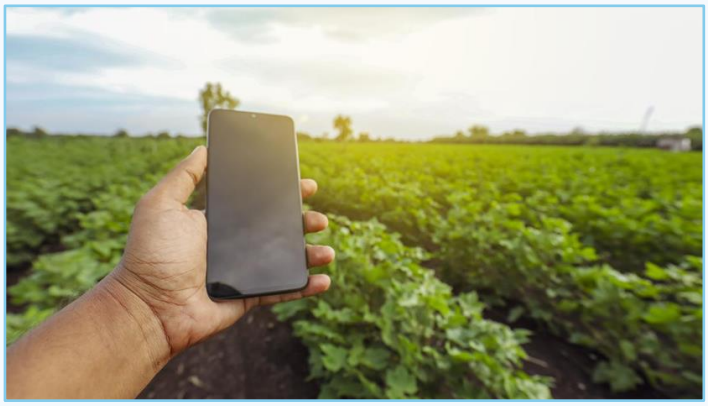
Conclusion

- Recent events in India's aviation sector demonstrate that **commercial interests continue to override flight safety**, with **DGCA and Ministry actions undermining established safety norms**.
- The crisis underscores the **urgent need for independent regulatory oversight, strict enforcement of CARs and FDTL rules, accountability of airlines, and robust passenger protection mechanisms**.
- Without these measures, the **safety of passengers and crew will remain compromised**, and India's aviation sector will continue to face **systemic vulnerabilities and international scrutiny**.

Q. *International civil aviation laws provide all countries complete and exclusive sovereignty over the airspace above the territory. What do you understand by airspace? What are the implications of these laws on the space above this airspace? Discuss the challenges which this poses and suggests ways to contain the threat.*

2.1.10. SURVEILLANCE APPS IN WELFARE, SNAKE OIL FOR ACCOUNTABILITY

Why in the News?



Digital monitoring tools such as biometric attendance and facial recognition apps are increasingly being used across welfare programmes — from MGNREGA to Public Distribution System (PDS). However, evidence suggests that these technologies may **intensify exclusion without improving accountability**, shifting the burden of compliance to already vulnerable workers.

Digital Surveillance in Welfare Delivery

Governments have introduced **smartphone-based attendance and biometric checks** to ensure punctuality and curb "leakages" such as ghost beneficiaries.

Examples:

- **Biometric attendance** in government offices intended to enforce discipline.
- **MGNREGA attendance** recorded via mobile apps to prevent fake muster rolls.

- **MoRD's ABBA system**: Aadhaar-based authentication for ration delivery.
- **Poshan Tracker app** requiring Anganwadi workers to upload photographs of mothers and children to prevent fraud.

The assumption: **Technology = Accountability**

But results show otherwise.

Ground-Level Reality: Exclusion & Punitive Outcomes

Digital surveillance often **punishes the vulnerable rather than the corrupt**:

- **Connectivity issues** prevent workers from uploading mandatory photos → wages withheld.
- **Elderly, disabled and women** struggle with authentication → lose entitlements.
- **Device and data costs** shift financial burden to frontline workers.
- **Excess documentation** delays attendance marking → wage losses.
- **Fear of punitive action** pushes workers to comply even when tech fails.

Instead of ensuring transparency, digital mandates often **reduce access** to welfare itself.

Limited Effectiveness in Reducing Corruption

Despite strict digital monitoring:

- **Master roll frauds still occur** in MGNREGA because tech cannot ensure whether real work was done.
- **Unauthorized ration diversion** continues in PDS despite ABBA.
- **Insensitive verification rules** (e.g., fixed photograph uploads) lead to genuine users being rejected.

Accountability for officials remains **minimal**, while frontline workers bear the brunt.

Tech-Fixes vs Systemic Accountability

Government Objective	Reality on Ground
Eliminate corruption	**Corrupt adapt faster** than systems
Improve service delivery	**Exclusion of genuine beneficiaries**
Evidence-based tracking	**Surveillance replaces care**

Technology addresses **symptoms**, not **institutional failures** like:

- lack of political will,
- inadequate grievance redressal,
- weak audits,
- poor administrative transparency.

Surveillance ≠ Accountability

Accountability requires **responsibility from officials**, not punitive tracking of workers.

Ethical and Social Concerns

- **Privacy violations** due to constant photo and data uploads
- **Stigmatisation** of the poor as "potential fraudsters"
- **Loss of dignity and trust** in welfare systems
- **Ignoring socio-economic barriers** like digital illiteracy

Jean Drèze and Amartya Sen warn against **using technology as a substitute for governance reform**.

The Core Issue: Accountability Deficit

Surveillance technologies often:

- become **ends in themselves**
- **confuse visibility with proof of delivery**
- divert focus from **official accountability to worker compliance**

Example: Even when technology fails, **workers get blamed**, while leakages by authorities remain unchecked.

The Way Forward

A humane and effective welfare system must ensure:

- Offline-enabled verification options
- Grievance systems that do not penalize workers
- Transparency in administration (social audits)
- Low-cost, worker-friendly technology
- Accountability fixed **upward**, not downward

Technology should **support**, not **substitute**, responsible governance.

Conclusion

Digital surveillance tools in welfare programmes promise improved accountability but often produce **exclusion, delays, harassment, and new forms of corruption**. Without **institutional reforms**, technology becomes **"snake oil"** — offering a false cure while the actual disease of governance failure persists. Ensuring welfare dignity requires shifting accountability **onto authorities**, not onto the poor whose rights these systems were designed to protect.

Q. *The emergence of Fourth Industrial Revolution (Digital Revolution) has initiated e Governance as an integral part of government.*

Q. *E-governance, as a critical tool of governance, has ushered in effectiveness, transparency and accountability in governments. What inadequacies hamper the enhancement of these features?*

2.1.11. CHARTING AN AGENDA ON THE RIGHT TO HEALTH

Why in the News?

- **Recently**, the **National Convention on Health Rights (NCHR)** was convened in **New Delhi**, timed between **Human Rights Day (December 10)** and **Universal Health Coverage Day (December 12)**.
- Organized by **Jan Swasthya Abhiyan (JSA)**, the gathering offered a significant platform for health professionals, community leaders, and activists to address **India's major health challenges** and chart an agenda on the **right to health**.

- The convention focused on drawing lessons from the **COVID-19 crisis**, strengthening **right to health initiatives**, and presenting alternatives to the **commercialisation of health care**.

Background and Context

- The convention was organised by **Jan Swasthya Abhiyan (People's Health Movement – India)**, a network comprising diverse civil society organisations from **over 20 States**.
- The gathering brought together around **400 health professionals, community leaders, and health activists**.
- A key message of the convention remains clear: **health care for people, not for profits**, affirming that **health must be a basic human right**.
- This year marks the **25th anniversary** of **Jan Swasthya Abhiyan (JSA)**.

Major Themes and Issues to be Addressed

Addressing Privatisation and Public Systems

- **Challenge of Privatisation:** A major issue addressed is the push for **privatisation of public health services**, where **public–private partnerships** are leading to the handover of **medical colleges and health facilities** to private players across India.
- This process threatens to **dismantle already weakened public services** and render health care **unaffordable** for the crores of Indians who rely on **public health-care provisioning**.
- **Critique and Strategy:** Leaders from movements against privatization in various states, including **Andhra Pradesh, Karnataka, Mumbai, Madhya Pradesh, and tribal districts of Gujarat**, were to share insights and strategies critiquing the impacts of privatization on health systems.

Regulating Commercial Private Health Care

- **Unregulated Commercial Boom:** Commercial private health care has **rapidly expanded**, fueled by domestic and foreign investments and pro-corporate policies, but this boom **has not been matched by necessary regulation**.
- **Failure of Clinical Establishments Act:** The **Clinical Establishments (Registration and Regulation) Act**, enacted in **2010**, remains only **nominally implemented**.
- **Consequences for Patients:** This regulatory lapse leads to frequent **overcharging**, **unnecessary medical procedures** (such as caesarean sections), **opaque pricing**, and **violations of patient rights**.
- **Advocacy for Regulation:** The convention was to advocate for **effective implementation of regulatory frameworks**, including:
- **Rate standardisation** and **transparent pricing**.
- **Mandatory observance of the Charter of Patient's Rights**.
- **Accessible grievance redress systems**.

Financing Public Health

- **Low Public Allocation:** India has among the **lowest financial allocations for public health globally**, with just **2% of the Union Budget** allocated for health services, resulting in annual per capita public spending of only **$25**.

- **Out-of-Pocket Expenses: Out-of-pocket expenses** remain high, despite disproportionate attention being given to **government-supported health insurance schemes**.
- **Alternative Frameworks:** Participants were to examine the **gap between claims and ground realities** of these schemes and explore alternative financing frameworks centered on **enhanced government spending**, **reduced out-of-pocket costs**, and **equitable access**.

Justice for Health Workers

- **Indispensable Role:** The **COVID-19 pandemic** underscored the **indispensable roles** of frontline doctors, nurses, paramedics, and support staff.
- **Inadequate Conditions:** Many health workers still face **low wages**, **insecure employment**, and **inadequate social security and working conditions**.
- **Advocacy:** Health worker associations were to highlight the need for **justice to health workers** and the establishment of **resilient health systems**.

Access to Medicines

- **High Cost and Low Price Control: Medicines constitute up to half** of a household's medical spending, yet **more than 80% of medicines in India remain outside price control**.
- **Persisting Issues: Irrational drug combinations**, **unethical marketing**, and **high retail markups** persist in the pharmaceutical market.
- **Session Focus:** The session on access to medicines was to examine **regulatory gaps**, **pricing barriers**, the proposed **removal of GST on medicines**, and **expanding public sector production of essential medicines**.

Vision for Universal Quality Services

- **Affirming Health Care as a Right:** The convention aimed to affirm **health care as a fundamental right** anchored in **robust, responsive public systems**.
- **Necessity of Public Provisioning:** With **over 80 crore people in India dependent on public provisioning**, strong public health services are deemed **essential**.
- **Revitalising Public Systems:** Participants were to highlight **community-led models** and successful state-level initiatives for revitalizing public systems, emphasizing **decentralised planning and community engagement**.

Eliminating Discrimination and Intersectoral Links

- **Social Hierarchies:** Entrenched **social hierarchies** continue to influence access to health care.
- **Special Session on Social Justice:** A special session on **gender and social justice** was to foreground the experiences of **Dalits, Adivasis, Muslims, LGBTQ+ persons, and persons with disabilities** to embed **inclusion and non-discrimination** in health systems.
- **Broader Determinants of Health:** The convention links health to **broader determinants**, with a session covering **food security, environmental pollution, and climate change**, exploring **intersectoral strategies for health**.

Political Advocacy

- Dialogue with **Members of Parliament** during the ongoing winter session will be facilitated to place key health policy demands on the legislative agenda.

Renewing Alliances

- The convention intended to celebrate the **25th anniversary legacy** of the JSA and renew long-standing alliances with diverse groups, including **women's organisations, science groups, rural movements, and patient groups**.

Shaping Future Demands

- Lessons from past campaigns will meet present energies to shape a **popular narrative and demands for policies** to ensure the **right to health for all in the decade ahead**.

Way Forward

- **Strengthen public health systems** by increasing **government investment** and reducing reliance on **commercial private care**.
- Ensure **implementation of regulatory frameworks**, including **Clinical Establishments Act** and **Charter of Patient's Rights**.
- Promote **equitable access to medicines**, **rational drug use**, and expansion of **public sector production**.
- Improve **working conditions, social security, and wages** for **frontline health workers**.
- Embed **community participation and decentralised planning** for **sustainable public health outcomes**.
- Address **social inequalities and discrimination** to ensure **health care for all marginalized groups**.
- Integrate **intersectoral strategies** covering **food security, environmental protection, and climate resilience** to strengthen health outcomes.
- Advocate **health care as a fundamental right**, moving away from **profit-driven approaches**.

Conclusion

- The **National Convention on Health Rights 2025** represents a crucial milestone in the **quarter-century journey of Jan Swasthya Abhiyan** and the broader people's health movement in India.
- By bringing together diverse voices to confront **privatisation, inadequate financing, regulatory failures, worker injustice,** and **social discrimination**, the convention is poised to revitalize the demand for healthcare for people, not for profit.
- It underscores that the **right to health can be realised only through robust, accountable, and equitable public health systems** rather than market-driven models.

Q. *"The persistent 'commercialization' of healthcare in India has transformed a fundamental human right into a market-driven commodity." In light of the deliberations at the National Convention on Health Rights (NCHR), evaluate the socio-economic impacts of the privatization of medical education and public health facilities on the goal of Universal Health Coverage (UHC).*

2.1.12. CITIZENSHIP GOVERNANCE AND THE PARADOX OF DEMOCRACY

Why in the News?

The issue of **citizenship governance** has recently resurfaced in the context of the **Election Commission of India's (ECI) countrywide Special Intensive Revision (SIR)** of electoral rolls.

Background and Context: Conflict between Status and Evidence

A **fundamental paradox of democracy** is highlighted by the conflict where the state, created by the people, is tasked with determining who constitutes the people. This is seen in the present conundrum of citizenship verification.

Core Conflict

- **Proof of Citizenship:** Holding an **Indian passport** or having a name on the **electoral rolls** is **no proof of citizenship**, as these documents can be forged.
- **Vexed Question:** This situation presents a **conflict between evidence of status and status of evidence**, raising profound questions regarding the administration and determination of citizenship.

Legal and Constitutional Battle: SIR and ECI's Mandate

The **Special Intensive Revision (SIR)** by the ECI is currently facing a legal challenge in the Supreme Court of India on several grounds, focusing on the jurisdiction and legality of the process.

Grounds for Legal Challenge Against SIR

- **ECI's Power:** The **Election Commission of India (ECI)** is argued to have **no power to determine citizenship**, which is claimed to be solely within the purview of the **Union Ministry of Home Affairs (MHA)**.
- **Legality of SIR:** Contention exists that **no provision in the law** allows for an **en masse SIR**, asserting that the revision can only be conducted selectively.
- **Foreigner Determination:** The determination of whether an individual is a **foreigner** can only be carried out by the **MHA under the Citizenship Act** and by **quasi-judicial bodies** such as **Foreigners Tribunals** constituted under the **Foreigners Act, 1946**.

ECI's Counter-Argument

- **Constitutional Mandate:** The **ECI's constitutional mandate** to determine eligibility for inclusion in the electoral rolls is argued to **necessarily entail verifying citizenship status**.
- **Distinction in Process:** The ECI's central contention is that the process of assessing eligibility for enrolment **cannot be equated with a formal determination of citizenship**.

Fundamental Issue

- **Presumption of Citizenship:** The **presumption that all residents are citizens unless proven otherwise** is being questioned by the SIR process.

Burden of Proof and the Legal Regime

The existing legal framework for citizenship places the **onus of proving citizenship** on the individual, rather than on the state, particularly when challenged.

Absence of a Single Document

- **No Single Evidence: No single piece of evidence** countrywide conclusively proves **Indian citizenship**, lacking the status of being definitive evidence of citizenship status.
- **Legal Regime Awaited:** A **legal regime for a countrywide adjudication** of everyone's citizenship, passed by Parliament, is awaiting rollout.

Centre's Position on Proof

- **Citizenship Act, 1955:** The **Citizenship Act, 1955, as amended in 2004**, provides for the Central Government to **compulsorily register every citizen** and issue a **National Identity Card (NIC)**.
- **National Register of Citizens (NRC):** The NICs are to be issued to citizens whose particulars are entered in the **National Register of Citizens (NRC)**, which is a **subset of the National Population Register (NPR)**.
- **NPR and NRC Mandate:** The **NRC is mandated in the Act**, while the **NPR**, which lists all residents, is **authorised by rules** framed under the Act. **Only citizens who have proven their status** are to be included in the NRC.

Evolution of Citizenship by Birth

Founders of the Republic favoured a **territorial conception of citizenship** (**Jus Soli** or 'Right of the Soil'), but **Jus Sanguinis** (Right of Blood/lineage) gained more prominence through subsequent amendments.

- **Pre-July 1, 1987:** Persons born in India before this date are citizens **regardless of who the parents are**.
- **July 1, 1987, to December 2, 2004:** Persons born in India during this period are citizens **only if either of the parents is a citizen** of the country at the time of birth.
- **On or after December 3, 2004:** For eligibility, apart from **at least one parent being a**

'Illegal Immigrant' Determination

- **2003 Amendment:** Legislation determined that a **section of residents are 'illegal immigrants'** who were to be **identified and deported**; they and their progeny would not be eligible for Indian citizenship by birth.
- **Dual Proof Requirement:** Eligibility now requires **both parents to be determined as citizens**, or **one parent to be a citizen and the other not an illegal immigrant**.
- **CAA, 2019:** A section of identified illegal immigrants qualify for Indian citizenship under the **Citizenship (Amendment) Act, 2019**, which became controversial due to the **explicit religious test mandated**.

Assam Exercise: A Case Study

The **only State with a draft NRC**, Assam, serves as a proof of the concept where the state determines who constitutes the people.

Section 6A and the Draft NRC

- **Separate Regime:** The **Citizenship (Amendment) Act, 1985**, inserted **Section 6A** into the Citizenship Act, 1955, creating a **separate citizenship regime for Assam** with varying cut-off dates.

- **Draft NRC Outcome:** A draft NRC, published in 2019, marked **19 lakh residents** out of 3.29 crore as **D, for Doubtful citizenship**.
- **Criteria for 'D':** A person whose status as a citizen **could not be "ascertained beyond reasonable doubt... to the satisfaction of the registering authority"** ended up as a doubtful citizen.

Consequences and Reliance on Records

- **Suspension of Rights:** Once a person is marked 'D', their **voting rights can be suspended**, their citizenship can be determined by a **foreigner's tribunal**, and they **could be deported**.
- **Legacy Records:** The process **relied heavily on legacy records**—documents regarding parentage and residency going back several decades—to prove the varying cut-off dates.

Paradox of Determination and State Apparatus

The **administrative state** is ultimately entrusted with the authority to determine who constitutes the people, a process that is often carried out at the lowest bureaucratic level.

Daily Determination

- **Deciding Authority:** Questions of citizenship, treason, and sedition are decided on a daily basis by the **border agent, constable, village clerk, and voter enlisting officer**.
- **Proxy Exercise:** The **SIR by the ECI** is viewed as a **proxy of the NRC exercise**. The same personnel (e.g., primary schoolteacher-BLO) involved in SIR under ECI oversight would likely make the same determination for NPR and NRC under MHA's oversight.

Fundamental Contradiction

- The **modern state apparatus**, invested with the authority to determine who constitute the people, has a **contradiction built in it** since the state's authority is created by the will of the people (sovereign).
- Regardless of which body oversees the exercise, the **definition, design, and application of citizenship laws** are structured such that the state decides who the people are.

Way Forward

- **Clarify institutional mandates by statute or judicial interpretation** so that competence for **citizenship determination** and competence for **electoral eligibility verification** are delineated, thereby reducing jurisdictional overlap and legal uncertainty.
- **Place procedural safeguards in enrolment and verification processes**, including **independent oversight, standardised checklists** for documentary scrutiny, opportunity for representation before decisions are finalised, and clear communication of recourse mechanisms, so that risk of disenfranchisement is minimised while integrity of rolls is preserved.
- **Ensure administrative capacity building and training for field functionaries** who will be engaged in verification tasks so that determinations are made consistently, lawfully and with sensitivity to human consequences, given that border agents, policemen and local registrars have been observed to make pivotal determinations.
- **Adopt transparent evidence standards and secure legacy record access mechanisms** so that **reliance on decades-old documents is balanced by realistic recognition of constraints** faced by many residents in producing such documents, thereby reducing arbitrary marking of persons as doubtful.

- **Mandate independent review or quasi-judicial scrutiny prior to suspension of voting rights** so that consequences such as **disenfranchisement and initiation of deportation proceedings** are not implemented without adequate legal process and avenues for redress.
- **Coordinate inter-ministerial framework for NPR/NRC/MNIC implementation** with **parliamentary oversight** so that promises of nationwide registration are translated into law and operationalised with due parliamentary debate and safeguards rather than ad hoc administrative exercises.

Conclusion

- The ongoing legal challenge against the ECI's SIR brings into sharp focus the **fundamental, political, and philosophical nature** of citizenship governance in a democracy.
- It highlights the inherent **paradox in the relationship between the people and the state**, where the administrative state, a creation of the people, retains the ultimate power to define its citizenry, placing a significant burden of proof on the individual.
- The resolution of this vexed question necessitates a robust and clear legal framework that ensures both the **integrity of electoral rolls** and the **protection of individual rights**.

Q. *To enhance the quality of democracy in India the Election Commission of India has proposed electoral reforms in 2016. What are the suggested reforms and how far are they significant to make democracy successful?*

2.1.13. SIR AND THE ANNIHILATION OF RIGHTS

Why in the News?

- The **Special Intensive Revision (SIR)** exercise, currently being undertaken by the **Election Commission of India (ECI)** across **12 States and Union Territories**, covering nearly **51 crore voters**, has recently come under scrutiny.
- An **eerily similar structural codification of exclusions** is observed in this **democratic process** and the **technocratic adventures** implemented in **welfare schemes**, particularly **MGNREGA**, prompting concerns over the **annihilation of rights**.

Background of Electoral Enrollment and Citizenship

Historically, the principle of voter enrollment has been premised on **presumed citizenship** and constitutional morality.

- **Legal Basis: Section 19 of the Representation of the People Act, 1950**, states that any person **"ordinarily resident in a constituency"** can be enrolled in the electoral rolls.
- **Expansive Interpretation:** In 1999, the **Gauhati High Court** provided an **expansive interpretation** of **"ordinarily a resident"** as being a **"habitual resident of that place"** who has the **"intention to dwell permanently."**

- **Premise of Inclusion:** Exercising **constitutional morality**, the ECI and the judiciary operated on the **premise of presumed citizenship**, where any resident adult was by default considered a **valid voter**.

Structural Inversion under Special Intensive Revision (SIR)

The ongoing SIR marks a **U-turn** from this default conceptualisation of citizenship, introducing procedural mandates that invert the state-citizen relationship.

- **Inversion of Responsibility:** Every elector, irrespective of having voted in earlier elections, is now mandated to **match their names and documents** with the electoral rolls of **2002-2005**.
- **Risk of Disenfranchisement:** This act, which **shifts the onus of compliance from the state to the people**, risks **disenfranchising many**, with **women, migrants, and the homeless** being likely to be **most hit**.
- **Procedural Difficulty:** The **2002-2005 rolls are not machine readable**, meaning even a **minor mismatch** between present details and earlier records can result in **notices and potential deletion**.

Technocratic Playbook: A Formula for Exclusion

The architecture of SIR strongly **resembles the technocratic playbook** employed by the Union government in welfare delivery, which has consistently resulted in **large-scale exclusions**.

Core Elements of the Exclusionary Formula

- Responsibility of **inclusion** is **shifted from the state to the people**.
- **Strict targets** are set for officials with **haphazard protocols** for implementation.
- Officials are **disciplined** to achieve **100% coverage** in a **short time**.
- **Ultimatum** is given to people to comply or risk having their **rights stripped away**.
- **Efficiency gains** are subsequently shown, based on **de-duplication by deleting people**.

MGNREGA: A Case Study in Digital Exclusion

The implementation of the **Aadhaar-based payment system (ABPS)** in MGNREGA serves as the primary parallel to the SIR process.

- **Mandatory ABPS:** In 2022, the Union government mandated ABPS, requiring workers to **link their MGNREGA job cards with their Aadhaar**, making the **right to work conditional** on this digital linkage.
- **Procedural Flaws: Procedures on dealing with mismatches** across workers' two documents were **unclear**, leading to officials **transferring the responsibility** of fixing errors to the workers.
- **Hastened Deletions:** To **hastily achieve 100% Aadhaar linking targets**, officials resorted to **deleting workers** from the database.
- Research based on a random sample of **2.98 lakh worker deletions** between 2022 and 2024 revealed that an estimated **two-thirds** of all those deleted were removed on grounds of being **"unwilling to work,"** a clear **legal violation** of the Act.
- **National Mobile Monitoring System (NMMS) App:** The introduction of this app in 2021 for **digital attendance recording denied attendance to many workers** and was flagged by the Ministry of Rural Development itself for being **"misused or manipulated."**

- **Administrative Route to Closure:** The pressure of **stringent targets and timelines** led frontline officials, unable to address migration-related absences or documentation glitches, to use **nearly 27 lakh deletions in just one month** as an administrative route to close pending records.

Compromise on Constitutional Morality

What is fundamentally similar in the technocratic approaches to MGNREGA and SIR is the **structural codification of exclusions**, which compromises the constitutional ethos.

- **Pressure on Officials:** Even well-meaning officials are **pressured to focus on dashboards and targets**, leading to severe mental stress, with some reportedly **taking their own lives**.
- **Exclusions as Progress:** Field officials are judged on **completion rates**, making **exclusions a quick way to show progress** (e.g., de-duplication).
- **Delayed Action:** The harmful consequences often become a **fait accompli**; for instance, a **standard operating procedure on worker deletions** was issued by the Union government **more than a year after** the rights of millions were deleted.
- **Inaccessible Grievance Channels:** Grievance channels are rendered **inaccessible for vulnerable groups** due to the requirement for **procedural agency** that is rarely available.
- **Ambedkar's Stress on Fraternity:** Dr. B.R. Ambedkar stressed the need for **constitutional morality**, implying that institutions must embody **fraternity**, where **inclusion must be the norm and exclusion the exception**.
- The ECI, by **inverting the citizen-state relationship** and imposing **onerous documentation** on people, is compromising on this constitutional morality.

Way Forward

- **Social audits** must be **implemented** as **participatory verification mechanism** so that **community-led review** replaces **rigid historical-document matching** and so that **disenfranchisement risks** are **reduced** through **local knowledge and corrective action**.
- **Machine-readability and digitisation of historical records** must be **ensured** with concurrent provision for **local-level correction** so that **minor mismatches** do not translate into **notices and deletions**, and so that **reliance on archaic non-machine-readable rolls** is **removed**.
- **Grievance mechanisms** must be **decentralised and simplified** and **outreach** must be **conducted for vulnerable groups** so that **remedial action** can be **taken** without **excessive procedural agency** being **demanded** from **disenfranchised persons**.
- **Performance targets and dashboard metrics** must be **recalibrated** to **prioritise inclusion outcomes** rather than **completion percentages** so that **perverse incentives for exclusions** are **neutralised** and **administrative focus** is **shifted** toward **rights-protective implementation**.
- **Institutional checks informed by constitutional morality** must be **strengthened** so that **electoral administration** is **guided** by **principle of fraternity and inclusion** rather than by **mechanistic compliance** with **rigid timelines and numerical targets**.

Conclusion

- The convergence of administrative strategies in the Special Intensive Revision of electoral rolls and welfare schemes like MGNREGA highlights a systemic issue where **technocratic mandates and rigid targets** are leveraged to bypass the fundamental principles of **inclusion and constitutional morality**.

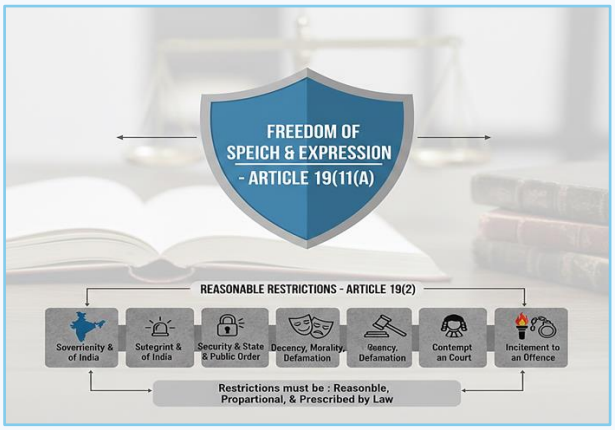
- This shift, placing the **burden of proof and compliance disproportionately** on the **poor and marginalised**, requires **immediate course correction** to prevent the **structural disenfranchisement of millions of citizens** and to re-establish the citizen-state relationship based on **fraternity and justice**.

Q. *Discuss the procedures to decide the disputes arising out of the election of a Member of the Parliament or State Legislature under the Representation of the People Act, 1951. What are the grounds on which the election of any returned candidate may be declared void? What remedy is available to the aggrieved party against the decision? Refer to the case laws.*

Q. *Discuss the role of the Election Commission of India in the light of the evolution of the Model Code of Conduct.*

2.1.14. ARTICLE 19(1)(A): FREEDOM, NOT ABSOLUTISM

Context- The proceedings of the Supreme Court of India, in Ranveer Allahbadia vs Union of India and other cases have raised the worry that the potential risks of endangering speech could emerge from the Court itself.



Basic about A-19(1)

Article 19(1)(a) of the Indian Constitution guarantees **freedom of speech and expression** to all citizens, forming the **bedrock of democratic governance** by enabling free exchange of ideas, dissent and accountability.

Broad Scope and Significance of Article 19(1)(a)

The Supreme Court, through several landmark judgments, has given an expansive interpretation to this right, encompassing various implicit facets crucial for a functioning democracy:

- **Freedom of the Press/Media:**
  - **Judgement-** ***Romesh Thappar v. State of Madras (1950)***
  - **Significance**– Essential for the free circulation of ideas and opinions; a powerful check on government.
- **Right to Know/Access Information:**
  - **Judgement-** ***State of U.P. v. Raj Narain (1975)***.
  - **Significance-** Citizens have a right to know every public act of their government; basis for the **Right to Information (RTI)**.
- **Right to Silence/Not to Speak:**
  - **Judgement-** ***Bijoe Emmanuel v. State of Kerala (1986)***
  - **Significance-** Freedom of expression includes the right to remain silent or express dissent through non-speech.
- **Right to Fly the National Flag:**
  - **Judgenent-** ***Union of India v. Naveen Jindal (2004)***

- **Significance-** Expressing patriotism is a form of expression under Article 19(1)(a).

- **Right to Internet Access:**
  - **Judgement-** ***Anuradha Bhasin v. Union of India (2020)***
  - **Significance-** Expressing patriotism is a form of expression under Article 19(1)(a).

Grounds and Judicial Interpretation of Restrictions (Article 19(2))

Article 19(2) explicitly provides the State with the power to impose **"reasonable restrictions"** on the freedom of speech and expression on eight specific grounds, which have been judicially interpreted:

1. **Sovereignty and Integrity of India:** This ground was added by the **16th Constitutional Amendment Act of 1963**
2. **Key Interpretation/Rationale**– To empower the State to curb expressions that challenge the territorial or constitutional integrity of the nation, primarily aimed at combating separatist or secessionist tendencies.
3. **Security of the State:** This restriction is narrowly interpreted by the Judiciary. As established in the ***Romesh Thappar Case***,
4. **Key Interpretation/Rationale**– It refers **only** to aggravated forms of public disorder, such as acts threatening the national structure (e.g., rebellion or waging war), and **not** to minor, ordinary breaches of law and order.
5. **Friendly relations with foreign states:** Introduced by the **1st Amendment Act of 1951**, **Key Interpretation/Rationale**– this ground allows the government to restrict speech that is hostile, malicious, or defamatory towards foreign nations with whom India maintains friendly diplomatic relations, thereby protecting India's international standing.
6. **Public Order:** The courts distinguish this ground from 'law and order' and 'security of the state.' As seen in the ***Superintendent, Central Prison v. Ram Manohar Lohia*** case, **Key Interpretation/Rationale-** 'public order' concerns disturbances that are grave enough to affect the community or public at large, disrupting the general peace and tranquility of society.
7. **Decency or Morality:** This ground relates to expressions that are considered offensive to the prevailing public standards of propriety and morality, often applied in the context of obscenity laws (such as Sections 292-294 of the Indian Penal Code) to protect public standards and ethics.
8. **Contempt of Court:** This restriction is essential to ensure that the judicial process functions impartially, without being prejudiced, scandalized, or obstructed by public comments, thus maintaining the dignity and authority of the courts and the administration of justice.
9. **Defamation:** This provision protects the fundamental right to reputation of individuals, which the Supreme Court has recognized as an integral part of the right to life under **Article 21**. Defamation can lead to both civil (damages) and criminal (punishment) proceedings.
10. **Incitement to an offence:** Also added by the **1st Amendment Act of 1951**, this ground restricts speech that directly, not remotely, encourages or provokes the commission of a cognizable offence, ensuring that freedom of expression does not become a license for criminal instigation.

Issues and Challenges Related to Article 19(1)

1. Vague and Overbroad Restrictions

The grounds for restriction under Article 19(2) are often criticized for their vagueness, allowing for potential misuse:

- **Public Order:** Despite judicial attempts (e.g., *Ram Manohar Lohia Case*) to establish a **"proximate nexus"** between the speech and the disorder, this ground is frequently invoked by the state for general policing actions or to suppress non-violent dissent (e.g., internet shutdowns, restrictions on protests).
- **Decency or Morality:** This ground is highly subjective, often leading to the arbitrary **censorship of artistic expression, literature, and films** based on the subjective *"hurt sentiments"* of a specific group, rather than on universal standards of public morals.
- **National Security/Sovereignty:** This is often cited in cases involving media bans (e.g., the *MediaOne ban* controversy) or the use of stringent laws like the **Unlawful Activities (Prevention) Act – UAPA** or the repealed **Sedition Law (Section 124A, IPC)**, which have historically been criticized for stifling political dissent and journalistic watchdog functions.

2. The Digital Age Dilemma

The proliferation of online platforms has introduced new complexities:

- **Hate Speech vs. Free Speech:** India lacks a clear, comprehensive legal framework to definitively define and address online hate speech. The current reliance on various provisions of the IPC (e.g., Section 153A, 295A) often results in a **"chilling effect"** on genuine speech due to arbitrary arrests and FIRs.
- **Misinformation and Fake News:** The massive scale and speed of misinformation circulation threaten public order and communal harmony, yet regulating content platforms raises serious questions about **digital censorship** and the overreach of government agencies.
- **Intermediary Liability:** The **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 (IT Rules, 2021)** impose responsibilities on digital platforms, which critics argue forces them to become state censors, potentially violating user freedom of expression.

3. Protection of Expressive Conduct

The Supreme Court has struggled to articulate a clear, principled test to determine **when expressive conduct** (like protests, demonstrations, or artistic actions) should be protected under Article 19(1)(a). The lack of a uniform principle leads to ad-hoc judicial decisions.

4. Rise of Horizontal Harms

Recent judicial debates have focused on the **"horizontal dimension"** of free speech: the idea that one citizen's speech can violate the fundamental rights (like the Right to Dignity under Article 21) of another citizen (especially marginalized groups), moving beyond the traditional **"vertical"** relationship between the citizen and the State.

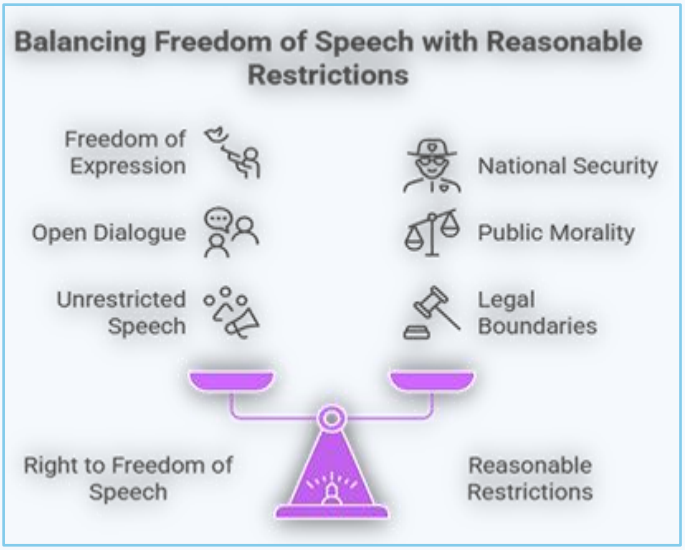
Way forward:

The Test of Reasonableness and Proportionality

The most crucial aspect is the judicial review of the restriction's **reasonableness**.

- **Test of Reasonableness:** The restriction must be related to the grounds specified in Article 19(2), and the government must demonstrate a reasonable connection between the restriction imposed and the objective sought to be achieved.

- **Doctrine of Proportionality:** As laid down in **Modern Dental College v. State of M.P. (2016)**, the restriction must be proportional. It means the extent of restriction must not be excessive or disproportionate to the evil it seeks to remedy. The least restrictive alternative should be chosen.



Conclusion

Freedom of speech under Article 19(1)(a) is **essential for democracy**, but its strength lies in a **carefully balanced framework** where individual liberty coexists with collective security and constitutional morality.

Q. *"Freedom of speech under Article 19(1)(a) is not absolute but foundational to Indian democracy." Examine the scope of this right and analyse how reasonable restrictions under A-19(2) have been interpreted by the judiciary.*

2.1.15. SUPREME COURT OPINION ON GOVERNOR'S ASSENTING POWER

Why in the News?

- Recently, the **Supreme Court of India** delivered an advisory opinion in **Special Reference No. 1 of 2025** regarding the scope of the **Governor's** and the **President's** discretionary powers concerning assent to Bills passed by State legislatures.
- This opinion has drawn scrutiny as it is perceived to potentially undermine the constitutional discipline and definitive limitations imposed on gubernatorial inaction by an earlier Supreme Court judgment.

Background and Context

- A definitive ruling addressing the obstructionist tendencies of Raj Bhavan was previously pronounced by the Supreme Court in **State of Tamil Nadu vs Governor of Tamil Nadu** (April 2025).
- This judgment aimed to conclude the protracted practice of unelected **Governors stymying Bills** passed by elected legislatures through the **indefinite delaying of assent**.
- To ensure **legislative supremacy**, **definitive timelines** were imposed for Governors to act, and judicial intervention was permitted if these timelines were violated.
- The verdict offered the rare relief of allowing courts to deem the **Governor's unexplained inaction as assent**, affirming democracy and addressing the resulting policy paralysis.

- However, before the full potential of this democracy-affirming verdict could be realised, the Court addressed a **Presidential Reference** (**Special Reference No. 1 of 2025**).
- This advisory opinion, delivered by a **Constitution Bench** led by the **(now former) Chief Justice of India, Justice B.R. Gavai**, has sought to dismantle the constitutional discipline imposed earlier, carrying **great persuasive heft** despite not formally overruling the previous judgment.

Court's Interpretation and Observations

- **Nature of Governor's Role**
- The Court described **Article 200** as a **repository of procedural mechanisms** enabling a **constitutional dialogue** between **Governor** and **State legislature**.
- However, the **dialogue** was viewed as **one-sided**, because the **Governor's prolonged silence** was not effectively addressed; **timely response** from both sides was necessary to uphold the **integrity of the legislative process**.
- **Judicial Limitations**
- The Court asserted that **imposing judicial timelines lacked textual sanction**, hence **courts could not deem silence as assent**.
- **Violation of clarity** established by the earlier verdict was noted, wherein the Court previously allowed **judicial intervention** when **Governors delayed assent without explanation**.
- In the new opinion, the **only relief** available for **prolonged inaction** is a **direction to the Governor to decide**, not an automatic construction of assent.

Issues and Concerns Arising

- **Revival of Unfettered Discretion**
- The **constitutional discipline** upheld in the ***State of Tamil Nadu verdict*** was **weakened**, reinstating **broad discretionary authority** for Governors.
- **Unelected representatives** may now **delay or withhold assent** without **clear accountability mechanisms**.
- **Reversal of Limitations on Governor's Powers**
- Previously, Governors were **required to act within reasonable time** and **assent** to Bills returned after reconsideration.
- The new interpretation **permits referral of Bills to the President** even **after reconsideration by the legislature**, thus **negating the binding nature** of State legislatures' re-enactment.
- **Constitutional Safeguards Undermined**
- **Article 200** (dealing with the **Governor's power to give assent to a Bill**) was presented as a **repository of procedures** that trigger a **constitutional dialogue** between constitutional functionaries.
- The **first proviso of Article 200** clearly stated that once a Bill was reconsidered and returned, **the Governor must assent**.
- Allowing **referral to the President at this stage** creates a **"constitutional black hole"**, enabling **Bills to die silently** without resolution.
- The Court invoked **Governor's immunity under Article 361**, barring deeper **judicial scrutiny** of inaction.

- **Missed Opportunity for Reform**
- The Reference had presented a **rare chance** for the judiciary to **subject unilateral referral of Bills** by Governors to **judicial oversight**.
- Instead, the opinion has **conferred wider discretion**, enabling Governors to **send even reconsidered Bills** to the President **without clear limitations**.

Constitutional Reasoning and Justification by the Court

- **Invocation of 'Checks and Balances'**
- The Court justified its stance on the pretext of **maintaining checks and balances** among constitutional authorities.
- It argued that **Assemblies might introduce amendments** potentially conflicting with **Central laws** or **the Constitution**, warranting **referral to the President**.
- **Problem of False Equivalence**
- This reasoning created what commentators termed as **false equivalence**, as **judicial review** always remains available for **testing validity of laws**, whereas **denial of assent** leaves **no redressal remedy**.
- The **power of assent** was seen as **procedural**, not as a **form of judicial review**, hence **elevating Governor's assent power** in such manner **distorts the constitutional design**.

Implications for Federalism and Governance

- The verdict represents a **constitutional regression**, **diluting the balance** between **Union and State authorities**.
- **Legislative supremacy** has been compromised, with **Raj Bhavans resuming a dominant position** in the law-making process.
- The **principle of cooperative federalism** stands threatened due to **elastic discretionary powers** conferred upon Governors.
- **Policy paralysis** in Opposition-ruled States may reappear, as **governors could again employ delay tactics** without facing effective legal consequences.

Way Forward: Restoring Constitutional Discipline

To address the **constitutional retrogression** and the resulting **unwanted fillip to the Union's domination over the States**, the following steps are suggested to restore balance and accountability in the assent process:

- **Upholding the Binding Nature of Reiteration:** The explicit mandate under **Article 200** must be strictly followed, requiring the Governor to assent to a Bill that has been **re-enacted by the State Assembly**. This closes the loophole that creates a **constitutional black hole**.
- **Curtailing Unfettered Referral Power:** The Governor's discretion to refer **reconsidered Bills** to the President must be **curtailed and subjected to transparent scrutiny**, addressing long-standing concerns raised by bodies like the **Sarkaria Commission**.
- **Maintain Assent as a Procedural Step:** The Governor's assent power must be confined to its role as a **procedural aspect of law-making**. It must **not** be elevated to the level of a **preliminary judicial review** conducted by Raj Bhavan, thereby preserving its nature as a **'balance'** rather than a **'check'**.

- **Strengthening Remedies Against Prolonged Inaction:** The judicial remedy for **prolonged inaction** must be strengthened beyond a mere **"direction to make a decision."** Such inaction must be treated as **constitutionally impermissible conduct**.
- **Reaffirm Legislative Supremacy:** The interpretation of **Article 200** must unequivocally **safeguard legislative supremacy**, ensuring that the will of **elected legislatures** is not frustrated by the **obstructionist tactics** of unelected functionaries.
- **Uphold the Rule Against Indirect Action:** The principle that **what cannot be done directly cannot be done indirectly** must be rigorously applied. This prevents the Governor from using the expanded **referral power** to achieve the **silent death of a Bill** that could not be legally denied assent directly.
- **Institutionalise Timely Constitutional Dialogue:** New mechanisms must be introduced to ensure the process under **Article 200** functions as an effective **constitutional dialogue**, mandating a **proper and timely response** from the Governor to prevent **motivated silence**.

Conclusion

Despite the challenges presented by the advisory opinion of the Supreme Court, the judicial discourse has clearly underscored the necessity of preserving **legislative supremacy** and the **federal balance**. The focus must now shift to advocating for robust constitutional practices that **mandate timely gubernatorial action** and firmly establish that the denial of assent cannot supersede the clear will of the elected State legislature.

Q. *Article 200 governs the Governor's assent to Bills, ensuring constitutional dialogue, but can be misused to delay legislation and frustrate State assemblies." Examine this in light of the recent Supreme Court advisory opinion and suggest measures to safeguard legislative supremacy.*

2.1.16. VIKSIT BHARAT'S NEW GUARANTEE: REIMAGINING THE RIGHT TO WORK FOR 2047

Background:

1. The Constitutional Philosophy

MGNREGA is the operationalization of the **Directive Principles of State Policy (DPSP)**.

- **Article 41:** Mandates that the State shall, within its economic capacity, secure the **"Right to Work"** and public assistance in cases of unemployment.
- **Article 21:** The Supreme Court has often linked the "Right to Work" with the **"Right to Life with Dignity,"** as employment provides the means for a dignified existence.
- **Article 243G:** Empowers Panchayats to plan for economic development, which is the bedrock of MGNREGA's decentralized implementation.

2. Historical Evolution (Pre-2005)

MGNREGA did not emerge in a vacuum; it was the culmination of multiple failed or partial schemes:

- **1970s (Maharashtra Model):** The first "Employment Guarantee Scheme" (EGS) was launched in Maharashtra following a severe drought. Its success became the blueprint for a national law.
- **1980-90s:** Schemes like the **Jawahar Rozgar Yojana (JRY)** and the **Employment Assurance Scheme (EAS)** were launched but suffered from "top-down" planning and middleman leakages.
- **2001:** The **Sampoorna Grameen Rozgar Yojana (SGRY)** merged earlier schemes but remained "allocation-based"—meaning if the budget ran out, the work stopped.

3. The 2005 "Rights-Based" Paradigm Shift

In September 2005, the Parliament passed the **National Rural Employment Guarantee Act (NREGA)**, which was renamed **MGNREGA** in 2009. Unlike its predecessors, it was an **Act**, not just a scheme.

4. Implementation Milestones (2006–2025)

- **Phase I (Feb 2006):** Launched in the 200 most backward districts.
- **Phase II & III (2007-08):** Expanded to all rural districts in India.
- **2011:** Direct Benefit Transfer (DBT) was introduced to pay wages directly into bank accounts, curbing corruption.
- **COVID-19 Pandemic (2020):** Acted as a "lifeboat" for millions of migrant workers returning to villages, with the budget hitting a record ₹1.11 lakh crore.
- **2023-24:** Introduction of the **National Mobile Monitoring System (NMMS)** for real-time digital attendance to prevent "ghost" workers.
- **Dec 2025:** Introduction of the **VB-G RAM G Bill** to transition the scheme into a "Mission-Mode" infrastructure framework.

Issues with MGNREGA:

While MGNREGA has been a "lifeboat" for the rural poor, especially during the pandemic, it faces a set of chronic and structural issues that have hampered its effectiveness. These challenges are often cited as the primary reason for the 2025 revamp via the **VB-G RAM G Bill**.

1. **The Fiscal & Budgetary Crisis**

- **Budget Cuts:** Despite being a demand-driven scheme, the budget allocation has seen a steady decline. In FY 2024-25, the allocation was significantly lower than the actual expenditure in previous years, leading to **"negative balances"** in several states.
- **Material-Wage Ratio Mismatch:** The Act mandates a **60:40 ratio** (60% wage, 40% material). In many states, materials for durable assets are not procured on time because the Centre prioritizes wages, resulting in poor-quality, non-durable assets.

2. **Wage-Related Issues**

- **Chronic Payment Delays:** Though the Act mandates payment within 15 days, delays of months are common. This "Stage-2 delay" (at the Central government level) discourages workers from seeking work.
- **Wages Below Market Rates:** In many states, MGNREGA wages (approx. ₹230–₹370) are significantly lower than the **Minimum Wage** for agricultural labor or market rates. This has led to the "feminization" of MGNREGA, where men seek higher-paying private work while women take up MGNREGA.

- **Inflation Indexing:** Wages are linked to the **CPI-AL (Agricultural Labour)**, which many experts argue does not accurately reflect the rising cost of rural living, unlike the CPI-Rural.

3. The "Digital Burden" and Exclusion

- **ABPS (Aadhaar Based Payment System):** Since January 2024, ABPS has been mandatory. While meant to curb "ghost workers," it has excluded thousands whose Aadhaar details do not perfectly match their bank records or job cards (name spelling, etc.).
- **NMMS App Glitches:** The mandatory **National Mobile Monitoring System (NMMS)** app requires supervisors to upload geo-tagged photos of workers twice a day.
- **Network Issues:** In remote or tribal areas with poor connectivity, photos fail to upload, leading to **rejected attendance** and zero pay for a full day's work.
- **Hardware Lack:** Many supervisors (Gram Rojgar Sahayaks) do not have high-quality smartphones capable of running the heavy app.

4. Administrative and Quality Issues

- **Creation of "Ghost Assets":** Corruption at the Panchayat level sometimes leads to the recording of assets (like a pond or road) that exist only on paper.
- **Poor Planning:** Works are often planned in a "siloed" manner without convergence with other schemes like the **Pradhan Mantri Awas Yojana (PMAY)** or **Swachh Bharat**, leading to fragmented infrastructure.
- **Weak Social Audits:** Although mandatory, many states have not yet established independent Social Audit Units. In states where they exist, audit findings are rarely acted upon by local officials.

How Vb-G Ram G Bill Can Solve the Issue Of MGNAREGA:

The Viksit Bharat — Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-G RAM G) Bill, 2025 is designed as a "legal reset" to fix the structural and operational inefficiencies that plagued MGNREGA for two decades.

Key Provision of the Bill

1. Expanded Statutory Guarantee (125 Days)

- **The Provision:** The Bill statutorily guarantees **125 days** of unskilled manual work per financial year to every rural household, an increase from the 100 days mandated under MGNREGA.
- **Significance:** It acknowledges the rising aspirations of rural households and seeks to provide an additional 25% income floor. While MGNREGA allowed "not less than 100 days," the system often treated it as a cap; the new Bill makes 125 days the legal standard.

2. The "Agricultural Pause" (60-Day Moratorium)

- **The Provision:** State governments can now notify a "pause" in public works for a total of **60 days** in a financial year, coinciding with peak sowing and harvesting seasons.
- **Rationale:** This directly addresses long-standing complaints from the farming community regarding "labor crowding-out." By halting government-guaranteed work during peak farm periods, it ensures the availability of agricultural labor and prevents artificial wage inflation for farmers.
- **Flexibility:** Notifications can be specific to agro-climatic zones, districts, or even blocks, ensuring the pause matches local cropping cycles.

3. Shift to "Normative Allocation" (Budgetary Reform)

- **The Provision:** The Bill replaces the open-ended, demand-driven "Labour Budget" with **"State-wise Normative Allocations."** The Central Government will determine fixed annual funding for each state based on objective parameters.
- **Impact:** Under MGNREGA, the Centre was legally bound to provide funds as demand arose. Now, the Centre sets a limit; any expenditure exceeding this normative allocation must be borne entirely by the **State Government**.

4. Shared Funding Model (Centrally Sponsored Scheme)

- **The Provision:** The funding structure has changed from the Centre bearing 100% of unskilled wages to a **60:40** (Centre:State) split for most states.
- **90:10** for North-Eastern and Himalayan States.
- **100% Central funding** for Union Territories without legislatures.
- **Rationale:** To instill "cooperative federalism" and ensure states have "skin in the game," encouraging better monitoring and curbing of leakages.

5. Viksit Bharat National Rural Infrastructure Stack

- **The Provision:** All rural works will now be integrated into a unified digital framework called the **Infrastructure Stack**, aligned with the **PM Gati Shakti** National Master Plan.
- **Four Priority Verticals:** To prevent the creation of "non-durable" assets (like temporary pits), the Bill limits works to:
- **Water Security:** Rejuvenation of ponds (Amrit Sarovars), check dams, and irrigation canals.
- **Core Rural Infrastructure:** Roads, connectivity, and foundational village assets.
- **Livelihood Assets:** Warehouses, cold storages, and market sheds.
- **Climate Resilience:** Flood drainage and disaster-mitigation works.

Impacts:

1. Economic Impact

- **Boost to Household Income:** Increasing the guarantee from 100 to **125 days** provides a **25% potential hike** in the annual wage floor for rural families. This is crucial for smoothing consumption during lean periods.
- **Rural Demand Stimulus:** Enhanced income leads to higher liquidity in the rural market, potentially boosting the FMCG, tractor, and two-wheeler sectors.
- **Fiscal Decentralization (and Stress):** By moving to a **60:40** cost-sharing model, states now have a direct financial stake.
- **Inflation Control:** The **60-day pause** prevents artificial wage spikes during peak seasons, helping to stabilize food production costs and curb "food inflation" driven by high farm labor costs.

2. Impact on Agriculture

- **Labor Rebalancing:** The seasonal moratorium solves the "Labor Crowding-out" issue. It ensures that when farmers need hands for sowing or harvesting, workers are not diverted to digging trenches for the government.
- **Water Security:** With "Water" as a primary vertical, the creation of **Amrit Sarovars** and check-dams directly improves groundwater levels, enabling multi-cropping and increasing farm yields.

- **Reduced Post-Harvest Losses:** Focus on "Livelihood Infrastructure" (cold storages and drying yards) helps farmers store produce longer, preventing "distress sales."

3. Impact on Infrastructure (The "Durable Asset" Shift)

- **Asset Quality:** Unlike MGNREGA's often temporary "kucha" works, the integration with **PM Gati Shakti** ensures that assets like rural roads and community centers are permanent and strategically located.
- **Climate Resilience:** The mandate for disaster-mitigation works (like flood-drainage and soil conservation) helps rural communities withstand the increasing frequency of extreme weather events.

4. Social and Rights-Based Impact

- **Empowerment of Vulnerable Groups:** The Bill introduces **Special Schedules of Rates** for women, the elderly, and persons with disabilities, recognizing that their output might differ and ensuring they aren't excluded due to rigorous physical targets.
- **Digital Inclusion vs. Exclusion:** Biometric and AI-driven systems reduce corruption (leakages).

5. Modern Digital Governance & Transparency

- **Biometric & AI Integration:** The Bill mandates biometric authentication for attendance and uses **AI-enabled analytics** for fraud detection and risk mitigation.
- **Weekly Payment Cycle:** Unlike the 15-day cycle of MGNREGA, the Bill aims for **weekly wage payments**, improving liquidity for the rural poor.
- **Public Disclosure:** Mandatory weekly public disclosure of data at the Panchayat level to ensure real-time accountability.

Challenges of the VB-G RAM G Bill:

1. Fiscal and Federal Challenges

The most contentious issue is the shift from a **Central Sector** type funding (where the Centre paid 100% of unskilled wages) to a **Centrally Sponsored Scheme (CSS)** model.

- **Financial Burden on States:** The **60:40 cost-sharing ratio** (for general category states) places a heavy fiscal load on states already struggling with revenue deficits. Economically backward states like **Bihar, Jharkhand, and Odisha**, which have the highest demand for rural work, may find it impossible to provide their 40% share, leading to a "funding crunch" at the ground level.
- **The "Normative Allocation" Trap:** Unlike MGNREGA's demand-driven funding, the new Bill uses a capped "Normative Allocation." If a state experiences a local disaster (like a drought or flood) and demand spikes, the Centre is not legally bound to provide more funds. The state must bear **100% of any expenditure** above the pre-set cap.
- **Inter-State Disparity:** States that are fiscally stronger might implement the scheme better, while poorer states might "soft-pedal" the guarantee to save costs, worsening regional inequality.

2. Legal and Rights-Based Concerns

Critics argue that the Bill dilutes the fundamental "Right to Work" established by the 2005 Act.

- **Supply-Driven vs. Demand-Driven:** Under MGNREGA, work was a legal entitlement—if you asked for it, the government had to provide it. The new Bill prioritizes **"Viksit Gram Panchayat**

Plans." If a worker's need does not fit into the "pre-approved" infrastructure stack, work may be denied.

- **Centralized "Switch-Off" Power:** Section 5(1) of the Bill reportedly allows the Central Government to notify specific "rural areas" where the Act applies. This raises fears that the Centre could selectively "switch off" the scheme in certain districts or opposition-ruled states, turning a universal right into a discretionary benefit.

3. Implementation and Operational Hurdles

The "tech-first" approach of the Bill brings its own set of practical difficulties.

- **The "Double Burden" of the Agricultural Pause:** While the 60-day pause helps farmers, it creates a **shorter window (only 300 days)** for workers to complete their guaranteed 125 days of work. This could lead to massive overcrowding at worksites during the non-pause months.
- **Digital Exclusion & Connectivity:** The mandate for **Biometric Authentication** and **GPS-based tracking** assumes seamless rural internet. In many "shadow areas" (hilly or remote regions), workers risk losing wages simply because the server was down or their fingerprints didn't scan—a phenomenon already seen with the NMMS app.
- **Loss of Local Autonomy:** By narrowing permissible works to four specific verticals (water, infrastructure, livelihoods, and climate), the **Gram Sabhas** lose the flexibility to address unique local needs that don't fall into these "national priorities."

Way Forward:

1. Fiscal Smoothing and Transitional Support

The shift to a **60:40 funding ratio** is the biggest hurdle for federal cooperation.

- **Gramin Transition Grants:** The Centre should provide special "bridging grants" for the first three years to help fiscally stressed states like Bihar, Odisha, and West Bengal adjust to the new 40% wage liability.
- **Finance Commission Alignment:** The **16th Finance Commission** should consider "Rural Employment Indicators" as a criterion for horizontal tax devolution, rewarding states that effectively implement the 125-day guarantee.
- **Contingency Fund for Distressed States:** A "National Rural Distress Fund" should be created, where the Centre reverts to 100% funding during times of officially notified national disasters or droughts, bypassing the "Normative Allocation" caps.

2. Strengthening Grassroots Democracy (Decentralized Planning)

The "Infrastructure Stack" should not stifle local innovation.

- **Hybrid Planning Model:** Gram Sabhas should retain absolute authority over **30% of the village fund** for "Local Priority Works" that may not fall under the four national verticals.
- **Viksit Panchayat Digital Literacy:** To prevent a "bureaucratic takeover" of planning, a massive training drive is needed for Gram Panchayat members to use the **PM Gati Shakti** and **spatial planning tools** effectively.

3. Human-Centric Technology Implementation

Technology must be an "enabler," not an "excluder."

- **Offline-First Mode:** Biometric and GPS systems must allow for "offline-caching" to ensure that workers in hilly or "shadow zones" (like Chhattisgarh or Ladakh) can mark attendance even without live internet, with data syncing once they reach a network.
- **The "Zero-Tolerance" Grievance Redressal:** A dedicated **Weekly Ombudsperson** at the Block level should have the power to override tech-based rejections (like fingerprint mismatches) based on physical verification.

4. Dynamic and Flexible Agricultural Pauses

A "one-size-fits-all" 60-day pause could be disastrous for varied cropping patterns.

- **Micro-Zonal Notifications:** Instead of state-wide notifications, the authority to trigger the 60-day agricultural pause should lie with the **Gram Sabha** or **Block Development Officer**, ensuring it aligns exactly with the local sowing/harvesting weeks.
- **Voluntary Labor Pool:** Create a "Farm-Support Labor Portal" where workers during the pause can be matched with local farmers seeking labor, ensuring a smooth transition between public works and private farm jobs.

Conclusion:

The VB-G RAM G Bill represents a shift from a "social safety net" to an "economic growth engine." While the increase to 125 days is a welcome expansion of benefits, the success of this reform will depend on balancing central digital control with the federal autonomy of states and the grassroots needs of workers.

Q. *The transition from MGNREGA to the VB-G RAM G Bill, 2025, signifies a fundamental shift from a demand-driven 'rights' framework to a supply-linked 'mission' framework. Evaluate the potential of this reform in creating durable rural assets while addressing the fiscal and federal challenges it poses.*

2.1.17. FROM VULNERABILITY TO VOICE: CHILD RIGHTS AND PROTECTION IN INDIA

Context: The Supreme Court, in a judgment on Friday, observed that child trafcking and commercial sexual exploitation of children by organised cartels is a "deeply disturbing reality" in India which continues to #ourish despite protective laws

Current Status

The MoSPI report released in late 2025 highlights a mix of significant progress and emerging health concerns:

- **Demographics:** The National Birth Rate has declined to **18.4 per 1,000** (Rural: 20.3; Urban: 14.9).
- **Mortality:**
- **Infant Mortality Rate (IMR):** Dropped from 44 (2011) to **25 (2023)**.
- **Under-Five Mortality Rate (U5MR):** Improved to **29 (2023)**.

- **Education:** Secondary school dropout rates saw a sharp decline from 13.8% (2022-23) to **8.2% (2024-25)**.
- **Gender Parity:** India achieved a **Gender Parity Index (GPI)** of 1.0 or higher across all education stages.
- **New Health Risk:** Over **one-third** of children (5–9 years) now show high triglyceride levels, indicating a rising risk of lifestyle diseases like diabetes.

Constitutional Provisions of Child Rights:

The Indian Constitution treats children as a "vulnerable group" requiring **protective discrimination** and **positive entitlements**.

1. **Foundational Principles: Part III (Fundamental Rights)**

- **Article 14 (Equality before Law):** Recognizes children as a special class requiring specific legal protection.
- **Article 15(3) (Protective Discrimination):** This is the **enabling provision** that allows the State to make "special provisions" for women and children. It serves as the constitutional basis for laws like the POCSO Act and the Juvenile Justice Act.
- **Article 21 (Right to Life and Dignity):** The Supreme Court (SC) has expanded this to include the right to health, nutrition, and a safe environment. In recent 2025 rulings (e.g., Re: Right to Privacy of Adolescents), the SC emphasized that a child's dignity must be protected even in the digital and reproductive spheres.
- **Article 21A (Right to Education):** Inserted via the **86th Amendment Act (2002)**, it mandates free and compulsory education for all children aged **6 to 14 years**.
- **Article 23 (Prohibition of Trafficking):** Protects children from human trafficking and begar (forced labor).
- **Article 24 (Prohibition of Child Labor):** Explicitly prohibits the employment of children below **14 years** in any factory, mine, or hazardous occupation.

2. **Guiding Principles: Part IV (Directive Principles of State Policy)**

- **Article 39(e):** Directs the State to ensure that the **"tender age of children"** is not abused and they are not forced by economic necessity to enter vocations unsuited to their age or strength.
- **Article 39(f):** Mandates the State to provide children with opportunities to develop in a **healthy manner** and in conditions of **freedom and dignity**. It also demands protection against moral and material abandonment.
- **Article 45:** Directs the State to provide **Early Childhood Care and Education (ECCE)** for all children until they complete **6 years** (this bridges the gap before the Article 21A age group).
- **Article 47:** Enjoins the State to raise the **level of nutrition** and the standard of living, which is the bedrock for schemes like *Poshan 2.0*.

3. **Fundamental Duties: Part IV-A**

- **Article 51A(k):** It is the duty of every parent or guardian to provide opportunities for education to their child/ward between the age of **6 and 14 years**.

4. **Institutional & Decentralized Governance**

- **Articles 243G and 243W:** These empower Panchayats and Municipalities to implement schemes for **child development** (found in the 11th and 12th Schedules).

Current Issues and Challenges

1. Health and Nutritional Challenges

Despite falling mortality rates, children face a "triple burden" of malnutrition and emerging lifestyle risks.

- **Emerging Lifestyle Risks:** As per the 2025 MoSPI report, over **one-third of children (5–9 years)** now have high triglyceride levels. This indicates a shift from acute hunger to obesity and early-onset metabolic disorders like diabetes.
- **The Persistence of Wasting and Stunting:** India ranks **102nd out of 123 countries** in the 2025 Global Hunger Index. Our child wasting rate (18.7%) is the second highest globally, signifying acute undernutrition that the *Poshan 2.0* scheme is still struggling to bridge.
- **Neonatal Vulnerability:** 48% of newborn deaths are still linked to prematurity and low birth weight, highlighting the need for better prenatal care for mothers.

2. Safety and Justice

- **Medical Negligence and Safety Gaps:** A significant headline in *The Hindu* (Dec 20, 2025) highlighted systemic gaps where children with chronic conditions (like Thalassemia) were exposed to infections like HIV due to contaminated blood transfusions. This points to a lack of stringent **NAT (Nucleic Acid Testing)** audits in blood banks.
- **Adulterated Medicines:** In late 2025, the Supreme Court heard pleas regarding the death of 22 children due to **contaminated cough syrups** (containing Diethylene Glycol). This exposes a major challenge in drug regulation and "Schedule M" compliance.
- **Trafficking Cartels:** The Supreme Court recently (Dec 19, 2025) described child trafficking and commercial sexual exploitation as a "deeply disturbing reality" that continues to flourish despite laws like the JJ Act.

3. Educational Challenges and the Digital Divide

- **The Learning Gap:** While enrollment is high, the "Learning Poverty Index" suggests that roughly **70% of 10-year-olds** in India struggle to read a basic text post-pandemic.
- **Digital Exclusion:** The 2025 Budget analysis shows a stark divide: only **24.6% of females in rural areas** have internet access compared to 72.5% of males in urban areas. This "double disadvantage" (gender + geography) prevents rural children from accessing digital resources like Swayam or *DIKSHA*.
- **Secondary Dropout Rates:** Although declining to 8.2% (2025), dropouts remain high among marginalized communities (SC/ST) due to economic pressure to enter the workforce.

Root Causes of Child Issues:

1. Structural and Institutional Issues

- **Judicial Backlog & Low Conviction:** Despite India reaching a "tipping point" in 2025 where POCSO case disposals (87,754) exceeded new filings (80,320), a massive backlog of **2.62 lakh cases** remains. Nearly half have been pending for over two years, leading to witness fatigue and low conviction rates.
- **Informalization of Care:** The Integrated Child Development Services (ICDS) is the backbone of child welfare, but workers (Anganwadi) are often treated as "informal caregivers" with wages below

minimum standards. This lack of professionalization hampers the quality of **Early Childhood Care and Education (ECCE)**.

- **Policy Gaps in "Family Enterprises":** The 2016 Child Labour Amendment allows children to work in family businesses after school. While intended to preserve traditional arts, it often acts as a loophole for hidden child labor in the unorganized sector.

2. Socio-Economic Root Causes

- **The "South Asian Enigma":** This refers to the paradox where India's economy grows (5th largest globally), but child malnutrition remains high.
- **Wasting & Stunting:** India still has the **highest child wasting rate (18.7%)** globally.
- **Caste & Geography:** Statistics show underweight rates are 56% among Scheduled Tribes compared to the national average, highlighting that issues are often driven by **Social Exclusion**.
- **Gender Inequality:** Girls from low-income backgrounds face a "double burden." While India achieved **Gender Parity in education** in 2024-25, girls remain at higher risk of dropping out at the secondary level due to "unpaid care work" at home and early marriage pressures.

3. Emerging 2025 Challenges

- **The "Triple Burden" of Nutrition:** A new trend in the **MoSPI 2025 Report** shows that while undernutrition persists, **one-third of children (5-9 years)** now have high triglycerides. This is caused by the rising consumption of high-calorie, low-nutrient ultra-processed foods.
- **Climate Displacement:** India ranks 26th in the **Children's Climate Risk Index**. Extreme weather events (floods/heatwaves) cause school closures and "climate-induced migration," which makes children easy targets for trafficking networks.
- **Digital Threats:** There has been a **94% rise in sexual crimes** against children (2017–2022). With the rapid expansion of AI and social media, "Cyber-grooming" and AI-generated abuse material have emerged as a primary safety challenge that current laws (POCSO 2012) are still adapting to.

Measures to Tackle Child Issues:

a) Government Schemes:

1. Nutrition and Health: The Foundation

- **Saksham Anganwadi and Poshan 2.0:** * **Objective:** To address the "Triple Burden" of malnutrition (Stunting, Wasting, and Anemia).
- **Key Feature:** Integrates the Integrated Child Development Services (ICDS), POSHAN Abhiyaan, and Scheme for Adolescent Girls.
- **2025 Context:** In response to the high triglyceride levels noted in the MoSPI 2025 report, the government is now pivoting towards **"Nutri-Halls"** in Anganwadis to provide millet-based diets.
- **PM POSHAN (Pradhan Mantri Poshan Shakti Nirman):**
- **Objective:** Provides one hot cooked meal in Government and Government-aided schools.
- **Scope:** Covers Balvatika (children below 6) and primary/upper-primary students.
- **Latest Data:** Recent social audits in 2025 emphasized the inclusion of eggs/fortified foods to combat the 67% prevalence of anemia among children.
- **Mission Indradhanush 5.0:**
- **Objective:** To achieve 100% immunization of children against 12 vaccine-preventable diseases.

- **Success:** Helped India reduce the Under-Five Mortality Rate (U5MR) to **29 per 1,000 live births** (as per Dec 2025 data).

2. Protection and Welfare: Mission Vatsalya

- **Mission Vatsalya:**
- **Objective:** A "road-map" for child protection and child welfare services.
- **Institutional Shift:** It supports Child Welfare Committees (CWCs) and Juvenile Justice Boards (JJBs).
- **2025 Update:** The **"Vatsalya Digital Portal"** was scaled up this year to track "Children in Street Situations" (CiSS) in real-time using Aadhaar-linked data.
- **PM CARES for Children:**
- **Context:** Launched for children who lost both parents to COVID-19.
- **Status:** In 2025, the first batch of these children received their corpus of ₹10 lakh upon turning 18, alongside health insurance under Ayushman Bharat.

3. Education and Digital Empowerment

- **Samagra Shiksha 2.0:**
- **Objective:** An overarching program for the school education sector extending from pre-school to class 12.
- **Feature:** Focuses on "NIPUN Bharat" (National Initiative for Proficiency in Reading with Understanding and Numeracy) to ensure every child achieves foundational literacy by Grade 3.
- **PM-SHRI Schools (PM Schools for Rising India):**
- **Feature:** Development of 14,500+ schools as "Green Schools" with modern labs and ICT.
- **Goal:** To showcase the implementation of the National Education Policy (NEP) 2020.
- **DIKSHA (Digital Infrastructure for Knowledge Sharing):**
- **Relevance:** Addressing the **Digital Divide**, It provides QR-coded textbooks and "Tele-Education" to rural areas.

4. The Girl Child: Beti Bachao Beti Padhao (BBBP)

- **BBBP 2.0:**
- **Shift:** The scheme has expanded to include **non-traditional livelihood (NTL)** options for girls.
- **Success:** Contributed to the **Gender Parity Index (GPI)** reaching 1.0 at all levels of schooling in 2025.
- **Sukanya Samriddhi Yojana (SSY):**
- **Feature:** A small deposit scheme for the girl child with high-interest rates and tax benefits.
- **Status:** Cumulative accounts surpassed 3.5 crores in 2025, promoting financial inclusion for minors

b) Legislative Measures:

1. **Juvenile Justice (Care and Protection of Children) Act, 2015**

- **Key Provision:** Introduced a distinction between "petty," "serious," and "heinous" crimes. It allows juveniles (16–18 years) to be tried as adults for **heinous offences** (crimes with a minimum punishment of 7 years).

2. POCSO Act (Protection of Children from Sexual Offences), 2012

- **Key Provision:** Places the **burden of proof** on the accused (rebuttable presumption of guilt) and mandates child-friendly court procedures (e.g., no face-to-face contact with the accused).
- **POCSO Amendment Act, 2019:**
- **Death Penalty:** Introduced capital punishment for "aggravated penetrative sexual assault" (e.g., on children below 12 years).
- **Child Pornography:** Criminalized the storage and possession of child sexual abuse material (CSAM).
- **Fast-Tracked Justice:** Mandated that trials must be completed within one year.

3. Child Labour (Prohibition and Regulation) Amendment Act, 2016.

- **Total Ban:** Prohibits the employment of children below **14 years** in all occupations.
- **Adolescents:** Introduced a new category—**Adolescents (14–18 years)**—prohibited from working in "hazardous occupations" (e.g., mines, inflammable substances).
- **Controversial Exception:** Allows children to help in **"family enterprises"** after school hours or during vacations, provided the work is non-hazardous. Critics argue this often serves as a loophole for hidden child labor.

4. Right to Education (RTE) Act, 2009

- **Legal Mandate:** Implements Article 21A, ensuring free and compulsory education for ages 6–14.
- **Section 12(1)(c):** Mandates **25% reservation** in private unaided schools for children from Economically Weaker Sections (EWS).
- **Recent Change (2019):** Abolished the "No Detention Policy" to improve learning outcomes, allowing states to conduct exams in Class 5 and 8.

5. Prohibition of Child Marriage (Amendment) Bill, 2021

- **Goal:** Seeks to increase the minimum age of marriage for women from **18 to 21 years**, bringing it on par with men.
- **Objective:** To reduce Maternal Mortality Ratio (MMR), improve nutrition levels of infants, and ensure women complete their higher education.

c) Institutional Measures:

1. National Statutory Bodies

- **National Commission for Protection of Child Rights (NCPCR):**
- **Role:** A statutory body (under the CPCR Act, 2005) that ensures all laws and policies align with child rights.
- **2025 Initiative:** Launched the **"Addiction-Free Amrit Kaal"** campaign and established **"Prahari Clubs"** in schools to involve children in raising awareness against substance abuse.
- **Powers:** It has the powers of a **Civil Court** to summon individuals and requisition public records during investigations into child rights violations.
- **Central Adoption Resource Authority (CARA):**
- **Role:** The nodal agency for adoption in India and the designated "Central Authority" under the Hague Convention.

- **2024-25 Reform:** Implementation of the **Model Foster Care Guidelines 2024**, which aim to shift the focus from long-term institutionalization to family-based foster care.

2. District-Level Mechanisms (Mission Vatsalya Framework)

The district is the functional unit for child protection under the **Mission Vatsalya** scheme.

- **Child Welfare Committee (CWC):**
- **Composition:** A bench of five members (at least one woman) in every district.
- **Function:** Deals with "Children in Need of Care and Protection" (CNCP). It acts as a **Quasi-Judicial body** with powers equivalent to a Metropolitan Magistrate.
- **Juvenile Justice Board (JJB):**
- **Composition:** A Judicial Magistrate and two social workers.
- **Function:** Decides on cases of "Children in Conflict with the Law" (CICL).
- **Latest Trend (Dec 2025):** The Supreme Court's Juvenile Justice Committee recently (Oct 2025) emphasized **"Diversion Programs"**—rehabilitating offenders through community service and counseling rather than detention in special homes.
- **District Child Protection Unit (DCPU):**
- **Role:** The implementation arm at the district level that coordinates between the CWC, JJB, and police. It is responsible for maintaining the "Individual Care Plan" for every child in state care.

3. Specialized Units and Judicial Measures

- **Special Juvenile Police Units (SJPU):** Established in every district and city, headed by a police officer not below the rank of DSP, to handle cases involving children with sensitivity.
- **Fast Track Special Courts (FTSCs):** As of **January 2025**, 754 Fast Track Courts (including **404 exclusive POCSO Courts**) are functional, having disposed of over 3.06 lakh cases to reduce the judicial backlog.
- **Childline (1098):** Now integrated with the national emergency number 112, this is a 24/7 emergency outreach service.

International Best Practices:

- **Iceland's Youth Model:** Focuses on curbing substance abuse through state-funded extracurricular activities (sports/arts) to keep children engaged.
- **Norway's Barnevernet:** A highly specialized (though sometimes controversial) social service system that intervenes early in cases of parental neglect.
- **Brazil's Bolsa Família:** A conditional cash transfer program that successfully reduced child labor by linking payments to school attendance and vaccinations.

Emerging Best Practice: Digital Safety (EU & Indonesia)

- **EU's "Age-Appropriate Design Code":** Platforms must prioritize children's safety by default (e.g., turning off location tracking and "nudge" features for minors).
- **Indonesia's 2024-25 Regulation:** Mandates that any digital product accessible to children must have **Privacy by Design**, putting the child's interest above commercial profit.

Way Forward:

1. Nutritional Shift: From "Calorie" to "Content"

- **Address the New Health Crisis:** With 33% of children (5-9 years) showing high triglycerides, the government must shift from cereal-heavy meals to **Nutrient-Dense Diets**.
- **Millet Integration:** Scale up the use of "Shree Anna" (millets) in PM-POSHAN to combat the double burden of obesity and anemia.
- **Medical Safety Protocols:** In light of recent medical tragedies, mandate **Nucleic Acid Testing (NAT)** and strict **Blood Bank Audits** to protect children with chronic conditions like Thalassemia from iatrogenic infections.

2. Digital Floor as a Social Guarantee

- **Universal Digital Access:** To bridge the rural-urban divide (where only 1 in 4 rural girls has internet), "Internet Access" should be treated as a necessary adjunct to the **Right to Education (Art 21A)**.
- **Cyber-Safety by Design:** Adopt international best practices like the EU's "Age-Appropriate Design Code" to protect children from data breaches and AI-generated exploitation.

3. Climate-Resilient Child Protection

- **Heat-Proofing Schools:** With children facing 8x more heatwaves than previous generations, school infrastructure must be retrofitted with **Cool Roofs** and decentralized water systems.
- **Disaster-Sensitive JJ Systems:** Develop a protocol for the immediate protection of children orphaned or displaced by climate-induced disasters (floods/cyclones).

4. Strengthening Institutional Accountability

- **Filling Statutory Vacancies:** State Governments must ensure 100% occupancy in **SCPCRs** and District Child Protection Units (DCPUs).
- **Data Integration:** Launch a **National Unified Child Portal** that merges police data (missing children), health data (immunization/nutrition), and school data (dropout tracking) for real-time intervention.

5. Legal and Judicial Reforms

- **Decriminalizing Consensual Adolescence:** As suggested by recent SC observations, the POCSO Act needs nuanced implementation to distinguish between "heinous predators" and "consensual adolescent relationships" to avoid unnecessary traumatization.
- **Fast-Tracking Trials:** Ensure that the goal of completing POCSO trials within one year is met through the recruitment of dedicated child psychologists and special public prosecutors.

Conclusion

As the **MoSPI 2025 Report** suggests, India is at a demographic crossroads. We have successfully reduced mortality, but the challenge now is to ensure **"Quality of Life."** A child-centric development model—one that is climate-resilient, digitally inclusive, and nutritionally sound—is not just a moral imperative but a prerequisite for India to achieve its Viksit Bharat @ 2047 goals.

Q. *While India has achieved a 'tipping point' in the judicial disposal of child sexual abuse cases, the challenges of digital exploitation and the rigid implementation of the POCSO Act in consensual adolescent relationships persist. Critically examine the efficacy of the current institutional and legal framework in ensuring holistic child protection in India.*

2.1.18. RIGHT TO A HEALTHY ENVIRONMENT

Context: Come winter and the **National Capital** wakes up with thick smog and severely low air quality, which cripples the city and poses serious health challenges.

Constitutional & Legal provision:

1. Constitutional Provisions

(a) Fundamental Rights

- **Article 21 – Right to Life**
- Interpreted expansively by the Supreme Court to include:
- Right to clean air
- Right to safe drinking water
- Right to pollution-free environment

(b) Directive Principles of State Policy (DPSPs)

- **Article 48A**
- "The State shall endeavour to protect and improve the environment and safeguard forests and wildlife."

(c) Fundamental Duties

- **Article 51A(g)**
- Duty of every citizen to protect and improve the natural environment.

2. Supreme Court Judgements

(a) Subhash Kumar v. State of Bihar (1991)

- Right to life includes **right to enjoyment of pollution-free water and air**.
- Explicit recognition of environmental quality under Article 21.

(b) M.C. Mehta v. Union of India (Oleum Gas Leak, 1986)

- Introduced **Absolute Liability** for hazardous industries.
- Environment protection prioritised over economic interests.

(c) Vellore Citizens' Welfare Forum v. Union of India (1996)

- Recognised:
- **Precautionary Principle**
- **Polluter Pays Principle**
- Held these principles as part of **Indian environmental law**.

(d) M.C. Mehta v. Kamal Nath (1997)

- Introduced **Public Trust Doctrine**.
- Natural resources held by the State in trust for the people.

(e) Recent Supreme Court Position

- Right against **adverse climate impacts** recognised as part of Article 21.(M.K. Ranjitsinh & Ors. v. Union of India & Ors.)
- Emphasis on **inter-generational equity** and sustainable development.

3. Legal & Statutory Provisions

- **Wildlife Protection Act (1972):** Protection of endangered species and habitats.
- **Water Act (1974) & Air Act (1981):** Established the CPCB and SPCBs to monitor and regulate pollution.
- **Environment (Protection) Act (1986):** An "umbrella legislation" providing the Centre with broad powers to coordinate state and central authorities.
- **National Green Tribunal (NGT) Act (2010):** Created a specialized forum for the speedy disposal of environmental disputes.

Key Environmental Principles:

1. The Precautionary Principle

- **Core Idea:** "Prevention is better than cure." If an action or policy has a suspected risk of causing severe or irreversible harm to the public or the environment, the **burden of proof** falls on those wanting to take the action to show it is not harmful.
- **Scientific Uncertainty:** Lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
- **Landmark Case: Vellore Citizens Welfare Forum v. Union of India (1996)**.

2. The Polluter Pays Principle (PPP)

- **Core Idea:** The party responsible for pollution should bear the costs of managing it.
- **Extended Scope in India:** In India, this doesn't just mean paying for the cleanup; it also includes **compensating the victims** of pollution and paying for the **restoration of the environment**.
- **Latest Application (2025):** The Supreme Court in the **M.K. Ranjitsinh case** reiterated that companies whose power lines cause the death of the Great Indian Bustard must bear the cost of species recovery under this principle.

3. The Public Trust Doctrine

- **Core Idea:** The State is not the "owner" of natural resources but a **"Trustee."**
- **Resource Protection:** Resources like air, sea, waters, and forests are of such great importance to the people as a whole that it would be unjustified to make them a subject of private ownership.
- **Landmark Case: M.C. Mehta v. Kamal Nath (1997)**, where the court struck down a lease granted to a private motel that would have disturbed the flow of the Beas River.

4. Doctrine of Absolute Liability

- **Core Idea:** An enterprise engaged in a hazardous or inherently dangerous activity is **strictly and absolutely liable** to compensate all those affected by an accident.
- **No Exceptions:** Unlike "Strict Liability" (which has exceptions like "Act of God"), Absolute Liability has **no exceptions**.
- **Origin:** Developed by Justice P.N. Bhagwati after the **Oleum Gas Leak case (1986)** to ensure large industries are held accountable regardless of negligence.

5. Inter-generational Equity

- **Core Idea:** Each generation has a moral and legal duty to leave the planet in no worse a condition than they received it.

- **Sustainable Use:** It demands a balance between the needs of the present and the rights of future generations to enjoy a healthy environment.

Current Issues & Challenges in Environmental Governance:

1. Institutional & Implementation Gaps

- **The "Symbolism vs. Substantive" Action:** As noted by SC Justice R. Mahadevan in **December 2025**, environmental protection is often relegated to "symbolism" rather than "preventive governance." Institutions frequently react to crises (like Delhi's air pollution) rather than maintaining "sustained vigilance."
- **Manpower & Resource Crunch:** The **Environment Audit Rules, 2025**, were recently introduced to allow private auditors to assist. This move stems from the severe capacity constraints within the **CPCB** and **SPCBs**, which are currently overwhelmed by the sheer volume of industries they must monitor.
- **The "Shadow Fleet" of Violations:** Minor but frequent environmental travesties at the district and panchayat levels often escape regulatory notice due to a lack of trained staff and digital surveillance.

2. The Conflict of "Green vs. Green"

- **Case Study: The GIB Controversy (2025):** The Supreme Court's ongoing scrutiny of renewable energy infrastructure in the **Great Indian Bustard (GIB)** habitat highlights a modern paradox. India's push for "Green Energy" (Solar/Wind) is directly clashing with "Biodiversity Conservation."
- **Defining the Aravallis:** In **late 2025**, the SC adopted a uniform definition for the Aravalli Hills (landforms rising 100m+). While meant to regulate mining, critics argue that the 100-meter threshold might exclude 90% of the landscape, leaving crucial groundwater recharge zones vulnerable to construction.

3. Dilution of Environmental Safeguards (EIA Crisis)

- **Post-Facto Clearances:** A major point of litigation in 2025 has been the government's attempt to institutionalize "post-facto" environmental clearances (regularizing projects after they have already caused damage). The SC has consistently struck these down, calling them a violation of the **Precautionary Principle**.
- **Strategic Exemptions:** Amendments to the **EIA Notification** have expanded exemptions for projects labeled "strategic" or "national security," often bypassing public consultation—the "bedrock" of environmental democracy.

4. Climate Justice & Social Vulnerability

- **Adaptive Capacity:** The social sector remains underfunded in India's climate action. While "Mitigation" (EVs, Solar) gets capital, "Adaptation" (protecting farmers from heatwaves or coastal communities from rising seas) lacks leadership and funding.
- **Corporate Duty:** In a landmark ruling, the SC held that **Corporate Social Responsibility (CSR)** is not "voluntary charity" but a **Constitutional Obligation** under Article 51A(g). Companies are now viewed as "guests in the ecosystem," sharing the duty to prevent species extinction.

Way forward

To ensure the **Right to a Healthy Environment** is realized effectively, India must transition from **"Environmental Adjudication"** (courtroom wins) to **"Environmental Administration"** (ground-level results).

1. Strategic & Legal Reforms

- **Codifying the "Climate Right":** India lacks a unified climate law. There is a pressing need for a **National Climate Change Act** that codifies the Supreme Court's 2024-25 rulings, establishing clear duties for state agencies and defining "Climate Justice" for vulnerable populations.
- **Strengthening the NGT:** The **National Green Tribunal** needs greater financial and administrative autonomy. Its benches should be expanded to ensure that specialized environmental justice is accessible at the regional level, reducing the burden on the Supreme Court.
- **Reforming SPCBs:** State Pollution Control Boards require a massive infusion of technical manpower and resources. Transitioning to **automated, real-time monitoring** of industrial effluents and emissions is essential to move away from the "Inspect-and-Fine" model.

2. Corporate & Economic Realignment

- **Implementing "Guest in the Abode" Doctrine:** As per the **Supreme Court ruling (Dec 19, 2025)**, corporations must internalize the principle that they are "guests" in the ecosystem.
- **Mandatory Environmental CSR:** Following the latest judicial directive, companies in sectors like mining and power must move beyond symbolic tree planting. A fixed percentage of **CSR funds** should be ring-fenced for **"Species Recovery Programs"** and restoring the local ecology directly impacted by their projects.
- **Green Credit Rules (2025):** Rapidly operationalize the new **Green Credit Program**, which prioritizes the "survival and canopy density" of forests over the mere number of saplings planted. This ensures that economic incentives are tied to actual ecological outcomes.

3. Grassroots & Technological Interventions

- **Environment Audit Rules (2025):** Leverage the newly notified rules to involve **third-party digital auditors** and GIS mapping for environmental compliance. This adds a layer of transparency and prevents "Regulatory Capture."
- **Decentralized Climate Action:** Empower Urban Local Bodies (ULBs) and Panchayats with **Climate Adaptation Funds**. Localized solutions like **"Miyawaki Forests"** in cities and **"Amrit Sarovars"** (pond rejuvenation) in villages can act as critical heat-sinks.
- **Mission LiFE (Lifestyle for Environment):** Institutionalize the **LiFE movement** into school curricula and municipal bylaws to nudge citizen behavior toward sustainable consumption, making the right to a healthy environment a "shared responsibility."

Conclusion

"Clean air and a stable climate are no longer just legal aspirations; they are the basic prerequisites for human dignity in the 21st century." —**SC Observations.**

Q. *"The right to a healthy environment has evolved from a directive principle into an enforceable fundamental right through judicial interpretation." Critically examine this evolution in the Indian context.*

2.1.19. THE UNEQUAL FUTURE OF WORK: WOMEN AND THE AI SKILLS GAP

The Upskilling Gap:

Upskilling gap refers to the widening divide whereby women are less able than men to acquire the new skills required in an AI-driven economy. This gap is rooted not just in employment statistics but in **unequal access to time to learn and reskill**.

The Current Landscape:

Time Poverty as a Core Constraint

Women carry a **double burden** of paid work plus **unpaid care work** (childcare, eldercare, domestic chores). **Time Use Survey data** shows women spend significantly **more hours on unpaid work** and have **less time for skill acquisition** compared to men.

Labour Force Participation

- India's female labour force participation remains low and uneven.
- Many women are involved in informal or low-productivity jobs that offer limited incentives or resources to upskill for AI-linked roles.

Issues with Female Workforce in The AI Era:

How AI Amplifies Gender Disparities:

1. **Unequal Exposure to Automation**: Women are disproportionately employed in **routine, clerical, and service-sector jobs** that are more susceptible to AI-driven automation, increasing their risk of displacement.
2. **Skill-Biased Nature of AI**: AI complements high-end digital and analytical skills. Due to **limited access to STEM education, reskilling opportunities, and time**, women are less likely to transition into AI-augmented roles.
3. **Time Poverty from Unpaid Care Work**: Continuous upskilling is essential in an AI economy. However, women's **disproportionate unpaid domestic and care responsibilities** restrict their ability to engage in training and lifelong learning.
4. **Algorithmic Bias and Discrimination**: AI systems trained on historical data often reproduce **gender biases** in recruitment, promotions, and wage-setting, penalising women with career breaks or part-time work histories.
5. **Digital Divide in AI Usage**: Women have lower access to advanced digital tools and are less likely to use **generative AI platforms**, reducing productivity gains and workplace competitiveness.
6. **Underrepresentation in AI Design and Governance**: Fewer women in AI development leads to **male-centric system design**, overlooking women's needs and reinforcing exclusion.
7. **Penalisation of Non-Linear Career Paths**: AI-based performance evaluation tools often undervalue **career interruptions**, disproportionately affecting women returning after maternity or caregiving breaks.

Structural & Societal Barriers:

- **Unpaid Care Work:** The bulk of unpaid labour — caregiving, domestic tasks — remains gendered. Without affordable public care infrastructure (childcare, eldercare), women's time remains constrained.

- **Digital & Skill Divide:** Beyond access to technologies, a **skills divide persists**: women are often less likely to attain advanced ICT and AI skills due to educational, cultural, and confidence barriers.
- **Workplace Bias:** Tech industries worldwide show persistent gender imbalance and discriminatory cultures that hinder women from entering or advancing in AI-centric jobs.
- **Global Findings on Risk:** Studies show women are **20% less likely than men to engage with generative AI tools**, further reducing their competitiveness in future job markets.

Macroeconomic Implications of the Gender Upskilling Gap in the AI Era:

1. **Loss of Growth Potential**: Excluding women from AI-driven sectors leads to underutilisation of human capital. With women forming nearly half of India's population, the economy risks **sub-optimal GDP growth** and reduced productivity gains from AI adoption.
2. **Widening Income & Wage Inequality**: AI disproportionately rewards high-skill labour. If women remain trapped in low-skill or informal jobs, **gender wage gaps will widen**, aggravating overall income inequality and weakening inclusive growth.
3. **Lower Labour Force Participation Rate (LFPR)**: Automation-induced job losses in routine sectors (clerical, services, informal work) may push women out of the workforce, further depressing India's already low **female LFPR**, which negatively impacts demographic dividend realisation.
4. **Reduced Consumption Demand**: Women's lower earnings and job insecurity reduce household disposable income, dampening **aggregate demand**, especially in education, health, and consumer goods—slowing economic momentum.
5. **Productivity & Innovation Deficit**: Homogeneous AI workforces risk biased innovation. Lack of women in AI design and deployment reduces **diversity-led innovation**, affecting long-term competitiveness of firms and the economy.
6. **Fiscal Stress on the State**: Lower female employment leads to reduced tax base and higher dependence on welfare spending, increasing **fiscal pressures** and limiting public investment in growth-enhancing sectors.
7. **Intergenerational Impact**: Women's economic disempowerment adversely affects **human capital formation** of future generations (nutrition, education, health), creating a long-term drag on economic development.

Policy Measures & Recommendations:

Reduce Time Poverty (Foundational Reform)

- **Expand public childcare and eldercare services** through urban anganwadis, crèches, and community care centres.
- Invest in **time-saving infrastructure** (piped water, clean cooking fuel, public transport) to reduce women's unpaid care burden.
- Encourage **shared care responsibilities** through parental leave policies for men.

Gender-Responsive Skilling Ecosystem

- Design **women-centric AI and digital skilling programmes** with flexible schedules, modular courses, and hybrid learning models.
- Integrate AI, data literacy, and digital skills into **school and higher education curricula for girls**.
- Provide **stipends, scholarships, and childcare support** during skill training.

Inclusive Digital Access

- Ensure affordable access to **devices, internet connectivity, and digital platforms** for women, especially in rural areas.

- Promote **digital literacy campaigns** targeting adult women and informal sector workers.

Labour Market & Workplace Reforms

- Encourage **flexible work arrangements** (remote work, part-time, gig models with safeguards).
- Shift towards **output-based performance evaluation** to avoid penalising career breaks.
- Mandate **gender diversity reporting** in tech and AI-intensive firms.
- **Safe, Bias-Free AI Ecosystem**
- Promote **gender-sensitive AI design**, including diverse datasets and algorithm audits to reduce bias.
- Support women's participation in **AI research, development, and governance** bodies.

Government & Institutional Interventions

- Align national initiatives like the **IndiaAI Mission** with explicit gender inclusion targets.
- Converge skilling schemes (Skill India, Digital India, PMKVY) with **women empowerment missions**.
- Strengthen data collection on **gendered impacts of AI and automation** for evidence-based policymaking.

Private Sector & Public–Private Partnerships

- Incentivise firms to invest in **reskilling women employees** through tax benefits and CSR mandates.
- Promote **industry–academia partnerships** focused on women in STEM and AI.

Way Forward: Ensuring Gender-Inclusive AI-Led Growth

1. **Move from Skill-Centric to Ecosystem-Centric Approach**: Policymaking must go beyond isolated upskilling programmes to address **time poverty, care infrastructure, digital access, and workplace norms** simultaneously.
2. **Mainstream Gender in AI Governance**: Gender inclusion should be embedded in the **design, deployment, and regulation of AI**, with mandatory bias audits, diverse datasets, and women's representation in AI policy bodies.
3. **Reimagine Work & Learning Models**: Promote **flexible, hybrid, and lifelong learning frameworks** that allow women to upskill alongside caregiving responsibilities without career penalties.
4. **Strengthen Public Investment in Care Economy**: Expanding childcare, eldercare, and social infrastructure will **free women's time**, boost labour force participation, and generate multiplier effects for growth.
5. **Target the Informal & Rural Workforce**: AI-linked skilling must reach **informal, gig, and rural women workers**, preventing exclusion from the future digital economy.
6. **Measure What Matters**: Regularly track **gender-disaggregated data on AI adoption, skill acquisition, and employment outcomes** to enable evidence-based corrections.

Conclusion:

India's AI transition can become a catalyst for women's economic empowerment only if inclusion is treated as a **core economic strategy**, not a peripheral social objective. Bridging the upskilling gap is essential for 78ealizing equitable, resilient, and sustainable growth.

Q. *Artificial Intelligence is expected to transform labour markets, but its benefits may not be gender-neutral. Analyse the structural reasons behind women's vulnerability to AI-led job displacement and propose measures to make AI-driven growth inclusive.*

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2.2. IR (INTERNATIONAL RELATION)

2.2.1. RESETTING THE HISTORIC US-SAUDI STRATEGIC PARTNERSHIP

Why in the News?

- **Exceptional amity** and a reset in **strategic cooperation** between the **United States (U.S.)** and **Saudi Arabia** were highlighted recently following a summit between **U.S. President Donald Trump** and **Saudi Crown Prince Mohammed bin Salman (MbS)**.
- This high-level engagement signaled the potential to anchor bilateral, regional, and global developments in a more consequential manner, with the summit witnessing agreements and commitments valued at approximately **$1 trillion**.

Background and Context: An 80-Year-Old Transactional Alliance

The **bilateral alliance** remains perhaps the **oldest transactional deal** still going strong, predating post-Second World War global architectures like the **United Nations**, **North Atlantic Treaty Organization (NATO)**, and the **Bretton Woods Institutions**.

- **Origin:** The partnership was conceived as a secret **"oil-for-security"** strategic deal, signed on **Valentine's Day 1945** between U.S. President Franklin D. Roosevelt and King Abdul Aziz bin Abdul Rehman al-Saud on the **USS Quincy** in the Suez Canal Area.
- **Renewal:** Originally intended to last **60 years**, the deal was formally renewed in **2005**.
- **Reset:** The current arrangement is being reset thanks to the **exceptional amity** between President Trump and Crown Prince MbS, moving towards **new domains of strategic cooperation**.

Trajectory of U.S.-Saudi Ties: Strains and Diversification

While the alliance is long-standing, its trajectory has not always involved **smooth sailing**, with ties undergoing periods of significant strain, pushing Saudi Arabia towards diversification.

Historical Tensions

- **Oil Embargo:** Strains were experienced during the **Ramadan War of 1973**, when Saudi Arabia joined an **Arab oil embargo**.
- **Missile Acquisition:** Saudis surprised Americans in the mid-1980s by purchasing **intermediate-range ballistic missiles** from **China**, a country not even recognized by the Kingdom at the time.
- **Military Supplies:** Tensions arose when American military supplies were **staunched** during the **Yemen war**, affecting Saudi offensive and defensive capabilities against the **Houthis**.
- **Khashoggi Assassination:** The assassination of journalist **Jamal Khashoggi** in October 2018 **jolted ties**, leading the Biden presidency to initially keep MbS at **arm's-length**.

Factors Reducing Commercial Content

- **Shale Technology:** The U.S. has become the world's largest producer of crude and a **significant exporter** due to **shale technology**, reducing the **commercial content** of the relationship.
- **Trade Balance: Decline in bilateral merchandise trade** has been observed, with the balance swinging in America's favour; the U.S. now ranks below **China** and **India** as Saudi Arabia's trading partner.

Diversification of Ties

- **China and Russia:** Friction with the U.S. pushed the Saudis into diversifying their ties with **China** and **Russia**.
- **Xi Jinping Visit:** In December 2022, China's President **Xi Jinping** visited Riyadh, holding **three separate summits** with the leaders of Saudi Arabia, Arab, and Muslim countries.
- **Iran Reconciliation:** Beijing also facilitated the resumption of **diplomatic ties** between Saudi Arabia and **Iran**.
- **Gaza Conflict:** U.S. support for **Israel's brutal military campaign in Gaza** since late 2023 has made it difficult for Riyadh to turn a new page in bilateral ties.
- **Israel Recognition:** Saudis have resisted U.S. pressure to formally recognize **Israel**, pre-conditioning it on the creation of a pathway to **Palestinian statehood**.

New Contours under Trump Presidency (Trump 2.0)

A **positive sea change** in bilateral ties has been noted since Mr. Trump took over the U.S. presidency recently, marked by his first visit abroad of his second term to Saudi Arabia in May 2025.

Key Summit Outcomes and Commitments

- **Military Equipment:** An agreement to supply **$142 billion** worth of **military equipment** was secured.
- **Investment Forum:** Deals worth **$270 billion** were signed at the investment forum.
- **Saudi Investments:** MbS readily agreed to raise promised Saudi investments in the U.S. economy from $600 billion to **$1 trillion** without a fixed time frame. This amount is nearly the size of the country's GDP and the entire corpus of the Kingdom's **Public Investment Fund (PIF)**.
- **Strategic Defence:** The groundbreaking **Strategic Defence Agreement** was signed, formally designating Saudi Arabia as a **"major non-NATO ally"** and committing the U.S. to actively assist Saudi Arabia if it came under attack.
- **Technological Collaboration: Tangible progress** was made towards collaboration in **civil nuclear energy** and the supply of state-of-the-art **Artificial Intelligence (AI) chips**.

Regional Impact of Robust Revival

The robust revival of U.S.-Saudi ties is bound to have a **regional impact** due to the Kingdom's more **assertive and visible pursuit of national interests**.

- **Regional Rivalries:** The process has accelerated after the two-year-long Israeli military campaign that has **subdued Iran**, the Kingdom's long-standing rival.
- **Syria and Sudan:** MbS has persuaded Mr. Trump to drop sanctions against **Syria's new regime** and has asked for **stronger American intervention** to end the **Sudanese civil war**.
- **Nuclear Talks Facilitation:** Even the Iranian President has sought **MbS facilitation** of the resumption of **nuclear talks** with Washington.
- **Empowerment of MbS:** Robust endorsement by the White House would further **empower MbS** as an **indispensable, long-term U.S. interlocutor** as the region's geopolitical architecture gets reconfigured.

Global Coordination on Oil

Although oil has largely disappeared as the driver for bilateral economic synergy, subterranean bilateral coordination is visible to ensure oil market stability.

- **Shared Interest:** Both Saudis and Americans want the **oil price** to be at a **moderate, sustainable level**.
- **Market Dominance:** Washington intends to continue its dominance of the **global oil market**, as demonstrated by recent U.S. sanctions against two Russian oil majors.
- **Supply Management:** Concerted American actions on sanctions against Iran, Venezuela, and Russian oil majors can help stem the emerging **supply-side oil glut**, shore up the price, and create market space for **higher exports** by both Saudi Arabia and the U.S.
- **Pax Americana:** Reinforced ties with Saudi Arabia would stave off recent encroachments by **China and Russia** on U.S. turf and complement its regional **Pax Americana**.

Implications for India: Strategic and Economic Considerations

The **Washington Summit** has several significant implications for India, impacting defense, connectivity, and economic diversification efforts.

- **Defence Concerns:** It may provide access to **advanced U.S. military equipment** for **Pakistan**, with which Riyadh concluded a **strategic mutual defence agreement** in September 2025, apparently with U.S. approval.
- **Oil Market Stability:** While India prefers low prices, **moderation and stability in the oil market** may still be preferable as India navigates for alternative sources to Russian supplies.
- **Economic Opportunities:** Soaring Saudi ambitions for its post-oil **Vision-2030**, such as **AI data centres**, may create **economic opportunities** for India.
- **Strategic Space:** Curbing **China's foray** into Saudi Arabia may open the door wider for India.
- **Regional Connectivity:** Emerging **modus vivendi with Israel** may facilitate work on the **India-Middle East-Europe Economic Corridor (IMEC)**, which transits through Saudi Arabia.
- **Policy Indication:** White House's differential treatment of MbS shows that its single-minded pursuit of **economic transactions** continues to trump previous qualms, which may light India's pathway to an **economic peace with the Americans**.

Way Forward for India: Deepening Strategic and Economic Ties

To leverage the changing geopolitical and economic landscape in the Middle East and safeguard its national interests, India must adopt a detailed, multi-pronged strategy.

Economic and Technological Alignment

- **CEPA Prioritization:** India needs to prioritize entering into a **Comprehensive Economic Partnership Agreement (CEPA)** with Saudi Arabia to secure preferential market access, enhance trade diversification, and attract Saudi investments into key Indian sectors.
- **Vision-2030 Synergy:** Active engagement is required to align India's technological and human capital strengths with Saudi Arabia's **Vision-2030** megaprojects and initiatives, particularly in emerging areas like **AI, data centres, renewable energy, and advanced manufacturing**.
- **PIF Channeling:** Dedicated efforts must be made to attract a greater portion of the Saudi **Public Investment Fund (PIF)**'s increased $1 trillion investment commitment towards India's infrastructure, technology, and startup ecosystems.

Geopolitical and Connectivity Initiatives

- **IMEC Acceleration:** Strategic focus must be placed on the timely realization and implementation of the **India-Middle East-Europe Economic Corridor (IMEC)**, utilizing the improving **Saudi-U.S. alignment to mitigate geopolitical risks and establish a resilient, multimodal trade and**

connectivity route that strengthens India's link to Europe and counterbalances regional dominance by other powers.

- **Security Dialogue:** Enhanced **high-level security and counter-terrorism dialogue** is necessary to address concerns arising from the **Saudi-Pakistan Strategic Mutual Defence Agreement** and to ensure that new regional defence alignments do not adversely impact India's strategic interests.

Conclusion

- The evident MbS-Trump bonhomie signals a U.S. **reclaiming of primacy** in Riyadh, shifting the bilateral focus to **technology, massive investment, and security commitments**.
- This reset, however, also propels Saudi Arabia toward greater **sovereign autonomy** and engagement with multiple global players.
- For India, this dynamic environment presents both **strategic challenges and enormous opportunities** that must be navigated through **proactive diplomacy, economic alignment, and the acceleration of critical connectivity projects** like IMEC.

Q. *The question of India's Energy Security constitutes the most important part of India's economic progress. Analyse India's energy policy cooperation with West Asian Countries.*

2.2.2. COLOMBO SECURITY CONCLAVE

Why in the News?

The **7th National Security Adviser (NSA)-level summit of the Colombo Security Conclave (CSC)** was **recently hosted by India**, signalling **encouraging signs that member-country engagement is deepening** in this regional security grouping, which seeks to position itself as a critical forum to foster cooperation in the **Indian Ocean Region (IOR)**.

Background and Evolution of the CSC

The CSC is a regional platform focused on enhancing security cooperation among littoral states of the Indian Ocean.

Origin and Revival

- **Initial Trilateral Grouping:** The CSC was initially started as a **trilateral grouping** between **India, Sri Lanka and Maldives in 2011**.
- **Loss of Momentum:** The group subsequently **lost steam** due to political transitions in the Maldives and Sri Lanka, coupled with a lack of convergence among member-states regarding security priorities.
- **Reconvening and Expansion:** Engagement was **reconvened under the aegis of the CSC in 2020** with a proposed framework to further cooperation.
- **Membership Growth:** Since its revival, the group has steadily maintained momentum and inducted new members:
- **Mauritius** joined as a full member in **2022**.

- **Bangladesh** was admitted as a full member in **2024**.

Mandate of Cooperation

The proposed framework for the CSC is anchored in cooperation across non-traditional issues of maritime security, including:

- **Maritime security**
- **Counter-terrorism**
- **Trafficking and organised crime**
- **Cybersecurity**

Significance and Key Developments of the 7th Summit

The 2025 summit, hosted by India, was considered pivotal, occurring amidst a crucial shift in maritime cooperation frameworks in the broader Indo-Pacific and Indian Ocean.

Deepening Engagement and Expansion

- **Hosting the Summit:** India's National Security Adviser, **Ajit Doval**, hosted his counterparts from **Sri Lanka, the Maldives, Mauritius, and Bangladesh**.
- Counterparts from **Seychelles** and **Malaysia** participated as an observer state and guest, respectively.
- **Full Member Accession:** The group saw **further expansion** by way of **accession of Seychelles as a full member** into the forum.
- This signals a **deep commitment** among countries in the region to harness cooperation within the mandate of the CSC.
- **Guest Participant Inclusion:** The inclusion of **Malaysia** as a **guest participant** may pave the way for further expansion of the group.

Strategic Importance for India

- **New Step in Engagement:** The CSC marks a **new step in further deepening engagement with its maritime neighbours** for India.
- **Regional Shift:** This deepening engagement is crucial amidst an **increasingly volatile geopolitical and security shift** underway in the region, largely attributed to **China's growing presence and influence**.
- **Security Vitality:** The summit underscores the **growing vitality of the security dimension** in enhancing cooperation to boost regional cooperation in the Indian Ocean.

Intertwining of Security and Development

For the wider **Indian Ocean littoral world**, especially the CSC members, maritime security challenges are often deeply coupled with their **developmental priorities**.

- **Economic Dependency:** Given the **extent of dependency** these countries have on the oceans for their **economic progress**, securing challenges emanating from the maritime domain is crucial.
- **Livelihoods and Opportunities:** Maritime security challenges are **deeply intertwined with the lives and livelihoods of littoral communities** and appear to **unlock new opportunities for national economies** in the era of **sea-borne globalisation**.

Looming Challenges for the Conclave

As the CSC envisages its expansion and broadening the contours of its agenda, certain key challenges must be addressed for its long-term resilience.

China Factor: Divergent Perceptions

- **India's Priority:** For India, a key maritime security priority is anchored in the **nature and extent of the Chinese presence in the Indian Ocean**.
- **Member Countries' View:** Other member countries of the CSC, however, **do not appear to view the Chinese presence** as a major security challenge, given their **dependence on Beijing as a key developmental partner**.
- **Required Balance:** A **careful balance needs to be achieved by India** to address the question of growing Chinese presence in the Indian Ocean without alienating other members.

Institutional Deficit and Domestic Uncertainties

- **Institutional Framework:** The CSC **must direct efforts to strengthen an institutional framework**, as the group presently operates at a **National Security Adviser-level structure**.
- Institutionalising cooperation is needed such that policy alignment with **actionable pathways of cooperation** remains consistent.
- **Domestic Uncertainties: Domestic uncertainties in countries such as Bangladesh**, and the ensuing impact on how Dhaka continues to engage with India and other member-countries, may run the **risk of uncertainty over the group's resilience**.

Way Forward: Fostering Resilience and Cohesion

The CSC has made significant advances in heralding a **new framework of cooperation** in a region that suffers from a **deep lack of cohesion and convergence** among countries on issues of security.

- **Institutional framework** within **CSC** must be **strengthened** to ensure consistent policy alignment, transition from **NSA-level dialogues to operational mechanisms,** and establishment of clear, actionable pathways for cooperation.
- **Trust-building measures** and **development-sensitive security initiatives** must be prioritised so that member states dependent on external developmental partners are reassured while security objectives are advanced.
- **Operationalisation** of cooperation in **maritime domain** must be pursued through joint exercises, information sharing mechanisms, capacity building for littoral states, and mutual assistance protocols targeting **non-traditional threats** such as trafficking and organised crime.
- **Strategic diplomacy** must be exercised by India to reconcile divergent perceptions of external presence, through calibrated engagement that emphasises complementarities between security and development and avoids coercive posturing that could alienate partners.
- **Resilience-building measures** must be adopted to mitigate risks posed by domestic political fluctuations within member states, including institutionalising dialogues at multiple levels and establishing continuity mechanisms for ongoing cooperation.

Conclusion

- The Colombo Security Conclave has successfully demonstrated its potential as a security template for cooperation in the Indian Ocean by **sustaining momentum and achieving steady expansion**.

- The recent summit reinforced the collective commitment to tackling **non-traditional security challenges** that intertwine with the **developmental priorities** of the littoral states.
- However, the future success of the CSC depends critically on its ability to **strengthen its institutional framework**, overcome the challenge of **divergent perceptions regarding extra-regional influences** like China, and secure its resilience against **domestic political uncertainties** within member states.

Q. *"The security of the Indian Ocean littoral states is inextricably linked to their economic resilience in the era of sea-borne globalization." Discuss the significance of the **Colombo Security Conclave** CSC's focus on non-traditional maritime threats in ensuring the stability of the regional blue economy.*

2.2.3. A NEW STEP IN THE DRAGON-ELEPHANT TANGO

Why in the News?

China recently approved its **15th Five-Year Plan** during the Fourth Plenary Session of the CPC. The plan emphasizes expanding global development partnerships — including with India — signaling renewed cooperation opportunities amidst a complex geopolitical environment.

Context: A Complex Relationship

- India and China: ancient civilizations + influential emerging powers
- Relationship characterized by:
- Border disputes & strategic mistrust
- Deep economic engagement
- People-to-people cultural exchanges

China's Development Push: Why It Matters to India

15th Five-Year Plan Vision

- High-quality development, innovation & tech modernisation
- Open economy with global cooperation
- Alignment with initiatives like BRI & Global Development Initiative

China's economic positioning influences regional geopolitics and global value chains — India must respond strategically.

Current Economic Engagement

- China is **India's largest trading partner**
- **2024** bilateral trade: **USD 138.46 billion**
- India's exports to China up by **11% (Jan–Oct 2024)**
- Collaboration platforms: Canton Fair, CIISF, CIIE, BRICS–related mechanisms

Complementarities

India	China
Strength in IT, pharma, services	World's largest manufacturing hub
Young demography	Strong industrial ecosystem
Rising middle class	Massive consumer market

Scope for **balanced trade**, supply chain resilience & tech cooperation.

Strategic Frameworks for Cooperation

Bilateral & People-to-People Relations

- Cultural appeal: yoga, Bollywood, Darjeeling tea
- Buddhist heritage → revived tourism & religious diplomacy
- 75 years of diplomatic ties (2025)

Multilateral Engagement

- BRICS | SCO | G20 → common voices on Global South priorities
- Climate change, health security, food systems — shared interests

Aviation & Tourism Revival

- Direct flights resumed (post-COVID phase)
- More exchanges encouraged for academics, students, business communities

Potential Sectors for Future Collaboration

Sector	Opportunity
Trade & Investment	Correcting trade imbalance, deeper market access
Green Energy	Solar supply chain reshaping
Technology	AI, fintech, semiconductors (with strategic safeguards)
Infrastructure	Connectivity in South Asia & Indo-Pacific
Healthcare	Pharmaceuticals & medical research cooperation
Agriculture	Food security solutions

Challenges & Areas of Contestation

- **Border tensions** (LAC: Ladakh, Arunachal Pradesh)
- India's security concerns with **China–Pakistan nexus**
- Competition for influence in the **Indian Ocean region**
- Trade imbalance heavily in China's favour
- Tech-security threats: 5G, cybersecurity, data privacy

Geopolitical trust deficit remains the biggest hurdle.

Way Forward: Principles for Engagement

India's Approach Should Focus On	Why
Strategic autonomy	Avoid bloc politics
Economic diversification	Reduce dependency on China
Defensive realism	Secure borders & critical tech
Constructive regional diplomacy	Stability in Indo-Pacific

Cooperation in economy → competition in geopolitics → **Calibrated engagement**

Conclusion

India–China relations embody a **dual character** — rivalry & cooperation. As both nations shape the Asian century, structured engagement rooted in fairness, reciprocity and respect for sovereignty is essential. A stable "dragon-elephant tango" can significantly influence global economic and strategic order.

Engagement without illusion, caution without hostility — the pragmatic path ahead.

India–China Relations

Introduction: India and China are two major Asian powers with significant geopolitical, economic, and strategic influence. While the early phase of bilateral ties was marked by friendship and cooperation, persistent border disputes and strategic distrust have strained relations over time. Both nations, however, remain connected through robust economic engagement and participation in numerous multilateral platforms.

Historical Evolution of Relations

Ancient & Cultural Linkages

- **Buddhism** facilitated people-to-people connectivity when it spread from India to China (1st century A.D.)
- Exchange of **scholars and travellers** like Fa-Xian, Xuan Zang, and Bodhidharma promoted knowledge and cultural exchange.

Era of National Movements

- Intellectual and political cooperation grew during the colonial period
- Kang Youwei's stay in India (1890s), Tagore's China visit (1924), Aid China Medical Mission led by **Dr. Kotnis** (1938)

Post-Independence Phase

- "**Hindi-Chini Bhai-Bhai**" spirit in the 1950s
- Gradual deterioration after the **1962 War** → strategic mistrust

Timeline of Key Developments

Year	Event
1950	Diplomatic relations established
1954	Panchsheel Agreement signed
1962	Sino-Indian border war
1976	Full diplomatic relations restored
1984	MFN status accorded
1986	China opposes Indian Statehood for Arunachal Pradesh
1998	India's nuclear tests invite Chinese criticism
2006	Nathu La reopened for trade
2017–22	Doklam, Galwan & Tawang confrontations

India–China Border Profile

- **Total Length:** 3,488 km
- **Status:** Undefined; LAC disagreements persist

- **Terrain:** Harsh, high-altitude, low infrastructure
- **Border Guarding Force:** ITBP

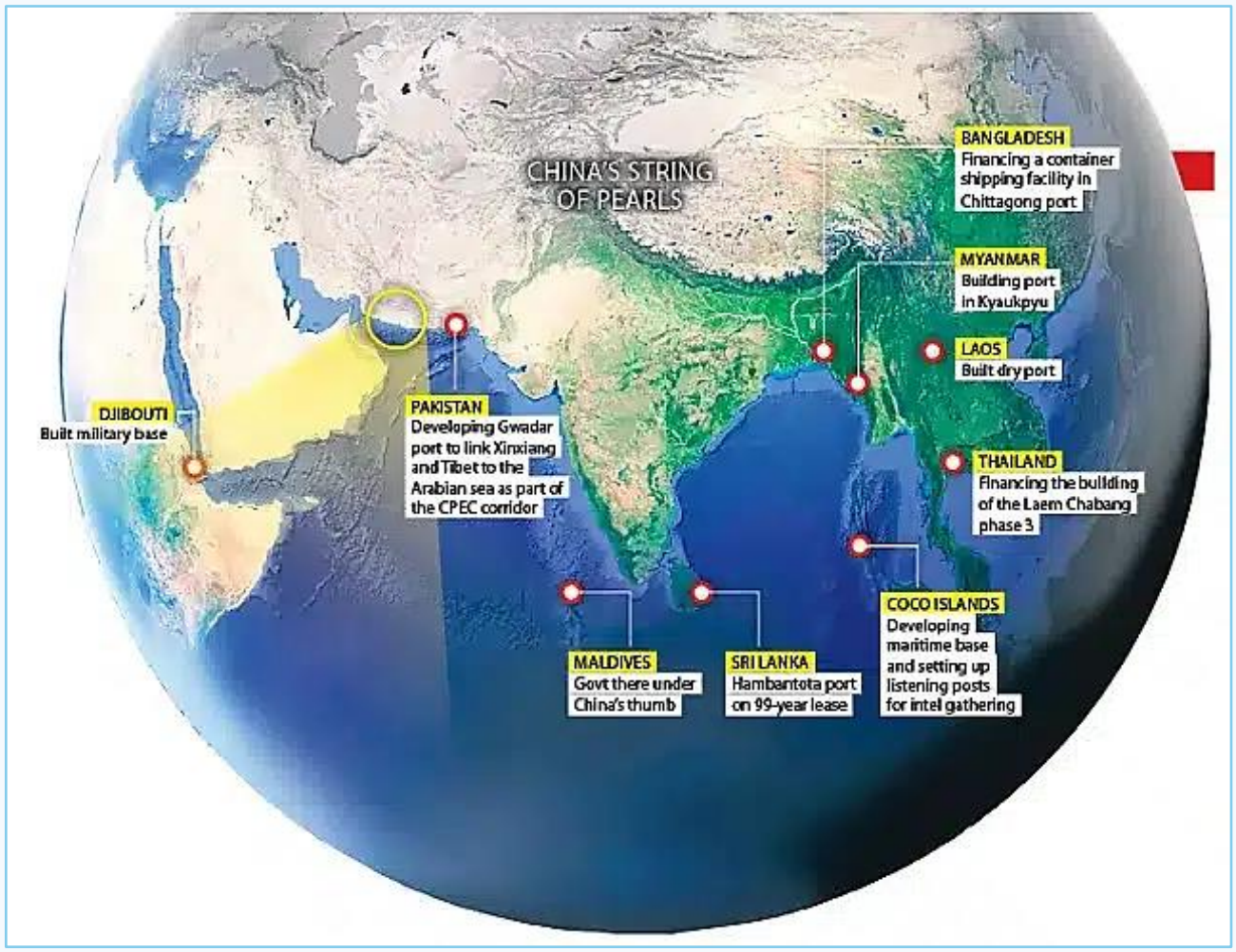
State/UT	Length (km)
Jammu & Kashmir / Ladakh	1,597
Himachal Pradesh	200
Uttarakhand	345
Sikkim	220
Arunachal Pradesh	1,126

Major Border Disputes

- **McMahon Line Dispute:** India accepts it, China rejects it
- **Aksai Chin & Arunachal Pradesh** remain core territorial contestations

Key Confrontations

- **1962 Sino-Indian War** – over Aksai Chin & NEFA
- **1967 Nathu La clashes** – India successfully pushes back PLA
- **2017 Doklam standoff** – 73-day military face-off
- **2020 Galwan Valley clash** – first fatalities since 1975
- **2022 Yangtse incident (Tawang)** – hand-to-hand combat



Political & Diplomatic Engagement

Core Principles

- Guided by **Panchsheel**: sovereignty, non-aggression, peaceful coexistence etc.

Top-Level Diplomacy

- Informal Summits: **Wuhan (2018)**, **Chennai (2019)**
- Over **30 dialogue mechanisms** covering political, cultural, economic, consular & strategic areas.

Multilateral Cooperation

Organization	Role of India–China Engagement
BRICS	Coordination on global governance reforms
SCO	Regional security and economic cooperation
G20	Shared agenda on economic stability
AIIB	Infrastructure financing in Asia

Economic Interdependence

Trade

- China = India's **largest trading partner**
- **Trade Deficit:** USD 85.1 billion (FY 2024) — driven by:
- Import dominance of Chinese manufacturing
- Limited Indian market access in pharmaceuticals, IT, food products

Investments

- Bilateral investments remain limited
- Decline post-2020 due to security restrictions on Chinese investments in India

Dialogue Platforms

- **JEG, SED** for structured economic discussion

Sociocultural Relations

- Heritage linkages rooted in **Buddhism**
- **Diaspora:** Around 56,000 Indians in China
- Popularity of **Bollywood** films & **Yoga**
- **Education Exchange Programme (2006)** facilitates student movement

Military Engagement

- **1993 Agreement** on peace & tranquillity along LAC
- **"Hand-in-Hand" joint exercises** for counter-terror cooperation
- CBMs exist but **trust deficit persists**

Recent Developments (2023–25)

- **Partial disengagement** in Depsang & Demchok
- Proposal to **resume Kailash Mansarovar Yatra**
- Joint plans to **restore normalcy** ahead of 75 years of relations in 2025

Major Challenges

Challenge	Description
Territorial & Strategic	China's **Salami Slicing** and **Five-Finger Policy**
Economic Dependency	Persistent high trade deficit
Geostrategic Rivalry	China's **String of Pearls** vs India's strategic concerns
Water Security	Chinese hydropower projects on **Brahmaputra**
Indian Ocean Surveillance	Spy vessels like **Yuan Wang-5**

Way Forward

Domain	Suggested Actions
Strategic Response	Enhance deterrence, border infrastructure (Vibrant Villages, Project Arunank)
Economic Measures	Strengthen **Aatmanirbhar Bharat**, diversify imports
Diplomatic Outreach	Leverage QUAD, I2U2, deeper regional ties
People-to-People Contact	Expand academic, tourism & cultural interactions
Maritime Strategy	Continue **Necklace of Diamonds** as a counter to String of Pearls
Dialogue Mechanisms	Sustain crisis-management channels to avoid escalation

Conclusion

India–China relations reflect a complex interplay of cooperation and rivalry. While strong economic and cultural connections continue, border tensions and geostrategic competition limit mutual trust. Going forward, managing competition through balanced diplomacy, robust national security, and diversified economic strength will be crucial for regional stability and peaceful coexistence.

Q. *Evaluate India's position in the Indo-Pacific in view of increasing Chinese assertiveness.*

Q. *Critically examine the role of India in the emerging global order in the backdrop of COVID-19 and growing US-China tensions.*

2.2.4. INDIA-ETHIOPIA RELATIONS: THE RIGHT MOMENT TO BOOST TIES

Context: Prime Minister Narendra Modi is on an official visit to Ethiopia (Dec 16-17, 2025) at the invitation of Ethiopian PM Dr. Abiy Ahmed Ali — his first full-fledged bilateral visit to Ethiopia in over a decade.

Introduction: The relationship between India and Ethiopia, rooted in **2,000 years of civilizational ties** dating back to the Axumite Empire, is entering a decisive phase. Ethiopia's recent induction into **BRICS (2024)** and its strategic location in the Horn of Africa, coupled with high-level exchanges—including

the **Prime Minister's first visit since 2011 (December 2025)**—provide a critical juncture to elevate the partnership from traditional friendship to a comprehensive strategic engagement.

Historical and Political Foundations

Ancient Ties- Trade flourished since the **1st Century AD**; Indian merchants exchanged silk and spices for gold and ivory. The presence of the **Siddi community** in India traces back to Ethiopian origins.

Modern Diplomacy- Established diplomatic relations in **1948**. Ethiopia was the first African country to set up an embassy in New Delhi. Both nations shared a strong commitment to **Non-Aligned Movement (NAM) principles.**

Goodwill & Capacity- During Emperor **Haile Selassie's reign**, a large number of Indian teachers developed significant goodwill, laying the foundation for Ethiopia's modern education system. Many Ethiopian leaders and professionals are alumni of Indian universities.

Multilateral Cooperation- Both are strong partners in the Global South. Ethiopia has consistently supported India's bid for a permanent seat on the **UNSC** and was a strong advocate for the **African Union (AU)**'s permanent **G20 membership** (under India's G20 Presidency, 2023).

Pillars of Contemporary Partnership (The 'Boost' Areas)

A. Economic and Trade Nexus

- **Investment Powerhouse:** India is the **second-largest source of Foreign Direct Investment (FDI)** for Ethiopia, with licensed investment exceeding $4 billion, creating over 75,000 jobs. Indian companies are dominant in **Manufacturing (around 78%)** and Agriculture.
- **Trade Volume:** Bilateral trade stood at **USD 1.8 billion (2021)**. Indian exports mainly include pharmaceuticals, machinery, steel, and textiles. India imports pulses, oil seeds, and leather.
- **Concessional Credit:** India has extended **Lines of Credit (LoC)** worth over $1 billion for crucial sectors like rural electrification, sugar industries, and railways (e.g., three major sugar projects implemented).

B. Strategic and Security Cooperation

- **Defence Engagement:** The signing of a **Defence Cooperation MoU (February 2025)** and the inaugural **Joint Defence Cooperation (JDC) meeting (October 2025)** marked a new chapter.
- **Areas of Focus:** Collaboration in military training, joint exercises, defence industry engagement, and medical cooperation. This is critical for India's strategic outreach into the **Horn of Africa** and the Western Indian Ocean region.
- **Counter-Terrorism:** Both countries share a common understanding of cross-border terrorism and can enhance intelligence and security cooperation in a volatile region.

C. Capacity Building and Digital Diplomacy

- **ITEC & Scholarships:** India remains a major capacity-building partner, training thousands of Ethiopian professionals and students under the **Indian Technical and Economic Cooperation (ITEC)** programme and ICCR scholarships.
- **Pan-African e-Network:** Ethiopia was the launchpad for the original Pan-African e-Network Project, pioneering tele-education and tele-medicine connectivity with India.
- **Digital Public Infrastructure (DPI):** Discussions are ongoing to explore Ethiopia's adoption of India's DPI model (like UPI, Aadhaar-like systems) to accelerate its digital economy.

D. Energy and Climate Collaboration

- **International Solar Alliance (ISA):** Ethiopia is a founding member of the ISA. India is supporting Ethiopia's renewable energy goals through initiatives like the establishment of a **Solar Technology Application Resource Center (STARC)**.
- **Focus on Green Energy:** The PM's visit agenda prioritised cooperation in **solar power, agriculture, and critical minerals**, aligning with global energy transition goals.

Strategic Imperatives for India (The 'Right Moment')

1. **Horn of Africa Strategy:** Ethiopia is a landlocked nation whose stability is key to the entire Horn of Africa region, which is vital for Indian Ocean trade and maritime security. Deeper engagement ensures India's proactive presence.
2. **BRICS Alignment:** As new BRICS partners, strengthening economic and political coordination with Ethiopia is essential to leverage the grouping for mutual benefit and to enhance the influence of the Global South.
3. **Countering Geopolitical Competition:** Proactive engagement is necessary to maintain India's position as a reliable and non-interfering development partner in the face of significant infrastructure and financial competition from other global powers.
4. **Food and Resource Security:** Ethiopia is rich in resources and has vast agricultural land. Cooperation in agriculture and food processing can bolster India's food security and help Ethiopia achieve its potential.

Challenges in India-Ethiopia Ties

The following are the key challenges that need to be navigated to realize the full potential of the strategic partnership:

- **Internal Instability:** Ethiopia has experienced periods of internal political dynamics and ethnic conflicts. This instability poses a risk to Indian investments and the continuity of bilateral projects, requiring careful monitoring.
- **Project Delays:** The successful execution of infrastructure projects funded through India's **Lines of Credit (LoC)** has sometimes faced delays. Such setbacks can undermine India's reputation as an efficient and reliable development partner.
- **Logistical Bottlenecks:** Being a landlocked country, Ethiopia faces inherent logistical challenges related to trade and connectivity. Dependence on the **Djibouti-Ethiopia corridor** can create bottlenecks for increased trade and investment flows.
- **Chinese Competition:** India faces intense competition from global powers, particularly China, which has massive financial capabilities and an established footprint in African infrastructure development, requiring India to offer a distinctive value proposition.

Way Forward

To overcome the challenges and strategically boost ties, the following recommendations are crucial:

- **Strategic Project Focus:** India must carefully monitor internal political dynamics and ethnic conflicts, choosing to **focus development projects on stable regions** to mitigate risks and ensure project longevity.

- **Ensuring Timely Execution:** The government must prioritize mechanisms to **ensure timely execution of LoC-funded infrastructure projects**. This is essential to uphold India's reputation as a reliable and efficient development partner.
- **Enhancing Connectivity:** India should actively **invest in enhancing connectivity**, which could include potential equity or technical investments in the existing **Djibouti-Ethiopia corridor** or proactively exploring alternative routes, possibly via the **Asia-Africa Growth Corridor (AAGC)** framework.
- **Differentiated Engagement Model:** India must differentiate its engagement model from competitors by focusing on its unique strengths: **capacity building, transparency, and demand-driven projects** based on the **South-South Cooperation model**, rather than competing on the sheer volume of opaque, debt-heavy infrastructure deals.

Conclusion:

The India-Ethiopia relationship is at a **critical inflection point**. Leveraging Ethiopia's new status as a BRICS member and its geopolitical importance in the Horn of Africa, India must strategically move beyond historical goodwill to establish a **future-ready partnership**.

Q. *Ethiopia occupies a pivotal position in India's Africa policy." In this context, examine the strategic, economic and diplomatic significance of India–Ethiopia relations.*

2.2.5. INDIA-OMAN RELATIONSHIP

Context: India and Oman share a **deep-rooted, multi-dimensional relationship** that spans **history, culture, trade, maritime engagement, and strategic cooperation**. What began as **ancient maritime and commercial exchanges across the Arabian Sea** has evolved into a **robust strategic partnership** encompassing **defence, security, energy, trade, connectivity, technology, education, and digital finance**.

Oman occupies a **unique and trusted position in India's West Asia policy**, owing to its **strategic location at the mouth of the Gulf of Oman**, its **policy of moderation, mediation, and deliberate neutrality**, and its consistent support for India during periods of regional uncertainty. In a region marked by conflicts and shifting alliances, Oman has remained an **island of stability and mediation**.

Concept and Historical Evolution of India–Oman Relations

India–Oman relations are best understood through the framework of **strategic convergence combined with mutual trust**.

Key conceptual pillars include:

- **Strategic Autonomy**: India's engagement with Oman allows it to safeguard interests without entanglement in regional rivalries.

- **Maritime Interdependence**: Shared stakes in **Indian Ocean security and freedom of navigation**.
- **Energy and Economic Complementarity**: Oman as an energy partner; India as a market and investment destination.
- **Soft Power and Diaspora Linkages**: A strong Indian expatriate community reinforcing bilateral goodwill.

Historical Ties

- **Centuries-old trade**: India and Oman have traded across the Arabian Sea since ancient times, with Indian merchants using Omani ports as gateways to the Gulf.
- **Cultural and social bonds**: Shared **maritime heritage, migration, and religious ties** have strengthened people-to-people connections.
- **Political alignment**: During periods when the Gulf was ambivalent toward India and supportive of Pakistan, Oman maintained **open and friendly relations**, providing a **reliable partner in West Asia**.

Diplomatic Evolution

- **1955**: Diplomatic relations formally established.
- **2005**: MoU on military cooperation signed, paving the way for structured defence engagement.
- **2008**: Strategic Partnership Agreement signed, reflecting the **broadening of India-Oman cooperation beyond trade and culture**.
- **2018 & 2025**: Prime Minister Modi's visits reaffirm strategic partnership; the 2025 visit coincides with **70 years of diplomatic relations**.
- **2023**: Sultan Haitham bin Tarik of Oman visited India, underscoring reciprocal diplomatic commitment.

Present Status of India-Oman Relations

The **visit of Prime Minister Narendra Modi to Oman from December 15-18, 2025**, as part of a three-nation tour to Jordan and Ethiopia, marks **70 years of diplomatic relations** between the two countries. This visit **in 2025** is described as **"more than a routine diplomatic trip"**; it is aimed at **strengthening bilateral cooperation amid regional uncertainties**.

Strategic and Defence Cooperation

- Defence and security cooperation form the **bedrock of strategic partnership**:
- Oman is the **first Gulf country with joint exercises across all three Indian armed forces**.
- Indian naval ships have been stationed in the **Gulf of Oman since 2012-13** for **anti-piracy operations**.
- Oman provides **overflight and transit facilities** for Indian military aircraft.
- **Duqm Port Agreement (2018)**:
- Provides **basing facilities, operational turnaround, and logistics support** for Indian Navy.
- Strategic location enables **monitoring of Chinese PLA naval activity** in the Indian Ocean.
- Defence procurement and collaboration:

- Oman purchased **INSAS rifles (2010)** from India.
- Potential deals for **Tejas fighter aircraft, naval patrol ships, radar equipment, and Jaguar spares**.
- Joint focus on **counter-terrorism, anti-piracy operations, and maritime security**.
- **Significance**: Ensures India maintains a **strategic footprint in the Gulf**, critical for regional stability and maritime security.
- Moreover, Oman is acknowledged as a **trusted partner that enables India's strategic presence in the Gulf and Indian Ocean**, vital in the context of regional volatility post-Gaza ceasefire and other conflicts.

Economic and Commercial Cooperation

- **Bilateral trade**: $10.613 billion in FY 2024-25, showing steady growth.
- **Foreign Direct Investment (FDI)**: Oman's cumulative FDI in India from 2000-2025 stands at **$605.57 million**.
- **Oman-India Joint Investment Fund (OIJIF)**:
- 50-50 JV between **State Bank of India** and **Oman Investment Authority**.
- Invested **$600 million**, with the **third tranche of $300 million announced in 2023**.
- **Digital Economy Cooperation**:
- MoU between **Central Bank of Oman** and **NPCI** in **October 2022**.
- Launch of **Rupay debit cards in Oman**, promoting **Digital Public Infrastructure (DPI)**.
- **Comprehensive Economic Partnership Agreement (CEPA)**:
- Likely to be signed during the 2025 visit.
- Oman to become **second Gulf country after UAE** to have CEPA with India.
- Helps diversify trade, mitigate **US tariff impacts**, and enhance economic cooperation.

Emerging Domains of Cooperation

- **Energy Cooperation**
- Focus on **green hydrogen, renewable energy, critical minerals**, and strategic petroleum reserves.
- Potential arrangement for **Oman to store strategic petroleum reserves in India**, similar to UAE.
- **Connectivity**
- Oman's role in the **India-Middle East-Europe Economic Corridor (IMEC)** for trade and transport.
- **Space and Technology**
- Potential expansion of **space cooperation agreements** (existing MoU from 2018).
- **Education and Health**
- Offshore campuses of **IITs and IIMs** in Oman.
- Collaboration in **healthcare innovation and telemedicine**.
- **Defence Industrial Collaboration**
- Joint manufacturing and supply of **critical weapon platforms**.

Significance of India-Oman Relations

- **Strategic Geopolitical Importance**
- Oman's location at the **entrance of the Gulf of Oman and Arabian Sea** provides India with a **critical strategic foothold in West Asia and the Indian Ocean Region (IOR)**.
- Enables India to **monitor regional developments, safeguard maritime trade routes, and enhance situational awareness** in a conflict-prone region.
- **Trusted Partner in Regional Stability**
- Oman's **neutral and mediation-oriented foreign policy** makes it a **reliable partner for India in the Gulf**, providing stability amid regional tensions.
- Acts as a **balancing factor** in India's West Asia policy, especially during conflicts or geopolitical uncertainties.
- **Maritime Security and Defence Cooperation**
- Joint naval exercises and anti-piracy operations enhance **Indian Ocean security and regional maritime stability**.
- **Duqm Port** and overflight facilities provide India with **strategic operational and logistics support**, strengthening defence preparedness.
- **Economic and Trade Significance**
- Bilateral trade reached **$10.613 billion (FY 2024-25)**, with potential for further growth under the **Comprehensive Economic Partnership Agreement (CEPA)**.
- Investment and joint ventures, like the **Oman-India Joint Investment Fund (OIJIF)**, promote **mutual economic growth and industrial cooperation**.
- **Energy Security and Collaboration**
- Oman is a **reliable supplier of oil and gas**, critical for India's **energy needs**.
- Emerging cooperation in **green energy, renewable resources, and strategic petroleum reserves** strengthens India's **energy diversification and sustainability goals**.
- **Technological and Digital Cooperation**
- Collaboration in **space, ICT, AI, and fintech** enhances India's **technological influence in West Asia**.
- Initiatives like **Rupay integration in Oman and NPCI partnerships** showcase India's **Digital Public Infrastructure (DPI) expertise** globally.
- **Education, Health, and Human Capital Development**
- Offshore campuses of **IITs and IIMs**, along with healthcare collaboration, promote **knowledge transfer, skill development, and research cooperation**.
- Strengthens **people-to-people ties** and soft power through engagement with the **Indian diaspora in Oman (over 500,000 expatriates)**.
- **Strategic Diplomacy and Multilateral Engagement**
- Oman supports India in **regional diplomacy, multilateral forums, and strategic initiatives**, including **G-20 engagements in 2023 (Oman invited as Guest Nation during India's G-20 Presidency (2023)) and connectivity projects**.

- Facilitates India's **balanced, forward-looking, and stable approach** in West Asia while enhancing its **global strategic presence**.

Challenges in India–Oman Relations

- **Underutilised Trade Potential**: Despite strong political and strategic engagement, **bilateral trade remains modest** compared to geographical proximity and historical ties. Limited diversification beyond the energy sector and **slow progress in trade facilitation mechanisms** continue to constrain expansion.
- **Delayed Economic Integration Frameworks**: The **absence of a finalised Comprehensive Economic Partnership Agreement (CEPA)** restricts deeper market access, tariff rationalisation, and supply-chain integration. **Regulatory complexity and procedural hurdles** further affect ease of doing business.
- **Regional Instability and Security Spillovers**: **Persistent geopolitical tensions in West Asia** pose risks to trade routes, energy flows, and investment confidence. Maritime disruptions in the **Gulf and adjoining sea lanes** can directly impact bilateral cooperation and economic stability.
- **Balancing Competing Gulf Partnerships**: India must balance expanding relations with **UAE, Saudi Arabia, Qatar, and Iran** while preserving Oman's role as a **neutral and stabilising partner**. Divergent regional alignments may occasionally limit the depth of security and diplomatic coordination.
- **Energy Transition and Policy Alignment Challenges**: While cooperation in **renewables and green hydrogen** is expanding, differences in **transition timelines, financing structures, and access to clean technologies** complicate collaboration. Managing the shift from hydrocarbons without undermining energy security remains a challenge.
- **Competition from Extra-Regional Powers**: The **growing economic, infrastructural, and strategic presence of China and other major powers** in the Gulf creates competitive pressures for India. External investments and naval activities can dilute India's relative influence.
- **Logistical and Connectivity Constraints**: **Limited direct shipping routes, air connectivity gaps, and underdeveloped port-to-port linkages** reduce trade efficiency. Full operationalisation of strategic assets such as **Duqm Port** requires sustained institutional coordination.

Way Forward for India–Oman Relations

- **Early Conclusion of CEPA**
- Fast-track the **India–Oman Comprehensive Economic Partnership Agreement (CEPA)** to unlock trade potential through tariff reduction, services liberalisation, and investment protection.
- Promote **sectoral diversification** beyond hydrocarbons into manufacturing, logistics, pharmaceuticals, and agri-exports.
- **Deepening Defence and Maritime Cooperation**
- Expand **joint military exercises, naval patrols, and intelligence sharing** to address maritime security and non-traditional threats.
- Fully operationalise **Duqm Port** for logistics, maintenance, and sustained naval presence in the Indian Ocean Region.

- **Strengthening Energy Transition Partnerships**
- Institutionalise cooperation in **green hydrogen, solar energy, critical minerals, and energy storage technologies**.
- Encourage **public-private partnerships** and joint research to align energy transition goals with long-term energy security.
- **Enhancing Connectivity and Logistics Integration**
- Improve **direct shipping, port-to-port linkages, and air connectivity** to reduce trade costs and time.
- Integrate Oman more closely into **regional and trans-continental connectivity corridors**, strengthening supply chain resilience.
- **Scaling Digital and Technology Cooperation**
- Expand **Digital Public Infrastructure (DPI)** collaboration beyond payments to include **digital identity, fintech regulation, and e-governance platforms**.
- Promote joint innovation in **AI, fintech, and cybersecurity**.
- **Boosting Investment and Financial Collaboration**
- Expand the scope and size of the **Oman–India Joint Investment Fund (OIJIF)** into emerging sectors such as start-ups, renewables, and smart infrastructure.
- Facilitate smoother regulatory coordination to attract long-term institutional investors.
- **People-Centric and Knowledge-Based Engagement**
- Strengthen cooperation in **education, healthcare, skill development, and labour mobility frameworks**.
- Establish offshore campuses of Indian institutions and ensure **diaspora welfare and skill upgradation** aligned with Oman's development goals.

Conclusion

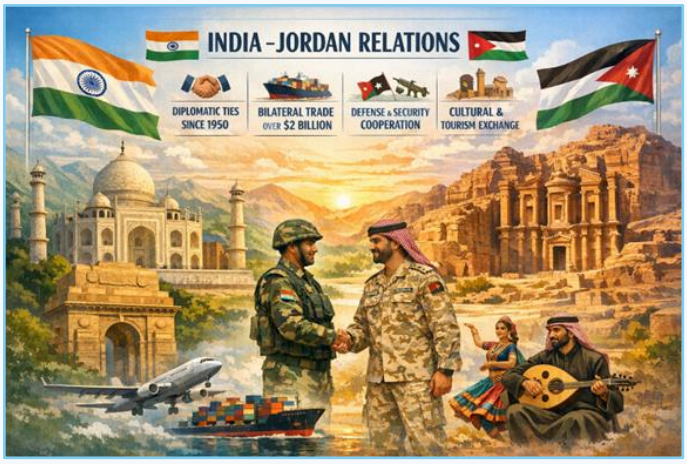
India-Oman relations epitomize a **multi-dimensional, strategic, and historically rooted partnership**. From defence to trade, maritime security to digital finance, energy to education, the bilateral relationship is poised for a **new phase of growth**. The **Prime Minister's 2025 visit** reinforces India's commitment to a **trusted, balanced, and strategic partnership**, with Oman playing a pivotal role in India's **extended neighbourhood strategy** and **global outreach**. This partnership is not just historical; it is **future-ready, resilient, and mutually beneficial**.

Q. *Oman has emerged as a key partner in India's efforts to secure its extended neighbourhood. Discuss how India–Oman relations contribute to India's broader goals of regional stability, strategic autonomy, and global engagement.*

Scan to attempt more questions...

2.2.6. FROM TRANSACTIONAL TO STRATEGIC: ADVANCING THE INDIA-JORDAN BLUEPRINT

Why in the news?



India-Jordan relationship is defined by its strategic elevation during the **75th anniversary of diplomatic ties**, marked by **PM Modi's first full bilateral visit in 37 years (Dec 2025)**.

Introduction

India and the Hashemite Kingdom of Jordan share a warm and time-tested relationship, formalized with the establishment of diplomatic ties in **1950**. Jordan is a crucial partner in India's **"Link West"** policy, serving as a pillar of **moderation and stability** in a volatile West Asian region. The relationship is currently celebrating its **75th Anniversary** (2025).

How Have India-Jordan Deepened Their Bilateral Relationship?

1. Political and Diplomatic Pillars

The relationship is characterized by sustained **high-level exchanges** and a deep convergence on key geopolitical issues.

- **High-Level Visits (Recent Momentum):**
- **King Abdullah II's State Visit to India (Feb-Mar 2018):** A watershed moment, focusing on counter-terrorism and signing 12 agreements/MoUs. He also addressed a conference on 'Islamic Heritage: Promoting Understanding & Moderation'.
- **PM Narendra Modi's Full Bilateral Visit (Dec 2025):** The first full bilateral visit by an Indian Prime Minister in **37 years**, marking the 75th anniversary of ties. This visit elevated the partnership and resulted in **five key agreements** (see recent events).
- **Other Engagements:** Regular Foreign Office Consultations (FOCs) and meetings on the sidelines of international summits (e.g., G7, UNGA) maintain momentum.
- **Shared Strategic Vision (Countering Extremism):**
- Both nations share a clear and consistent stance against **terrorism, extremism, and radicalization**. Jordan, under King Abdullah II, is a strong proponent of **moderation** in the Arab world.
- **Cooperation:** Focus on **information sharing, capacity building**, and developing a counter-narrative against radical ideologies. Jordan has consistently condemned terror acts in India.
- **Multilateral Support:** Jordan supports India's candidature for a **permanent seat** in the expanded UN Security Council (UNSC) and cooperates on the World Trade Organization (WTO) and other international forums.

2. Economic and Trade Cooperation

Economic ties are the foundation of the relationship, driven primarily by India's need for crucial **fertilizer inputs**.

- **Trade Volume:** Bilateral trade was valued at approximately **USD 2.875 billion in 2023-24**. India is Jordan's **4th largest trading partner**.
- **Strategic Imports:** India is critically dependent on Jordan for **fertilizer security**. Key imports are **Phosphates, Potash, and Phosphoric Acid**, vital for India's agricultural sector and food security.
- **Key Exports:** India exports machinery, pharmaceuticals, cereals (like Basmati rice), frozen meat, and organic/inorganic chemicals to Jordan.
- **Flagship Joint Venture (Investment):**
- **Jordan India Fertilizer Company (JIFCO):** A joint venture between **IFFCO (India)** and the **Jordan Phosphate Mines Company (JPMC)**, commissioned in 2015. This **USD 860 million** project produces phosphoric acid, a key raw material for DAP/NPK fertilizers, ensuring a dedicated supply chain for India.
- **Indian Investment:** Indian and Non-Resident Indian (NRI) investments are substantial, totaling around **USD 1.5 billion**, particularly in the **textiles/garment sector** (Qualified Industrial Zones-QIZ) and the fertilizer industry.

3. Security, Defence, and Emerging Cooperation

Cooperation is expanding beyond trade into high-tech and strategic sectors.

- **Defence Cooperation:** An **MoU on Defence Cooperation** was signed in **2018**, providing a framework for:
- Military training and joint exercises.
- Defence industry collaboration and procurement.
- Counter-terrorism and cyber security cooperation.
- This marks a strategic step in establishing India's strategic imprint in the Levant and Red Sea region.
- **Digital and Tech (Recent Focus):**
- **India-Jordan Centre of Excellence in IT:** Inaugurated in 2021 at Al-Hussein Technical University, fully funded by India, equipped with a **PARAM Supercomputer**. It aims to train thousands of Jordanian professionals.
- **Latest Agreement (Dec 2025):** Letter of Intent on sharing **India's successful digital solutions** (like UPI, Aadhaar-stack) for Jordan's digital transformation.
- **New Sectors (Recent Agreements):**
- **MoU on New and Renewable Energy** (Dec 2025).
- **MoU on Water Resources Management & Development** (Dec 2025). This is critical given Jordan's water-scarce environment.

4. People-to-People and Development Partnership

Soft power and community ties act as a strong bridge.

- **ITEC & ICCR:** India actively supports Jordan's human resource development through the **Indian Technical and Economic Cooperation (ITEC)** programme. The number of slots has been consistently utilized and recently increased to 50 slots annually, along with ICCR scholarships.
- **Indian Diaspora (Data Point):** Jordan hosts a sizeable Indian community of over **17,500 people**, primarily employed in the textiles, construction, and manufacturing sectors.

- **Cultural Exchange:** The **"Twinning Agreement" between Petra (Jordan) and Ellora (India)** (Dec 2025) will boost heritage conservation, tourism, and academic exchange. Jordan also provides **e-Visa/Visa-on-Arrival** to Indian tourists.

Geopolitical Significance for India:

Jordan's location and political stability render it strategically vital for India's West Asia Policy, serving multiple critical purposes.

- **Pillar of Stability in a Volatile Region:** Jordan is recognized as a moderate and stable monarchy, strategically positioned adjacent to volatile nations like Syria, Iraq, and Israel/Palestine. Partnering with Jordan allows India to maintain a robust diplomatic presence and access the region's heartland without being directly drawn into the complexities and conflicts of its neighbours, enabling a policy of non-interference while maintaining influence.
- **Key to West Asia Balance:** Jordan's neutral and respected standing, particularly its role as the custodian of Muslim and Christian holy sites in Jerusalem, helps India diversify its West Asia outreach beyond traditional partners (GCC/Israel). This relationship facilitates a balanced and nuanced approach to the Israel-Palestine issue, where King Abdullah II is a highly respected and influential voice, especially concerning the **Gaza issue** and regional de-escalation efforts.
- **Energy and Food Security Link:** The relationship is a direct contributor to India's national security, particularly food security. The dedicated supply of vital agricultural inputs like **Phosphates and Potash** through the **Jordan India Fertilizer Company (JIFCO)** project ensures the stability of India's domestic food production chain, insulating it from global price volatility and supply disruptions.
- **Counter-Radicalization and Moderate Narrative:** Jordan actively promotes a moderate Islamic narrative globally, including the widely cited **Amman Message**. This is critical for India's domestic security interests and global counter-terrorism diplomacy, providing a valuable partner in developing a counter-narrative against religious extremism and radicalization.

Key Challenges in India–Jordan Bilateral Relations:

1. Economic and Trade Imbalances

The current economic relationship suffers from structural issues, despite India being Jordan's 3rd or 4th largest trading partner.

- **Trade Composition:** The bilateral trade, valued at **USD 2.875 billion (2023-24)**, is heavily dominated by India's imports of just a few commodities, mainly **Phosphates and Potash** for fertilizer security. This reliance makes the economic partnership transactional and susceptible to fluctuations in global commodity prices and fertilizer demand.

- **Target vs. Reality:** Although a recent high-level visit (Dec 2025) set an ambitious target of doubling trade to **USD 5 billion** over five years, achieving this requires significant diversification of Indian exports beyond traditional items (machinery, pharmaceuticals, and cereals) and encouraging more reciprocal Jordanian investments in India.
- **Absence of Comprehensive FTA:** Unlike India's strategic partners in the GCC, the absence of a comprehensive **Free Trade Agreement (FTA)** or Preferential Trade Agreement (PTA) acts as a potential hurdle, maintaining tariffs and complicating market access for a wider range of goods.

2. Low Depth in Defence Cooperation

Despite the signing of an **MoU on Defence Cooperation in 2018**, the partnership remains nascent, especially compared to India's deepening defence ties with other West Asian states.

- **Limited High-End Exercises:** There is a lack of high-visibility, regular, and large-scale joint military exercises that could significantly enhance interoperability and strategic trust.
- **Defence Trade:** Defence procurement and co-production between the two countries are minimal. India needs to actively offer its indigenous defence platforms and technology (like patrol vessels, radars, or missile systems) to Jordan to evolve the relationship from merely training-based to a supplier-consumer framework.
- **Focus Constraint:** Jordan's primary security alignment is traditionally with the US and Western powers. India needs to carve out a compelling niche, leveraging its strategic autonomy and non-aligned defence philosophy to become a preferred, reliable partner in areas like counter-insurgency training and specialized technology.

3. Geopolitical Vulnerability and Regional Distractions

Jordan's difficult location and regional dependencies pose persistent risks that can affect the bilateral relationship.

- **Regional Instability:** Jordan is situated in a volatile neighbourhood, bordering Syria, Iraq, and the Israeli-Palestinian territories. Instability, particularly the prolonged **Gaza conflict**, necessitates Jordan's constant focus on border security and humanitarian crises, often diverting its attention and resources from bilateral economic initiatives.
- **Impact of the Palestine Issue:** The Palestine issue is central to Jordan's foreign policy and domestic stability (due to its large Palestinian refugee population). While India and Jordan have a shared vision of a stable West Asia, any shifts in India's policy concerning the Israel-Palestine issue can create diplomatic sensitivities in Amman, potentially causing friction or requiring careful balancing.

4. Need for Greater Visibility and People-to-People Links

The bilateral relationship, while warm at the political level, lacks a strong public and commercial foundation.

- **Low Awareness:** Despite the cultural affinity (e.g., **Bollywood** interest), public awareness in both countries about the scale and strategic significance of the partnership is relatively low. This limits the mobilization of soft power resources and restricts people-to-people movement beyond the existing diaspora community (around 17,500 people).
- **Limited Tourism and Academic Exchange:** While tourism has been growing and the **"Twinning Agreement"** between **Petra and Ellora** is a positive step, the volume of tourist and academic

exchange remains low compared to India's ties with other major destinations. This restricts the long-term, organic growth of mutual understanding and professional collaboration.

Steps Needed to Advance India–Jordan Strategic Partnership:

1. Diversifying Economic and Trade Ties

Moving beyond the reliance on the fertilizer trade is the most crucial step for sustainable economic engagement.

- **Finalize and Implement Key Agreements:** Expedite the finalization and implementation of the **Double Taxation Avoidance Agreement (DTAA)** review and explore a **Preferential Trade Agreement (PTA)** to reduce tariffs and facilitate wider trade.
- **Sectoral Diversification:** India must actively push cooperation into Jordan's priority sectors. Key areas include **Renewable Energy** (MoU signed in Dec 2025), **Water Resources Management** (critical for water-scarce Jordan), **Fintech, and Digital Technologies**. India should leverage its expertise to help Jordan meet its UN Sustainable Development Goals (SDGs) related to water and energy.
- **Promote Investment in High-Tech:** Encourage Indian investment in Jordan's non-traditional sectors, leveraging Jordan's skilled workforce and its proximity to Western markets. The success of the **Jordan India Fertilizer Company (JIFCO)** joint venture should be replicated in areas like IT, pharmaceuticals, and infrastructure.

2. Deepening Security and Strategic Dialogue

Strengthening the security architecture will underline the 'Strategic' component of the partnership.

- **Institutionalize Strategic Dialogue:** Establish regular, institutionalized dialogues at the **National Security Adviser (NSA)** level for consultations on regional security, counter-terrorism, and de-radicalization. Utilize Jordan's expertise in the **Aqaba Process** (a multilateral counter-terrorism platform).
- **Enhance Defence Cooperation:** Move beyond basic training to joint exercises focused on **cyber security, counter-insurgency, and specialized military medical services**, leveraging the 2018 MoU. India should offer indigenous defence technology (e.g., BrahMos, LCA Tejas components) to become a reliable defence supplier, integrating Jordan into India's defence ecosystem.
- **Support Global Initiatives:** Jordan's intent to join Indian-led global initiatives like the **International Solar Alliance (ISA)**, **Global Biofuel Alliance (GBA)**, and the **Coalition for Disaster Resilient Infrastructure (CDRI)** (outcomes of the Dec 2025 visit) must be fast-tracked to expand strategic alignment on climate change and sustainable development.

3. Leveraging Digital and Capacity Building

India's strength in digital public infrastructure (DPI) and human resource development must be fully utilized.

- **Promote DPI and Fintech:** Actively support Jordan's digital transformation by sharing India's successful population-scale digital solutions, such as the **Aadhaar-stack and UPI/RuPay digital payment systems**, as was agreed upon in the Letter of Intent (Dec 2025). This can streamline Jordan's economy and enhance financial inclusion.
- **Scale up ITEC and Skill Development:** Increase the number of slots under the **Indian Technical and Economic Cooperation (ITEC)** programme and tailor courses specifically for Jordanian

professionals in areas like cybersecurity, AI, and renewable energy technologies to meet local demand.

- **Collaborate on Health and Education:** Strengthen cooperation in affordable healthcare, pharmaceuticals, telemedicine, and medical training, using India's cost-effective models to build Jordan's institutional capacity.

4. Enhancing People-to-People Connectivity

Facilitating greater contact and cultural exchange builds long-term goodwill and commercial opportunities.

- **Improve Connectivity:** Encourage direct flight routes between major Indian and Jordanian cities to boost tourism, trade, and business travel, capitalizing on the simplified e-Visa process for Indian tourists.
- **Promote Cultural and Academic Exchange:** Fully utilize the **Twinning Agreement between Petra and Ellora** (Dec 2025) to promote heritage conservation, tourism, and academic research. Encourage scholarships and exchange programs between universities.
- **Harness Diaspora Potential:** Engage the significant Indian diaspora in Jordan (17,500 people, especially in textiles) to act as a bridge for trade, investment, and cultural promotion

Conclusion

The India-Jordan partnership is evolving from a transactional relationship centered on fertilizers to a comprehensive, **strategic alliance** encompassing defence, digital technology, and water security. Sustaining this momentum through the agreed-upon **$5 billion bilateral trade target** and deeper security cooperation will solidify Jordan's role as a reliable and trusted gateway for India in the tumultuous West Asian landscape.

Q. *Jordan is a vital pillar of stability for India's "Link West" policy. Discuss the geopolitical significance of this relationship for India, highlighting the key challenges to advancing this strategic partnership.*

2.2.7. THE EVOLUTION OF INDIA-US TIES

Context: In 2005, **India–U.S. relations** entered a transformative phase, marked by American confidence in strengthening rising powers, symbolised by the **civil nuclear deal** and support for India's global rise. The **2025 U.S. National Security Strategy** reflects a sharp departure from this outlook. The U.S. now adopts a **defensive**, **inward-looking posture**, **viewing global leadership as a burden. India** is framed instrumentally, primarily within **America's China strategy**, rather than as an end in itself. Cooperation remains important but increasingly transactional. Consequently, India's emergence as a **major power** will depend on its own **strategic confidence**, autonomy, and capacity within a fragmented global order.

How Have India-USA Deepened Their Bilateral Relationship?

A. Defense Ties: From Buyer to Co-producer

The relationship is governed by the **COMPACT** (Catalyzing Opportunities for Military Partnership, Accelerated Commerce & Technology) framework.

- **Key Procurement:** Integration of **MQ-9B Predator drones**, **P-8I Poseidon** aircraft, and discussions for **F-35** fighter jets.
- **Co-production:** Focus on **GE F414 jet engines** in India and the **INDUS-X** initiative which connects defense startups.
- **Interoperability:** Foundational agreements (LEMOA, COMCASA, BECA) are now fully operational, enabling real-time ISR (Intelligence, Surveillance, Reconnaissance) sharing.

B. Technology & Space: The New Frontier

Technology is now the "defining" pillar of the relationship.

- **The TRUST Initiative:** Rebranded from iCET, focusing on **Semiconductors, AI Infrastructure**, and **Quantum Computing**.
- **Space Collaboration:NISAR Mission:** The NASA-ISRO Synthetic Aperture Radar (NISAR) satellite was successfully launched in July 2025 to map Earth's changes.
  - **Gaganyaan & ISS:** NASA is facilitating the training and transport of Indian "Gaganyatris" (Group Capt. Shubhanshu Shukla) to the International Space Station (ISS) via the Axiom-4 mission.

C. Geopolitical Interests: The Indo-Pacific & Global Order

- **The Quad:** Continued commitment to a "Free and Open Indo-Pacific" to counter China's maritime assertiveness.
- **Middle East & I2U2:** Collaboration in the Middle East via the I2U2 group (India, Israel, UAE, US) for food security and energy.
- **Strategic Autonomy:** India maintains its "neutral" stance on the Russia-Ukraine conflict, which remains a primary point of friction with Washington.

D. People-to-People & Business

- **The Diaspora:** 4.5 million Indian-Americans act as a "living bridge," influencing U.S. policy through the "Samosa Caucus."
- **Tourism & Culture:** The U.S. remains a top destination for Indian students and tourists, though **H-1B visa caps** and deportation debates continue to create anxiety.
- **Investment:** Massive investments by Apple, Micron (Semiconductors), and Microsoft ($17.5 Billion in 2025) underline the **"China+1" strategy.**

Geopolitical Significance for India:

1. Strategic Centrality: The "Net Security Provider"

India's role in the **Indian Ocean Region (IOR)** and the broader **Indo-Pacific** is the cornerstone of its geopolitical importance.

- **MAHASAGAR Doctrine (2025):** Launched in March 2025, this extends the earlier SAGAR vision to the entire Global South, including Africa and the Pacific Islands. It positions India as a "steward of the ocean commons."

- **Maritime Leadership:** As the **IORA Chair (2025–27)**, India is the lead responder for Disaster Relief (HADR), counter-piracy, and maintaining sea lines of communication (SLOCs) through which 90% of its trade and the world's energy pass.
- **The "China+1" Strategy:** Geopolitically, India is viewed as the primary alternative to China for global supply chain resilience, reinforced by initiatives like the **Indo-Pacific Economic Framework (IPEF)**.

2. The India-US Geopolitical "Stress Test" (2025)

- **The Tariff Crisis:** In August 2025, the U.S. imposed **50% tariffs** on Indian goods, citing India's purchase of Russian oil and its rejection of U.S. mediation offers during the May 2025 India-Pakistan border tensions.
- **Strategic Autonomy under Fire:** India's refusal to "pick sides" in the Russia-Ukraine conflict or the Israel-Gaza crisis has created a "values-gap" with Washington. However, India argues that its oil purchases stabilize global energy markets—a view previously supported by U.S. officials like Janet Yellen.
- **Security Safety Net:** Despite trade wars, the **COMPACT** (defense co-production) and **TRUST** (critical tech) initiatives continue, showing that the "strategic logic" of the partnership remains intact due to the shared "China Factor."

3. Voice of the Global South

India has successfully leveraged its capacity to convene 125+ nations through the **Voice of Global South Summits**.

- **Institutional Reform:** India is leading the charge for **UNSC and WTO reforms**, arguing that the current global governance architecture is "passé" and must reflect the demographic realities of India and Africa.
- **Economic Resilience:** On **November 21, 2025**, India enacted four landmark **Labour Codes**, described as the most significant structural reform since 1991. This is a geopolitical move to build "domestic resilience" against external volatility like U.S. tariffs.

CHALLENGES OF US INDIA RELATION:

1. The 2025 Trade & Tariff Crisis

The single most visible challenge today is the collapse of trade predictability.

- **The 50% Tariff Barrier:** Since late August 2025, the U.S. has imposed a combined **50% tariff** on most Indian exports (10% baseline + 15% reciprocal + 25% penalty for Russian oil imports). This has hit labor-intensive sectors like **textiles, gems and jewelry, and auto components** severely.
- **Competitiveness Gap:** Unlike India, competitors like Vietnam and Mexico have managed to maintain lower tariff access to the U.S. market, leading to a loss of market share for Indian exporters.
- **Failure of Trade Deal:** Despite multiple deadline extensions in 2025, a comprehensive trade agreement remains elusive due to disagreements over dairy access, medical device pricing, and India's refusal to cut ties with Russia.

2. Strategic Divergence over Russia and Iran

India's "Strategic Autonomy" is no longer just a diplomatic term; it is a friction point.

- **The Russian Oil "Penalty":** The U.S. has explicitly linked its trade penalties to India's continued imports of discounted Russian crude. This puts India in a bind between its **Energy Security** and its **Trade Security**.
- **Defense Spares and CAATSA:** With 60% of India's military equipment being of Russian origin, the risk of U.S. "secondary sanctions" under **CAATSA** (Countering America's Adversaries Through Sanctions Act) remains a persistent threat to India's operational readiness.
- **Iran & Chabahar:** U.S. sanctions continue to hamper the full operationalization of the **Chabahar Port**, which is India's strategic gateway to Central Asia and a counter to China's Gwadar.

3. The "Pannun" and "Nijjar" Diplomatic Standoff

Issues of sovereignty and intelligence operations have entered the bilateral discourse.

- **Transnational Repression Accusations:** Allegations regarding the attempted assassination of separatist leader Gurpatwant Singh Pannun on U.S. soil have strained the "trust" between intelligence agencies.
- **Values vs. Interests:** This has reignited the debate in Washington on whether India is a "values-based" ally or merely an "interests-based" partner. The U.S. Congress has become increasingly vocal about human rights and "democratic backsliding," adding a layer of political complexity.

4. Technology Alignment vs. Tech Autonomy

While initiatives like **iCET** and **TRUST** promote cooperation, there is a "hidden" conflict over standards.

- **Export Controls:** India still faces hurdles in accessing high-end dual-use technology due to the U.S.'s strict **ITAR (International Traffic in Arms Regulations)**.
- **Data Sovereignty:** Disagreements over **Data Localization** laws in India and the U.S.'s demand for "unfettered data flow" continue to stall cooperation in the digital economy and AI.

5. Transactionalism in the "Trump 2.0" Era

The U.S. National Security Strategy (NSS) 2025 has signaled a shift toward **Unilateralism**.

- **Burden Sharing:** The U.S. expects India to act like a "treaty ally" (e.g., naval activism in the South China Sea) without providing the security guarantees or market access typically given to allies.
- **Personalized Diplomacy:** The relationship has become highly dependent on the personal chemistry between leaders (Modi and Trump), making it vulnerable to sudden policy shifts via "Executive Orders" rather than stable institutional agreements.

Way Forwards

1. Immediate: Breaking the Trade Deadlock

The priority is to convert the **50% tariff crisis** into a predictable framework.

- **Finalizing the Framework Deal:** As per recent Commerce Ministry statements, India should aim to conclude the **"first tranche" of the Bilateral Trade Agreement (BTA)** by the end of 2025. This involves offering concessions on US farm goods (corn, soybean, dairy) in exchange for the removal of the 25% "Russian oil penalty" tariffs.
- **Preferential Trade Agreement (PTA) as a Bridge:** Since a full Free Trade Agreement (FTA) is time-consuming, a **WTO-compatible PTA** should be the fast-track vehicle to secure Indian supply chains (textiles, auto parts) in the US market.

2. Strategic: Strengthening "Trusted Ecosystems"

India must position itself as the indispensable **"De-Sinicization Partner"** for the US.

- **Operationalizing COMPACT & TRUST:** Moving the **COMPACT** (defense) and **TRUST** (tech) initiatives from joint statements to ground-level manufacturing. This includes the successful co-production of **GE F414 engines** and the launch of the **INDUS Innovation bridge** for space and AI.
- **Strategic Petroleum Reserves:** Expanding the 2025 arrangement for shared strategic oil reserves can mitigate US concerns over India's reliance on Russian energy.

3. Diplomatic: Managing "Strategic Autonomy"

India needs to redefine its "multi-alignment" as a stabilizing force rather than a hedge.

- **The "Bridge Power" Role:** India can leverage its relationship with both the US and Russia to act as a **peace facilitator** in the Ukraine conflict, a role President Trump has recently signaled interest in.
- **Institutionalizing Bipartisanship:** India must engage with both the US Executive and Congress to ensure that defense designations like **STA-1 (Strategic Trade Authorization)** and the **Major Defense Partner** status are protected from seasonal trade disputes.

4. Economic: Building Domestic Resilience

Geopolitical significance is only as strong as the domestic economy.

- **Labour & Land Reforms:** Successfully implementing the **2025 Labour Codes** is the internal "way forward." It signals to US investors (like Apple and Micron) that India is a competitive and stable alternative manufacturing hub.
- **The "Samosa Caucus" Leverage:** Utilizing the 4.5 million-strong Indian diaspora to lobby for **visa stability (H-1B)** and to frame Indian immigration as a "merit-based asset" rather than a security loophole.

Conclusion

The India-US relationship in 2025 is no longer about "overcoming the hesitations of history," but about **"managing the frictions of proximity."** To move forward, both nations must decouple their strategic/defense convergence from their tactical/trade divergence.

Q. *"The India–US relationship has successfully transitioned from 'estranged democracies' to 'indispensable strategic partners.' However, India's pursuit of strategic autonomy and its legacy ties with Russia continue to act as a litmus test for this partnership. Discuss."*

2.2.8. PAX SILICA: INDIA'S QUEST FOR SEMICONDUCTOR SOVEREIGNTY

Context: India officially launched its first indigenously designed **1.0 GHz, 64-bit dual-core microprocessor DHRUV64 Microprocessor** developed by **C-DAC** under the Microprocessor Development Programme (MDP), it is based on the open-source **RISC-V architecture**.

Significance of the Industry

1. Economic Significance: The "Multiplier" Effect

- **Engine of Digital Economy:** Semiconductors power the $1 trillion digital economy goal. They are the core components of the electronics manufacturing sector, which is projected to reach **$300 billion by 2026**.

- **Employment Generation:** The industry is a massive job creator. Beyond high-end design engineers, the setting up of Fabs and OSAT units (Assembly & Testing) creates a huge demand for **"gray-collar"** technicians.
- Context: India is projected to require **3 lakh semiconductor professionals by 2027**.
- **Correcting Trade Imbalances:** Currently, India imports nearly 100% of its chips, with a massive bill estimated to hit **$100 billion by 2025-26**. Domestic production is vital to reduce this foreign exchange outflow.

2. Strategic and National Security Significance

- **Technological Sovereignty:** In an era of "Cyber Warfare," hardware-level security is paramount. Using indigenous chips like the **DHRUV64** or **Vikram-3201** ensures that critical infrastructure (Power grids, Telecom, Defense) is free from foreign "backdoors" or kill-switches.
- **Trusted Supply Chains:** The "China Plus One" strategy and the recent **Pax Silica** initiative highlight the shift toward "friend-shoring." India is positioning itself as a **Trusted Value Chain Partner** for the West, reducing reliance on geographically concentrated hubs like Taiwan.
- **Defense & Space:** Modern warfare relies on "Smart" munitions, UAVs, and satellite communication—all of which require specialized, radiation-hardened, and high-performance semiconductors.

3. Technological & Industrial Growth

- **Foundation for Industry 4.0:** Technologies like **AI, 6G, Internet of Things (IoT), and Quantum Computing** are physically impossible without advanced semiconductor nodes.
- **Clean Energy & EVs:** Semiconductors are the "brain" of Electric Vehicles (managing battery systems) and Solar Inverters. India's **Net Zero 2070** goal is directly tied to a stable chip supply for the green energy transition.
- **The RISC-V Revolution:** By adopting open-source architectures (like in the **DHRUV64**), India is breaking the monopoly of global giants (Intel/ARM), allowing domestic startups to innovate without heavy licensing fees.

India's Current Position

In 2025, India's position in the semiconductor industry has shifted from being a **"Design Back-office"** to an **"Emerging Manufacturing Hub."**

1. The Numbers: Market and Scale

- **Market Size:** Valued at **$45–50 billion in 2024-25**, it is one of the fastest-growing markets globally, projected to hit **$110 billion by 2030**.
- **Global Talent Share:** India contributes **20% of the world's chip design talent**. Over 125,000 Indian engineers are currently working on global "tape-outs" (final designs) for companies like Intel, NVIDIA, and Qualcomm.
- **Consumption:** India accounts for nearly **10% of real global semiconductor consumption**, largely driven by the mobile, automotive, and industrial sectors.

2. The Manufacturing Landscape (ISM 1.0)

As of late 2025, the **India Semiconductor Mission (ISM)** has grounded **10 major projects** with a cumulative investment of **₹1.6 lakh crore**.

a. **Mega Fabs- Tata-PSMC (Dholera, Gujarat)**: ₹91,000 Cr plant.

b. **Packaging (OSAT/ATMP)- Tata-PSMC (Dholera, Gujarat)**: ₹91,000 Cr plant.

c. **Packaging (OSAT/ATMP)- Micron (Sanand)**; **Tata (Assam)**; **CG Semi (Gujarat)**.

d. **Indigenous Processors- DHRUV64** (C-DAC); **Shakti** (IIT-Madras).

e. **New Frontiers- HCL-Foxconn JV** (UP); **3D Glass Solutions** (Odisha).

3. Technological Standing

- **From 28nm to 3nm:** While manufacturing is currently focused on **28nm to 90nm nodes** (perfect for EVs and 5G), India inaugurated its first **3-nanometer (3nm) design centers** in Noida and Bengaluru in May 2025.
- **Compound Semiconductors:** India is making a strategic shift into **Silicon Carbide (SiC)** and **Gallium Nitride (GaN)**, which are essential for high-efficiency power electronics in Electric Vehicles.

4. Strategic Position: "The Trusted Partner"

India is leveraging the **Pax Silica** (a period of semiconductor-driven peace/alliance) to position itself as a reliable alternative to China.

- **Global Alliances:** India has signed critical MoUs with the **USA (iCET)**, **Japan**, **Singapore**, and the **EU** to build a resilient, non-China-centric supply chain.
- **Sovereignty:** By developing the **RISC-V (DHRUV)** architecture, India is reducing its reliance on proprietary foreign IP (like ARM or Intel), ensuring "Hardware Sovereignty."

5. Summary of India's Current Tier

India currently sits in the **"High Design, Emerging Fab"** tier. We are the world's leading "Brain-shop" for chips and are on track to become one of the **Top 5 Global Manufacturing Destinations** by 2030.

Challenges

1. Capital Intensity and Long Gestation Periods

Semiconductor fabrication is one of the most expensive industries globally. A single state-of-the-art "Mega Fab" can cost between **$10 billion and $20 billion**.

- **The Fiscal Burden:** Despite the **₹76,000 crore** allocation under ISM 1.0, the government must sustain high subsidies (up to 50% of project costs) over decades, not just years.
- **Economic Risk:** These plants have long gestation periods (3–5 years) and are subject to the industry's notorious **cyclicality** (periods of "chip gluts" followed by "chip shortages").

2. Critical Infrastructure: The "Zero-Error" Requirement

Fabs require a level of infrastructure reliability that is unprecedented in India:

- **Uninterrupted Power:** A power fluctuation lasting even a **few milliseconds** can ruin an entire batch of thousands of wafers, costing millions of dollars. As of 2025, ensuring "Gold Standard" power stability at sites like Dholera remains a top engineering challenge.
- **Ultra-Pure Water (UPW):** A single large fab can consume **5–10 million gallons of water daily**. This water must be thousands of times purer than drinking water (UPW acts as an industrial solvent). In water-stressed regions like Gujarat, sourcing and recycling this volume is a significant ecological and logistical task.

3. The Talent Gap: Moving Beyond Design

While India has 20% of the world's chip design engineers, it lacks fabrication specialists.

- **The Numbers:** Projections for 2027 indicate a shortfall of **250,000 to 350,000 skilled workers** across the value chain, specifically in process engineering and cleanroom operations.
- **"Brain Drain" 2.0:** High-end Indian talent often migrates to established hubs like Taiwan (TSMC) or the USA (Intel) due to better research ecosystems and pay.

4. Supply Chain and Raw Material Vulnerability

India currently lacks the "upstream" ecosystem of chemicals, gases, and minerals.

- **Critical Minerals:** India is heavily dependent on imports for **Silicon wafers, High-purity Neon, Gallium, and Germanium**. Geopolitical tensions (e.g., Russia-Ukraine for Neon, China for Gallium) make the supply chain fragile.
- **Specialty Chemicals:** The industry requires roughly 500 different specialty chemicals and gases, most of which are currently not manufactured to "semiconductor grade" in India.

5. Environmental and Sustainability Concerns

The "clean" image of microchips hides a "dirty" manufacturing process:

- **Hazardous Waste:** Fabrication involves toxic materials like arsenic, antimony, and phosphorus. Managing the disposal of these hazardous effluents without damaging local groundwater is a major regulatory challenge.
- **Carbon Footprint:** Fabs are "power-hungry" (consuming as much electricity as a small city). Aligning this with India's **Net Zero 2070** goals requires a rapid shift to renewable baseload power, such as **Small Modular Reactors (SMRs)** or dedicated solar-wind hybrid plants.

Government Initiatives

The Government of India has adopted a **"Plug-and-Play"** policy approach to create a globally competitive semiconductor ecosystem. By 2025, the focus has shifted from merely attracting investment (ISM 1.0) to building a sustainable, end-to-end supply chain (ISM 2.0).

1. India Semiconductor Mission (ISM 2.0)

Following the success of the initial ₹76,000 crore outlay, the government recently expanded the mission with a **new $15–20 billion (approx. ₹1.3–1.7 lakh crore) phase**.

Expanded Scope: Unlike the first phase which focused on large fabs, ISM 2.0 includes incentives for **raw material suppliers, specialty chemical manufacturers, and capital equipment makers**.

Modernization of SCL Mohali: A dedicated investment of **₹4,500 crore** has been cleared to transform the government-run Semiconductor Laboratory into a high-volume R&D and commercial production center, ensuring it remains a public strategic asset.

2. Fiscal & Production Incentives

Modified Semicon India Programme: The government provides **50% fiscal support** on a pari-passu (equal footing) basis for setting up Silicon Fabs, Display Fabs, and ATMP/OSAT facilities.

Design Linked Incentive (DLI) Scheme: To foster domestic Intellectual Property (IP), this scheme offers up to **₹15 crore per application** and deployment-linked incentives of **4% to 6% on net sales** for five years.

Recent Update: As of late 2025, over **23 chip design startups** have been approved, including those working on AI chips and 5G IoT modules.

Electronics Component Manufacturing Scheme (ECMS): Launched in early 2025 with a budget of **₹22,919 crore**, it aims to increase domestic value addition from 5% to 20% by incentivizing the production of sub-components like resistors and multi-layer PCBs.

3. Talent and Skilling: "Chips to Startup" (C2S)

To address the workforce challenge, the government is implementing a multi-tiered skilling strategy:

Academic Integration: Providing industry-grade **Electronic Design Automation (EDA) tools** to nearly **400 universities** across India.

Global Partnerships: Collaborations with firms like **Lam Research** aim to train **60,000 engineers** in nanofabrication and process engineering over the next decade.

4. Strategic Infrastructure: The IndiaAI Mission

The **₹10,372 crore IndiaAI Mission** complements the semiconductor push by creating a massive demand for high-performance computing.

It aims to establish a computing capacity of over **10,000 GPUs** (Graphics Processing Units), which will eventually be powered by indigenous 64-bit processors like **DHRUV**.

Way Forward

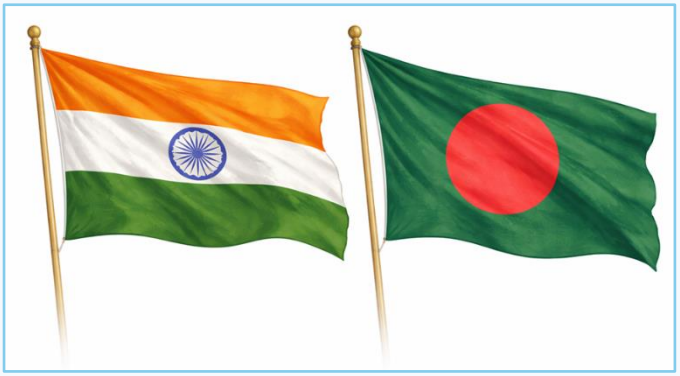
1. **Move Up the Value Chain:** India should transition from mature nodes (28nm) to **leading-edge nodes (3nm/2nm)**. The recent inauguration of 3nm design centers in 2025 is a step in the right direction, but this must be coupled with high-end fabrication capabilities to support AI and Supercomputing.
2. **Strengthen the "Upstream" Ecosystem:** Focus must shift toward the **Materials and Equipment** pillars. Incentivizing the domestic production of semiconductor-grade chemicals, specialty gases (like Neon and Helium), and silicon wafers will reduce the "Import Dependency Trap."
3. **Infrastructure "Gold Standard":** Developing dedicated **Semiconductor Clusters** with plug-and-play infrastructure is vital. This includes guaranteed 99.99% power stability and massive-scale Water Treatment Plants (WTP) to provide the Ultra-Pure Water (UPW) required for zero-defect manufacturing.
4. **Deep-Tech Research & IP Creation:** Rather than just being a "Foundry" for others, India must own the Intellectual Property. Doubling down on the **RISC-V (DIR-V)** program will allow Indian startups to create customized chips for local needs in EVs, Agriculture (IoT), and Strategic Defense without paying heavy foreign royalties.
5. **Global Supply Chain Diplomacy:** Leveraging the **"China Plus One"** sentiment, India should deepen partnerships with **Quad** nations and **Singapore**. Establishing a "Common Component Pool" or a "Mineral Bank" with friendly nations can safeguard against global supply shocks.

Conclusion

India's semiconductor journey is no longer just about meeting domestic demand; it is about becoming a **"Trusted Partner"** in the global value chain.

Q. *India aims to become a semiconductor manufacturing hub. What are the challenges faced by the semiconductor industry in India? Mention the salient features of the India Semiconductor Mission.*

2.2.9. INDIA-BANGLADESH RELATIONS: STRATEGIC PARTNERSHIP AT A CROSSROADS



Context: The death of the Inqilab Mancha leader Hadi on December 18, 2025, triggered mob attacks on Indian missions and liberal media & on the other hand India on Sunday described the killing of a Hindu youth in Bangladesh as a "horrendous act", and expressed "strong concern" about the safety of minority communities in the neighbouring country.

Historical Background: The Foundation of Ties

1. The 1971 Liberation War (The Genesis)

- **Birth of a Nation:** The relationship was forged in blood during the 1971 war. India provided sanctuary to nearly **10 million refugees** and extended diplomatic and military support to the **Mukti Bahini** against West Pakistani atrocities (Operation Searchlight).
- **Decisive Intervention:** India's military intervention led to the surrender of 93,000 Pakistani troops and the creation of Bangladesh. India was the **first country** to recognize Bangladesh as a sovereign state (Dec 6, 1971).
- **Maitri Diwas:** To honor this shared history, December 16 is celebrated as **Vijay Diwas** in India, and both nations commemorate December 6 as **Maitri Diwas**.

2. The Era of Foundation (1972–1975)

- **Indira-Mujib Treaty (1972):** A 25-year **Treaty of Peace and Friendship** was signed, laying the ground for cooperation in trade, flood control, and security.
- **Land Boundary Agreement (1974):** The foundational document intended to resolve complex border issues and enclaves (Chitmahals) left behind by the flawed 1947 Radcliffe line.

3. Period of Strategic Ambivalence (1975–2008)

- **Post-Mujib Era:** The assassination of Sheikh Mujibur Rahman in 1975 led to a series of military regimes. Ties became strained as Bangladesh moved toward a more "pro-Pakistan" or "Islamist" tilt, and insurgent groups from India's Northeast found safe havens in Bangladesh.
- **The Farakka Barrage Issue:** Disagreements over the sharing of Ganga waters peaked during this time, though the **Ganga Water Treaty (1996)** under the I.K. Gujral doctrine eventually provided a 30-year roadmap.

4. The "Sonali Adhyay" or Golden Phase (2009–August 2024)

- **Security Decoupling:** Under the Awami League government, Bangladesh adopted a "zero-tolerance" policy toward anti-India insurgents (e.g., handing over ULFA leaders), which fundamentally transformed India's internal security in the Northeast.

- **LBA Ratification (2015):** The **100th Constitutional Amendment Act** in India finally ratified the 1974 Land Boundary Agreement, leading to a historic exchange of 162 enclaves and resolving a 41-year-old border dispute.
- **Connectivity Revolution:** Revival of pre-1965 rail links and the opening of transit/transshipment routes (**Chittagong and Mongla ports**) turned Bangladesh into India's "Connectivity Gateway" to the East.

5. Recent Context (2024–2025)

The relationship has entered a "Reset Phase" following the **August 2024 student-led uprising** and the fall of the Sheikh Hasina government.

- **Interim Government:** India is now engaging with the Interim Government led by **Nobel Laureate Muhammad Yunus**.
- **BIMSTEC Summit (April 2025):** The first high-level meeting between PM Modi and Chief Adviser Yunus in Bangkok signaled a pragmatic shift toward maintaining stability.
- **Diplomatic Sensitivity:** The presence of Sheikh Hasina in India remains a friction point, with Dhaka seeking her extradition and New Delhi citing "humanitarian tradition."

Strategic Significance of India-Bangladesh Relations

1. Security: The "Northeast Stabilizer"

- **Neutralizing Insurgency:** For over a decade, Bangladesh's "Zero Tolerance" policy towards anti-India insurgents (ULFA, NSCN-K) provided a security dividend for India's Northeast.
- **The "Seven Sisters" Threat (2025 Context):** Recent rhetoric from certain political groups in Dhaka (e.g., the National Citizen Party) threatening to shelter Northeast separatists underscores why a friendly Bangladesh is vital to prevent a revival of insurgency in the **"Seven Sisters."**
- **Chicken's Neck Vulnerability:** The **Siliguri Corridor** is only 22 km wide at its narrowest point. Strategic depth provided by Bangladesh is essential to secure this "Achilles' heel" from potential encirclement by hostile powers.

2. Geopolitical: The "Counter-China" Buffer

- **String of Pearls:** Bangladesh is a key theatre in the Indo-Pacific. India's recent win in gaining **operational rights for the Mongla Port terminal** (2024-25) is a significant move to counter Chinese maritime influence in the Bay of Bengal.
- **Neighborhood First vs. BRI:** Bangladesh is a major participant in China's Belt and Road Initiative. India's significance lies in offering an alternative based on **connectivity and capacity building** (like the $8bn Line of Credit) rather than debt-heavy infrastructure.

3. Connectivity: Gateway to the "Act East" Policy

- **The "Connectivity Hub":** Bangladesh is not just a neighbor but a **bridge to Southeast Asia**.
- **Transit and Transshipment:** By allowing Indian cargo to move from Kolkata to the Northeast via **Chattogram and Mongla ports**, Bangladesh reduces travel distance by over 60% (from 1,600 km via the "Chicken's Neck" to just 500 km).
- **BIMSTEC & BBIN:** Bangladesh is the literal geographic center of the **Bay of Bengal Initiative (BIMSTEC)**, making it indispensable for any regional integration aimed at bypassing a dysfunctional SAARC.

4. Economic: Trade and Resource Security

- **Trade Pillar:** Bangladesh is India's **largest trading partner in South Asia** (trade ~ $13-14 billion in 2024-25).
- **Energy Integration:** India supplies over **1,160 MW** of power to Bangladesh. The **India-Bangladesh Friendship Pipeline** (diesel) and grid connectivity are blueprints for the **"One Sun One World One Grid" (OSOWOG)** vision.
- **Medical and Education Tourism:** Bangladeshis account for over **35% of India's medical tourists**, contributing significantly to India's service sector economy.

5. Civilizational & Environmental Significance

- **Linguistic Bond:** The shared Bengali heritage (Tagore and Nazrul) is India's strongest **Soft Power** asset.
- **Ecological Interdependence:** Both nations share the **Sundarbans** (the world's largest mangrove forest) and 54 rivers. Cooperation is vital for climate resilience and disaster management in the face of rising sea levels.

Areas of Cooperation: The "Pillars of Partnership"

1. Economic & Trade Integration

- **Largest Regional Partner:** Bangladesh remains India's **largest trading partner in South Asia**, with bilateral trade crossing **$13 billion** in FY 2024-25.
- **CEPA Negotiations:** Both nations are fast-tracking the **Comprehensive Economic Partnership Agreement (CEPA)** to ensure duty-free access continues even after Bangladesh graduates from the 'Least Developed Country' (LDC) status in 2026.
- **Settlement in INR:** To reduce dependence on the US Dollar and ease the forex crisis in Dhaka, trade settlements in **Indian Rupees (INR)** have gained momentum.

2. Connectivity: The "Northeast Gateway"

- **Multimodal Infrastructure:** * **Railways:** 5 out of 6 pre-1965 rail links are now operational. The **Akhaura-Agartala** link (operational 2024) has reduced travel time between Agartala and Kolkata from 31 hours to just 10 hours.
- **Waterways:** The **Protocol on Inland Water Transit and Trade (PIWTT)** allows Indian goods to reach the Northeast via Bangladeshi rivers.
- **Port Access:** India's recent acquisition of **terminal operations at Mongla Port** (2024) is a strategic masterstroke to secure maritime logistics in the Bay of Bengal.
- **BBIN MVA:** Active cooperation under the **Bhutan-Bangladesh-India-Nepal** Motor Vehicles Agreement to create a seamless South Asian transport corridor.

3. Energy & Power Synergy

- **"Energy Security Anchor":** Bangladesh currently imports over **1,160 MW** of power from India via cross-border grids.
- **Friendship Pipeline (IBFP):** The 131-km pipeline (Siliguri to Parbatipur) now supplies **1 million metric tonnes** of high-speed diesel annually to northern Bangladesh at a significantly lower cost.
- **Maitree Thermal Power Plant:** The 1320 MW joint venture in Rampal became a critical component of Bangladesh's national grid in 2024-25.

- **Nuclear & Clean Energy:** India is assisting in the construction of the **Rooppur Nuclear Power Plant** (via technical support) and exploring tripartite power trade involving **Nepal's hydropower**.

4. Defense & Security Cooperation

- **Joint Military Exercises:** Annual exercises like **SAMPRITI** (Army) and **BONGOSAGAR** (Navy) continue to enhance interoperability.
- **Defense Credit:** India has extended a **$500 million Line of Credit (LoC)** specifically for defense procurement, aimed at helping Bangladesh modernize its forces with Indian hardware (e.g., radars, patrolling vessels).
- **Counter-Terrorism:** Robust intelligence sharing persists to tackle radicalization and cross-border insurgent groups like the Kuki-Chin National Front (KNF).

5. Science, Space & Technology

- **Space Partnership:** ISRO and the Bangladesh Space Research and Remote Sensing Organization (SPARRSO) are collaborating on the **joint development of a small satellite** for Bangladesh.
- **Digital Public Infrastructure (DPI):** India is sharing its "India Stack" (UPI, CoWin, etc.) to help Bangladesh digitize its public service delivery.

6. People-to-People & Medical Tourism

- **The "Medical Bridge":** Over **35% of all foreign medical tourists** in India are from Bangladesh. In 2025, India introduced a "Simplified E-Medical Visa" for Bangladeshi citizens.
- **Scholarships:** The **Muktijoddha Scholarship** scheme and ICCR grants support thousands of Bangladeshi students in Indian universities.

Key Challenges in India-Bangladesh Relations

1. Political Transition and "Regime Change" Friction

- **The "Hasina Factor":** The presence of ousted PM Sheikh Hasina in India remains the biggest diplomatic hurdle. Dhaka has formally sought her **extradition** (following a death sentence in absentia in Nov 2025), while New Delhi maintains its stance based on "humanitarian tradition."
- **Generational Shift:** A "generational discontinuity" is visible. The new youth-led nationalism in Bangladesh often views India's past support for the Awami League as interference in their domestic sovereignty.

2. Security & Radicalization Concerns

- **Resurgence of Extremism:** Since the August 2024 uprising, groups like **Jamaat-e-Islami** (reinstated) and **Inqilab Mancha** have gained political space. The looting of over **5,800 weapons** from police stations during the unrest has created a "security vacuum" that extremist elements are exploiting.
- **Northeast Vulnerability:** Provocative rhetoric from new political actors (like the National Citizen Party) suggesting refuge for Northeast Indian separatists poses a direct threat to the stability of India's **"Seven Sisters."**

3. Minority Safety and Human Rights

- **Attacks on Hindus:** Persistent reports of violence against the Hindu minority in Bangladesh post-regime change have led to severe diplomatic friction. India has summoned the Bangladeshi envoy multiple times in late 2025 to express "grave concern" over these targeted attacks.

- **The "Hadi Murder" Fallout:** The killing of youth leader **Sharif Osman Hadi** in December 2025 triggered a fresh wave of anti-India sentiment in Dhaka, based on unverified rumors that the perpetrators fled to India.

4. Water Diplomacy & The 2026 Deadline

- **Ganga Water Treaty (1996):** This landmark treaty is set to expire in **December 2026**. While technical talks were held in March 2025, a final agreement is stalled due to the lack of high-level political trust.
- **Teesta Deadlock:** The Teesta River water-sharing remains unresolved. The potential involvement of **China** in the "Teesta River Management Project" is a major strategic "red line" for India.

5. The China-Pakistan "Strategic Prowess"

- **Strategic Realignment:** Under the Interim Government, Dhaka has shown an increased "warmth" toward **Beijing and Islamabad**.
- **Infrastructure Encroachment:** China's **$370 million expansion of Mongla Port** (March 2025) and its role in developing the **Lalmonirhat airbase** are seen as attempts to shrink India's strategic space.

Way Forward: Navigating the "New Normal"

1. Diversifying Political Engagement

- **Beyond the Awami League:** India must move away from the perception of being "all-in" with one party. The way forward involves building formal and informal channels with the **Interim Government (Muhammad Yunus)**, the **BNP**, and even emerging student-led parties like the **National Citizen Party (NCP)**.
- **Engaging the "Gen-Z" Protesters:** Indian diplomacy should focus on the youth who led the 2024 revolution. Initiatives like the **"India-Bangladesh Youth Dialogue 2026"** and targeted tech-internships can help bridge the current trust deficit.

2. Proactive Water and Climate Diplomacy

- **The 2026 Deadline:** The **Ganga Water Treaty expires in December 2026**. India should propose a renewal based on **real-time hydrological data** and "Ecological Flow" rather than fixed 10-day cycles. This shows India's sensitivity to Bangladesh's climate vulnerability.
- **Teesta Management:** India must find a middle ground with West Bengal to finalize a water-sharing framework, preventing Dhaka from turning to China for the $1 billion Teesta River Management Project.

3. Institutionalizing Security Cooperation

- **Mechanism Reset:** While high-level trust is low, technical-level cooperation between the **BSF and Border Guard Bangladesh (BGB)** must remain insulated from politics.
- **Joint Investigation:** In the wake of recent violence (e.g., the **Sharif Osman Hadi case**), India and Bangladesh should establish a **Joint Fact-Finding Commission** to debunk social media rumors and prevent "mob-driven" diplomacy.

4. Leveraging Digital Public Infrastructure (DPI)

- **The "India Stack" as Soft Power:** India can assist the Interim Government in stabilizing the economy by exporting its **Digital Public Infrastructure (DPI)**.

- **Direct Benefit Transfer (DBT):** To help Dhaka reduce corruption in welfare.
- **UPI-Style Payments:** To facilitate remittances and formalize the economy, countering the ongoing forex crisis.

5. "Neighborhood First" 2.0: Border Management

- **Zero Killings Policy:** To counter anti-India sentiment, India must strictly implement "non-lethal" border management. Turning the 4,096 km border from a "security fence" into an **"Economic Corridor"** with more **Border Haats** (local markets) is the long-term solution.
- **Completing Lines of Credit (LoC):** Swiftly finishing the $8 billion worth of pending infrastructure projects to prove that India is a "delivery partner" and not just a "promise partner."

Conclusion

The way forward for India-Bangladesh relations lies in recognizing that **geography is destiny.** While political regimes change, the shared 54 rivers and the 4,096 km border remain constant. India's success will depend on its ability to respect Bangladesh's **new-found domestic sovereignty** while demonstrating that it remains the most reliable partner for Bangladesh's **economic graduation in 2026**."

Q. *The post-2024 political transition in Bangladesh marks a shift from legacy-based diplomacy to a period of 'strategic recalibration' for India. Critically analyze the emerging challenges to India's 'Neighborhood First' policy and suggest a pragmatic roadmap for future engagement.*

2.2.10. INDIA AFRICA ECONOMIC PARTNERSHIP

Context: India–Africa economic partnership today represents one of the most dynamic South–South growth corridors, crucial for India's Global South diplomacy and Africa's development agenda. **20th CII India-Africa Business Conclave (August 2025)** highlights India's strategic push to double bilateral trade to **$200 billion by 2030**, leveraging the **African Continental Free Trade Area (AfCFTA)** and the **African Union's entry into the G20** to deepen economic, digital, and energy partnerships.

Significance of India-Africa Relationship

The significance of the India-Africa economic relationship transcends mere trade figures. It represents a strategic pillar for India's global ambitions, energy security, and its identity as the **"Voice of the Global South."**

1. Strategic and Geopolitical Significance

- **Global South Leadership:** By championing the **African Union's (AU) permanent membership in the G20** (2023), India has cemented its role as a bridge between the developed world and emerging economies.

- **Reforming Multilateralism:** Africa's 54 votes are crucial for India's bid for a permanent seat on the **UN Security Council** and for advocating reforms in the WTO and IMF.
- **Maritime Security (SAGAR Vision):** Africa's eastern seaboard is vital for the security of the Western Indian Ocean. Initiatives like **AIKEYME 2025** (Africa-India Key Maritime Engagement) focus on anti-piracy and securing Sea Lines of Communication (SLOCs).

2. Energy and Resource Security

- **Critical Minerals for Green Transition:** Africa holds **30% of global mineral reserves**. India is actively securing "Critical Mineral Partnership Agreements" for **Lithium, Cobalt (DRC/Zambia), and Manganese**, which are essential for India's EV and semiconductor missions.
- **Hydrocarbon Security:** Africa provides nearly **15-20% of India's crude oil** imports (Nigeria, Angola), helping diversify supply away from the volatile Middle East.
- **Food Security:** India is investing in African "breadbaskets" (e.g., Ethiopia, Sudan) for pulses and oilseeds to stabilize domestic food inflation.

3. Economic and Demographic Synergy

- **Alternative to China:** Unlike the "Debt Trap" model often associated with other players, India's **"Kampala Principles"** focus on local capacity building, transparency, and "co-development."
- **The AfCFTA Factor:** The **African Continental Free Trade Area** creates a $3.4 trillion unified market. For Indian MSMEs and automobile giants, this provides a massive export frontier as Africa's population is set to reach 2.5 billion by 2050.
- **"Pharmacy of the World":** Indian generics account for roughly **80% of ARVs** used in Africa to fight HIV/AIDS, making India indispensable to African public health.

4. Digital and Technological Partnership

- **Exporting DPI (Digital Public Infrastructure):** Africa is the primary testing ground for the internationalization of the **India Stack**.
- **Financial Inclusion:** UPI-style systems in Ghana and Namibia.
- **Digital Identity:** MOSIP (Aadhaar-based) implementation in Togo and Ethiopia.
- **Bridging the Digital Divide:** Through the **Pan-African e-Network**, India provides low-cost tele-education and tele-medicine, building high-value soft power.

More about Current State of Economic Engagement:

1. Trade Trajectory: The $100 Billion Milestone

- **Total Volume:** In FY 2024-25, bilateral trade officially crossed the **$103 billion** mark, representing a 17% year-on-year growth.
- **Trade Balance:** India currently faces a trade deficit (Exports: ~$45bn; Imports: ~$58bn), primarily due to high-value imports of energy and raw materials.
- **The 2030 Target:** The Government of India has set an ambitious target to reach **$200 billion** in trade by 2030.
- **DFTP Scheme:** India's Duty-Free Tariff Preference (DFTP) scheme now provides non-reciprocal market access to **34 African Least Developed Countries (LDCs)**, covering 98% of tariff lines.

2. Investment: Top-Tier Global Player

- **Cumulative FDI:** India is one of the top five investors in Africa with a cumulative investment of **$75–100 billion**.
- **Focus Sectors:** Investment has matured beyond mining. It is now concentrated in:
- **Telecom:** (e.g., Airtel's $200m+ AI-infrastructure push in Nigeria).
- **Healthcare:** 20% of India's pharma exports go to Africa; Indian firms are now setting up local manufacturing hubs in Egypt and South Africa.
- **Automobiles:** India is the leading supplier of two-wheelers and three-wheelers across the continent.

3. The New Pillars: Digital & Green Energy

- **The Digital Compact:**
- **UPI Expansion:** Namibia and Ghana have integrated UPI-style payment systems in 2024-25.
- **Digital ID:** Togo and Ethiopia are implementing **MOSIP** (India's open-source Aadhaar-style platform).
- **Critical Mineral Diplomacy:** India has signed MoUs with **Zambia and DRC** for the joint exploration of Lithium and Cobalt—essential for India's National E-Mobility Mission.
- **Green Hydrogen:** Joint ventures are emerging in **Namibia and Morocco** to leverage Africa's solar potential for Green Hydrogen production.

4. Development Finance (The Concessional Model)

- **Lines of Credit (LoC):** India has extended over **$12.37 billion** through EXIM Bank, funding 200+ projects in 43 countries.
- **Human Capital:** The **ITEC program** and **ICCR scholarships** have trained over 40,000 African professionals, creating a "Human Bridge" in policy and governance.

Key Challenges in India–Africa Economic Ties

Despite reaching the **$100 billion trade milestone**, the India–Africa relationship faces structural and geopolitical hurdles that prevent it from reaching its full potential.

1. The "China Factor" & High-Volume Competition

- **Scale Gap:** While India–Africa trade is ~$103 billion, China–Africa trade exceeds **$280 billion**. China's state-backed "Belt and Road Initiative" (BRI) allows for massive, high-visibility infrastructure projects (railways, ports, dams) that India's private-sector-led model struggles to match in scale.
- **Resource Dominance:** China has already secured deep equity in African mines (Cobalt in DRC, Lithium in Zimbabwe), making it difficult for Indian firms to secure primary access to critical minerals for the green energy transition.

2. Financial and Implementation Bottlenecks

- **"Strategic Inertia":** There has been a notable gap in high-level institutional engagement; the last **India-Africa Forum Summit (IAFS)** was in 2015. This has led to a perceived loss of diplomatic momentum compared to other players like Russia, Turkey, and the UAE.
- **Line of Credit (LoC) Delays:** Indian-funded projects often suffer from **bureaucratic "red tape"** and slow disbursement processes. On the ground, capacity constraints within African recipient agencies further delay project completion.

- **Trade Imbalance:** India's trade is concentrated in a few commodities (oil, gold) and with a few countries (Nigeria, South Africa, Egypt). Diversifying trade to the other 50+ nations remains a challenge.

3. Political Instability and Security Risks

- **The "Coup Belt":** Since 2020, Africa has seen **9 military coups** (notably in the Sahel region—Mali, Niger, Burkina Faso). This political volatility threatens the safety of Indian investments and the Indian diaspora.
- **Insurgency and Terrorism:** Rising radicalization in the Horn of Africa and the Cabo Delgado region (Mozambique) directly affects Indian energy investments (like the $20 billion LNG project led by ONGC Videsh).

4. Logistics and Connectivity Gaps

- **High Transaction Costs:** A lack of direct shipping lines and limited air connectivity between Indian and African hubs increases the cost of goods.
- **Fragmented Markets:** While the **AfCFTA** aims to create a unified market, the actual implementation is slow. Indian exporters still have to navigate 54 different sets of regulations, standards, and customs duties.

5. Socio-Cultural Challenges

- **Public Perception:** Instances of **discrimination and violence against African students** in India have occasionally strained "soft power" ties. This "perception gap" can negatively impact people-to-people economic exchange.
- **Low Branding:** Unlike China's high-profile stadiums and railways, India's contributions (like tele-education or SME training) are less visible, leading to a "visibility deficit" in the African public eye.

Way forward

The Five-Point Strategy for India-Africa Economic Engagement

1. Trade for Development

- **The Goal:** Transitioning from the $100 billion milestone to a **$200 billion bilateral trade target by 2030**.
- **Action:** Strengthening the **Duty-Free Tariff Preference (DFTP)** scheme for African LDCs and deepening engagement with the **African Continental Free Trade Area (AfCFTA)** to treat Africa as a single, unified market.
- **Shift:** Moving away from being just a commodity importer to exporting high-value engineering goods, refined petroleum, and specialized textiles.

2. Digital Transformation & DPI Export

- **The Goal:** Establishing a **"Digital Corridor"** between India and Africa.
- **Action:** Scaling up the **"India Stack"** (DPI).
- **Financials:** Expanding **UPI** and RuPay systems (already active in Namibia and Ghana).
- **Identity:** Deploying **MOSIP** (Aadhaar-style ID) to formalize economies (e.g., Togo, Ethiopia).
- **Soft Power:** Leveraging the **e-VidyaBharti** and **e-ArogyaBharti** platforms for tele-education and tele-medicine.

3. Energy Transition & Critical Mineral Security

- **The Goal:** Mutual energy security through green and traditional channels.
- **Action:**
- **Green Energy:** Utilizing the **International Solar Alliance (ISA)** and **Global Biofuels Alliance** to help Africa overcome "energy poverty."
- **Critical Minerals:** Securing "Joint Exploration Agreements" for **Lithium, Cobalt, and Copper** (specifically with the DRC, Zambia, and Namibia) to fuel India's EV and semiconductor sectors.

4. Value-Added Manufacturing & MSME Collaboration

- **The Goal:** Moving from "Made in India" to **"Made in Africa with India."**
- **Action:** Supporting African industrialization by setting up manufacturing units locally.
- **MSME Integration:** Promoting joint ventures between Indian and African MSMEs to build resilient supply chains.
- **Pharma:** Setting up generic drug manufacturing hubs in Africa to reduce their import dependency on the West.

5. Capacity Building & Human Capital Multiplier

- **The Goal:** Creating a skilled workforce for the future.
- **Action:**
- **The "Skills Multiplier" Initiative:** A 2025 target to train **one million African trainers** and professionals through ITEC and institutional setups like the **IIT Zanzibar campus**.
- **Institutional Support:** Helping African nations develop data centers, governance frameworks, and agricultural excellence centers.

Conclusion

"The future of India-Africa relations lies in shifting from a **resource-extractive** relationship to a **shared-innovation** model. By treating the African Union as a single economic bloc (AfCFTA) and positioning India as the primary provider of affordable technology and digital goods, India can create a **'South-South'** success story that serves as a credible alternative to traditional Western or Chinese models."

Q. *How does India see its place in the economic space of rising natural resource rich Africa?*

2.2.11. INDIA-RUSSIA RELATION

Context: Russian President Vladimir Putin's visit to India (December 4 and 5) for the **India-Russia Annual Summit** had sparked a great deal of interest across the world, apart from India itself, though for different reasons.

Historical Background: The "Time-Tested" Bond:

- **Early Years (1947–1960s):** Diplomatic ties were established in April 1947. The USSR

provided critical support for India's heavy industrialization (e.g., **Bhilai Steel Plant**).

- **1971 Treaty of Peace, Friendship, and Cooperation:** A watershed moment during the Bangladesh Liberation War. The USSR used its UNSC veto to protect India from Western pressure.
- **Post-Soviet Era (1991–2000):** After the USSR's collapse, relations were re-codified in the **1993 Treaty of Friendship**.

Institutionalization (2000–Present):

A. The Foundation: The 2000 Declaration

In **October 2000**, during Vladimir Putin's first state visit to India, the **"Declaration on the India-Russia Strategic Partnership"** was signed. This was a turning point that:

- **Institutionalized the Relationship:** Established the **Annual Summit** mechanism, where the Indian PM and Russian President meet every year—a level of consistency India shares with very few countries.
- **Broadened the Scope:** Moved beyond just defense to include counter-terrorism, space, and science.
- **Strategic Convergence:** Both nations officially advocated for a **"Multipolar World Order,"** resisting a unipolar world dominated by a single superpower.

B. Elevation to "Special and Privileged" (2010)

During President Putin's 2010 visit, the relationship was upgraded to a **"Special and Privileged Strategic Partnership."**

- **Meaning:** This unique nomenclature signifies a level of trust where Russia provides India with technologies it doesn't share with others (e.g., Akula-class nuclear submarine leases and BrahMos technology).
- **Civil Nuclear Cooperation:** The **"Haripur"** and **"Kudankulam"** agreements cemented Russia as India's most reliable partner in nuclear energy, even as India signed the 123 Agreement with the US.

C. The "Make in India" Pivot (2014–2021)

With the advent of the Modi government and Putin's continued leadership, the defense relationship evolved from a **"Buyer-Seller"** model to **"Joint Research, Development, and Production."**

- **S-400 Deal (2018):** Despite the threat of US sanctions (CAATSA), both leaders moved ahead with the $5 billion deal, signaling India's strategic autonomy.
- **2+2 Dialogue (2021):** The first-ever 2+2 meeting (Foreign and Defense Ministers) was held, bringing Russia on par with India's Quad partners in terms of diplomatic infrastructure.

D. The "Post-Ukraine" Reality (2022–Present)

The recent phase under Putin has been defined by **Economic Realignment** due to Western sanctions.

- **Energy Shift:** Russia became India's largest oil supplier (from <1% to ~40% of imports).
- **23rd Annual Summit (Dec 2025):** Reaffirmed the bond on the **25th Anniversary** of the 2000 Declaration.
- **Vision 2030:** A roadmap to hit **$100 billion in trade**.
- **Connectivity:** Renewed focus on the **Chennai-Vladivostok Corridor** and the **Northern Sea Route (NSR)** in the Arctic.

- **Labor Mobility:** A landmark agreement in 2025 to send skilled Indian workers to Russia to fill labor shortages.

Key Areas of Cooperation:

A. Defence & Security (The Strongest Pillar)

- **Equipment Dependence:** Russia accounts for nearly **60–70%** of India's military inventory.
- **Major Projects:** S-400 Triumf systems, Su-30MKI fighters, T-90 tanks, and **INS Vikramaditya**.
- **Shift to "Make in India":** Transitioning from buyer-seller to joint production.
- **BrahMos Missile:** World's fastest supersonic cruise missile (now being exported to third countries like Philippines).
- **AK-203 Rifles:** Manufactured in Amethi, UP.
- **Joint Exercises: INDRA** (Tri-services) and participation in multilateral drills like **Vostok**.

B. Energy & Nuclear Security

- **Oil & Fertilizers:** In FY 2024-25, Russia remained India's top crude oil supplier (providing over 40% of imports) and a primary source of fertilizers.
- **Civil Nuclear:** The **Kudankulam Nuclear Power Plant (KKNPP)** in Tamil Nadu is the only major nuclear project in India built with foreign collaboration (Units 1-6).
- **Future:** Exploring **Small Modular Reactors (SMRs)** and liquid natural gas (LNG) ties.

C. Economic & Connectivity

- **Trade Target:** Bilateral trade hit a record **$68.7 billion** in FY 2024-25. The new target is **$100 billion by 2030**.
- **Connectivity Corridors:**
- **INSTC (International North-South Transport Corridor):** Reducing time/cost for trade with Eurasia.
- **Chennai-Vladivostok Eastern Maritime Corridor:** Linking India's east coast to the Russian Far East.
- **Northern Sea Route (NSR):** Strategic access to the Arctic.

D. Space & Technology

- **Gaganyaan:** Russia provided training for Indian astronauts (Gaganyatris) and critical life-support components.
- **Cryogenic Engines:** Historical Russian support for ISRO's heavy-lift capabilities.

Emerging Challenges:

1. The "China Factor" & Strategic Divergence

- **The "No-Limits" Partnership:** Russia's deepening economic and military reliance on China (due to Western isolation) is New Delhi's primary concern. India fears Moscow may become a **"Junior Partner"** to Beijing, potentially compromising Russian neutrality in the event of a Sino-Indian border conflict.
- **Indo-Pacific Dissonance:** Russia remains critical of the **"Quad"** (India, US, Japan, Australia), labeling it a Western "bloc-based" approach. India, conversely, views the Quad as essential for a free and open Indo-Pacific—a direct clash in regional maritime visions.

- **Russia-Pakistan Ties:** Moscow's "hedging" strategy includes expanding ties with Islamabad. The **"Druzhba-2025"** joint military exercises and potential energy deals with Pakistan are seen by India as a dilution of its "exclusive" strategic space with Russia.

2. The Economic & Payment Crisis

- **Trade Imbalance:** While bilateral trade hit nearly **$69 billion (FY 2024-25)**, it is highly lopsided. India's imports (mostly oil/fertilizers) dwarf its exports (~$5 billion), leading to a massive **"Rupee Surplus"** in Russian Vostro accounts.
- **The Rupee-Rouble Trap:** Russian exporters are reluctant to hold large amounts of volatile Indian Rupees. Efforts to institutionalize a digital payment corridor or reinvest these funds into Indian infrastructure (e.g., ports/energy) are still in the pilot stages.
- **Eroding "Oil Windfall":** The deep discounts on Russian crude that India enjoyed in 2022-23 have narrowed to just **$2.3 per barrel** (avg. 2024-25), while the diplomatic cost and shipping risks (sanctions on the "Shadow Fleet") remain high.

3. Defense Delays & Diversification

- **The S-400 Timeline:** While four regiments are active, the final delivery of the **S-400 Triumf** has been pushed to **2026** due to the war in Ukraine.
- **Sanctions Pressure (CAATSA):** Despite the strategic "exception" given by the US so far, the threat of sanctions remains a "Sword of Damocles," especially with the 2025 US administration taking a harder line on energy and defense purchases from Moscow.
- **Supply Chain Disruptions:** Russia's focus on its domestic war effort has led to delays in the supply of spare parts for India's Su-30MKI and T-90 fleets, forcing India to accelerate its **"Atmanirbhar"** (self-reliance) and Western diversification efforts.

4. Humanitarian and People-to-People Irritants

- **Recruitment Controversy:** A significant diplomatic friction point emerged in 2024-25 regarding Indian nationals duped by "job agents" and forced into the **Russian military**. As of late 2025, the MEA confirms at least **44 Indians** are still on the front lines despite high-level promises of discharge.
- **Xenophobia Concerns:** Reports of nativist sentiment in Russia following the 2024 Crocus City Hall attacks have raised concerns for the safety of the growing Indian labor and student community.

Way Forward:

1. Economic Diversification & Trade Balance

- **The 300-Product Strategy:** India has identified nearly **300 high-potential Products** (engineering goods, pharmaceuticals, agriculture, and textiles) to narrow the $60 billion trade deficit. The goal is to move beyond the "Oil and Defense" trap.
- **Target 2030:** Accelerating the **$100 billion bilateral trade target**, which PM Modi recently suggested could be achieved even before 2030 through "bottom-up" organic business growth.
- **India-EAEU FTA:** Expediting the **Free Trade Agreement with the Eurasian Economic Union** to provide Indian exporters seamless access to a 180-million-strong market.

2. Financial & Connectivity Architecture

- **Payment Interoperability:** Moving beyond the "Rupee-Rouble" hurdles by integrating the **Unified Payments Interface (UPI)** with Russia's **MIR card** system and linking national financial messaging systems (bypassing SWIFT).

- **Arctic & Maritime Pivot: Northern Sea Route (NSR):** India is positioning itself as a key partner in Arctic shipping and resource extraction.
- **Chennai-Vladivostok Eastern Maritime Corridor:** Operationalizing this will reduce cargo transit time from 40 days to **24 days**, effectively linking India's east coast to the Russian Far East.

3. Evolving the Defense Pillar

- **"Atmanirbhar" Co-production:** Shifting from "Buyer-Seller" to a **"JV-Export"** model. The **BrahMos-II** (hypersonic) and the joint production of **AK-203 rifles** in Amethi serve as blueprints for exporting to third countries in the Global South.
- **Niche Tech Cooperation:** Focusing on **Cyber Defense, AI, and Quantum Computing**. Russia's proposal to supply **AL-41 engines** for the Su-30MKI fleet shows a willingness for deeper tech-transfer.

4. Strategic Balancing & Multipolarity

- **"China-Neutral" Diplomacy:** India must continue to engage Russia to ensure that Moscow's dependence on Beijing does not translate into an anti-India tilt in continental Eurasia.
- **The Global South Bridge:** Leveraging **BRICS (under India's 2026 Chairship)** and the **SCO** to drive a "Reformed Multilateralism" agenda that reflects the interests of the Global South, rather than just Western or Chinese blocs.

5. Energy & Environment

- **Civil Nuclear Expansion:** Following the completion of the **Kudankulam** units (expected by 2027), India is striving to allot a **second site** for Russian VVER-1200 reactors.

Conclusion: The "Dhruv Taara" (Pole Star) of Indian Diplomacy

The India-Russia relationship has transcended the traditional "buyer-seller" dynamic to become a cornerstone of global stability. Prime Minister Narendra Modi, during the **December 2025 Summit** in New Delhi, encapsulated this bond using a powerful celestial metaphor.

Q. *"The India-Russia 'Special and Privileged Strategic Partnership' is currently navigating a period of structural transformation. Analyze the key challenges emerging from the shifting global order and suggest how both nations can recalibrate their ties to ensure long-term sustainability."*

2.2.12. PAKISTAN'S STRATEGIC RE-ENTRY INTO WEST ASIA

Context: The Geopolitical Pivot:

For nearly a decade, Pakistan's relationship with West Asian monarchies (Saudi Arabia, UAE, Qatar) was strained, primarily due to Islamabad's 2015 refusal to join the Yemen war and its perceived tilt toward a Turkey-Qatar-Malaysia axis. However, by late 2025, a significant **diplomatic "Thaw"** has occurred, with Pakistan repositioning itself as a security and economic partner.

Recent Key Developments:

- **Saudi-Pakistan Strategic Mutual Defense Agreement (SMDA):** Signed in September 2025, this pact is a watershed moment. It includes a "NATO-like" clause where any aggression against one is considered an attack on both.
- **Libyan Arms Deal:** In December 2025, Pakistan signed a **$4 billion deal** with the Libyan National Army for JF-17 fighter jets and Super Mushak trainers, marking its entry into the high-end conventional arms export market in the region.
- **Shift from Aid to Investment:** Finance Minister Muhammad Aurangzeb recently announced a pivot away from "aid-seeking" toward **"trade and investment-led partnerships"** with the Gulf nations.
- **Aramco-GO Partnership:** Saudi Aramco acquired a 40% stake in Pakistan's Gas & Oil (GO), signaling deep energy-sector integration.

Reasons for the Re-engagement:

1. Diversification of Security (The "Plan B" Strategy)

- **Declining U.S. Reliability:** Gulf monarchies are increasingly questioning the durability of U.S. security guarantees. This was accelerated after the **Israeli airstrike on Doha (September 9, 2025)**, which targeted Hamas negotiators. The "light rebuke" from the U.S. to Israel rattled the region.
- **The Nuclear Dimension:** As the only nuclear-armed Muslim state, Pakistan provides a unique deterrent. The **Strategic Mutual Defense Agreement (SMDA)** with Saudi Arabia acts as an "extended deterrence" mechanism, signaling to both Washington and Tel Aviv that Riyadh has alternative security pillars.

2. Shift from "Aid to Trade" (Economic Realism)

- **The "Uraan" Strategy:** Pakistan has officially pivoted its foreign policy from seeking grants to seeking investments. Finance Minister Muhammad Aurangzeb (Dec 2025) noted that discussions on a **Free Trade Agreement (FTA) with the GCC** are at an "advanced stage."
- **Gulf Investment in Reko Diq:** Massive investments by Saudi Arabia and Qatar in Pakistan's mining (Copper/Gold) and energy sectors have turned Pakistan into a stakeholder for Gulf economic success, rather than just a "charity case."

3. Pakistan's Evolving Military Diplomacy

- **Field Marshal Asim Munir's Outreach:** The elevation of General Asim Munir to **Field Marshal** and his frequent visits to Riyadh, Washington, and Benghazi (Libya) have institutionalized Pakistan's military as a reliable, professional partner for regional stability.
- **Middle Power Pragmatism:** Pakistan is positioning itself as a provider of "professional military expertise without great-power baggage." This is evident in the recent **Pakistan-Libya defense ties (Dec 2025)** focused on training and counterterrorism.

4. Role as a Mediator & Regional Hub

- **Trump's Mediation:** The 2025 U.S. administration, under Donald Trump, has used Pakistan as a conduit for regional peace talks. Pakistan's role in brokering the ceasefire during the **4-day India-Pakistan conflict (May 2025)** elevated its diplomatic standing.

- **The Gaza Factor:** The U.S. and Gulf states are reportedly pressing Pakistan to contribute troops to a **Gaza Stabilisation Force**. Pakistan's willingness to engage in "stabilisation diplomacy" has earned it significant political capital.

5. Managing the "Sectarian Tightrope"

- **Strategic Autonomy:** By closing the Iranian border (June 2025) and aligning strictly with the Sunni-led Gulf security framework, Pakistan has signaled a decisive choice to prioritize its "West-facing" relationships. This has removed the ambiguity that previously frustrated Saudi Arabia and the UAE.

Significance for India:

1. Challenge to "Strategic De-hyphenation"

For years, India successfully convinced Gulf monarchies to treat India and Pakistan as separate entities—associating India with **economy/technology** and Pakistan with **security/aid**.

- **The Return of the "Security Nexus":** The SMDA (2025) suggests that the Gulf still views the Pakistani military as its primary "security provider." This dilutes India's efforts to position itself as the sole "Net Security Provider" in the Indian Ocean Region.
- **Institutional Wedge:** The pact challenges the assumption that India's economic outreach (e.g., the $100bn Saudi investment pledge) would permanently install an institutional wedge between Islamabad and Arab states.

2. Security & Nuclear Deterrence Implications

- **The "Nuclear Umbrella" Concern:** Western reports and Indian analysts (like Manoj Joshi, 2025) speculate that the SMDA could extend Pakistan's nuclear deterrence to Saudi Arabia. This **"Nuclear Sharing"** or "Ambiguity" creates a new layer of complexity for India's own nuclear doctrine and regional stability.
- **Aggression Clause:** The clause stating "aggression against one is an attack on both" raises a critical question: If India launches a punitive "Surgical Strike" or "Balakot-style" air strike following a terror attack, will it trigger a collective response from the Gulf? This increases the **perceived cost of escalation** for New Delhi.

3. Complicating India's "Link West" Policy

- **Multipolar Alignment:** Saudi Arabia is chasing its own "Strategic Autonomy" by multi-aligning with both India (Economic/Vision 2030) and Pakistan (Security/Ideology).
- **The I2U2 & IMEC Conflict:** India's preferred regional architecture—like the **India-Middle East-Europe Economic Corridor (IMEC)**—requires a stable, pro-India West Asia. A resurgent Pakistan-Gulf military bloc could introduce new vetoes or delays in these trans-regional projects.

4. Defense Competition & Exports

- **Arms Race in the Gulf:** Pakistan's recent success in exporting **JF-17 Block III** jets and **drones** to Libya and potentially Saudi Arabia (2025) directly competes with India's ambitions to export the **Tejas (LCA)** and **BrahMos** missiles to the same region.
- **Training and Doctrine:** Pakistan's decades-long experience in training Gulf forces gives it "Soft Power" in the military bureaucracy of these nations, which India is only now starting to build through joint exercises like Desert Cyclone.

5. Diplomatic "Quarantine" Challenges

- **Failure of Isolation:** India's strategy to "internationally quarantine" Pakistan—especially after the **Pahalgam attack (April 2025)**—has faced a setback. The SMDA proves that Pakistan's "Military-Bureaucratic Nexus" remains a relevant geopolitical actor that major powers are unwilling to abandon.
- **Kashmir Narrative:** A resurgent Pakistan with Gulf backing is likely to use multilateral platforms (OIC) to push its narrative on Kashmir more aggressively, complicating India's communication strategy abroad.

Challenges:

1. The "Sectarian Collision" (The Iran Factor)

Pakistan's decisive tilt toward the Saudi-led security bloc has severely strained its relationship with Tehran.

- **Border Closure (June 2025):** Pakistan officially sealed its 900km border with Iran following the **Pahalgam Crisis** and rising U.S.-Iran tensions. This has crippled local trade in Balochistan and created a brewing humanitarian crisis with thousands of displaced people.
- **Security Spillover:** Iran has accused Pakistan of allowing its soil to be used for "proxy operations" backed by Western interests, leading to fears of tit-for-tat missile strikes similar to those seen in early 2024.

2. The "Transactional Gap" in Economics

While the Gulf is "back," the nature of the relationship has changed from "charity" to "commercialism."

- **Bailout Fatigue:** Saudi Arabia and the UAE are no longer offering unconditional "cash-in-bank" support. They now demand **structural reforms** (tax base expansion) and **equity** in national assets (like the Reko Diq mines or Karachi Port).
- **Labor Localization:** Gulf nations are aggressively pushing "Saudization" and "Emiratization." This is displacing millions of low-skilled Pakistani workers, threatening the **$25-30 billion remittance lifeline** that keeps Pakistan's economy afloat.

3. Internal Fragility & Militancy

The "re-entry" into West Asian security pacts has made Pakistan a target for internal groups opposed to the military's pro-Western/pro-Saudi stance.

- **BLA & TTP Surge:** 2025 saw a **121% increase in fatalities** from militant attacks in the first half of the year. Groups like the **Balochistan Liberation Army (BLA)** specifically target Gulf-funded investment projects, viewing them as "resource theft" by the state.
- **Political Fragmentation:** The continued imprisonment of **Imran Khan** and the suppression of the PTI party have created a deep divide between the military-led foreign policy and public sentiment, which remains skeptical of "Western-aligned" defense pacts.

4. The "China-US" Balancing Act

Pakistan is attempting to host **U.S. bases** (near Pasni) while simultaneously seeking **CPEC Phase II** funding from Beijing.

- **Strategic Distrust:** China is increasingly wary of the U.S. "foothold" in Pakistan, while the U.S. is using the **Strategic Mutual Defense Agreement (SMDA)** to pull Pakistan away from the Chinese orbit. Any misstep could result in Pakistan losing its most reliable long-term strategic partner (China) for a "fleeting" high with the West.

Way Forward:

1. Institutionalizing "2+2" Ministerial Dialogues

- **From Leader-led to System-led:** India's current West Asia policy relies heavily on personal chemistry between leaders. To ensure continuity, India should establish **2+2 Dialogues (Foreign + Defense Ministers)** with Saudi Arabia and the UAE.
- **Objective:** This provides a permanent bureaucratic platform for real-time coordination on maritime security, counter-terrorism, and sharing intelligence on regional defense pacts (like the SMDA).

2. Recalibrating IMEC: Focus on the "Eastern Leg"

- **Strategic Integration:** Given the volatility in the Mediterranean/**Levant region** (due to the Israel-Hamas-Hezbollah conflicts), India should prioritize the **India-to-Arabian Peninsula** corridor.
- **Digital & Energy Grids:** By fast-tracking undersea fiber-optic cables and green energy grids with Abu Dhabi and Riyadh, India can lock in economic interdependence that makes "choosing sides" between India and Pakistan costly for the Gulf.

3. Defense "Minilateralism" and Export Push

- **Security Net Provider:** India should graduate from joint exercises to being a **defense manufacturing hub** for the region.
- **Competitive Exports:** Fast-tracking the export of **BrahMos missiles**, **Pinaka rockets**, and **Tejas LCA** to Oman and UAE (as discussed in Dec 2025) will create a "user-supplier" dependency that balances Pakistan's legacy military training role.

4. "Strategic Insulation" and Narrative Management

- **Managing OIC Rhetoric:** Rather than reacting with "tit-for-tat" diplomatic protests against OIC resolutions (often pushed by Pakistan), India should maintain **diplomatic minimalism**.
- **Global South Leadership:** India must leverage its role in the **G20** and **BRICS+** to frame its West Asia engagement as a "non-intrusive alternative" to the security-centric, high-risk models currently being pursued by Islamabad.

5. Fintech and DPI Diplomacy

- **Digital Public Infrastructure (DPI):** India should fully integrate its **UPI and Rupee-based trade mechanisms** with Gulf financial systems.
- **Leveraging Diaspora:** With over 9 million Indians in the GCC sending **$47 billion** in remittances (2024 data), seamless cross-border financial integration acts as a "soft power" anchor that a military-heavy Pakistan cannot replicate.

Conclusion

India lies in **'Strategic De-hyphenation 2.0.'** While Pakistan seeks a 'Return to Mainstream' via military pacts, India must cement its status as an **Indispensable Economic and Technological Partner.** By shifting focus from 'managing Pakistan' to 'shaping regional architecture' (via IMEC and 2+2 dialogues), India can ensure that its interests in West Asia remain insulated from the shifting sands of bilateral military alliances."

Q. *"Pakistan's recent re-engagement with West Asia marks a recalibration of its foreign policy driven by economic compulsions and evolving regional geopolitics." Critically examine the factors behind Pakistan's strategic re-entry into West Asia and analyse its implications for regional stability and India's interests.*

2.3. SOCIAL JUSTICE

2.3.1. IMPERATIVE FOR REMOVING ANTI-LEPROSY PROVISIONS

Why in the News?

- The issue of **discriminatory provisions** against **persons with leprosy** has gained urgency recently, prompted by the **Supreme Court of India's intervention** to combat **stigma and discrimination**.
- Following a direction from the Court, the **National Human Rights Commission (NHRC)** submitted a report detailing that as many as **97 central and State laws** continue to contain provisions that discriminate against those affected.
- The need for a corrective action against these **antediluvian provisions** has been strongly emphasized, especially given the current state of **medical advancements** regarding the disease.

Background and Context: Leprosy and Discrimination

The problem of discrimination is rooted in a history of **fear, misinformation, and ancient beliefs** regarding the disease, despite modern science rendering it curable and non-infectious.

Understanding Leprosy in India

- **Causative Agent:** Leprosy is primarily caused by the bacterium, **Mycobacterium leprae**.
- **Historical Context:** It is among the **earliest known infections** to affect humans, with skeletal evidence dating back to **2000 BCE**.
- **Global Burden:** Today, **India continues to report about 57% of leprosy cases worldwide**.
- **Susceptibility: Genetic predisposition** and **living in unsanitary conditions** are noted as factors that raise susceptibility.
- **Medical Status:** Due to a plethora of **medical advancements**, leprosy is now considered a **non-infectious condition** and can be **fully curable with the right interventions**.

Scope of Legal Discrimination

The provisions found across central and State statutes, which were being challenged through a batch of petitions, deny persons with leprosy access to fundamental rights and basic necessities:

- **Denial of Access:** Access to things as basic as **public transport and public spaces** is often denied.
- **Political Rights:** The **right to run for elected office** is restricted.
- **Economic Rights:** Access to **employment** or the ability to run a **business venture** is often impeded.

NHRC's Pursuit of Justice

- The **NHRC** has been actively pursuing this issue **since 2021** and previously released a comprehensive document with key recommendations.
- The recommendations aimed to ensure **dignity and equal access to fundamental rights** for persons with leprosy through:

- **Early identification** and **timely treatment**.
- **Rehabilitation**.
- **Removing discriminatory practices**.

Way Forward: Systematic Efforts for Remedial Action

A systematic and multi-pronged approach is urgently required to eliminate the stigma and remove the outdated legal barriers that impede the lives of persons with leprosy.

- Immediate repeal or suitable amendment of the **97 identified discriminatory provisions** across Central and State laws must be undertaken by the **Union Government** and all **State Governments** on a war footing.
- Comprehensive **anti-discrimination legislation** specifically addressing **leprosy-related stigma**, replacing all **derogatory terminology** with dignified and scientific language, must be enacted without further delay.
- Nationwide **awareness campaigns to dispel myths and misinformation** about leprosy transmissibility and curability must be launched through schools, media and healthcare systems.
- **Early detection**, free **multi-drug therapy** and complete treatment must be ensured through strengthened **primary healthcare** and the **National Leprosy Eradication Programme**.
- **Economic rehabilitation**, **skill development** and **livelihood support** programmes for leprosy-affected persons and their families must be expanded and adequately funded.
- The **Unique Identification Authority of India (UIDAI)** has been given a pointed recommendation to **promote the use of iris scans for Aadhaar enrolment**, given that leprosy primarily affects the **fingertips** through nerve damage.
- Regular **monitoring and reporting mechanism** involving **NHRC**, **Ministry of Health** and **civil society organisations** must be established to prevent future legislative discrimination.
- **Systematic efforts** are required to **eliminate stigma**, which is often seeded by **fear, misinformation or ancient beliefs**, and to remove the discriminatory attitudes towards those affected.

Conclusion

- In an era where medical science has rendered leprosy completely **curable** and **non-infectious** after timely intervention, the continued existence of nearly a hundred **discriminatory laws** constitutes an unacceptable failure of the state to uphold **constitutional values** of **equality**, **dignity** and **fraternity**.
- The **Supreme Court's proactive intervention**, combined with evidence-based advocacy by the **NHRC**, presents a historic opportunity to finally dismantle **legal apartheid** against leprosy-affected citizens and ensure that no individual is condemned to live in the dark ages because of a treatable medical condition.

Q. *Appropriate local community-level healthcare intervention is a prerequisite to achieving 'Health for All' in India. Explain.*

2.3.2. ESCALATION OF RESEARCH MISCONDUCT IN INDIAN ACADEMIA

Why in the News?

- **Recently**, sharp rise in **publication retractions from India since 2022** was highlighted, with India emerging as one of leading contributors globally to retracted scientific papers.
- Concerns were articulated by **Achal Agrawal**, founder of **India Research Watch (IRW)** and member of **Nature's 10 list of people who shaped science in 2025**, regarding **academic misconduct**, **misuse of generative artificial intelligence (Gen AI)**, and **institutional failures in research governance**.

Background and Context

- **India was stated to rank second globally since 2022**, after China, in **number of publication retractions**, surpassing United States, with both **absolute retraction numbers** and **percentage of published articles retracted** witnessing steep increases.
- **Even discovered cases of misconduct** were reported to be **not taken seriously**, revealing systemic tolerance rather than isolated negligence.

Understanding Publication Retractions

Publication retractions occur when peer-reviewed papers are withdrawn due to serious flaws such as **misconduct**, **fabrication**, or **errors**. A surge in retraction signals deep-rooted problems in research ethics, institutional oversight, and incentive structures, impacting national scientific reputation and global trust.

What Constitutes Academic Misconduct?

Academic misconduct includes **plagiarism**, **data manipulation**, **image manipulation**, **fabrication of results**, and unethical use of software tools to circumvent detection. Such practices erode the foundation of scientific progress and mislead policy, innovation, and further research.

Reasons for Inadequate Action on Misconduct

- **Weak regulatory framework:** UGC norms allow very light penalties even for 60% plagiarism, completely omit data and image manipulation from the definition of misconduct, and India lacks a central Research Integrity Office as exists in most countries.
- **Institutional complicity and conflicts of interest:** Researchers with over 30 retractions for manipulation have still been felicitated in premier institutes, while misconduct probes are left to the same institutions that benefit from high publication counts, encouraging tolerance of shortcuts.

Misuse of Digital Tools in Academic Research

1. Misuse of Generative Artificial Intelligence in Research

- Generative AI tools (e.g., ChatGPT, Gemini, DALL-E, Midjourney) can create text, images, datasets, and code using learned patterns.
- Their unethical use has emerged as a major driver of recent retractions, including fabrication of research data, auto-generation of full papers, and even fake peer-review reports.

2. Paraphrasing Software as a Tool to Evade Plagiarism Detection

- Prior to Gen AI, paraphrasing software was widely used to bypass plagiarism thresholds by mechanically rewording existing papers.
- Manuscripts were submitted and accepted without meaningful human scrutiny, often containing absurd linguistic artefacts (e.g., "big data" rendered as "colossal information," "artificial intelligence" as "counterfeit consciousness").

3. Image Manipulation and Data Falsification

- Digital image-editing software has been routinely misused to manipulate figures and experimental images, further undermining research credibility and reproducibility.

4. Institutional Response: NIRF-Linked Penalties

- Under the **National Institutional Ranking Framework** (NIRF), institutions are penalised when multiple papers authored by their faculty are retracted.

5. Core Problem: Flawed Evaluation Metrics in NIRF

- NIRF penalties address outcomes rather than causes, as ranking metrics over-emphasise publication counts.
- The quantum and visibility of penalties are unclear, rendering them largely ineffective as deterrents.

6. Consequences for Higher Education Quality

- Excessive focus on research output has marginalised teaching quality in higher education.
- Faculty often reduce teaching effort to maximise research publications, since research productivity is disproportionately rewarded in assessments and rankings.

Whistleblower Protection and Reporting Mechanism

- An anonymous reporting portal has been developed by **IRW**, designed to protect whistleblowers who fear retribution.
- Users can optionally provide **anonymous emails** for follow-up communication.
- Around **10 tips are received daily**, many of which are generic requests to examine profiles or appear motivated by personal vendettas based on language.
- Authentic complaints are pursued, occasionally resulting in public posts via the IRW handle.
- **Formal Research Integrity Office** would be far more effective, as such office would be **vested with statutory authority to investigate complaints and enforce corrective actions**, ensuring that reported misconduct is actively pursued and acted upon.

Challenges in Proving Misconduct and Retraction Process

The difficulties in proving misconduct and achieving retraction stem from both methodological and institutional flaws.

- **Methodological and Technological Challenges**
- **Difficulty in Detection of Clever Fraud:** Most cases being caught currently involve **lazy researchers** who do **shabby job** at hiding unethical artefacts. **Clever ones** are significantly **more difficult to prove**, often requiring cooperation and coordination of several bodies.
- **Unreliability of Detection Software: Plagiarism detection software** as well as **Gen AI detection software** are **not reliable** and cannot be considered proof.

- **Evasion by Paraphrasing:** Significant amount of **paraphrasing escapes detection** by current technological tools, allowing compromised work to be accepted.
- **Institutional and Legal Challenges**
- **Lengthy Retraction Process:** Retraction happens on average **two years after publishing**, indicating **rigorous process** that delays correction of the academic record.
- **Flagged Papers Still Not Retracted:** Lot of problematic papers flagged by sleuths are **still not retracted** even after clear proof of issues.
- **Legal Threat to Whistleblowers:** The whistleblower, India Research Watch, now faces a **civil defamation case** filed by a private university, demonstrating the **legal challenges and potential retribution** faced by individuals who drive the discourse on research misconduct.

Global Best Practices in Research Integrity

Leading international frameworks and institutional models offer proven approaches that India can adapt to strengthen its system:

- **Singapore Statement on Research Integrity (2010)**: A foundational global document outlining core principles—**honesty**, **accountability**, **professional courtesy**, and **responsibility** in research conduct, widely endorsed to guide policies and training.
- **European Code of Conduct for Research Integrity (ALLEA)**: Emphasises fostering positive research cultures, preventing misconduct through education, and ensuring transparency; adopted across Europe to promote quality and trust in science.
- **Committee on Publication Ethics (COPE) Guidelines**: Provides standards for journals and publishers on handling **retractions**, **fake reviews**, and ethical publishing, including tools for detecting manipulations.
- **OECD and ENRIO Models**: Focus on annual reporting, independent audits, and network-based support (European Network of Research Integrity Offices) for harmonising standards and continuous system improvement.

Way Forward: Key Reforms to Restore Academic Integrity in India

To combat the surge in **publication retractions**, **academic misconduct**, and emerging threats like **generative AI** and **paper mills**, India must adopt a robust, multi-dimensional strategy.

- **Establish a National Research Integrity Office**: An independent **central Research Integrity Office** should be urgently created under the Ministry of Education, with statutory powers to investigate misconduct, coordinate with journals and institutions, impose sanctions, conduct regular audits, and publish annual reports on trends and resolutions for transparency and deterrence.
- **Overhaul UGC Guidelines**: **University Grants Commission (UGC)** regulations must be expanded to cover all misconduct forms (**data fabrication**, **image manipulation**, **generative AI misuse**, **fake reviews**), adopting stringent, graded penalties (including grant recovery and debarment) with mandatory public disclosure to enhance accountability.
- **Restructure NIRF Metrics**: **National Institutional Ranking Framework (NIRF)** requires transparent reform to prioritise quality over quantity (e.g., citation impact, replication, ethical compliance), balancing research with teaching parameters, and implementing visible penalties/negative marking for retractions.

- **Strengthen Detection, Prevention, and Mandatory Training**: Prioritise investment in advanced **detection tools** for AI content and manipulations, enforce pre-publication screening, and mandate comprehensive **research ethics training** at all levels to address emerging threats proactively.
- **Protect and Empower Whistleblowers**: Enact strong legal safeguards with anonymity, anti-retaliation policies, fast-track inquiries, and government-supported platforms (extending **IRW portal**) to encourage reporting without fear.
- **Realign Incentives and Foster Collaboration**: Shift academic rewards to **quality and verifiable impact** (limiting publication counts for promotions) and formalise ties with global databases like **Retraction Watch** for real-time monitoring.
- **Promote Cultural Shift Through Awareness**: Launch nationwide campaigns and institutional programs emphasizing ethical norms and the societal damage of misconduct to build transparency and responsibility.
- **Ensure Ongoing Monitoring and Review**: Publish annual **national reports on research integrity** and conduct periodic independent audits to track progress and ensure continuous improvement.

Conclusion

Sharp rise in publication retractions since 2022 exposed systemic weaknesses in India's research governance, including **weak regulation, flawed incentive structures, institutional conflicts of interest,** and **misuse of emerging technologies**. Absence of central integrity oversight and metric-driven pressures further eroded academic credibility. **Structural reform** aligned with global best practices remains essential to restore trust and integrity in Indian research ecosystem.

Q. *"The sharp rise in publication retractions in India reflects systemic governance failures rather than isolated ethical lapses." Critically examine this statement in the light of recent trends in academic misconduct, regulatory gaps, and incentive structures in Indian higher education.*

2.4. HEALTH

2.4.1. AIDS AND TB FIGHT: TAMIL NADU SHOWS THE WAY AGAIN

Why in the News?

- **Success of TANSACS:** The news highlights the exceptional success of Tamil Nadu's targeted interventions, which have reduced the **HIV prevalence rate to 0.18%**, significantly lower than the national average of 0.22% (as per the 2021 NACO report).
- **Targeted Elimination Goal:** The state is now moving toward the ambitious goal of eliminating **HIV-TB co-infection** by 2025-26, ahead of the national elimination target of 2030 for AIDS.
- **Focus on PMTBMBA:** The article draws attention to the state's active promotion of the **Pradhan Mantri TB Mukt Bharat Abhiyan (PMTBMBA)**, a community-centric initiative to provide support to TB patients, which underscores the crucial role of societal engagement in public health campaigns.

Key Takeaways

1. The Tamil Nadu Model of AIDS Control (TANSACS)

Tamil Nadu was one of the earliest and hardest-hit states by the HIV epidemic in India. Its response, led by the first-of-its-kind State AIDS Control Society (TANSACS), offers a successful blueprint for other states and national health programs.

Pointers:

- **Early and Sustained Intervention:** TANSACS was registered in **1994**, making it the first such society in India, allowing for an early, dedicated, and sustained programmatic approach.
- **Focus on High-Risk Groups (HRGs):** It adopted a strategy of **Targeted Interventions (TIs)**, focusing on key populations (Female Sex Workers – FSWs, Men who have Sex with Men – MSM, etc.) through **Community-Based Organisations (CBOs)** and NGOs. This ensured maximum impact with limited resources.
- **Comprehensive Service Continuum:** TANSACS established a robust 'prevention-to-care continuum':
  - **Prevention:** Widespread awareness campaigns, condom promotion, and Needle Syringe Exchange Programs (NSEP) for Injecting Drug Users (IDUs).
  - **Testing:** Establishing accessible **Integrated Counselling and Testing Centres (ICTCs)**, branded as **Nambikai Maiyam** (Centre of Hope), which served as the entry point for diagnosis and care.
  - **Treatment & Care:** Scaling up **Antiretroviral Therapy (ART)** centres and providing care, support, and treatment (CST) services.
- **Stigma Reduction:** Innovative campaigns, like urban art murals, were used to combat stigma and discrimination, promoting social inclusion for People Living with HIV (PLHIV).

2. The Challenge of HIV-TB Co-Infection (The 'Accursed Duet')

Tuberculosis (TB) is the most common opportunistic infection among People Living with HIV (PLHIV). The co-infection (known as the 'Accursed Duet') poses a significant public health threat, as HIV accelerates the progression of latent TB infection to active disease.

Pointers:

- **Bidirectional Relationship:**
  - **HIV on TB:** HIV infection weakens the immune system, increasing the annual risk of developing active TB by **5-15%** (compared to 5-10% lifetime risk for an immunocompetent person).
  - **TB on HIV:** Active TB can worsen the course of HIV-related immunodeficiency.
- **Mortality Burden:** In India, TB accounts for approximately **25% of deaths** among PLHIV.
- **Strategy for Elimination (The 3 I's):** India's National AIDS Control Programme (NACP) and National TB Elimination Programme (NTEP) use a collaborative strategy, including:
  - **Intensified TB Case Finding (ICF)** at ART centres.
  - **Isoniazid Preventive Therapy (IPT)** for all eligible PLHIV to prevent the progression of latent TB to active TB.
  - **Infection Control (IC)** measures at all healthcare facilities.

3. Community-Based Initiatives and Corporate Social Responsibility (CSR)

The focus on the **Pradhan Mantri TB Mukt Bharat Abhiyan (PMTBMBA)** highlights the shift towards community and multi-stakeholder participation in achieving health targets.

Pointers:

- **Objective of PMTBMBA:** Launched in 2022 to provide additional support to Persons with TB (PwTB) to accelerate the country's progress towards TB elimination by **2025**.
- **The 'Ni-kshay Mitra' Model:** This is the core component where a donor (Ni-kshay Mitra)—which can be an individual, a private organisation, a corporate, or a political party—adopts consented TB patients to provide **nutritional, diagnostic, and vocational support** for a minimum of six months.
- **Role of CSR:** Corporations can fulfill their Corporate Social Responsibility (CSR) mandate by becoming Ni-kshay Mitras, directing resources toward the nutritional support component, which is critical for improving treatment adherence and outcomes.
- **Filling the Gaps:** PMTBMBA supplements the government's existing financial support for nutrition, the **Ni-kshay Poshan Yojana (NPY)** (₹500 per month). The community support addresses the crucial social determinants of health like undernutrition and loss of livelihood, which perpetuate the cycle of disease and poverty.

Comparative Framework: Health Programmes in India

Feature	TANSACS (State-Level HIV/AIDS Control)	PMTBMBA (National TB Control)
Objective	Reduce new HIV infections; provide care & treatment; eliminate Mother-to-Child Transmission (EMTCT).	Eliminate TB in India by **2025**.

Primary Strategy	Targeted Interventions for HRGs; Prevention-to-Care Continuum (ICTC-ART).	Community support and supplemental care through **Ni-kshay Mitra** (Donor).
Funding & Oversight	**NACO** (National AIDS Control Organisation) under the Ministry of Health and Family Welfare (MoHFW).	**NTEP** (National TB Elimination Programme) under MoHFW, with community/CSR funding for supplemental support.
Key Lesson	**Sustained, evidence-based, and targeted** programmatic approach is vital for epidemic control.	**Multi-stakeholder ownership** and addressing social determinants (e.g., nutrition) are necessary for elimination.

Challenges

- **Sustaining Momentum:** As HIV prevalence falls, there is a risk of donor fatigue and reduced political priority, which could lead to a resurgence.
- **Hidden Epidemics:** Reaching hidden populations (like certain HRGs, migrants, and remote rural communities) with testing and care remains a logistical challenge.
- **Integration Gaps:** Despite the joint efforts (like the 3 I's), better programmatic integration between AIDS (NACP) and TB (NTEP) is needed to ensure seamless diagnosis and treatment for co-infected patients across all healthcare levels.
- **Adherence and Stigma:** Treatment adherence, particularly for the long duration of TB treatment, is complicated by persistent stigma and discrimination against both diseases.

Way Forward (Recommendations)

- **Decentralized Empowerment:** Empowering District-level AIDS Prevention and Control Units (DAPCUs) and local health institutions to tailor interventions to local needs, replicating the **TANSACS model**.
- **Leveraging Technology:** Using technology for better supply chain management of medicines (ART/TB drugs) and a centralized patient tracking system (**Ni-kshay** is a step in this direction) to ensure continuity of care.
- **Focus on 'One Health':** Extending the elimination concept to other comorbidities, such as **HIV-Hepatitis B/C co-infection**, which also pose a significant health threat.
- **Mainstreaming Public Health:** Making health education a core part of the curriculum and using mass media to continuously normalize and destigmatize conditions like HIV and TB.

Q. *Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard.*

Q. *In a crucial domain like the public healthcare system, the Indian State should play a vital role in containing the adverse impact of marketization of the system. Discuss.*

Scan to attempt more questions...

2.4.2. NATIONAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE (NAP-AMR) 2.0 (2025-29)

Why in the News?

- **National Action Plan on Antimicrobial Resistance (NAP-AMR 2.0)** for period 2025-29 was **recently released**, during period when **Antimicrobial Resistance (AMR)** has been impacting **human health**, **veterinary sectors**, **aquaculture**, **agriculture**, **waste systems**, and **entire food chain**.
- Concern was highlighted that **AMR has been crossing hospital boundaries** and has been moving through **soil**, **water**, **livestock**, **markets**, and **food systems**, establishing **One Health challenge**.

Understanding Antimicrobial Resistance and Its Scope

What is Antimicrobial Resistance (AMR)?

- **Antimicrobial Resistance** represents **threat to human health** where microorganisms develop ability to **resist antimicrobial drugs**, making infections increasingly difficult to treat.
- **Antibiotic residues**, **resistant organisms** and **environmental discharge** connect multiple sectors—hospitals, agriculture, aquaculture, veterinary practice, waste management and food systems—in powerful and interconnected ways.

One Health Dimension of AMR

One Health framework recognizes that AMR does not remain confined to hospitals but moves through:

- **Soil and water systems**
- **Livestock and animal populations**
- **Markets and commercial establishments**
- **Food systems and food chains**
- **Waste management infrastructure**

This interconnected nature makes AMR true **One Health challenge** requiring coordinated action across **human health, animal health and environmental sectors**.

Evolution of India's Approach: From NAP-AMR 1.0 to NAP-AMR 2.0

- First **National Action Plan on AMR** launched in **2017** represented **significant step forward** in India's antimicrobial resistance management. Key achievements of first plan included:
- Brought **AMR** into **national consciousness** and public policy discourse
- Encouraged **multi-sectoral participation** across various governmental and private domains
- **Improved laboratory networks** for diagnostic capabilities
- **Expanded national surveillance** systems for tracking resistance patterns
- Supported **antimicrobial stewardship** initiatives across healthcare sector

- Placed **AMR** firmly within **One Health framework**, recognizing critical links between human health, animal health and environment
- **Implementation challenges persisted:**
- Only **Kerala**, **Madhya Pradesh**, **Delhi**, **Andhra Pradesh**, **Gujarat**, **Sikkim**, **Punjab** developed State Action Plans
- Only few States advanced into **meaningful execution**
- Many States depended on **fragmented sectoral activities**
- **State-wide One Health structures** did not take shape in most regions

Reason for Slow Uptake

- Determinants of AMR fall under **State jurisdiction**, including:
- **Health administration**
- **Hospital functioning**
- **Pharmacy regulation**
- **Veterinary oversight**
- **Agricultural antibiotic practices**
- **Food-chain monitoring**
- **Waste governance**
- National guidance was insufficient for full implementation because **operational levers** sit with **States**.

India's Public Health Experience as Reference Point

Successful Models of Centre-State Coordination

India's broader public health experience demonstrates that real progress happens only when Centre and States work within **structured, mutually accountable system**. Two prominent examples illustrate this principle:

National Tuberculosis Elimination Programme

Achievements of TB programme arise from:

- **Regular joint reviews** between Centre and States
- **Shared monitoring missions** across jurisdictions
- **Clearly defined roles** across different levels of government
- Sustained coordination mechanisms

National Health Mission (NHM)

Following similar principles, National Health Mission achieves results through:

- **Coordinated planning** at national and State levels
- **Dedicated funding signals** that prioritize health objectives
- **Periodic performance assessments** and accountability measures
- Enabling States to turn national priorities into **on-ground action**

These examples provide template for what NAP-AMR 2.0 should aspire to achieve.

Key Features of NAP-AMR 2.0 (2025-29)

NAP-AMR 2.0 represents **more mature and implementation-oriented framework** when compared with first plan. Plan moves beyond broad intent and outlines **clearer timelines, responsibilities and resource planning structures**.

Stronger Implementation Orientation

- New plan has moved beyond broad intent and has outlined **clearer timelines**, **defined responsibilities**, and **resource planning frameworks**.

Recognition of Private Sector Role

- Acknowledgement that **private sector** delivers significant share of **health care** and **veterinary services**; hence participation has been emphasised.

Stronger Scientific Base

- Enhanced stress on **innovation**, including:
- **Rapid diagnostics**
- **Point-of-care tools**
- **Alternatives to antibiotics**
- **Improved environmental monitoring mechanisms**

Deepened One Health Focus

- Strengthening attention on **food-system pathways**, **waste management**, and **environmental contamination**.
- Moving towards **integrated surveillance** across **human, veterinary, agricultural**, and environmental sectors to enable **harmonised national approach.**

Improved Governance Framework

- Introduction of **higher-level national oversight**, with **intersectoral supervision** under **NITI Aayog**, through **Coordination and Monitoring Committee**.
- Mandate created for **State AMR Cells** and **State Action Plans**, aligned with national framework.
- **National dashboard** proposed for continuous progress reporting.

Identified Gaps in NAP-AMR 2.0

Absence of Enforcement Mechanism

- Despite emphasis on State-level implementation, **fundamental weakness remains unchanged**:
- No **formal Centre-State AMR platform**
- No **joint review mechanism**
- No **statutory requirement** for States to notify or implement plans
- No **financial pathways**, such as **NHM-linked incentives**, to support sustained commitment

Federal Challenges

- In federal context, AMR determinants lie primarily in **State control**, making absence of coordinated mechanisms **pivotal gap**.

- Risk that national plan may remain **technical document** without strong **administrative structure**, **political engagement**, and **shared accountability**.

Critical Success Factors for NAP-AMR 2.0

Primary Determinant of Success

Success of **NAP-AMR 2.0 depends entirely on how effectively national and State systems work together**. This is not matter of technical capacity but of **institutional design and political commitment**.

Key Factors for Effective Implementation

- **Political leadership** at both national and State levels
- **Senior administrative commitment** across governance levels
- **Multi-departmental engagement** beyond health sector
- **Structured accountability mechanisms** with consequences
- **Adequate financial resources** aligned with action plan objectives
- **Regular monitoring and evaluation** systems
- **Cross-sector coordination** mechanisms at all levels

Opportunity for India

India has **opportunity now** to build **coordinated and accountable Centre-State model** for AMR control. If such system is established with institutional mechanisms, legal framework and financial backing, country can:

- **Achieve measurable progress** in AMR control
- **Set international example** for federal nations tackling AMR
- Demonstrate effective implementation of **One Health approach**
- Build **sustainable framework** for antimicrobial stewardship

Way Forward: Building Coordinated Centre-State Model

To make **NAP-AMR 2.0 effective**, India needs **clear architecture** that brings political leadership, senior administrators and sectoral departments from all States into **unified system**.

Establishment of National-State AMR Council

A **National-State AMR Council** should be established with following characteristics:

- Chaired by **Union Health Minister** for political backing and priority
- Guided by **NITI Aayog** for institutional coordination
- Provides **platform for regular review and joint decision-making**
- Enables **coordinated problem-solving** across:
- **Human health sector**
- **Veterinary sector** and animal health
- **Agriculture** and crop production
- **Aquaculture** and fish farming
- **Food systems** and supply chains
- **Environmental regulation** and pollution control

This council would institutionalize regular engagement and accountability.

Formal State Action Plan Preparation and Notification

State engagement would strengthen if:

- **Union Government formally requests** each State to prepare and notify its **AMR Action Plan**
- **Clear timelines** are established for plan development and implementation
- **Annual reviews** are conducted to assess progress and identify challenges
- High-level communication, especially through **Chief Secretaries**, shifts administrative attention and resource prioritization

Experience from National Health Mission and tuberculosis programmes demonstrates that such high-level engagement significantly impacts State-level administrative response.

Financial Mechanisms for Sustainability and Incentivization

Financial mechanisms must follow implementation architecture:

- **Modest conditional grants** under **National Health Mission** can drive improvements in:
- **Surveillance systems**
- **Antimicrobial stewardship**
- **Infection control measures**
- **Laboratory strengthening**
- When **funding signals priority**, States respond with:
- **Administrative energy**
- **Policy focus**
- **Resource allocation**
- **Institutional commitment**

This creates positive incentive structure for State compliance and performance.

Unified Implementation Framework

Centre and States must work within **common implementation framework** characterized by:

- Clear delineation of roles and responsibilities
- Shared accountability mechanisms
- Regular performance monitoring
- Coordinated resource mobilization
- Joint problem-solving approaches

Conclusion

- NAP-AMR 2.0 has offered structured scientific and strategic foundation for India's AMR response; however, success will depend entirely on **effectiveness of Centre-State coordination**.
- AMR has been driven by real-world practices across entire **One Health continuum**, and without **strong State participation**, national strategy cannot translate into national impact.
- India holds significant opportunity to build **coordinated and accountable AMR control model**, and with sustained cross-sectoral engagement, NAP-AMR 2.0 can become critical turning point in national AMR journey.

Q. Can overuse and free availability of antibiotics without Doctor's prescription, be contributors to the emergence of drug-resistant diseases in India? What are the available mechanisms for monitoring and control? Critically discuss the various issues involved.

***

Scan to attempt more questions...

GENERAL STUDIES 3

3.1. ECONOMY

3.1.1. ENABLING A MODERN AND FUTURE-READY LABOUR ECOSYSTEM

Why in the News?

India has implemented the long-awaited **four modernised Labour Codes** on **21 November 2025**, consolidating multiple central labour laws into a simplified regulatory framework. This marks one of the most significant labour reforms in independent India, intended to strengthen workers' rights, improve enterprise competitiveness, and support the goal of a developed India.

Evolution of Labour Framework in India

India's labour laws previously developed incrementally across decades. This resulted in **fragmentation**, overlapping definitions, and **complex compliance** for employers and workers alike. Recognising the need to reflect growing diversity in the workforce — particularly the rise of informal, gig, and platform-based employment — comprehensive reform was undertaken between 2015 and 2019, culminating in the four Codes.

The reform aligns labour regulation with a **dynamic economic landscape**, where employment trends show declining unemployment, growing formalisation, and one of the world's largest and youngest workforces — **over 643 million workers**.

Overview of the Four Labour Codes

Labour Code	Objective	Major Provisions
Code on Wages, 2019	Ensure fairness in wages and payment	Universal minimum wages, national floor wage, timely payment, clarity on working hours
Industrial Relations Code, 2020	Improve industrial harmony and dispute resolution	Easier registration, rules for strikes/lockouts, streamlined dispute settlement
Code on Social Security, 2020	Expand social protection to all segments of workforce	ESIC/EPF coverage expansion, gig/platform worker inclusion, social security funds
OSH & Working Conditions Code, 2020	Strengthen workplace safety	Workplace standards, safety committees, preventive health checks, 48-hour weekly limit

Key Areas of Impact

1. **Formalisation and Decent Work –** The Codes emphasise registration, standard definitions, and transparent procedures. This encourages enterprises to formalise, improving worker protection and **long-term economic productivity**.

2. **Social Security Expansion –** For the first time, the law explicitly includes **gig and platform workers**, acknowledging digital livelihoods. A dedicated **Social Security Fund** aims to finance contributory benefits for such workers.

3. **Women Empowerment in Workforce**

- Night-shift permission with safety safeguards
- Better maternity benefits
- Enhanced arrangements for childcare and working flexibility

These measures can help India improve currently modest **female labour participation (~32–33%)**.

4. **Enhancing Workplace Safety & Well-being**

The OSH Code mandates universal minimum standards across sectors:

- National floor wage promotes wage equity
- Safety committees and health checks reduce workplace hazards
- Better coordination of labour inspections improves accountability

Workplace dignity is now recognised as essential to productivity and national growth.

Economic Significance

The new framework supports:

- **MSMEs** through simplified compliance
- **Industrial growth** via predictable regulation
- **Investment attraction** by improving labour governance
- **Youth employment** through job-rich market expansion

It integrates labour reform into broader national goals like digitalisation, formalisation, and a **competitive manufacturing ecosystem**.

Challenges Going Forward

Despite clear advantages, success depends on:

- **State-level readiness** — enforcement capacity and timely rules
- **Clarity in gig worker contributions** — practical funding mechanisms
- **Awareness among informal workers** — enabling access to entitlements
- **Balancing protections and flexibility** — avoiding over-regulation of small units

These issues require **cooperative federalism** and sustained institutional support.

Balanced Way Ahead

- Phased implementation with assistance for smaller enterprises
- Strengthening digital systems for registration and compliance
- Targeted outreach to informal and gig workers
- Stronger monitoring of workplace safety and women-centred provisions

Effective execution will determine whether these reforms truly enhance **equity**, **industrial harmony**, and **workforce productivity**.

Conclusion

The Labour Codes represent a **transformational shift** in India's social and economic governance. By simplifying laws, expanding protections, and recognising emerging forms of work, they seek to align

labour policy with India's aspirations of inclusive and sustainable growth. The upcoming years will be crucial — as timely, uniform and worker-friendly implementation will define whether these reforms deliver a stronger, more secure, and future-ready labour ecosystem.

Q. *"India's labour reforms aim to simplify regulatory frameworks, yet concerns persist about their impact on worker security." Discuss.*

Q. *Discuss the challenges and way forward in ensuring universal social security for India's workforce in the context of expanding gig and platform work.*

3.1.2. DATA DEFICIENCIES

Why in the news?

- The International Monetary Fund (IMF) has assigned India a 'C' grade for its national accounts statistics.
- The low grading highlights critical gaps in India's data collection, analysis, and reporting framework.
- This assessment emphasizes the urgency for India to update and improve its statistical infrastructure to ensure accurate economic monitoring and policymaking.

International Monetary Fund (IMF)

Background

- India maintains national accounts statistics to track key macroeconomic indicators such as GDP, GVA, investment levels, and consumer spending.
- These accounts are crucial for policy decisions, economic planning, and international credibility.
- Despite improvements, India faces persistent challenges due to outdated data methodologies and incomplete coverage of the informal sector.

Key Issues Highlighted by IMF

1. Outdated Base Years

- India's national accounts, **Index of Industrial Production (IIP),** and **Consumer Price Index (CPI)** are based on 2011–12 as the reference year.
- Outdated base years affect:
  - Accurate measurement of economic growth.
  - Proper assessment of price movements in CPI.
  - Effectiveness of RBI's monetary policy.

2. Impact on Policy

- Poor data quality hampers effective policymaking.
- A 'C' grade indicates that India is in the same league as China in terms of national accounts data issues — a concerning position.
- Accurate data is critical for:
  - Sector-specific interventions.
  - Export and consumption analysis.
  - Tracking investment trends.

3. Incomplete Coverage of Informal Sector

- Informal sector is largely unregistered and cash-based, making it difficult to quantify.
- Current statistics may not reflect the real size and contribution of the informal economy.
- Improved estimates would:
  - Better capture population livelihood patterns.
  - Offer insights into economic resilience and growth potential.

Steps Taken by the Government

Updating Base Years and Methodologies

- The government is revising base years and methodologies for:
  - National accounts.
  - CPI.
  - IIP.
- New statistical series expected in early 2026.
- Aim: Improve accuracy, reliability, and comparability of economic data.

Integration of Sectoral Data

- MCA-21 database now used to capture corporate sector data, replacing Annual Survey of Industries.
- Proposal to include GST data in GDP estimation:
  - Will improve coverage of formal sector.
  - Strengthens reliability of growth estimates.

Implications of Data Deficiencies

Aspect	Implication
GDP/GVA estimates	May not reflect real economic growth due to outdated base and incomplete sector coverage.
CPI	Cannot accurately track inflation, especially food inflation due to outdated weights.
Monetary policy	RBI's policy decisions may be less effective if based on inaccurate inflation or growth data.
Policy interventions	Sector-specific and targeted interventions may be misguided without reliable data.
International credibility	Low IMF grading signals need for better data to global investors and institutions.

Way Forward

- Prioritize accurate estimation of informal sector.
- Ensure frequent updates of base years and weights in statistical indices.
- Integrate administrative data (GST, MCA-21) into national accounts.
- Encourage technology-driven data collection and real-time monitoring.
- Continuous capacity building for statistical agencies.

Conclusion

- IMF's grading serves as a wake-up call for India to modernize its statistical systems.
- Accurate, timely, and comprehensive national accounts are crucial for:
  - Robust policymaking.

- Economic planning.
- International credibility.

- Government reforms in updating methodologies and integrating new data sources are steps in the right direction, but effective implementation is key.

Q. *Explain the difference between computing methodology of India's Gross Domestic Product (GDP) before the year 2015 and after the year 2015.*

3.1.3. INDIA NEEDS RESEARCH PIPELINES

Why in the News?

The urgency stems from the recognition of **India's R&D investment gap** and its reliance on public funding. Key reasons for the current focus include:

- **Addressing Policy Deficiencies:** India's GERD, at approximately **0.64% of GDP**, lags significantly behind economic rivals (e.g., China at ~2.4%, US at ~3.5%, South Korea at ~4.8%).
- **Rebalancing Funding Sources:** The Central Government currently bears $\sim 44\%$ of GERD, while the private sector contributes only ~36%. This contrasts sharply with developed economies where the private sector typically funds **over 70%** of R&D, driving market-relevant innovation.
- **The New Financial Mechanism:** The launch of a **₹1 lakh crore R&D corpus** (often referred to as the RDI Scheme, a part of the ANRF framework) is a strategic step. This fund aims to de-risk private R&D through low-interest, long-term loans, directly addressing the private sector's reluctance for capital-intensive, high-risk research.

The Economic Imperative and Global Benchmarks

India's economic future is tied to its ability to transition from a service-driven economy to a knowledge and technology-driven manufacturing hub.

1. The GERD Challenge and Implications

The low GERD is not merely a number; it reflects a systemic inability to create **high-value Intellectual Property (IP)**, which results in:

- **Technology Dependence:** Continued reliance on importing high-end technology, especially in strategic sectors (e.g., semiconductors, specialized machinery).
- **Low Innovation Output:** While India has improved its ranking in the Global Innovation Index (GII) (currently 40th), its output of patents-per-revenue remains significantly lower than global peers.
- **Fragmented Research:** Public-funded research often focuses on curiosity-driven science, which, while valuable, may not always have a direct, rapid commercial application.

2. Comparative Analysis of R&D Funding

Economy	GERD as % of GDP (Approx.)	Private Sector Share in GERD (Approx.)	Key Strategy
South Korea	>4.8%	>75%	Government-led strategic funding + Large Chaebols (Conglomerates)
USA	>3.5%	>70%	Defence and Health spending + Strong University-Industry Linkages
China	>2.4%	>77%	State-directed investment in Frontier Technologies
India	~0.64%	~36%	Government dominance + New Focus on Private Capital & HEIs

The Institutional Pillar – ANRF

The **Anusandhan National Research Foundation (ANRF)**, established under the ANRF Act, 2023, is the central mechanism to transform the R&D landscape.

Pointers:

- **Apex Statutory Body:** ANRF acts as the apex body providing high-level **strategic direction** for scientific research, in line with the **National Education Policy (NEP) 2020**.
- **Unified Funding Mechanism:** It unifies the currently fragmented public research funding landscape (subsuming bodies like the Science and Engineering Research Board – SERB).
- **Private Capital Mobilization:** ANRF is tasked with mobilizing a total fund of **₹50,000 crore** over five years (2023-2028), with an ambitious **~70%** expected to come from the private sector and non-governmental sources.
- **Focus Areas:** It prioritizes funding for interdisciplinary, translational, and high-impact research aligned with national missions in areas like **Artificial Intelligence (AI), Quantum Technologies, Semiconductors, Health, and Climate Change**.
- **Democratization of Research:** A key objective is to build research capacity in **State Universities and private HEIs**, moving the research culture beyond the elite IITs and central institutions.

Bridging the Academia-Industry Divide

The success of the GERD target depends critically on fostering genuine, sustained collaboration between universities and industry.

1. Industry-Centric Policy Tools

- **R&D-Linked Financial Tools:** The new ₹1 lakh crore fund for **low-cost, long-term loans** acts as a powerful financial lubricant.
- **Tax Incentives:** Modernizing R&D tax incentives, linking them explicitly to **collaborations with accredited HEIs**, and focusing on **measurable IP output** rather than just input expenditure.
- **Mandated R&D Outlay:** Encouraging or mandating that large companies in strategic sectors (Pharma, Auto, Electronics) dedicate a specific percentage of their revenue or even a portion of their **CSR funds** towards academic research collaborations.

2. Academic/HEI Reforms (as per NEP 2020)

- **Industry Relation Cells (IRCs):** Universities must set up dedicated IRCs/Technology Transfer Offices (TTOs) to professionalize engagement and manage **IP rights**.
- **Faculty Immersion and 'Professor of Practice':** Faculty exchange programs where professors spend time in industry and industry experts (Professors of Practice) teach in universities ensure that curriculum and research focus remain **industry-relevant**.
- **Co-Designed Curriculum:** Industry must actively participate in **co-designing curricula** and implementing mandatory, structured internships to reduce the **employability gap**.

3. Overcoming Cultural and Structural Challenges

- **Cross-Purpose Conflict:** Academics prioritize **publications and fundamental knowledge**, while industry seeks **applied solutions and short-term profits**. Clear contracts and mutual agreements on the scope and timeline of deliverables are essential to resolve this.
- **IP Conflict:** The most significant friction point is the **Intellectual Property (IP) ownership**. Universities want the right to publish for academic promotion, while industry demands proprietary secrecy for market advantage. Clear, pre-agreed **IP sharing models** (e.g., joint ownership, licensing) must be standardized.
- **Bureaucracy and Speed:** University procurement and administrative processes are often slow, which frustrates the industry's need for speed and agility. **ANRF's single-window system** aims to address this.

Conclusion: Securing India's Technological Sovereignty

India is at a critical juncture where sustained economic growth is impossible without indigenous technological capacity. The push to raise GERD to 2% of GDP, with 50% contribution from the private sector, is not just a financial target—it is a **national mission for technological sovereignty**. The ANRF provides the institutional architecture, the ₹1 lakh crore fund provides the financial incentive, and the NEP provides the human resource reform. Success hinges on a **sustained political will** to overcome cultural inertia and bureaucratic friction, making India a global leader not just in consumption, but in **cutting-edge creation**.

Q. *Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard.*

Q. *What is the status of digitalization in the Indian economy? Explain the problems faced in this regard and suggest improvements.*

3.1.4. CAN INDIA BECOME SELF-RELIANT IN REE PRODUCTION

Why in the News?

The Union Cabinet's recent approval of a ₹7,280-crore scheme to establish integrated facilities for manufacturing **Rare Earth Permanent Magnets (REPM)** underscores India's urgent drive towards self-reliance in **Rare Earth Elements (REEs)**.

What Are Rare Earth Elements (REEs)?

Rare Earth Elements (REEs) comprise a group of 17 metallic elements essential for modern technologies due to their unique magnetic, luminescent, and catalytic properties. Despite their name, REEs are relatively abundant in the Earth's crust, but their extraction and processing are challenging because of dispersed deposits, complex ore compositions, and associated environmental risks like radioactive byproducts.

Classification and Properties

REEs are categorized into:

- **Light REEs (LREEs)**: Including lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), samarium (Sm). These are more common and vital for catalysts, alloys, and glass applications.
- **Heavy REEs (HREEs)**: Such as dysprosium (Dy), terbium (Tb), europium (Eu), yttrium (Y). Rarer and more valuable, they enhance high-performance magnets and electronics.

Key properties include:

- **Magnetic Strength**: Neodymium-based magnets (NdFeB) provide exceptional power for compact devices like EV motors and wind turbines.
- **Optical and Catalytic Traits**: Enable efficient LED displays, fiber optics, and pollution control in vehicles.
- **Thermal and Conductive Qualities**: Support aerospace alloys and superconductors.

Global demand is surging, projected to increase 7-10 times by 2040, driven by the energy transition. However, supply is monopolized, leading to price volatility and geopolitical risks, which directly impact import-dependent nations like India.

India's Position in the Global REE Landscape

India holds the world's fifth-largest REE reserves (6.9 million tonnes), concentrated in monazite sands along coastal regions. Yet, domestic production is negligible, with 100% reliance on imports for processed REEs. This gap exposes critical sectors: EVs (requiring 1-2 kg REEs per vehicle), renewables (200 kg per wind turbine), and defense (missile guidance systems). Connecting this to broader vulnerabilities, China's dominance amplifies supply chain disruptions, as seen in past crises, pushing India towards integrated development.

China's Dominance as a Geopolitical Strategy

- China's control over REEs is a calculated tool of influence, evolving from market flooding to strategic restrictions. Starting in the 1990s, state-backed mining at sites like Bayan Obo captured global shares through low costs and minimal regulations. By 2010, export quotas amid territorial disputes spiked prices, forcing diversification elsewhere. Recent moves, like the 2024 curbs on seven REEs during US trade tensions, prioritize domestic needs in EVs and renewables, where China holds 60% market share.
- This strategy creates asymmetries: disrupting supplies to coerce policy shifts, as in Australia's case. For India, as a Quad member, it delays localization efforts, highlighting the need for countermeasures to safeguard economic and security interests.

Key Features of India's REE Self-Reliance Push

To address these challenges, the government is rolling out comprehensive schemes focusing on exploration, processing, and end-use manufacturing, building a seamless value chain.

The REPM Scheme

- **Scope and Funding**: Targets integrated production from REE oxides to alloys and magnets over seven years, with a total outlay supporting ecosystem development worth ₹34,300 crore.
- **Key Components**: Subsidies for capital (up to 50%), technology transfers via IREL, and linkages to PLI schemes for EVs and renewables.
- **Strategic Locations**: Facilities in Andhra Pradesh, Odisha, Tamil Nadu, focusing on high-potential reserves like beach sands.

Broader Initiatives Under National Critical Mineral Mission (NCMM)

- **Exploration and Mining**: Auctions for 30 critical minerals, including REEs, with seabed nodule ventures in the Indian Ocean.
- **Processing Upgrades**: Expanding IREL capacities in Odisha and Tamil Nadu to 10,000 MT/year.
- **International Collaborations**: KABIL's overseas acquisitions (e.g., lithium in Argentina) to diversify sourcing.

These steps connect exploration to application, ensuring raw materials feed into high-value products like REPMs.

Challenges in Achieving Self-Reliance

Despite promising reserves, several hurdles impede progress, requiring coordinated solutions to avoid perpetuating dependencies.

Technical and Resource Constraints

- **Underdeveloped Exploration**: Only 10% of potential sites mapped, with atomic mineral restrictions limiting private involvement.
- **Processing Gaps**: Lack of commercial separation tech leads to exporting raw ores and re-importing products.
- **Environmental Issues**: Thorium co-products demand safe handling, complicating projects in eco-sensitive areas.

Geopolitical and Economic Barriers

- **Market Volatility**: Fluctuating global prices deter investments.
- **Skill and Infrastructure Deficits**: Need for specialized R&D and workforce training.

Challenge	Impact	Mitigation Strategy
Exploration Limits	Underexploited 6.9 MT reserves	Amend MMDR Act for private auctions; enhance geological surveys.
Processing Tech Gap	100% import reliance	JV with Japan/Australia for hydrometallurgy transfer.
Environmental Risks	Project delays due to thorium	Adopt green mining protocols; IAEA-compliant waste management.
Geopolitical Exposure	Supply disruptions from China	Quad partnerships; diversify via Vietnam/Australia.

Overcoming these will ensure a resilient supply chain, linking domestic strengths to global opportunities.

Implications for India's Future

- The REE initiative has transformative potential, decoupling growth from external risks while fostering innovation. Economically, it could generate ₹10,000 crore in exports and support a $50 billion green sector by 2030. Technologically, it enables EV localization (30% market by 2030) and renewable expansion (500 GW target), reducing costs and emissions.
- Geopolitically, it strengthens strategic autonomy, countering China's leverage through alliances like Quad's Critical Minerals Dialogue. However, success depends on execution: balancing ESG concerns to prevent social conflicts in mining areas, and integrating with broader policies like Net-Zero 2070. Critically, without rapid scaling, India risks missing the green transition window, emphasizing the need for sustained investment and reforms.

Conclusion

India's pursuit of REE self-reliance, anchored by the **REPM scheme** and **NCMM**, represents a strategic response to global chokepoints, transforming vulnerabilities into opportunities for sovereign growth. By harnessing domestic reserves, advancing processing, and forging partnerships, it can secure supplies for EVs, defense, and renewables. Yet, addressing technical, environmental, and geopolitical challenges is essential to build a robust ecosystem. Ultimately, this endeavor will define India's role in the **critical mineral's era**, ensuring **sustainable development** and **technological leadership**.

Rare Earth Elements (REEs)

Rare Earth Elements consist of 17 chemically similar metals: the 15 lanthanides (La to Lu) plus scandium and yttrium. Despite the name, they are relatively abundant in the Earth's crust but rarely occur in economically extractable concentrations.

Key characteristics

- High melting points, density, electrical and thermal conductivity
- Divided into Light REEs (Lanthanum to Samarium) and Heavy REEs (Europium to Lutetium + Yttrium)
- Highly reactive, excellent magnetic, luminescent and catalytic properties

Main mineral sources

- Bastnäsite, monazite, xenotime (primary sources)
- Loparite and ionic adsorption clays (especially for heavy REEs)
- Usually found mixed with other minerals, never in native form

Major Applications of REEs

Even in tiny quantities, they are irreplaceable in modern technology:

- **Clean energy**: Neodymium, praseodymium, dysprosium and terbium in high-performance permanent magnets for electric vehicle motors and wind turbines

- **Electronics & lighting**: Europium and terbium as phosphors in LEDs, displays and fluorescent lamps
- **Defence & aerospace**: Precision guidance systems, jet engines, radar, sonar and laser targeting
- **Healthcare**: MRI contrast agents, X-ray systems, surgical lasers
- **Oil refining & catalysis**: Lanthanum and cerium in fluid catalytic cracking to produce gasoline
- **Nuclear**: Gadolinium and samarium in control rods and neutron absorption
- **High-strength alloys**: Added to magnesium, aluminium and steel for aerospace and automotive use

Global and Indian Reserve-Production Scenario (as of 2024–2025)

World reserves: ~120 million tonnes REO equivalent

- China: 44 Mt (37%)
- Vietnam, Brazil, Russia: next largest
- India ranks 5th with ~6.9 million tonnes of contained REO (mostly in beach sand monazite)

Production (2024 estimates)

- China: 240–270 kt REO (~70% of global supply) plus ~90% of refined products and ~90–95% of permanent magnets
- Australia, USA, Myanmar, Russia and others make up the rest
- China still processes almost all heavy REEs globally

India

- 5th largest reserves but production <1% of global output
- Almost 100% import-dependent for separated REE compounds and magnets
- Monazite-rich beach sands in Odisha, Andhra Pradesh, Tamil Nadu and Kerala are the primary resource

Strategic Importance

- Demand is projected to grow 5–9× by 2030–2040, driven by EVs, renewables and defence
- Extreme supply-chain concentration (far higher than oil) creates vulnerability
- China has previously weaponised export quotas (2010 Japan embargo, recent gallium/germanium restrictions)
- Rising prices: NdPr oxide doubled from ~$70/kg in 2020 to $150–200/kg in 2024–25
- India's import bill and forex pressure will increase sharply as domestic EV/wind manufacturing scales

Why India Produces Very Little Despite Large Reserves

1. Monazite is classified as an "atomic mineral" because of co-occurring thorium → mining restricted to government entities only (IREL and KMML)
2. Private sector banned from beach-sand mining since 2016–2019
3. IREL's main revenue comes from ilmenite, rutile, zircon, not REEs → low incentive to invest in separation and refining
4. Outdated technology and negligible private/academic R&D participation

5. Fragmented exploration efforts and regulatory overlap

Recommended Measures to Unlock India's REE Potential

1. Remove REEs from the atomic minerals list (except when thorium concentration exceeds threshold) to allow private mining and processing
2. Permit private companies to mine beach sands with strict condition to return thorium-bearing monazite to government
3. Create a dedicated Department of Rare Earths & Critical Minerals under Ministry of Mines
4. Set up an independent regulator (Rare Earth Regulatory Authority)
5. Restructure IREL: separate thorium-related activities (keep under DAE) and create a new commercially-driven REE entity
6. Incentivise private investment in downstream separation, metal-making and magnet production through PLI-type schemes
7. Consolidate exploration under a single advanced centre (National Centre for Mineral Targeting)
8. Build strategic stockpiles of key REE compounds and magnets
9. Accelerate overseas acquisition and joint ventures through KABIL and partnerships with Australia, USA, Japan, Vietnam, Africa
10. Implementing these reforms can transform India from a near-total importer to a significant global player in the rare earth supply chain within this decade.

Q. *Despite India being one of the countries of Gondwanaland, its mining industry contributes much less to its Gross Domestic Product (GDP) in percentage. Discuss.*

Q. *Mineral resources are fundamental to the country's economy and these are exploited by mining. Why is mining considered an environmental hazard? Explain the remedial measures required to reduce the environmental hazard due to mining.*

3.1.5. MISSING LINK IN INDIA'S MINERAL MISSION

Why in the News?

- Recently, the Union Cabinet approved a **₹7,280 crore rare-earth magnet scheme** and the **G-20 framework on critical minerals** has been finalised with value creation through refining and manufacturing as its centrepiece.
- These developments have highlighted the urgent need to develop domestic **processing and refining capacity** of **critical minerals**, an area where India continues to remain significantly weak despite progressive mining reforms.

Background and Context

The foundational importance of the midstream segment is being increasingly recognized globally and domestically, but a significant gap persists in India's industrial capability.

Focus on Domestic Mining Reforms

- In recent years, the **Mines and Minerals (Development and Regulation) Act** has been **amended** to bolster domestic mining.
- These reforms were intended to support the sector through measures such as:
- Introduction of **exploration licences**.
- Use of **national auctions**.
- Facilitation of mining **associated minerals**.
- Establishment of a **national mineral exchange**.
- It has been observed that these reforms help with the **digging** of minerals but **do not address the refining** challenge.

Global Bottleneck

- The **midstream segment**—**processing and refining**—is identified as a **global chokepoint**.
- **China's dominance** in this segment is substantial, controlling:
- Over **90%** of rare earth and graphite refining.
- Nearly **80%** of cobalt processing.
- **70%** of lithium chemicals production.

Strategic Vulnerability and Exposure

- **Digging without processing** is noted as an act of **exporting prosperity**.
- The **absence of domestic processing capacity** exposes India's supply chains to global shocks, which have intensified due to **U.S.–China trade frictions** leading to new tariffs and export restrictions.
- In October 2025, Beijing briefly **weaponised** these supply chains by imposing controls on crucial products and technologies like **rare earth magnets, lithium-ion batteries, graphite anodes, and processing technologies**, illustrating the vulnerability.
- India still **imports almost all its lithium, nickel, and cobalt**.
- The processing gap impacts not just the **clean energy transition** (solar panels, electric vehicles, wind turbines) but also vital sectors like **semiconductors, telecommunications, automobiles, pharmaceuticals, and defence systems**.

India's Processing Lags and Quality Gaps

The **Council on Energy, Environment and Water (CEEW)** conducted a recent study identifying the critical minerals that India currently mines and processes for clean energy and defence, yet in each case, refining either lags behind in **scale** or **quality**.

Status of Key Critical Minerals

Mineral	Domestic Production Status	Processing Gap
Graphite	Mined and Processed	Domestic purity reaches 92–99%, whereas batteries require **99.95% spherical graphite**.
Rare Earths	Mined and Processed	Processed into **oxides** but not **separated** into the metals required for magnets.

Tin	Mined and Processed	Domestic production meets barely **one per cent** of total demand.
Others	Mined and Processed	The mineral list includes **copper, silicon, titanium, and zirconium**.

Five-Point Strategy for Developing Critical Mineral Processing

A structured approach is required to close these gaps, demanding **long-term investments**, **proprietary know-how**, and a **skilled workforce**.

1. Transform Centres of Excellence (CoEs) into Innovation Engines:

- The **nine CoEs** under the **National Critical Mineral Mission (NCMM)** must spearhead **applied research** to produce high-purity compounds and materials aligned with **downstream industry needs**.
- The immediate focus should be on developing **commercial-ready processing technologies** (**Technology Readiness Level 7–8**) with clearly defined metrics for **purity, recovery, cost, and waste**.
- **Collaborative projects** involving IITs, NITs, industry, and think tanks must be accelerated to move innovations swiftly from the **lab to the market**.

2. Unlock Secondary Resources for Critical Minerals Recovery:

- India generates significant volumes of residues, which contain valuable critical minerals:
- Over **250 million tonnes** of **coal fly ash** annually, containing light and heavy rare earths.
- **Red mud** from aluminium plants, holding gallium.
- **Zinc residues**, containing cobalt.
- **Steel slag**, carrying vanadium.
- **Pilot projects at CSIR and IITs** have demonstrated the feasibility of recovery.
- Scaling efforts could involve embedding recovery units in the proposed **Critical Minerals Processing Parks**, supported by incentives for utilizing **mine tailings and residues**, and co-funded with **PSUs and state utilities**.
- The **Environment Ministry** should **streamline clearances** for efficient utilization of secondary resources. The recently **approved ₹1,500 crore critical minerals recycling scheme** is noted as a promising start.

3. Train and Upskill a New Generation of Process Metallurgists and Technicians:

- The existing metallurgical workforce is primarily trained for **bulk metals** using **pyrometallurgy**.
- Critical minerals, found in low-grade ores, necessitate specialized skills in **hydrometallurgical** and **advanced refining techniques**.
- The **₹100 crore NCMM allocation** for skilling should be utilized to fund **train-the-trainer programmes, diploma courses, and new curricula** developed in collaboration with industry.
- **Apprenticeships** at major refiners like Hindustan Copper, Hindalco, and Vedanta can provide essential hands-on experience, potentially creating thousands of skilled jobs in mineral-rich states like **Odisha, Gujarat, and Jharkhand**.

4. De-risk Investment through Demand Assurance and Financing Tools:

- Global mineral markets are often characterized by **artificially low prices**, which discourage new domestic entrants.
- India should consider adapting models like the **U.S. Department of Defence's deal** with MP Materials, which utilized **offtake commitments and price guarantees**.
- The planned **mineral stockpile** can be transformed into an **active market-maker**, which would involve:
- **Buying** from domestic producers during market downturns.
- **Releasing** supply during periods of high demand.
- A dedicated window under the **Ministry of Mines** could manage this mechanism through **long-term contracts**.
- **Key sectors** like **defence, pharmaceuticals, and electronics** should be encouraged to source part of their inputs domestically, while processors are concurrently encouraged to meet stringent quality and reliability standards to anchor demand and attract **private investment**.

5. Link Mineral Diplomacy to Processing Capacity:

- Overseas acquisitions, such as the **five lithium blocks in Argentina** through **Khanij Bidesh India Limited** (KABIL) and exploration rights in **Zambia**, predominantly focus on **raw ores**.
- **Real leverage** is asserted to lie in processing strength.
- By demonstrating consistent high-purity refining across the seven minerals already handled, India can elevate global partnerships from mere buyer-seller deals to **co-investment alliances**.
- The announced **Australia-Canada-India Technology and Innovation Partnership** at the Johannesburg summit provides a template for co-developing processing technologies with major resource holders.
- The concept of **critical minerals parks** under the NCMM should serve as a platform for such partnerships.
- The **Ministry of Commerce and Industry**, alongside the **Ministry of Mines**, should integrate the processing of critical minerals, along with trade and investment opportunities, into bilateral and multilateral economic dialogues such as **G-20, BRICS, and IPEF**.

Way Forward

- **CoEs must be mandated to function as outcome-driven research hubs** delivering scale-ready technologies with commercial applicability, measurable through stringent purity and recovery benchmarks.
- **Secondary resource utilisation must be elevated to national priority**, supported by clearances, incentives, and co-funding to create steady domestic feedstock for processing parks.
- **Workforce development must focus on hydrometallurgy and advanced refining,** supported by structured industry-academia training pathways.
- **Demand assurance tools including offtake contracts, price guarantees, and strategic stockpile operations** must be institutionalised to de-risk investments.
- **Mineral diplomacy must be recalibrated** toward co-investment in refining technologies and establishment of integrated cross-border supply chains centred on processing hubs within India.
- **Integrated Critical Minerals Processing Parks** must be established as national anchors for mining-to-manufacturing value addition.

Conclusion

- India's mineral mission has reached stage where upstream reforms are no longer sufficient, since **strategic autonomy will depend on mastery of processing and refining**, which convert raw ores into materials that power defence, electronics, semiconductors, pharmaceuticals, and clean energy.
- Control over refining equals control over future industrial power, and India must act decisively to develop midstream strength to transition from raw material supplier toward resilient and competitive industrial economy.

Q. *"While recent amendments to the Mines and Minerals (Development and Regulation) Act have addressed upstream extraction, India's 'strategic autonomy' remains compromised by a hollowed-out midstream segment." Critically analyze the vulnerabilities arising from India's dependence on global processing chokepoints and suggest measures to bridge the 'refining-purity' gap.*

3.1.6. CHILE'S LESSON FOR INDIA'S COAL CONUNDRUM

Why in the News

- Recently, concerns regarding **India's progress in phasing out coal** were highlighted by country's drop of 13 places to the **23rd position** in the **Climate Change Performance Index**, which was released during **COP30 in Brazil in November 2025**. The urgent need for a coal exit plan is stressed, and the successful experience of **Chile** in tackling its coal dependence is being considered a crucial lesson for India.

Background or Context

- Coal presents a significant **conundrum** for India. The continued reliance on coal is resulting in the **loss of lives and livelihoods** due to **runaway global warming** and **air pollution**.
- Conversely, its immediate phaseout presents a trade-off, potentially causing the **loss of jobs** and jeopardising the **supply of low-cost electricity** in some States.
- This socio-ecological calculus requires a focused and systematic approach toward **decarbonisation**.

India's Energy Conundrum and Comparative Status

India's Energy Profile

India's energy dependency remains heavily skewed towards coal, despite significant gains being made in cleaner sources:

- **Dominance of Coal:** Coal accounts for **over half** the source of total energy use.
- **Renewables Share:** While the share of renewables in **total installed power capacity is one half** (following the doubling of clean energy capacity during 2021-25), **only one-fifth of electricity** was actually generated using them in 2024.

- **Electricity Generation:** Coal continues to contribute a dominant **75% of electricity generation**, and India is currently **increasing domestic production** of coal.

Chile's Successful Transition

In sharp contrast, Chile successfully accelerated its energy transition through decisive policy actions, making it an apt case study:

- **Coal Reduction:** Coal's share of Chile's electricity generation was significantly reduced, falling from **43.6% to 17.5%** during 2016-24.
- **Renewables Dominance:** Today, renewables (especially wind and solar) constitute **over 60%** of country's power mix.
- **Policy Drivers:** The transition was driven by decisive governmental actions, including the introduction of a **2014 tax of $5 a tonne of carbon emissions**, imposition of **stringent emission standards** on coal plants (raising compliance costs by 30%), and the use of **competitive auctions** to favour wind and solar power.
- **Grid Stability: Energy storage systems** were aggressively built out to stabilise the grid, and a commitment was made to **phase out all coal by 2040**.

Policy Trade-offs and Socio-Ecological Calculus

Benefits of Coal Phaseout (The 'No Regrets' Policy)

Coal phaseout constitutes a **"no regrets" policy** as it is part of averting massive damages linked to climate change and health crises:

- **Economic Damage Aversion:** It is estimated that by 2100, climate change would significantly **sap 3%-10% of India's GDP** through heat stress and declining labour productivity.
- **Health Benefits:** Coal phaseout is part of stopping massive health damage; one estimate suggests a one GW increase in coal-fired capacity corresponds to a **14% increase in infant mortality rates** in districts near the plant site.

India's Complexity vs. Chile's Facilitation

While Chile's transition offers a model, India's coal dependence presents a more complex challenge:

- **Scale and Workforce:** Coal occupies a smaller share of Chile's energy compared to India, meaning fewer plants needed to be shut down and a smaller dependent workforce needed to be managed.
- **Economic Alternatives:** Chile had already begun developing **alternative industries**, particularly in renewables, creating pathways to **absorb displaced workers and capital**.
- **Social Risks:** India's deeper coal dependence and **limited economic alternatives** in coal regions mean that many districts in **Jharkhand, Chhattisgarh, Odisha, and West Bengal** could face severe **social risks** from abrupt closures.
- **Political Environment:** Chile's transition was enabled by a political environment that allowed **swift, market reforms** following the privatisation of key sectors.

Way Forward: A Systematic Decarbonisation Road Map

The central thrust of the transition must be on **decarbonisation**, requiring a systematic, multi-pronged strategy:

- **Phasing out Coal and Enhancing Renewables**
- **Plant Removal:** A systematic removal of the **oldest and most polluting plants** is necessary, coupled with the **cancellation of new coal approvals**.

- **Replacement Strategy:** Coal output must be replaced with **firm renewable power** backed by **storage** systems.
- **Timelines:** Specific **timelines for plant retirements and closures** must be established; TERI has suggested that India could phase out coal power entirely by **2050** to meet its **net zero goals**.
- **Efficiency:** In the transition phase, there should be an **incremental scaling down of coal** coupled with **improved efficiency** and eventual **decommissioning**.
- **Market Reforms and Incentives**
- **Market Disincentives:** Regulation and markets must be reformed to **disincentivise coal**, for example, through the implementation of **carbon pricing** mechanisms and the removal of **coal subsidies**.
- **Procurement Rules: Clean dispatch rules** and **power procurement contracts** must be established to actively favour renewables over coal.
- **Just Transition and Worker Support**
- **Reskilling and Livelihoods:** Robust support for workers must be provided through **reskilling** programs and the creation of **alternative livelihoods**, drawing directly from Chile's successful experience.
- **Dedicated Funding:** A **dedicated transition fund**, such as the proposed **"Green Energy Transition India Fund"** suggested by the Inter-Ministerial Committee, is essential for social protection.
- **Financing the Transition**
- **Blended Finance Model:** Financing should utilise a **blended model of public and private capital**, where government support is strategically directed toward **community welfare and workforce reskilling**.
- **Private Investment:** Private investors should be encouraged to lead the expansion of **clean energy infrastructure**.
- **Strategic Use of Corpus:** The **District Mineral Foundation corpus** can be strategically used to foster **entrepreneurship and economic diversification** in coal-dependent regions.

Conclusion

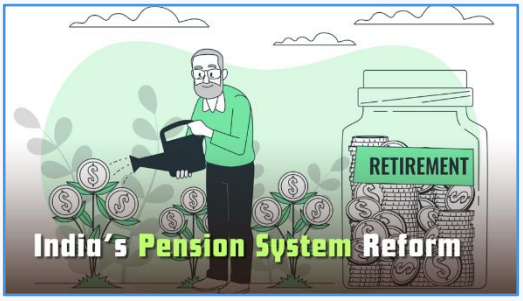
- Chile's experience was reported to demonstrate that **coal-dependent economies** can accelerate transition through **market incentives**, **regulatory tightening**, and **investment in renewables and storage**; however, **India's larger scale of coal dependence** and **limited economic alternatives in coal regions** were reported to make transition more complex.
- Therefore, **phaseout of coal** was recommended to be made **top political priority**, supported by **timelines for retirements**, **market reforms**, **financing for social protection**, and **learning from Chile** while adapting measures to India's socio-economic realities.

Q. Despite India being one of the countries of Gondwanaland, its mining industry contributes much less to its Gross Domestic Product (GDP) in percentage. Discuss.

Q. "In Spite of adverse environmental impact, coal mining is still inevitable for development". Discuss.

3.1.7. THE EVOLUTION OF PENSION REFORMS IN INDIA

Why in the News?



India is witnessing a rapid demographic transition, with over **153 million elderly citizens (60+)** at present — a number expected to **cross 347 million by 2050**. As nearly **88% of senior citizens depend on informal sector jobs without assured pensions**, the need to strengthen India's pension ecosystem has become increasingly critical.

Early Pillars of Social Security: IGNOAPS & OPS

- **IGNOAPS (1995)** marked the beginning of nationwide income support for Below Poverty Line (BPL) senior citizens aged 65+, gradually expanding in age and coverage.
- **Old Pension Scheme (OPS)** guaranteed government employees a **defined benefit pension** post-retirement.

Together, these introduced a **welfare-driven approach** to protect economically vulnerable elderly groups.

Transition to Contributory Pension Models: NPS & APY

- **National Pension System (2004)** replaced OPS for government employees, promoting a **market-linked, contributory** model.
- **NPS Corporate Model** broadened access to formal private-sector workers.
- **NPS 2.0 reforms** allowed **100% equity allocation**, giving younger investors more flexibility and higher return potential.
- **Atal Pension Yojana (2015–16)** encouraged low-income and informal-sector workers (18–40 years) to build retirement savings through **small, flexible contributions** suited to irregular incomes like agriculture.

These reforms shifted the emphasis from **state-funded pensions** to **individual savings and shared responsibility**.

Labour Codes: Strengthening the Pension Base

- A **uniform definition of wages** (minimum 50% basic pay) curbs allowances-based under-reporting.
- This boosts contributions to **PF, gratuity and pension**, ensuring stronger future financial security across both public and private sectors.

Five Phases of India's Pension Evolution

Stage	Focus	Key Reform
Stage 1	Social Safety Net	IGNOAPS
Stage 2	Formal-Sector Retirement Security	OPS
Stage 3	Contributory & Market-Linked Pensions	NPS
Stage 4	Informal-Sector Integration	APY
Stage 5	Investment Choice & Modernisation	NPS 2.0

Overall shift: From welfare-based dependency → to inclusive, contributory, and choice-driven pension systems

Persistent Gaps: Awareness & Accessibility

- **42%** people above 55 were unaware of NPS eligibility (LASI 2017–18).
- Documentation complexity and low awareness hinder informal-sector enrolment.
- **63% of elderly citizens lack digital literacy**, creating new barriers in digital pension services.

eSHRAM: A New Framework for Inclusion

- First national database for informal workers.
- Provides seamless linkage to pension and other social security schemes.
- LASI findings: **75.6% women** and **68% men** above 55 still depend on informal jobs.

Challenges include:

- Aadhaar/mobile mismatch
- Banking issues
- Limited last-mile awareness

Why Reform Is Urgent

- **Longer life expectancy** means more retirement years without income.
- **Declining fertility** raises the old-age dependency burden.
- **90% workforce** remains informal and outside institutional pensions.
- **High medical expenses** heighten vulnerability.
- Joint family support systems are weakening due to **urbanisation and migration**.

Conclusion

India's pension ecosystem has gradually progressed from **basic welfare** to **broad-based contributory protection** via IGNOAPS, OPS, NPS, APY, and eSHRAM. Yet, **awareness deficits, digital hurdles, and informal-sector vulnerabilities** continue to limit universal pension coverage. Ensuring **financial literacy, simplified access, and deeper outreach** will be crucial to secure a **dignified and stable old age** for India's surging elderly population.

Q. *"While the 'Feminization of Ageing' and the dominance of the informal workforce are the defining characteristics of India's demographic shift, the current pension ecosystem remains largely formal-sector centric." Critically analyze the structural and digital barriers that hinder the scaling of schemes like the Atal Pension Yojana (APY) and eSHRAM in reaching the 'missing middle' of India's economy.*

3.1.8. TRANSPORT CRISES IN INDIA

Why in the News?

- **Recently**, the Indian transport infrastructure witnessed **massive strain**, highlighted by two major, simultaneous events: an **immense rush** on **trains bound for Bihar** during **Chhath Puja and Bihar elections**, and the **mass cancellation of Indigo flights**, leading to **stranded passengers** and **inflated airfares**.

- These crises serve to explain the reaction of **prices** and the responses of **government and private players** to **demand and supply shocks**, indicating the constraints imposed on **welfare** within a **neo-liberal economic framework**.

Background and Context

- During recent months, **transport infrastructure in India** has been placed under **massive strain**, with **rail and air transport systems** struggling to absorb **sudden demand and supply shocks**.
- In railways, **mass festival and election-related** migration towards Bihar generated unprecedented demand for trains, while capacity remained constrained, leading to overcrowding and safety concerns.
- In aviation, **regulatory non-compliance by Indigo** regarding crew norms triggered **wide-scale cancellations**, which reduced **available seat capacity** sharply and contributed to **sharp fare escalation** for remaining flights in presence of **near-monopoly conditions**.

Demand Shock and Government Services (Indian Railways)

- **Nature of Demand Shock:**
- **Sudden surge in demand** for **Bihar-bound trains** in October and November has been identified as **classic demand shock**, where **demand curve shifted sharply upward** while **short-run supply of trains remained fixed**.
- Under **standard economic theory**, if **prices remain fixed** due to policy, the outcome would be **excess demand**, **overcrowding**, and **hazardous travelling conditions**, exactly as observed in **unreserved compartments**.
- **Role of Low Prices and Excess Demand:**
- **Government intervention** in keeping **rail fares low** for **social and welfare reasons** prevented market-driven fare escalation, but this resulted in a **number of travellers far exceeding train capacity**, leading to **rampant overcrowding and inefficiency**.
- **Standard criticism** of **public services** has been highlighted, where **low administered prices** are blamed for **excess demand** and **poor service quality**.
- **Investment-based Alternative:**
- **Criticism focusing only on low prices** is argued to miss the **fundamental issue**, as the **solution does not lie in raising prices**, rather in **increasing supply through government investment**.
- For **essential services** such as **health, education, and train travel**, **affordable prices must be maintained** for **welfare**, but this must be complemented by **significant state investment** to **expand infrastructure and access**.

Neo-Liberal Constraints on Public Investment

- **Fiscal Limits and Policy Framework:**
- Expansion of **public investment** is described as **difficult under neo-liberal economic regime**, which imposes **strict constraints on government intervention**, especially through **numerical limits on fiscal deficit**.
- The state's **capacity to expand railway infrastructure and increase number of trains** is restricted, even when **social need** is evident.
- **Progressive Taxation of Top 1%:**

- A route proposed for **raising resources without breaching deficit limits** is through **higher wealth and income taxation of top 1% population**, enabling **strengthening of welfare state**.
- Work of **Thomas Piketty and collaborators** has been cited to show that **modest progressive taxation on richest 1%** could generate **substantial resources** for **public investment in welfare services**, but such measures are described as **politically unacceptable** to **domestic and global capital**.

Monopolies and Indigo Flight Cancellations

- **Nature of Supply Shock:**
- The **Indigo crisis** has been characterised as **supply shock**, where **withdrawal of large number of flights** occurred, leading to a **sharp rise in fares** and **welfare losses for passengers**.
- The **near-monopoly status** of Indigo amplified **price increases** for alternative flights, as **competition remained limited**.
- **Monopoly Power and Welfare Loss:**
- **Supply restrictions by one firm** would not have resulted in **systemic disruption** if **market structure had been genuinely competitive**.
- **Near-monopoly power** enabled airlines to **raise fares substantially** in the face of **supply shortfall**, producing **large consumer surplus loss** and **inequitable outcomes**.
- **Global Illustration: U.S. Inflation Episode:**
- **Non-competitive pricing power** has been cited as a **major factor** in **rapid inflation** during **former U.S. President Joe Biden's term**, where **dominant firms** used **market power** to **inflate margins**, creating a **cost-of-living crisis**.
- This situation highlights how **monopoly power in neo-liberal economies** can have **macroeconomic and political consequences**.

Neo-Liberal Economy and Structural Constraints

Asymmetry between State and Market

- The two crises are interpreted as **outcomes of the neo-liberal economic model** which **restricts state intervention** while **encouraging deregulation of the private sector**.
- Under this model, the **state is constrained** from **raising taxes on the wealthy**, **expanding spending**, and **investing in public infrastructure**, leaving it with **limited options** such as **keeping prices low** without expanding capacity, which leads to **overcrowding and degraded service quality** in sectors like **railways**.

Rise of Monopolies through Deregulation

- Simultaneously, **deregulation of private sector activities** has been argued to promote **concentration of capital**, enabling the formation of **monopolies or oligopolies**, as visible in the **aviation sector**.
- Instead of **enhancing consumer welfare**, such **unregulated private markets** with **monopoly power** can **reduce welfare** through **higher prices**, **service disruptions**, and **vulnerability of users**.

Common Thread between Rail and Aviation Crises

- While **railway overcrowding** and **flight cancellations** may appear **qualitatively different**, both have been presented as **logical outcomes of the same economic framework** that **prioritises private interests** and **underplays public provisioning**.
- The crises yield **mirrored welfare failures** in **public and private domains**, driven by **underinvestment in public infrastructure** and **monopolistic pricing** in deregulated concentrated markets, respectively.

Way Forward

- **Expansion of public investment** must be undertaken to ensure that essential services such as **railways**, **aviation**, **health**, and **education** are capable of meeting surging demand without compromising on quality or safety.
- **Affordable pricing** should be maintained, but it must be supported by **adequate infrastructure** and **supply augmentation**, rather than relying solely on low fares to achieve welfare objectives.
- **Fiscal capacity** of the state must be strengthened through **sustainable resource mobilisation**, including **progressive taxation** of top-income groups, to enable greater government spending on welfare and transport infrastructure.
- **Regulatory oversight** must be enhanced to prevent the rise of **monopolies** in critical sectors such as **aviation** and to ensure compliance with **safety and operational standards**, avoiding sudden withdrawal of services.
- **Efficient planning** mechanisms should be established to handle seasonal and election-related **surges in passenger traffic**, thereby reducing overcrowding and travel hazards.
- **Public-private coordination** frameworks should be developed to ensure that **private market operations** do not compromise **consumer welfare**, while allowing for efficient resource allocation.
- **Monitoring and evaluation** systems must be instituted to continuously assess **service delivery**, **price stability**, and **infrastructure capacity**, enabling timely interventions during crises.

Conclusion

- Recent **railway overcrowding** and **Indigo flight cancellations** are presented as **illustrative crises** that reveal the **limits of the neo-liberal economic framework** in delivering **reliable, equitable, and welfare-enhancing transport services**.
- It has been shown that **low prices without investment** and **deregulated prices under monopoly** both **reduce welfare**, especially for **ordinary citizens and migrants**.
- Unless **underlying tendencies towards monopolies**, **fiscal constraints on public investment**, and **devaluation of public services** are addressed, similar **mass disruptions in transport systems** are likely to reappear, with significant **economic, social, and political consequences** for India.

Q. *Why is Public Private Partnership (PPP) required in infrastructural projects? Examine the role of PPP model in the redevelopment of Railway Stations in India.*

Q. *The setting up of a Rail Tariff Authority to regulate fares will subject the cash strapped Indian Railways to demand subsidy for obligation to operate non-profitable routes and services. Taking into account the experience in the power sector, discuss if the proposed reform is expected to benefit the consumers, the Indian Railways, or the private container operators.*

3.1.9. MONETARY POLICY REVIEW

Why in the News?

The **Reserve Bank of India's (RBI) Monetary Policy Committee (MPC)** recently decided to **cut interest rates** once again by **25 basis points (bps)**, bringing the rate to **5.25%**. This move is regarded as an **assessment of India's current economy** and future expectations.

Background and Context: Policy Trend and Growth Trajectory

A comparison of the current rate cuts with a past episode provides context for the MPC's decision-making process concerning the **growth-inflation dynamic**.

Cumulative Rate Cuts

- **Total Reduction:** Interest rates have been **cut cumulatively by 125 basis points** in the calendar year.
- **Comparison to 2019:** Similar large cuts (135 bps) were implemented in **2019**; however, those cuts were in reaction to a **plummeting growth rate** (from 8.9% in March 2018 quarter to 3.3% by December 2019 quarter).

Current Growth Trajectory

- **Opposite Trend:** Growth is currently following the **opposite trajectory**, steadily accelerating from 5.6% in the second quarter (Q2) of the previous year to a recently released **8.2% in Q2** of the current year.

MPC's Rationale for Rate Reduction

The rate cut, despite the seemingly strong Gross Domestic Product (GDP) numbers, suggests the MPC is operating under specific concerns and aims.

Growth Perspective Assessments

- **Subdued Growth Conviction:** Central bank is **not convinced** that growth is currently as robust as the numbers suggest, indicating **monetary policy** needs to be as **supportive as possible**.
- **Excess Capacity and Investment:** MPC feels that Indian companies are **still sitting on excess capacity**, making **risks of overheating the economy slim** and supporting a push for **more growth**.
- **Underlying Reality:** Reality is likely a combination of factors: **real growth looks higher due to an unusually low deflator**, and companies can afford to **invest more**, even if this is fuelled by debt. The rate cut is seen as addressing both issues.

External Factors and Economic Impact

- **US Tariff Impact:** MPC possibly feels that the economic impact of the **U.S.'s 50% tariffs** has **not yet fully played out**.
- **Supply Chain Realignment: Supply chains** take time to realign, suggesting there might be a **further shift away from Indian exporters**.
- **Credit Support: Cheaper credit** going ahead will be welcomed by **Indian MSMEs**, especially **exporters**.

Inflation Outlook and Prudent Stance

The MPC has revised its inflation outlook but remains cautious, maintaining a specific policy posture to allow for flexibility.

Inflation Outlook

- **Lower Projection:** Outlook for inflation for the year has been **lowered to a benign 2%**.
- **Risk Factors:** All calculations could be undone by a sudden **jump in food prices or oil prices**.

Prudent Policy Posture

- **Neutral Stance:** The decision to **retain a neutral stance** is considered prudent.
- **Policy Pivot Necessity: Global uncertainty** is such that growth and inflation trajectories could **reverse direction suddenly**, requiring a **quick policy pivot** (readiness to raise rates).

Historical Precedent (2019)

- **Inflation Jump:** The 2019 rate cut episode saw **inflation jumping from 2% to 7.6%** in about a year, highlighting the need for vigilance.

Way Forward

- **Continuous Monitoring of Inflation Drivers**: Priority needs to be placed **on close monitoring of food and fuel prices**, with particular attention to **supply-side disruptions**, so that **emerging inflation pressures** can be detected **early and timely** policy response can be executed before inflation expectations become unanchored.
- **Strengthening Policy Transmission and Credit Access:** Emphasis needs to be placed on **effective transmission of policy rate cuts** to **bank lending rates**, especially for **MSMEs and export-oriented sectors**, so that intended growth support from cheaper credit is fully realised and not diluted by rigidities in financial system.
- **Integrating External Risk into Macro Strategy**: **Broader macroeconomic framework** needs to **incorporate trade shocks** such as **high foreign tariffs** into growth and external sector planning, with focus on **diversification of export markets, productivity improvements, and domestic competitiveness**, thereby ensuring that monetary policy is not overburdened as sole adjustment instrument.
- **Maintaining Readiness for Swift Policy Pivot**: **Institutional capacity** needs to be kept ready for rapid change in **policy direction**, including **re-tightening if inflation spikes,** or further easing if global or domestic shocks undermine growth, which justifies maintenance of neutral stance and flexible forward guidance.

Conclusion

- The **Reserve Bank of India's (RBI)** latest **interest rate cut** is based on an assessment that India's **robust growth momentum** needs additional support, given domestic factors like excess capacity and external risks like the impact of **U.S. tariffs**, while inflationary concerns are currently contained.
- However, the retention of a **neutral policy stance** is a **prudent action**, acknowledging the high degree of **global uncertainty** that could necessitate a swift change in the monetary policy direction to ensure **macroeconomic stability**.

Q. *Explain the difference between the computing methodology of India's Gross Domestic Product (GDP) before the year 2015 and after the year 2015.*

Q. *Do you agree with the view that steady GDP growth and low inflation have left the Indian economy in good shape? Give reasons in support of your arguments.*

3.1.10. IS INDIA'S 8.2% GROWTH RATE SUSTAINABLE

Why in the News?

India's GDP surged 8.2% to ₹48.63 lakh crore, reflecting strong economic momentum. However, the IMF's 'Grade C' rating warns of structural weaknesses that threaten long-term growth amid global volatility and internal challenges.

The General State of the Economy

India's latest GDP numbers indicate that the economy is operating at a significantly higher level than last year. The 8.2% rise highlights genuine economic momentum rather than a mere post-pandemic recovery.

- **Manufacturing (9.1% growth)**: Reflects strong industrial demand, rising factory utilisation, and healthy production cycles.
- **Services (60% of GDP, growing at 9.2%)**: Led by financial services growing at 10.2%, driven by robust credit activity and high transaction volumes.
- **Gross Value Added (GVA) increase**: From ₹82.88 lakh crore to ₹89.41 lakh crore confirms rising real economic activity, not just inflationary effects.

Inflation remained under control as **nominal GDP increased only 8.8%**, indicating that growth was largely real. Household spending also strengthened, with **PFCE rising 7.9%**. Agriculture grew 3.5%, supported by fuller reservoirs and horticulture improvements.

The **external sector** contributed through a small current account deficit, stable services exports, and healthy forex buffers that cushioned global volatility.

The IMF's 'Grade C' Rating

Despite positive numbers, the IMF assigned India a **Grade C** rating in national income accounting, pointing toward methodological and structural issues. The concerns include:

- Outdated base year (2011–12)

- Inadequate wholesale price data
- Missing producer price indices
- Possible cyclical biases from single deflators
- Discrepancies in production and expenditure approaches
- Incomplete coverage of informal sector activity
- Lack of consolidated data from States after 2019

These shortcomings create room for **underrating or overrating actual growth**, complicating economic analysis.

The Credibility Question

The RBI's Annual Report (2024-25) notes that while the economy has performed well, **structural constraints continue to drag India's credibility**, including:

- Weak institutional capacity at State level
- Low labour productivity
- A mismatch between export profile and global demand

India may show strong quarterly GDP growth, but its **long-term economic framework is still developing**.

Additionally:

- Mining barely grew (0.04%) due to an unusually long monsoon.
- Electricity/utilities grew only 4.4%. These sectors together employ millions but contribute little to GDP, signalling **uneven recovery**.

Structural Vulnerabilities

The RBI cautions that India's export trajectory faces several headwinds:

- Rising global protectionism
- Tariff uncertainties
- Geopolitical tensions in key markets

Services exports and remittances remain strong but **cannot replace a diversified, high-value export base**, which India still lacks.

Another contradiction appears in the **financial markets**: the rupee looked stable, but this stability was driven by a strong dollar and foreign capital movements, not domestic resilience.

Thus, India's strong GDP numbers do not fully reflect **governance quality, institutional depth, or structural health**—factors the IMF emphasises.

Broad-Sector Concerns

Despite Q2 strength:

- **Agriculture grew only 3.5%**
- **Utilities at 4.4%**
- **Mining just above zero**

These sectors employ a large share of the workforce but generate **low productivity and limited value addition**, slowing overall structural transformation.

Conclusion

India's 8.2% GDP growth is a major achievement and signals strong economic momentum. However, the IMF's **Grade C** serves as a subtle but important reminder:

- Short-term numbers look robust
- But long-term structural issues in governance, labour productivity, institutional capacity, and exports remain unresolved

India is growing fast—but sustaining this growth requires **deep structural reforms**.

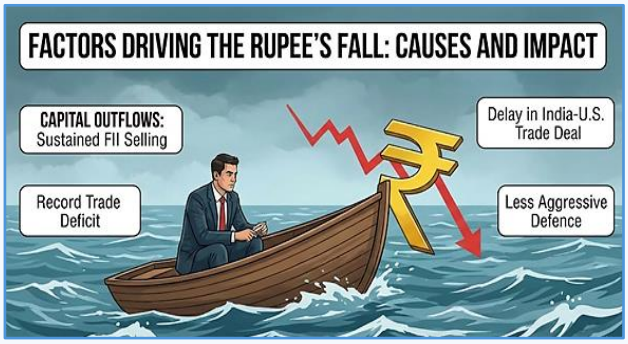
Q. *Do you agree that the Indian economy has recently experienced V-shaped recovery? Give reasons in support of your answer.*

Q. *Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard.*

3.1.11. IS THE FALLING RUPEE A CAUSE FOR ALARM

The Immediate Context: Asia's Worst Performer

- **Sharp Decline:** The Rupee has depreciated significantly, making it the **worst-performing currency in Asia** year-to-date (CYTD), falling by over 5% in 2025.
- **Psychological Mark Breached:** The Rupee's fall past the ₹88.8 level (previously defended by the RBI) and then the **psychological mark of ₹90** has created market pressure and volatility.

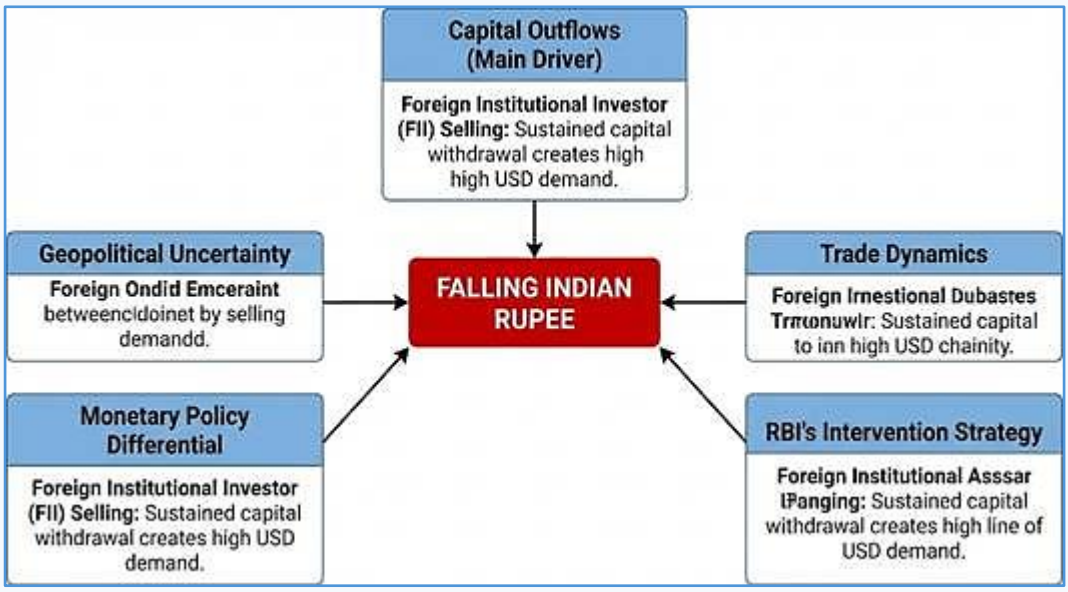


Key Factors Driving the Rupee's Fall

The Rupee's slide to a confluence of external shocks and domestic imbalances:

1. **Sustained FII Selling:** Foreign Institutional Investors (FIIs) are pulling capital out of Indian equity and debt markets. This creates a high, continuous demand for the US Dollar, thereby increasing its price against the INR. The pressure is clearly **"emanating from a drying up of capital flows"** rather than the current account.
2. **Record Trade Deficit & US Tariffs:** India's trade deficit ballooned to a record high, driven by the **50% tariffs imposed by the US** on Indian goods, severely impacting exports in labour-intensive sectors
3. **Delay in India-U.S. Trade Deal:** The lack of clarity or a delay in finalising a **trade deal** with the US is cited as a major factor impacting market sentiment. Analysts believe a swift deal could trigger a bounce-back.

4. **Global Dollar Strength:** Developed countries, particularly the US, have raised **interest rates** sharply. This widens the interest rate gap, making dollar-denominated assets more attractive, leading to capital shifting out of emerging markets like India
5. **Less Aggressive Defence:** Some experts note that the RBI under the current governor has been **"less interventionist"** than in the past, allowing the currency to find its level while only stepping in to curb extreme volatility.



Impact of a Weak Rupee

Positive Impacts

1. **Exports become cheaper/competitive** — can stimulate export-oriented sectors.
2. **Import substitution incentive** — domestic producers can gain.
3. Some depreciation may **improve current account balance** over time.

Negative Impacts

1. **Imported inflation:** Higher cost of crude, industrial inputs can push prices up. **Capital flight vulnerability:** Continued FPI outflows can weaken investor confidence.
2. **Corporate balance sheets:** Unhedged foreign liabilities costlier; credit ratings may suffer.
3. **Inflation expectations:** Pass-through may accelerate if oil/commodity prices rise.
4. **Fiscal impact:** Subsidies and external debt servicing costs could rise.

Policy Recommendations

SHORT-TERM: Stabilise the Rupee Without Killing Growth

Targeted RBI Intervention (Already using ~$2–3 billion weekly smoothing)

- When the rupee hit **₹90.55/$**, RBI reportedly sold dollars through banks to reduce intraday volatility.
- **Example:** In **2013 taper tantrum**, RBI stabilised INR by selling reserves + opening special swap windows.

Strengthen Corporate Hedging (India's unhedged FX exposure ≈ 40–45%)

- Encourage exporters/importers to hedge via cheaper long-tenure forwards.

- **Example:** After Turkey's 2021 currency shock, unhedged companies faced insolvency—India must avoid this scenario.

Temporary Tariff/Custom Relief for Critical Imports

- Reduce excise/customs on essential imported inputs (e.g., fuel, edible oils).
- **Evidence:** A ₹1 fall in rupee raises India's annual oil import bill by **₹10,000–12,000 crore**.

MEDIUM-TERM: Reduce External Vulnerability

Fast-track India–US Trade Agreement (Stalled since 2020; high tariff losses)

- US tariffs affect **> $10 billion** of India's exports (textiles, steel, pharma).
- A breakthrough could boost export earnings + reduce CAD pressure.

Diversify Export Markets (Reduce dependence on US/EU where demand is slowing)

- Expand trade with **Africa (8% of exports), Latin America (3%)**, where India is under-represented.
- **Example:** Vietnam boosted exports 20% by diversifying to Latin America & ASEAN.

Boost Domestic Bond Market to Reduce FPI Dependence

- FPIs withdrew **$18 billion in 2025** → weaken INR.
- Strengthen domestic bond participation (LICs, mutual funds) to replace volatile foreign capital.

LONG-TERM: Structural Reforms for a Strong, Independent Rupee

Reduce Oil Import Dependence (India imports 85% of crude)

- Push green hydrogen, EVs, ethanol blending (already at **12%**, target **20% by 2025**).
- **Example:** Brazil's ethanol policy cut its oil import dependence by **40%** in a decade.

Promote Rupee Internationalisation (Reduce USD dependence)

- Expand **Local Currency Settlement Agreements (LCSAs)** with Gulf & ASEAN nations.
- **Example:** India–UAE Rupee–Dirham settlement framework saved millions in transaction costs.

Encourage High-Value Exports (Electronics, Pharma, Defence)

- Electronics import bill is **>$55 billion/year** — reducing this would stabilise the rupee long-term.
- Leverage PLI schemes to expand components manufacturing.

Conclusion:

The falling Rupee is a result of a global dollar strength cycle coinciding with domestic capital outflows and trade dynamics. While the government views it as manageable, analysts agree that the full economic impact depends on how quickly India can conclude trade agreements and whether global capital flows reverse course

Q. *How do geopolitical uncertainties and trade dynamics, such as the delay in the India-U.S. Trade Deal and record trade deficits, exacerbate the pressure on the Indian Rupee? In this context, elaborate on the importance of finalising strategic bilateral trade agreements as a countermeasure to stabilise the currency.*

3.1.12. FTA 2.0: INDIA'S TRADE TURNAROUND FROM DEFICIT TO DOMINANCE

Context: India's strategy regarding Free Trade Agreements (FTAs) has undergone a crucial **paradigm shift** post-2019, moving from a cautious, **defensive posture** (e.g., withdrawal from **RCEP)** to an aggressive, **proactive approach** focused on securing **"New Generation" FTAs** with developed economies. This shift is integral to India's ambition of becoming a **5 trillion Dollar** economy and a major node in resilient Global Value Chains (GVCs).

Strategic Rationale Driving the New FTA Push

India's accelerated pursuit of high-standard FTAs is driven by a mix of economic necessity and geopolitical strategy.

- **Countering Global Protectionism:** The primary economic driver is the need to secure preferential market access for Indian exporters in the face of rising global tariffs and trade barriers (e.g., American tariffs up to 50% on key exports).
- **WTO Gridlock:** The paralysis at the World Trade Organization (WTO) and the failure of the Doha Round have necessitated focusing on **Bilateral and Regional Trade Agreements (RTAs)** as the only viable mechanism to liberalize trade rules.
- **Geopolitical Hedging and GVC Resilience:** FTAs are used as a strategic tool to diversify supply chains and reduce reliance on single markets (like China). Pacts with partners like Australia, the UK, and EFTA are seen through the lens of **Indo-Pacific cooperation** and securing reliable sources of critical inputs and investment.
- **Attracting Quality FDI and Technology:** Agreements like the India-EFTA Trade and Economic Partnership Agreement (TEPA) are designed to be transactional, securing a **binding investment commitment (e.g.$100 billion over 15 years from EFTA)** in exchange for market access, thereby driving **'Make in India'** and **'Atmanirbhar Bharat'** goals by attracting advanced technology.

Critical Review of 'First Generation' FTAs

The current strategy is a course correction based on the mixed or unfavorable outcomes of older agreements (signed mainly during the "Look East" policy phase).

- **Trade Deficit Widening:** FTAs with **ASEAN, Japan, and South Korea** consistently resulted in a significant and widening trade deficit against India. For example, the trade deficit with ASEAN widened from about $10 billion in 2017 to nearly $44 billion by 2023.
- **Structural Failures:** The deficits arose primarily due to structural and policy flaws:
- **Inadequate Negotiation of NTBs:** India failed to secure adequate **Mutual Recognition Agreements (MRAs)** on quality standards, certifications, and Technical Barriers to Trade (TBT), preventing Indian exports from accessing partner markets easily.
- **Weak Rules of Origin (ROO):** Lax ROO provisions often allowed partners to re-route cheaper goods from third countries (e.g., China) through the FTA member, harming domestic industry.

- **Low Utilization Rate:** The average utilization rate of India's FTAs is low (approx 25% compared to approx 70-80% globally), indicating insufficient domestic popularization and support for MSMEs to leverage preferential tariffs.

Major Ongoing / Active FTA Negotiations of India

1. India–European Union (EU) FTA

- Relaunched in **2022** after a gap of 9 years
- Covers **trade in goods, services, investment, IPR, digital trade, sustainability**
- EU is one of India's **largest trading partners**

2. India–United Kingdom (UK) FTA

- Negotiations intensified post **Brexit**
- Focus areas:
- Services (IT, professionals)
- Reduction of tariffs on **textiles, leather, gems & jewellery**
- Also includes **Double Contribution Convention (DCC)**

3. India–Canada Comprehensive Economic Partnership Agreement (CEPA)

- Aims at:
- Services mobility
- Investment protection
- Education and skilled workforce cooperation

4. India–Gulf Cooperation Council (GCC) FTA

- GCC includes **Saudi Arabia, UAE, Qatar, Kuwait, Oman, Bahrain**
- Objective:
- Secure energy supply
- Boost trade in petrochemicals, food products, services

5. India–Eurasian Economic Union (EAEU) FTA

- Members: **Russia, Kazakhstan, Belarus, Armenia, Kyrgyzstan**
- Focus on:
- Pharmaceuticals
- Engineering goods
- Agriculture

Features of India's 'New Generation' FTA Strategy

The new approach is holistic, high-standard, and tailored to India's sectoral strengths.

I. **Focus Shift-** From tariff reduction on goods to deep integration in **Services, Investment, and Non-Tariff Issues**.

   Example: Prioritisation of **Professional Mobility** (visa relaxation, social security exemptions) and **IT/Services access.**

II. **Binding Investment-** FTAs include explicit, binding commitments on FDI and job creation.

   Example- EFTA's $100 billion investment pledge linked to job targets.

III. **New/Progressive Issues-** Inclusion of high-standard chapters on **labour rights, environmental protection, gender equity, and anti-corruption**.

Example- Addressing the **EU's Carbon Border Adjustment Mechanism (CBAM)** in negotiations, which targets carbon-intensive Indian exports (steel, cement).

IV. **Custom-Designed Stance-** Negotiations are shaped by intensive consultations with specific export sectors, moving away from generic agreements.

Example- Focus on **services, seafood, and engineering goods** for the US pact; protection of **sensitive agricultural sectors** (dairy, soya) through exclusion lists.

Challenges and Way Forward for FTA Success

A. Key Implementation Challenges

- **Risk of Trade Deficit Repetition:** Despite better negotiations, the inherent trade structure (India importing high-value capital goods) poses a continuous risk of widening deficits, especially with developed, high-tech economies like EFTA and Japan.
- **Compliance with Progressive Clauses:** Meeting the stringent **labour and environmental standards** demanded by the EU and UK could impose significant compliance costs on Indian MSMEs, potentially turning these progressive chapters into new **Non-Tariff Barriers (NTBs)**.
- **Safeguarding IPR and Pharmaceuticals:** Negotiations on Intellectual Property Rights (IPR) with developed blocs threaten India's generic pharmaceutical industry (e.g., concerns over data exclusivity clauses).

B. The Way Forward (Policy Imperatives)

1. **Strengthening Domestic Competitiveness:** The **arduous task of supporting India's exporters must follow the pacts**. This involves massive investment in **standards infrastructure, technology upgrades, and quality testing facilities** to meet partner countries' regulatory requirements.
2. **Robust Monitoring of ROO:** Establish strong institutional and legal mechanisms to strictly monitor the utilization of **Rules of Origin** to prevent trade deflection and safeguard domestic industry.
3. **Active FTA Outreach:** Implement proactive campaigns by the Commerce Ministry to popularize FTAs among the MSME sector, providing easy-to-understand **market intelligence** and facilitating access to credit and logistics for exports.
4. **Strategic Ratification and Review:** Establish a system for **periodic review and renegotiation** of existing FTAs to address imbalances and ensure they remain relevant to India's evolving economic priorities.

Conclusion:

India's FTA strategy is a bold statement of its intent for global economic leadership. Its success, however, will be determined not just by the agreements signed, but by the **domestic reforms, infrastructural investment, and targeted policy support** that enable Indian industry to capitalize on the preferential access secured.

Q. *What are the challenges before the Indian economy when the world is moving away from free trade and multilateralism to protectionism and bilateralism? How can these challenges be met?*

3.1.13. SAGAR'S NEXT WAVE: INDIA'S BLUEPRINT FOR A SUSTAINABLE BLUE ECONOMY

Conceptual Shift: From Exploitation to Sustainability

- **New Paradigm:** The Blue Economy moves beyond traditional ocean exploitation (like deep-sea fishing and oil drilling) to focus on the **sustainable and responsible use of ocean resources** for economic growth, improved livelihoods, and marine ecosystem health.
- **Balancing Act:** The core principle is achieving a balance between **economic prosperity** (Blue) and **environmental conservation** (Green).
- **IOR's Significance:** The region, which hosts critical Sea Lanes of Communication (SLOCs) and is rich in biodiversity, must pioneer models of sustainable governance to serve as a **global benchmark**.

The Three Pillars of India's Blue Ocean Strategy

India's strategy rests on a framework designed for collective, sustainable, and resilient development in the Indian Ocean Region (IOR).

I. First Pillar: Stewardship of the Commons

- **Core Principle:** Asserting the Indian Ocean as a **shared space**, not a contested one, promoting cooperative management over competitive exploitation.
- **Action Areas:**
- Prioritising **ecosystem restoration** and **biodiversity protection**.
- Ensuring **sustainable fisheries** practices.
- Setting the tone for cooperative regional management.

II. Second Pillar: Resilience

- **Core Principle:** Focusing on **adaptation and preparedness** against the intensifying climate crisis.
- **India's Leadership Role:** Establishing a **Regional Resilience and Ocean Innovation hub** to lead regional efforts.
- **Key Initiatives:**
- Strengthening **ocean observation networks**.
- Improving **early warning systems** (EWS).
- Facilitating **technology transfer** to Small Island Developing States (SIDS) and African coastal nations.

III. Third Pillar: Inclusive Growth

- **Core Principle:** Ensuring the Indian Ocean drives **prosperity for all littoral states**.
- **Pathways to Development:** Leveraging climate-compatible economic activities such as:
- **Green shipping** (decarbonisation of maritime transport).
- **Offshore renewable energy** (e.g., wind, tidal).

- **Sustainable aquaculture** (responsible farming).
- **Marine biotechnology** (innovations from marine life).
- **Requirement:** Realising this potential demands sustained investment and **coordinated regional action**.

SIGNIFICANCE OF THE BLUE OCEAN STRATEGY

I. Key Economic Sectors and Innovation

The focus is on leveraging technology to maximize resource utilization while minimizing environmental harm.

- **Renewable Ocean Energy:**
- Promoting the harnessing of **offshore wind energy** and exploring technologies like **Ocean Thermal Energy Conversion (OTEC)** and tidal/wave energy.
- **Fisheries and Aquaculture:**
- Implementation of the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** to promote sustainable and responsible fishing practices, cold-chain development, and value-addition.
- Emphasis on **aquaculture expansion** with a focus on environmental sustainability.
- **Marine Biotechnology:**
- Leveraging the vast and largely unexplored marine biodiversity of the IOR for innovation in **pharmaceuticals, cosmetics, and industrial enzymes**.

II. Sustainability and Climate Resilience

Protecting the IOR's delicate ecosystems is central to the Blue Economy framework.

- **Blue Carbon Ecosystems:** Focus on the protection and restoration of **coastal ecosystems**—primarily **mangroves and seagrass beds**—which act as powerful **Blue Carbon** sinks, sequestering atmospheric CO_2.
- **Marine Spatial Planning (MSP):** Developing a framework to organize and allocate space in the marine environment to **minimize conflicts** between economic activities (e.g., shipping, fishing, conservation) and achieve specific ecological objectives.
- **Plastic Pollution Control:** Implementation of effective strategies to manage and reduce **marine plastic pollution**, focusing on circular economy models for waste reduction and recycling.

Key Challenges to Realizing the Indian Ocean Blue Economy

I. Environmental and Climate Challenges (The Sustainability Crisis)

These challenges directly threaten the resource base upon which the Blue Economy must be built.

- **Climate Vulnerability:** The Indian Ocean is warming faster than any other ocean since the 1950s. This leads to:
- **Rising Sea Levels and Extreme Weather:** Increased frequency and intensity of cyclones, threatening coastal infrastructure and communities.
- **Reduced Fish Stocks:** Ocean warming and acidification are projected to reduce fish productivity, directly impacting livelihoods in coastal nations.
- **Pollution and Habitat Degradation:**

- **Marine and Coastal Pollution:** High levels of pollution from plastic waste, untreated sewage, and industrial run-off degrade marine health and coastal ecosystems.
- **Unsustainable Practices:** Overfishing, illegal, unreported, and unregulated (IUU) fishing, and habitat destruction (e.g., mangrove clearance)
- **Regulatory Gaps:** Relaxed coastal zone regulations (like the CRZ Notification) often prioritize real estate and large-scale development over conservation, increasing vulnerability.

II. Governance, Policy, and Institutional Hurdles

Effective execution is hampered by fragmented and uncoordinated mechanisms.

- **Fragmented Governance:** The Blue Economy involves multiple sectors (defense, trade, environment, energy) and jurisdictions (Central and State).
- **Inter-Ministerial Coordination:** Lack of strong institutional coordination across the 30+ ministries involved in the Indian Blue Economy agenda.
- **Policy Gaps in Strategy:** Initiatives like the **SAGAR doctrine** have been criticized for lacking a comprehensive white paper,
- **Data and Technology Sharing:**
- **Maritime Domain Awareness (MDA):** MDA is complicated by the collection and fusion of data. **Littoral countries** are often hesitant to share limited data due to national security concerns and mistrust.
- **Technology Gaps:** High upfront research and development costs for new sectors like **Offshore Wind** and **Deep-Sea Exploration** limit private investment and adoption.

III. Financial and Economic Constraints

Scaling up sustainable projects requires overcoming significant financial barriers.

- **Financing Gap:** Despite global pledges, successfully catalyzing public and private investments **at scale** into sustainable ocean sectors remains a major challenge, particularly for Small Island Developing States (SIDS).
- **High Upfront Costs:** Sectors like marine renewable energy and deep-sea exploration are characterized by high initial capital and technological costs, often deterring private investors.
- **Infrastructure Deficit:** Still require massive investment to match global standards and meet the demand of the ambitious Sagarmala and Maritime India Vision projects.

IV. Geopolitical and Security Threats

The IOR is a theatre of increasing great power competition, complicating regional cooperation.

- **Geopolitical Rivalry:** The escalating presence and strategic investments (like China's Belt and Road Initiative – BRI) increase the pressure on India to balance cooperation with strategic competition, potentially diverting resources from pure Blue Economy development.
- **Non-Traditional Security Threats:** The IOR faces a persistent threat from **Non-Traditional Security (NTS)** issues that undermine economic stability and safety:
- **Piracy and Armed Robbery:** Despite recent decreases in some areas, incidents of piracy and armed robbery remain a risk, especially around critical chokepoints.
- **Trafficking and Illegal Migration:** The ocean is a route for drug smuggling, human trafficking, and illicit arms.

- **IUU Fishing:** Illegal, Unreported, and Unregulated fishing not only depletes fish stocks but also creates security issues and tensions among coastal states.

India's Vision and Initiatives

India views the Blue Economy as a key pillar for national growth and regional stability, underpinned by major government programs.

- **Deep Ocean Mission (DOM):**
- **Focus:** A massive scientific and technological mission to explore and responsibly utilize deep-sea resources.
- **Resource Mapping:** Focus on mapping and developing technology for mining **Polymetallic Nodules (PMN)** in the Central Indian Ocean Basin.
- **Human Presence:** Development of the manned submersible vehicle, **Matsya 6000**.
- **Infrastructure and Connectivity:**
- **Sagarmala Programme:** Concentrates on modernizing ports, boosting port-led industrialization, and enhancing coastal shipping efficiency to reduce logistics costs.
- **Green Port Mandate:** Initiatives like the **Harit Sagar Green Port Guidelines** aim to decarbonize port operations and promote the use of cleaner fuels and renewable energy sources.
- **Security and Regional Growth (SAGAR Doctrine):**
- **Diplomatic Framework:** India's policy of **Security and Growth for All in the Region (SAGAR)** underpins cooperation, capacity building, and maritime domain awareness across IOR littoral states.
- **First Responder:** Positioning India as the preferred security partner and 'first responder' for Humanitarian Assistance and Disaster Relief (HADR) in the region.
- **India's Opportunity and Proposed Fund**
- **Global Shift:** These commitments demonstrate the ocean is now **firmly on the global climate finance agenda**.
- **Call to Action for India:** India must seize this momentum to channel global financing into IOR regional priorities.
- **Proposed Mechanism:** Creation of an **Indian Ocean Blue Fund**, to be:
- **Seeded by India.**
- Open to contributions from development banks, philanthropy, and the private sector.
- Serving as the institutional architecture to convert financial pledges into tangible projects.

Global Initiatives

I. Turning Financial Tide (Blue Economy Finance)

- **Monaco Forum (June 2025):** The Blue Economy and Finance Forum (BEFF) highlighted:
- A **€25 billion** pipeline of existing ocean investments.
- **€8.7 billion** in new commitments, with near-parity between public and private sources.
- **Public Development Banks (PDBs):**
- The **Finance in Common Ocean Coalition (20 PDBs)** announced annual pledges of **$7.5 billion**.
- The Development Bank of Latin America doubled its blue economy target to **$2.5 billion by 2030**.

- **COP30 Commitment (Belém Action Agenda):**
- The Brazilian Presidency launched the **One Ocean Partnership**.
- Commitment to mobilise **$20 billion** for ocean action by 2030.

WAYFORWARD

The Digital Enabler

The integration of digital technology is crucial for efficient and transparent Blue Economy operations.

- **Ocean Data Systems:** Utilization of **AI, IoT, and satellite-based remote sensing** for real-time monitoring of ocean health, fish stocks, and maritime traffic.
- **Smart Ports:** Deployment of digital solutions to automate and optimize port logistics, improving turnaround time and energy efficiency.
- **Traceability:** Using technologies like Blockchain to ensure the transparency and sustainability of seafood supply chains, allowing consumers to verify the origin and methods used

Conclusion

India must embrace its historic responsibility to establish the Indian Ocean as the Cradle of a New Blue Economy, vital for its journey to developed nation status. This requires a strategy focused on Resilience and Inclusive Growth, powered by advanced technology. By capitalizing on the surge in global climate finance through mechanisms like an Indian Ocean Blue Fund, India can accelerate investment in green shipping and offshore renewable energy, ensuring prosperity is built on a foundation of climate sustainability and regional solidarity.

Q. The Blue Economy, in the context of the Indian Ocean Region (IOR), necessitates moving beyond traditional resource exploitation to a framework balancing economic prosperity and environmental sustainability." Explain.

3.1.14. THE RUPEE-TARIFF TIGHTROPE: TEMPORARY RELIEF OR LOOMING DISTRESS

Context: The rupee depreciation impact on Indian economy has emerged as a critical concern amid rising trade tariffs, global uncertainty and domestic macroeconomic pressures.

The rupee hit an all-time low of **₹91.14** per US dollar earlier this week. As of today, **December 19, 2025**, it has strengthened slightly to around **₹89.96–₹90.20** following the Reserve Bank of India's (RBI) largest intraday intervention in seven months.

Reasons for Rupee Depreciation

1. Geopolitical Pressures & "Trump Tantrums"

- **The 50% Tariff Impact:** In August 2025, the U.S. imposed a **50% tariff** on a large portion of Indian exports. This has created massive uncertainty in the currency market. Investors sell rupees in anticipation of a significant drop in future dollar earnings from the U.S., India's largest export market.

- **Trade Deal Delays:** Sentiment has been dampened by the "limbo" in trade negotiations between New Delhi and Washington. The lack of a clear timeline for tariff reduction has led to speculative dollar buying.

2. **Persistent FPI / FII Outflows**

- **"Flight to Quality":** Foreign Portfolio Investors (FPIs) have been aggressive net sellers in the Indian equity market throughout late 2025. In December alone, they were net sellers in **9 out of 11 trading sessions**.
- **Yield Differentials:** Higher yields in U.S. Treasuries and better risk-adjusted returns in developed markets have caused FIIs to pull capital out of India, converting their rupee holdings back into dollars and increasing downward pressure on the INR.
- **AI Obsession:** Many global funds have been reallocating capital away from India to "AI-centric" hubs in North Asia (like Taiwan and South Korea), leading to a structural decline in the portfolio "largesse" India once enjoyed.

3. **Widening Trade and Current Account Deficit (CAD)**

- **Import Intensity:** Despite a strong showing in services, the **merchandise trade deficit** remains a core pressure point. While imports fell slightly in November 2025, the cumulative deficit for April–November 2025 widened by **9.74%** year-on-year.
- **Gold and Energy Bill:** A spike in gold imports (up over 50% in some months) and volatile crude oil prices have consistently drained India's dollar reserves. Since oil and gold are priced in dollars, every increase in their demand forces the RBI and importers to sell more rupees.

4. **Global Dollar Strength (The "Safe Haven" Effect)**

- **US Dollar Index (DXY):** Even during phases where the DXY eases globally, the rupee has often underperformed its emerging market peers. This is because non-economic and **sentiment-driven influences** (like the Geopolitical Risk Index) are now accounting for a larger portion of the currency's variation.
- **Monetary Policy Divergence:** While the RBI has focused on maintaining "orderly market conditions," expectations of fewer-than-expected rate cuts by the U.S. Federal Reserve have kept the dollar globally attractive.

Rupee Depreciation Impact on Indian Economy

Negative Impact of Rupee Depreciation

1. Imported Inflation (Cost-Push Inflation)

- **Energy Bill:** India imports nearly 80% of its crude oil. A weaker rupee means India pays more in local currency for the same barrel of oil, leading to higher petrol and diesel prices at the pump.
- **Essential Commodities:** The cost of other critical imports like **fertilizers, edible oils, and electronic components** rises. This "cost-push" inflation eventually trickles down to the common man, increasing the overall cost of living.

2. Higher Debt Servicing Costs

- **External Commercial Borrowings (ECBs):** Many Indian corporations borrow in dollars because of lower interest rates abroad. When the rupee falls, these companies need more rupees to buy the dollars required for interest and principal repayments.

- **Balance Sheet Stress:** For firms with "unhedged" exposure (loans not protected against currency swings), a 5% depreciation can increase repayment costs by an equivalent 4–5%, severely squeezing corporate profit margins.

3. **Widening Trade and Current Account Deficits**

- **Inelastic Imports:** Items like oil, gold, and high-tech machinery are "inelastic"—meaning India cannot easily reduce its demand for them even if prices rise.
- **Off-setting Export Gains:** Research from late 2025 (e.g., SBI Research) indicates that the cost of imported raw materials for sectors like electronics and chemicals often offsets any competitive price advantage gained in the export market, failing to meaningfully fix the trade balance.

4. **Impact on Households and Individuals**

- **Foreign Education:** For the 7.6 lakh+ Indian students abroad, a falling rupee acts as a "silent fee hike." A semester fee of $20,000 that cost ₹16.8 lakh at ₹84/$ now costs over **₹18.2 lakh at ₹91/$**.
- **Outbound Tourism:** International vacations become significantly more expensive. In December 2025, many travelers shifted from "long-haul" destinations (USA/Europe) to "short-haul" ones (Dubai/Vietnam) to manage shrinking budgets.

5. **Risk of Capital Flight**

- **Investor Sentiment:** Sustained depreciation signals macroeconomic instability. Foreign Portfolio Investors (FPIs), who have already pulled out over **₹1.59 lakh crore** in 2025, may continue to exit the Indian market to avoid further "currency translation losses" on their investments.

Positive impact of Rupee depreciation:

1. **Enhanced Export Competitiveness**

- **Price Advantage:** A weaker rupee makes Indian goods and services cheaper for foreign buyers. This is a critical "shock absorber" for exporters currently facing **50% U.S. tariffs**. By selling at a lower dollar price, they can maintain market share without losing their rupee-denominated profit margins.
- **Sectoral Gainers:IT & Software:** Companies like Infosys and TCS earn in dollars but pay salaries in rupees. Every **₹1 drop** against the dollar typically adds **30–50 basis points** to their operating margins.
- **Pharma & Textiles:** These labor-intensive sectors become more attractive to global buyers compared to competitors with stronger currencies (like the Euro or Yen).
- **Agro-exports:** As per recent SBI Research, food and agro-based sectors benefit most because they have **low import intensity** (they don't need to import raw materials to export).

2. **Boost to Remittance Inflows**

- **The "Wealth Effect" for NRIs:** Non-Resident Indians (NRIs) sending money home get more rupees for every dollar. For example, $1,000 sent home in early 2025 (at ₹83) yielded ₹83,000; at **₹91**, it yields **₹91,000**.
- **Significance:** India is the world's largest recipient of remittances. This surge in inflows helps bridge the **Current Account Deficit (CAD)** and provides much-needed foreign exchange liquidity to the banking system.

3. **Natural "Import Substitution" (Make in India)**

- **Protection for Local Industry:** As imports (like electronics, furniture, and processed foods) become costlier, domestic consumers naturally shift toward **locally manufactured alternatives**.
- **Incentive for Value Addition:** High import costs force Indian manufacturers to find domestic sources for components (e.g., semiconductors or chemicals), accelerating the goals of **Atmanirbhar Bharat**.

4. **Encouraging Inbound Tourism**

- **India as a "Cheap Destination":** For international travelers, India becomes a more affordable destination. Their dollars stretch further in terms of luxury stays, travel, and services, potentially boosting the hospitality sector during the peak winter season of 2025-26.

INITIATIVE:

1. RBI's Monetary & Market Interventions

The RBI is currently Asia's most active central bank, using its **$690 billion** "war chest" strategically:

- **Tactical Dollar Sales:** On December 17, 2025, the RBI intervened through state-run banks to sell dollars as the Rupee breached the **91.14** level. This "forceful intervention" triggered a 1% intraday recovery, the sharpest in seven months.
- **Liquidity Management (VRR Auctions):** To balance year-end liquidity, the RBI conducted a **₹75,000 crore Overnight Variable Rate Repo (VRR)** auction. This ensures banks have enough Rupee liquidity to prevent interest rate spikes while the central bank manages the currency.
- **Forex Swaps:** The RBI recently utilized a **$5 billion forex swap** to inject Rupee liquidity into the system without causing the currency to crash, effectively decoupling domestic cash needs from exchange rate defense.

2. Government's Export Promotion Mission (EPM)

Launched with an outlay of **₹25,060 crore**, the EPM is the government's structural answer to the **50% U.S. tariffs**:

- **Niryat Protsahan (Financial Support):** Provides MSMEs with affordable trade finance, interest subvention, and collateral-free credit.
- **Credit Guarantee Scheme for Exporters (CGSE):** A specialized **₹20,000 crore** scheme that provides a **100% guarantee** to banks for lending working capital to exporters, helping them survive the high-tariff period.
- **BharatTradeNet:** A new unified digital platform for trade documentation and financing, aimed at reducing transaction costs and the "logistical friction" that often hurts Indian exports.

Way Forward

1. **Short-Term Stabilization Measures**

- **Managed Float Strategy:** The RBI should continue its "crawl-like" intervention—intervening only to curb excessive volatility rather than defending a specific psychological level. This prevents the depletion of forex reserves while allowing the economy to adjust to global market realities.
- **Incentivizing NRI Deposits:** To boost immediate dollar inflows, the government and RBI can offer higher interest rates on **Non-Resident External (NRE)** and **FCNR(B)** accounts, similar to the measures taken during the 2013 "Taper Tantrum."

- **Easing ECB Norms:** Easing the limits and end-use restrictions for **External Commercial Borrowings (ECBs)** will allow Indian firms to bring in more foreign currency, helping stabilize the capital account.

2. **Medium to Long-Term Structural Overhaul**

- **Aggressive Export Diversification:** India must pivot away from over-reliance on the U.S. market (currently facing 50% tariffs). Strengthening trade ties with **ASEAN, the Middle East (via CEPA with UAE), and the UK (via the 2025 CETA agreement)** is crucial to creating alternative dollar-earning corridors.
- **Deepening the "Internationalization of Rupee":** Expand the use of **Special Rupee Vostro Accounts (SRVAs)** beyond the current 18-22 countries.
- Promote **Rupee-denominated Masala Bonds** so that the currency risk is shifted from Indian borrowers to foreign investors.
- **Import Substitution (Atmanirbhar 2.0):** Focus on reducing the "inelastic" import bill. This includes accelerating green energy to reduce oil dependence and scaling up the **PLI scheme** for semiconductors and electronics to cut down on component imports from China.

3. **Strategic Policy Focus**

- **CAD Management:** Maintaining the **Current Account Deficit (CAD)** within a sustainable limit of **1.5%–2% of GDP** should be the primary goal, supported by robust services exports and remittances.
- **Fiscal Prudence:** Sticking to the fiscal deficit target (targeted at **4.5% by FY26**) is vital to maintain investor confidence and prevent further capital flight by FPIs.

Conclusion

The trajectory of the Indian Rupee in late 2025 represents a critical **balancing act** between maintaining export competitiveness and controlling imported inflation. While the breach of **₹91/$** has caused immediate concern for importers and students abroad, the RBI's strategic shift toward a **"managed float"** allows the currency to act as a natural shock absorber against external trade wars.

Q. *Rupee depreciation is often seen as a cushion against external trade shocks, but it has limited effectiveness in offsetting the impact of high import tariffs imposed by major trading partners such as the United States.Discuss in the context of recent U.S. tariff measures on Indian exports.*

3.1.15. NEW INDIA'S FREE TRADE AGREEMENT

Context: India's recently announced closure of negotiations for a free trade agreement (FTA) with **New Zealand** marks a maturing in New Delhi's approach to global trade.

Recent FTAs at a Glance (2024–2025):

1. **India-New Zealand FTA**

- **100% Duty-Free Access:** New Zealand has provided zero-duty access for 100% of Indian goods immediately upon entry into force.
- **Investment Guarantee:** Includes a commitment of **$20 billion FDI** into India over 15 years.

- **Skilled Mobility:** A new "Temporary Employment Entry" (TEE) visa with a quota of **5,000 professionals** for sectors like IT, Healthcare, and Education.
- **AYUSH Focus:** First-ever dedicated chapter on Traditional Medicine (AYUSH), recognizing Indian wellness systems alongside Maori health practices.
- **Sensitive Protections:** India has **completely excluded Dairy** (milk, cheese, etc.) and specific agricultural products like sugar and honey to protect local farmers.

2. India-Oman CEPA

- **Market Reach:** Nearly universal duty-free access (98% of tariff lines) for Indian exports like textiles, gems & jewelry, and engineering goods.
- **Hiring Flexibility:** Omani authorities have committed to permanent flexibility in hiring Indian professionals, allowing firms to employ up to 100% Indian workforce in certain categories.
- **Energy and Services:** Secured commitments in 127 service sub-sectors; 100% FDI allowed for Indian companies in major Omani service sectors.
- **Pharma Fast-Track:** Established a mechanism for fast-tracking approvals of Indian pharmaceutical products already approved by major global regulators (USFDA, EMA).

3. India-EFTA TEPA

- **Binding FDI:** The first FTA in global history where partners (Switzerland, Norway, Iceland, Liechtenstein) have legally pledged **$100 billion investment** and **1 million jobs** over 15 years.
- **Tech & Innovation:** Focuses on high-tech manufacturing, R&D, and precision engineering.
- **Trade Balance:** EFTA countries have eliminated duties on 99.6% of Indian exports. In return, India will gradually reduce duties on Swiss watches, chocolates, and high-end machinery.
- **Generic Medicines:** India successfully defended its right to produce generic drugs by resisting "data exclusivity" clauses that would have extended patent monopolies.

4. India-Australia CECA

- **Beyond ECTA:** Building on the 2022 interim deal (ECTA), the **Comprehensive** agreement (CECA) is in its 11th round of talks (as of Aug 2025).
- **Digital Trade:** Newer rounds focus on Digital Trade, Government Procurement, and stricter Rules of Origin to prevent Chinese goods from being rerouted through Australia.
- **Critical Minerals:** A major strategic pillar involves securing supply chains for Lithium and Cobalt for India's EV mission.
- **Double Taxation:** Already resolved under the first phase, saving Indian IT companies millions in taxes.

5. India-UAE CEPA

- **Trade Volume:** Bilateral trade surged past **$100 billion in FY 2024-25**, a nearly 20% increase since the FTA became operational.
- **Bharat Mart:** Establishment of a massive retail and warehouse complex in Dubai to act as a gateway for Indian MSMEs to the Middle East and Africa.
- **Gold TRQ:** India introduced a transparent competitive bidding process for the gold import quota granted under the CEPA to ensure fair access for domestic jewelers.

- **Food Security:** Collaborative "Food Corridors" where UAE invests in Indian food parks to secure their supply chain.

Reasons for This New FTA Push:

1. **Countering Protectionism & Trump Tariffs**

- **Market Diversification:** With the US administration imposing significant "reciprocal tariffs" on Indian goods in 2025, India is moving away from over-reliance on the US and China.
- **Safety Net:** FTAs with the UK and EU act as "diplomatic insurance," ensuring stable market access even if global trade wars escalate.

2. **Shift from "Shallow" to "Deep" Agreements**

- **Learning from the Past:** Previous FTAs (ASEAN, Japan, S. Korea) led to widening trade deficits because they focused mainly on raw materials and low-end goods.
- **Investment-Led Growth:** The new "benchmark" (seen in the **EFTA TEPA**) includes legally binding investment pledges. India now demands FDI commitments ($100bn from EFTA, $20bn from NZ) as a prerequisite for market access.

3. **Operationalizing "China Plus One"**

- **Global Value Chain (GVC) Integration:** India aims to replace China as the "World's Factory." FTAs with developed nations allow for the duty-free import of high-tech components and machinery, which are then used in the **Make in India** and **PLI schemes** to export finished goods.
- **Critical Minerals:** Agreements like the Australia CECA and UK CETA are designed to secure raw materials (Lithium, Cobalt) essential for India's green energy and EV transitions.

4. **Leveraging India's Services Strength**

- **Professional Mobility:** Unlike older deals, new FTAs prioritize "Movement of Natural Persons."
- **Social Security Savings:** The India-UK deal (2025) includes a **Double Contribution Convention**, saving Indian firms and workers over ₹4,000crore annually by removing dual social security payments.
- **New Quotas:** Deals like the NZ FTA (2025) include specific visa quotas (5,000+) for Indian IT, healthcare, and educational professionals.

5. **Geopolitical & Strategic Autonomy**

- **Strategic Ties:** FTAs are now used as tools of diplomacy. Strengthening ties with the UAE and Oman secures India's energy interests in West Asia, while the EFTA deal balances India's relationship with Europe.
- **Soft Power (AYUSH):** Recent deals (Oman, NZ) include dedicated chapters on **Traditional Medicine**, gaining global recognition for Ayurveda and Yoga.

6. **Reducing Non-Tariff Barriers (NTBs)**

- **Regulatory Alignment:** India is now willing to negotiate on "WTO-Plus" issues (Labor, Environment, Digital Trade) to prevent developed nations from using "Green Taxes" (like the EU's CBAM) to block Indian exports.

Significance of New-Age FTAs:

1. **Shift to Investment-Led Trade (The "FDI Pillar")**

For the first time, India is using FTAs to secure **legally binding investment commitments**.

- **Guaranteed FDI:** The **India-EFTA TEPA (2025)** includes a historic pledge of **$100 billion** in FDI over 15 years. Similarly, the **New Zealand FTA (Dec 2025)** brings a **$20 billion** investment commitment.
- **Job Creation:** These investments are specifically tied to generating direct employment (e.g., 1 million jobs targeted via the EFTA deal), moving the FTA narrative from "cheap imports" to "domestic manufacturing."

2. Trade as "Diplomatic Insurance" (The Geopolitical Pillar)

In a fragmented global order, FTAs are now tools of **Strategic Autonomy**.

- **China Plus One:** By signing deals with high-tech Western nations (UK, Switzerland), India integrates into global value chains as a reliable alternative to China.
- **Countering Protectionism:** As major economies (like the US in 2025) lean toward protectionism, bilateral FTAs ensure that Indian goods have "privileged access" and are shielded from sudden tariff hikes.
- **West Asia Pivot:** Deals with the **UAE (2022)** and **Oman (Dec 2025)** secure India's energy corridor and provide a gateway to African and European markets.

3. Services-First Approach (The "Mode 4" Pillar)

India is leveraging its strength in the **Services Sector** (IT, Healthcare, Education) more aggressively.

- **Professional Mobility:** New FTAs focus on the **"Movement of Natural Persons."** For example, the India-UK CETA (2025) eases visas for Indian professionals and includes a **Double Contribution Convention**, saving Indian firms **₹4,000+ crore** by eliminating dual social security payments.
- **Niche Service Quotas:** The India-NZ FTA provides specific quotas for Indian chefs, yoga instructors, and traditional medicine (AYUSH) practitioners.

4. Supply Chain & Resource Security (The "Critical Inputs" Pillar)

Modern FTAs are designed to feed India's domestic "Make in India" and "Green Energy" goals.

- **Critical Minerals:** Agreements with **Australia** and the **UK** focus on securing Lithium, Cobalt, and Copper—essential for India's Electric Vehicle (EV) and semiconductor missions.
- **Zero-Duty Inputs:** The India-NZ FTA allows duty-free import of **wooden logs and coking coal**, which are vital raw materials for Indian infrastructure and steel industries.

5. Balancing Ambition with Sensitivity (The "Protectionist" Pillar)

India has mastered the **"Calibrated Liberalization"** model.

- **Dairy & Agri Safeguards:** Despite immense pressure from New Zealand (a global dairy giant), India **completely excluded the dairy sector** from the 2025 FTA to protect the livelihoods of 80 million Indian dairy farmers.
- **Pharma Sovereignty:** In the EFTA deal, India successfully resisted "data exclusivity" clauses, ensuring that the **Indian Generic Drug Industry** can continue to provide affordable medicines globally without patent hurdles.

Key Concerns & Challenges:

1. The Challenge of "Asymmetric Gains" (Trade Deficits)

- **Historical Baggage:** Past FTAs with ASEAN, Japan, and South Korea saw imports into India grow much faster than Indian exports (e.g., ASEAN imports grew **234%** while exports grew only **130%** between 2009-2023).

- **Current Fear:** Even with new partners like the UK and EFTA, there is a risk that high-value imports (machinery, electronics, and chemicals) will widen the trade deficit further, despite duty-free access for Indian labor-intensive goods.

2. **The "Inverted Duty Structure" (Manufacturing vs. Trading)**

- **Concept:** This occurs when the import duty on finished products is **lower** than the duty on the raw materials/intermediate goods required to make them.
- **Impact:** FTAs often lower duties on finished goods to zero. If domestic manufacturers still pay higher duties (or taxes like GST) on raw materials, it becomes cheaper to **import and trade** than to **manufacture in India**, directly contradicting the Atmanirbhar Bharat vision.

3. **Low FTA Utilization Rate**

- **Complexity:** India's FTA utilization rate is significantly low—estimated at only **25%**—compared to 70–80% in developed countries.
- **Reasons:** Small and Medium Enterprises (MSMEs) often find the paperwork and **Rules of Origin (ROO)** certification too complex and costly, opting instead to pay the standard Most Favoured Nation (MFN) duties.

4. **"Green Protectionism" and Non-Tariff Barriers (NTBs)**

- **CBAM (Carbon Tax):** The EU's **Carbon Border Adjustment Mechanism** (starting Jan 2026) could impose 20–35% taxes on Indian steel, aluminum, and cement, effectively neutralizing any "zero-duty" benefits gained through an FTA.
- **Sanitary and Phytosanitary (SPS) Measures:** Indian agri-exports (like grapes, rice, and shrimp) frequently face rejection in EU and UK markets due to stringent pesticide residue norms that go beyond international standards.

5. **"WTO-Plus" Issues (Sovereignty vs. Trade)**

Developed nations (UK, EU, EFTA) are pushing for standards in areas where India has traditional sensitivities:

- **Labour & Environment:** Recent deals like the **EFTA TEPA (2025)** and **India-UK CETA** include chapters on sustainability. India is concerned that these could be used as "disguised protectionism" to block Indian goods if domestic labor reforms (Labour Codes) are not fully implemented.
- **Data Exclusivity in Pharma:** Partners often demand "Data Exclusivity," which prevents Indian generic companies from using existing clinical trial data to launch cheaper drugs, potentially threatening India's status as the **"Pharmacy of the World."**

India's Modern Approach:

1. **The "Investment-First" Paradigm**

The most significant shift in India's modern approach is the inclusion of **legally binding investment commitments**.

- **The EFTA Benchmark:** The **India-EFTA TEPA (Operational Oct 2025)** is a global first, where partner nations committed to **$100 billion in FDI** and **1 million direct jobs** in India over 15 years.
- **The "Clawback" Mechanism:** In the **New Zealand FTA (Dec 2025)**, the **$20 billion** investment pledge is reportedly backed by a mechanism where market access can be reviewed if investment targets are not met.

- **Impact:** This ensures that FTAs lead to **"Made in India"** manufacturing rather than just turning India into a consumption market for foreign goods.

2. Strategic "Safety Nets" (Geopolitical Alignment)

In 2025, as the US implemented aggressive **"reciprocal tariffs"** (reaching up to 50% on some Indian goods), India used FTAs to insulate its economy.

- **Trade Insurance:** By locking in zero-duty access to the **UK, Oman, and EFTA**, India created alternative hubs for its labor-intensive sectors (textiles, leather) to bypass US tariff walls.
- **China Plus One:** FTAs are now used to secure **Critical Mineral** supply chains (Lithium from Australia, High-tech from Switzerland) to reduce dependence on China.

3. Managing "WTO-Plus" Issues

India has shown a newfound willingness to negotiate on complex, non-tariff issues that it previously avoided:

- **Sustainability & Labor:** The **India-UK CETA (2025)** and **EFTA** deals include chapters on environment and labor. India's approach is to accept these standards only if they do not act as "disguised protectionism."
- **Data & Digital Trade:** India is moving from a rigid "data localization" stance to a more fluid "trusted corridor" approach, as seen in the **2025 Digital Personal Data Protection (DPDP) Rules** which facilitate cross-border data flows with FTA partners.

4. Tactical Safeguards & "Red Lines"

- **Exclusion as a Tool:** India has institutionalized a "Red Line" policy for sensitive sectors. It successfully excluded **Dairy** from the New Zealand deal and **Gold** duty changes from the EFTA deal.
- **CAROTAR 2020:** Modern FTAs are paired with strict **Rules of Origin (ROO)**. Importers must prove that a significant portion of value addition happened in the partner country, preventing Chinese goods from being "re-labeled" and dumped into India.

Way Forward:

1. Structural & Fiscal Reforms

- **Addressing Inverted Duty Structures:** As signaled in the 2025 Budget, India is rationalizing customs duties—reducing the number of tariff rates to eight. The priority is to ensure duties on raw materials (like lithium, cobalt, and laboratory chemicals) are consistently lower than finished products to incentivize **Make in India**.
- **National Manufacturing Mission:** Integrating FTAs with the "National Manufacturing Mission" to help MSMEs upgrade technology and meet the quality standards of developed markets.

2. Boosting FTA Utilization & Ease of Doing Business

- **Unified Trade Portal:** To solve the low utilization rate (currently ~25%), the government is developing a single searchable national portal. This will provide MSMEs with easy access to **Rules of Origin (ROO)** certification and duty drawback codes.
- **Export Hubs:** Operationalizing **District Export Hubs** to identify localized products (one district, one product) that have competitive advantages under specific FTAs.

3. Countering "Green Protectionism" (CBAM)

- **Domestic Carbon Pricing:** India is fast-tracking its own **Carbon Credit Trading Scheme (CCTS)**, set for full implementation by October 2026. This allows Indian exporters to pay carbon taxes domestically, which can then be credited against the EU's **Carbon Border Adjustment Mechanism (CBAM)** to avoid double taxation.
- **Technology Transition:** Utilizing **PLI (Production Linked Incentive)** schemes to help the steel and aluminum sectors pivot to "Green Hydrogen" and low-emission technologies to remain competitive in the EU/UK.

4. **Leveraging Services & Mobility**

- **Mutual Recognition Agreements (MRAs):** Moving beyond visa quotas to ensure that Indian professional degrees (Doctors, CAs, Engineers) are legally recognized in partner countries.
- **Social Security Portability:** Expanding the **Double Contribution Convention** (found in the UK deal) to other partners to save billions for Indian IT firms and professionals working abroad.

5. **Digital & Intellectual Property Strategy**

- **Trusted Data Corridors:** Using the **Digital Personal Data Protection (DPDP) Act 2023** to create "trusted zones" for data flow with FTA partners, facilitating the growth of India's Fintech and Global Capability Centers (GCCs).
- **Generic Sovereignty:** Maintaining a firm stance against "Data Exclusivity" in all future negotiations (like the ongoing India-EU FTA) to protect the domestic generic pharma industry.

Conclusion:

India's recent FTAs represent a "Goldilocks" approach—liberal enough to attract high-tech investment and market access, yet cautious enough to protect the livelihoods of millions of farmers and MSMEs. As India eyes the $5 trillion economy mark, these "new era" pacts will be the engines of its external growth.

3.2. DISASTER MANAGEMENT

3.2.1. INDIA'S DISASTER RESPONSE: A SLIPPERY SLOPE FOR FEDERALISM

Why in the News?

- The article highlights growing concerns over India's **disaster-response financing** framework after the **Wayanad landslides in July 2024**.
- Despite Kerala's estimated loss of ₹2,200 crore, the Union released only **₹260 crore** for immediate relief (~11% of the claimed amount), raising questions on **federalism, equity, and efficiency** in disaster management.
- The Supreme Court and policymakers are increasingly debating whether India's fiscal federalism in disaster response is **conditional and centralized**, instead of **cooperative and state-responsive**.

Background/Context

India's Disaster Response Framework

- India's disaster response is governed primarily by the **Disaster Management Act, 2005**.
- Two main funds:

1. **State Disaster Response Fund (SDRF):** Jointly financed by Centre & States in 75:25 ratio (90:10 for Himalayan & northeastern states), for **immediate relief** (shelter, food, medical care, compensation).
2. **National Disaster Response Fund (NDRF):** Fully funded by the **Union government**, supplements SDRF in **severe disasters**.

Observed Problem

- Disasters are becoming fiscal stress tests for States due to **climate change intensifying extreme events**.
- Rising **conditionality and central control** are reducing **state autonomy** in rapid disaster response.

Key Issues Highlighted

1. Drifting Towards Centralized Control

- Relief norms are outdated and rigid:
- Compensation ceilings: ₹4 lakh for each life lost, ₹1.2 lakh for fully damaged houses.
- Focused on **subsistence needs**, not reconstruction or rehabilitation.
- Procedural delays due to sequential approvals from **State memorandum → Central assessment → High-level clearance**.

2. Ambiguity in Disaster Classification

- Disaster severity is **vaguely defined**, giving **wide discretion** to the Centre for NDRF eligibility.
- Kerala's Wayanad landslide took months to be classified as "severe," delaying aid.

3. Weak Allocation Criteria

- Current formula: Based on **population + total geographic area**.
- **Flaws:**
- Ignores actual **hazard exposure**.
- Vulnerability proxied by poverty, not **risk indices** (exposure to floods, cyclones, landslides).
- **Example**: States like Tamil Nadu & Karnataka faced delayed disaster funds despite high damages during **Cyclone Gaja (2018)** & floods (2019).

4. SDRF Procedural Constraints

- SDRF releases are **not automatic**, and funds often arrive **late in the fiscal year**.
- Funds are **restricted for immediate relief**, limiting reconstruction or livelihood restoration.
- States forced to **retain reserves for liquidity**, reducing their operational flexibility.

Analysis of India's Disaster Response Framework

Issue	Current Scenario	Impact on Federalism	Suggested Reform
Disaster Classification	Ambiguous, subjective	Delays state access to funds	Define severity with clear objective indicators
Funding Mechanism	SDRF/NDRF with conditionality	Centre dominates fund flow	Use grant-based allocation with state operational control
Allocation Criteria	Population + Area	Misaligns actual exposure & need	Introduce **vulnerability & hazard risk index**
Procedural Delay	Sequential approvals	Slows immediate response	Automated triggers for quick release
Reconstruction Support	Limited	Focus on subsistence only	Allow funds for rehabilitation & livelihood

Federalism Under Strain

- Cooperative federalism **eroded**: Central oversight dominates procedural approvals.
- Conditionality limits states' **autonomy and efficiency** in disaster relief.
- Financial misalignment creates **disparity across states** in relief allocation.

Learning from Global Practices

- **USA (FEMA):** Data-driven, transparent triggers for federal support.
- **Mexico (FONDEN):** Automatic fund release based on **rainfall/wind thresholds**.
- **Philippines:** Quick-response funds triggered by rainfall/fatality indices.
- **Australia:** Federal aid linked to **state revenue**, ensuring accountability and speed.
- **Africa & Caribbean:** Insurance facilities using **satellite data** for rapid payouts.

Lesson for India:

- Move to **objective triggers** for disaster assistance, reducing **discretion and delays**.
- Prioritize **grant-based transfers**, not debt-based, with **state-led operational control**.

Rebuilding the Federal Spirit

Recommendations

1. **Update Relief Norms:** Reflect current costs, not decade-old estimates.
2. **Objective Allocation:** Introduce comprehensive **vulnerability index** to guide funding.
3. **Strengthen Grant-based Model:** Disaster aid should remain **grant, not loan-based**, enhancing state autonomy.
4. **Operational Control to States:** Union's role should be **post-audit verification**, not prior approval.
5. **Speed & Rules-Based Response:** Systematic triggers to ensure **swift, equitable, and accountable aid**.

Core Idea: Disaster management must reinforce **cooperative federalism**, balancing **central oversight with state autonomy**.

Conclusion

The Wayanad landslide underscores the need for a paradigm shift in India's disaster-response framework. Current fiscal mechanisms, procedural rigidity, and discretionary aid highlight an imbalance in cooperative federalism, undermining states' ability to act promptly. Strengthening objective, transparent, and grant-based disaster financing, coupled with clear operational autonomy for states, is essential not only for efficient relief but also for preserving the federal spirit in India's evolving disaster management landscape.

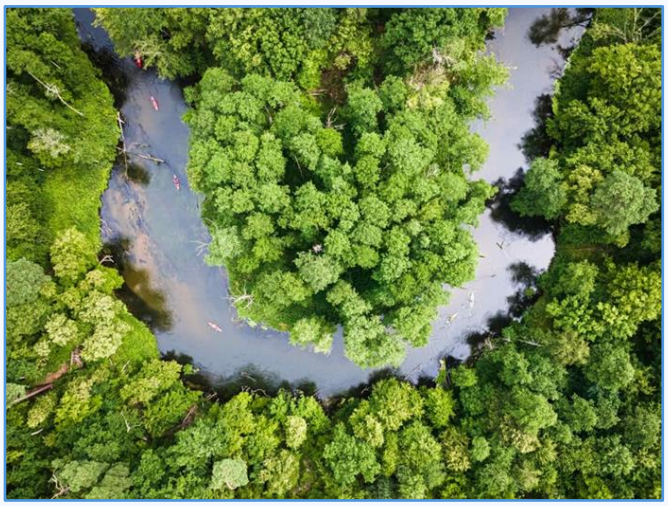
Q. *What is disaster resilience? How is it determined? Describe the elements of a resilience framework. Flooding in urban areas is an emerging climate-induced disaster. Discuss the causes of this disaster. Mention features of two major floods in the last two decades in India. Describe the policies and frameworks in India that aim at tackling such floods.*

Q. *Dam failures are always catastrophic and have widespread social, economic, and environmental impacts. Analyze the causes of dam failures in India. Give two examples of large dam failures in the last two decades.*

3.3. ENVIRONMENT

3.3.1. FIGHTING THE FIRE

Why in the News?



The **30th Conference of the Parties** concluded with a clear message: the era of announcing ever-higher targets is over. The world has entered a decisive "**implementation decade**". Hosted for the **first time in the Amazon rainforest city of Belém**, the summit deliberately shifted the narrative from setting new goals to delivering on existing ones, especially keeping the 1.5°C target alive through concrete **national actions by 2030.**

Historical Context and Evolution of COPs

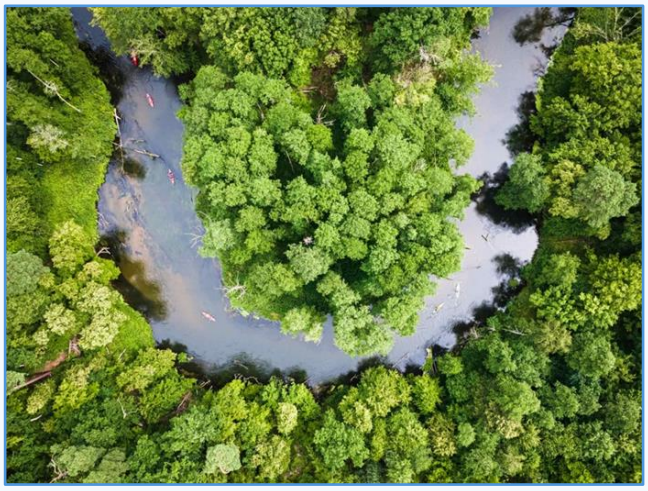
COP	Year & Location	Core Achievement	Nature of Focus
COP21	2015 Paris	Paris Agreement, 1.5/2°C goals, NDCs	Goal-setting
COP26	2021 Glasgow	Coal phase-down, $100 bn finance pledge	Enhanced ambition
COP27	2022 Egypt	Loss and Damage Fund created	Compensating historical injustice
COP28	2023 Dubai	First-ever fossil fuel transition language	Beginning of end-game for fossils
COP29	2024 Baku	New finance goal ($300 bn public + $1.3 tn total by 2035)	Quantifying means of implementation
COP30	2025 Belém	Mandatory 1.5°C-aligned NDCs with detailed implementation roadmaps by Feb 2026	Execution and delivery

The progression is clear: the first 25 COPs built the architecture; the last five filled it with numbers; COP30 has now locked the door on further delay by making delivery the central criterion of success.

The Core Narrative Shift at Belém

Brazil, as president, framed the summit around three phrases that now define the post-2025 climate regime:

1. "**From pledge to progress**"
2. "The new normal is systematic decoupling of economic growth from fossil fuels"
3. "Implementation is the new ambition"



These were not slogans — they translated into binding decisions:

- All countries must submit new or updated NDCs by February 2026 that are fully consistent with 1.5°C pathways and contain sector-specific roadmaps and biennial transparency reports on actual delivery.
- First-ever work programme on phasing out fossil-fuel subsidies with mandatory annual reporting starting 2027.
- Creation of the "**Belém Implementation Lab**" — a permanent technical body to help countries turn pledges into investable policies.

The Two Persistent Divides and How COP30 Handled Them

Divide	Developed Countries' Position	Developing Countries' Position	COP30 Outcome
Ambition vs Support	Push for universal timelines and carbon metrics	Enhanced action only with enhanced finance and technology	Finance goal remains $300 bn public by 2035, but delivery roadmap and grant element increased to 45%
Fossil Phase-out	Fixed global end-dates	National circumstances and just transition	No universal date; instead "systematic global efforts" with differentiated pathways

The compromise language reflects continued North-South trust deficit but moves the conversation from "**whether**" to "**how fast and with what support**".

Finance: From Promises to Pipelines

- The $300 billion public finance goal agreed at COP29 is now accompanied by a detailed contributor base (26 developed + 8 high-income emitters).
- 45% of flows must be grants or highly concessional (up from 28% earlier).
- Loss and Damage Fund crossed $750 million and became fully operational with direct community access in 42 vulnerable countries.
- Brazil's proposal of a 1–2% global levy on fossil-fuel extraction did not enter the final text but was annexed as an option for future consideration — expect this in 2026–27 negotiations.

Amazon Symbolism and Concrete Biodiversity Gains

Hosting the **COP** in **Belém** was strategic. Outcomes include:

- $10 billion Amazon Resilience Facility (2026–2030).
- Commitment to reduce Amazon deforestation to net-zero by 2028 (from 50% reduction achieved 2023–2025).
- First-ever inclusion of indigenous knowledge systems as a formal input into national adaptation plans.

India's Role and Gains

India maintained its principled stance of "**ambition in proportion to support**" and secured:

- Explicit recognition that coal phase-down timelines will differ according to national circumstances.
- Increased share in the Adaptation Fund and direct access entity status for NABARD and SIDBI.
- Leadership role in the work programme on just transition for coal-dependent economies.

Key Takeaways for the Coming Years

1. 2026 is the make-or-break year — new NDCs will reveal who is serious about 1.5°C.
2. Transparency framework is now enforceable; false reporting carries risk of trade measures.
3. Finance and technology transfer remain the litmus test of multilateral trust.
4. The Amazon outcome has set a template for ecosystem-specific global funds (watch for similar funds for Himalayas, Congo Basin, and coral reefs).

COP30 did not produce dramatic headlines, but it quietly ended the era of climate diplomacy as theatre. The world has moved from writing the script to performing it — and the audience (future generations) will judge strictly on results.

Q. *The Intergovernmental Panel on Climate Change (IPCC) has predicted a global sea level rise of about one metre by AD 2100. What would be its impact in India and the other countries in the Indian Ocean region?*

Q. *'Clean energy is the order of the day.' Describe briefly India's changing policy towards climate change in various international forums in the context of geopolitics.*

3.3.2. WHY DOES INDIA NEED BIOREMEDIATION

Why in the News?

India's escalating **environmental crisis**, driven by **rapid industrialisation** and **unchecked waste generation**, has made **bioremediation** a critical national priority. With rivers like **Ganga** and **Yamuna** receiving **untreated sewage and industrial effluents** daily, urban landfills overflowing (e.g., Bengaluru's Mittaganahalli, 2024), and legacy contamination from oil spills, heavy metals, and pesticides, traditional cleanup methods have failed.

The government is now aggressively pushing **bioremediation** through **Namami Gange**, **Swachh Bharat Mission**, and **Department of Biotechnology (DBT)** programmes. This shift aligns with **SDG 6 (Clean Water)**, **SDG 14 (Life Below Water)**, and India's **NDCs under Paris Agreement**.

The Pollution Burden & Need for Green Solutions

- Post-independence **industrial boom** → severe **soil, water and air contamination**
- **70%+ surface water bodies polluted** (CPCB 2023)
- **80% sewage flows untreated** into rivers (World Bank 2022)
- Legacy issues: **Bhopal gas tragedy aftermath**, **oil spills**, **pesticide-laden Punjab farmland**, **chromium dumps in Kanpur**
- Conventional methods (excavation, chemical treatment) → **expensive, energy-intensive** and create **secondary pollution** → Hence, **bioremediation** emerges as **low-cost, in-situ, eco-friendly** alternative

What is Bioremediation?

"Restoring life through biology" – using **microorganisms** (bacteria, fungi) and **plants** to detoxify pollutants by converting them into **harmless substances** (CO_2, water, biomass).

Two Broad Types

Type	Description	Example
In-situ	Treatment at the contamination site itself	Bioaugmentation in Yamuna riverbed
Ex-situ	Excavated soil/water treated in controlled facility	Bioreactors for tannery sludge in Kanpur

Traditional vs Modern Bioremediation

Approach	Features	Indian Relevance
Traditional Microbiology	Uses native microbes, low-tech	Cost-effective in rural areas
Cutting-edge Biotech	**Genetic engineering, nanobiotech, GM plants**	Faster degradation, tackles complex pollutants

Key Government Initiatives

Programme / Agency	Focus Area
Namami Gange	Microbial treatment of sewage before river discharge
Swachh Bharat Mission (Urban)	Fungal degradation of municipal solid waste
CSIR-NEERI	Indigenous oil-zapping bacteria for marine spills
DBT-BCIL	Commercialisation of microbial formulations
National Clean Technology Programme	University–industry partnerships

Opportunities for India

- Restore **rivers, groundwater, degraded farmland**
- Create **green jobs** in biotech & waste management (1 million by 2030 – DBT estimate)
- Reduce **import dependence** on chemical remediants
- Export **low-cost bioremediation tech** to Global South
- Support **circular economy** & **LiFE (Lifestyle for Environment)** movement

Major Challenges

Challenge	Impact	Way Forward
No unified national policy	Fragmented implementation	Dedicated **National Bioremediation Mission**
GMO biosafety concerns	Fear of gene flow, ecological imbalance	Strengthen **GEAC** monitoring & field trials
Site-specific customisation	One-size-fits-all strains fail in diverse climates	Regional bioremediation hubs & strain banks
Lack of trained manpower	Scaling bottleneck	Include in curriculum + skill programmes
Monitoring & standardisation	Incomplete degradation goes undetected	Real-time biosensors + third-party certification

Strategic Importance for India

- **Decouples economic growth from ecological damage** – essential for **Amrit Kaal** vision
- Directly contributes to **NDC targets** (carbon sinks via restored lands, reduced methane from landfills)
- Strengthens **National Green Hydrogen Mission** (clean feedstock via remediated waste)
- Positions India as **global leader in tropical bioremediation** (high temperature & monsoon-resilient strains)
- Addresses **environmental justice** – most polluted sites are in poor/marginalised areas

Conclusion

Bioremediation is no longer an academic curiosity — it is a **national security and sustainability imperative** for India. In an era where rivers burn, groundwater is toxic, and landfills tower over cities, biology offers the most potent, affordable, and regenerative tool to heal the environment without harming it further. The success of **Namami Gange**, **Swachh Bharat**, and India's **net-zero 2070** journey will depend heavily on how fast we move from pilot projects to **nationwide, regulated, indigenous bioremediation ecosystems**.

Q. *What is oil pollution? What are its impacts on the marine ecosystem? In what way is oil pollution particularly harmful for a country like India?*

Q. *Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard.*

3.3.3. A DISMANTLING OF THE BASE OF ENVIRONMENTAL REGULATION

Why in the News?

On **18 November 2025**, the Supreme Court of India, through a **2:1 majority** in the CREDAI vs Vanashakti review petition, **recalled** its earlier judgment (May 2025) which had declared **ex-post facto (retrospective) Environmental Clearances (ECs)** illegal.

The original judgment was seen as a powerful reaffirmation of India's preventive environmental framework. However, the review ruling now creates **fresh**

uncertainty regarding the State's authority to **regularise violations** after development has already begun, altering the legal and environmental accountability landscape.

Background: India's Environmental Clearance Architecture

Environmental governance in India is built on the principle that **environmental risk must be assessed before development begins**. This principle is codified in:

- Environment (Protection) Act, 1986
- EIA Notifications of 1994 and 2006

These require:

- **Prior EC** before construction or expansion
- Public hearings and scientific scrutiny
- Conditions to prevent irreversible harm

This model supports the **precautionary principle**, **polluter pays**, and **inter-generational equity** — widely recognised norms in Indian jurisprudence.

Evolution of Retrospective Environmental Clearances

Period / Event	What it Permitted	Consequence
Prior to 2017	Strict rule of prior EC	Preventive regime maintained
2017 Notification	One-time window to apply for EC **after** commencement	Start of retrospective regularisation
2021 Office Memoranda / SOP	Detailed route to regularise violations with penalties	Institutionalisation of violations
May 2025 Supreme Court ruling	Held retrospective ECs illegal, restoring strict regime	Strengthened deterrence and rule of law
Nov 2025 Review (Current Develop.)	Recalled the earlier ruling, reopening scope for regularisation	Dilution of safeguards

The Original Judgment: A Protective Legal Shift

The May 2025 ruling strongly reaffirmed:

- **Environmental protection as a core constitutional value** under Article 21
- The **preventive nature** of the EIA regime
- That allowing projects to start illegally and later purchase compliance **destroys deterrence**

The Court recognised that:

- Environmental harms often become **irreversible** if addressed late
- Public consultation cannot be bypassed without harming **environmental justice**
- Executive convenience cannot rewrite statutory intent

It re-aligned environmental regulation with scientific prudence and global best practices.

The Review Judgment: A Shift Toward Accommodation

The review decision adopted **a significantly different stance**:

- Treated retrospective clearances as **administrative accommodation** rather than structural violation
- Suggested **penalties and costs** can compensate for non-compliance
- Allowed the State **greater flexibility** in managing regulatory breaches

However, the dissenting opinion warned: "Punishing illegality after the fact cannot substitute scientific appraisal before harm occurs."

Thus, the majority's view **reduces the legal stigma** attached to violations and risks making **regularisation a norm** instead of an exception.

Key Concerns Arising from the Review

1. **Loss of Deterrence:** If compliance can be bought **later**, project developers may willingly violate initial requirements.
2. **Weakening Public Participation:** Public hearings — a cornerstone of EIAs — are **impossible to restore** retrospectively.
3. **Dilution of Environmental Rule of Law:** Executive memoranda and one-time windows can now override a statutory **prior clearance mandate**.
4. **Increased Scope for Regulatory Capture:** Financially powerful violators could secure approvals easily, leaving communities exposed.
5. **Long-term Harm to Ecological Security:** Damage done before assessment **cannot always be remedied**, even with penalties.

This shift represents **not just a legal reinterpretation**, but a **philosophical retreat** from environmental precaution.

The Larger Significance: A Precedent with Systemic Effects

The review judgment signals a **broader weakening of accountability**:

- **Environmental governance** becomes vulnerable to convenience
- Enforcement authorities may become **lenient**
- Violations may be viewed as **regularisable defaults** instead of threats
- **Climate and biodiversity commitments** stand compromised

India's environmental framework — long celebrated internationally for judicial leadership — now **faces erosion at its core**.

Way Forward

For environmental protection to remain meaningful:

1. **Clear legal boundaries:** Parliament must define if and when retrospective regularisation is allowed — and under **strictly narrow conditions**.
2. **Stringent safeguards:** Any regularisation must require **restoration plans**, **independent scientific evaluation**, and **community participation**.
3. **Real penalties:** Violators should compensate based on **ecological damage**, not nominal fines.
4. **Institutional strengthening:** Pollution control boards and appraisal committees need **capacity and autonomy**.

Only then can developmental needs be balanced without compromising environmental integrity.

Conclusion

The Supreme Court's recall of its earlier judgment marks a **moment of deep concern** for India's environmental regulatory rulebook. The preventive shield that ensures **assessment before destruction** has been weakened. The path to sustainable development demands that India:

- Stay aligned with constitutional environmental values

- Preserve public participation and scientific oversight
- Resist shortcuts that convert illegality into entitlement

How the State and judiciary navigate this space now will shape the **ecological rights of future generations**.

Q. *Discuss the role of water harvesting & groundwater recharge techniques in India.*

Q. *How does the National Green Tribunal ensure access to environmental justice?*

3.3.4. INDIA'S ENVIRONMENTAL CRISIS

Why in the News?

The dismal state of India's environment was **recently** highlighted in a critique, citing a **deep-seated and continuing disregard for environment** in government policymaking, which combined encouragement of reckless exploitation of natural resources with a callous disregard for consequences.

Background and Context: A Pattern of Environmental Disregard

Government actions and proposed changes to environmental regulations were scrutinised for displaying a **venal streak of cynicism** in relation to environmental protection.

Key Areas of Concern: Legislative and Policy Dilutions

- **Forest (Conservation) Amendment Act, 2023:** Large categories of land and projects were **exempted** from forest clearance rules, thus **easing diversion** for other purposes.
- **Draft Environmental Impact Assessment (EIA) notification 2020:** Sought to **dilute public hearings**, **expand exemptions**, and **reduce compliance reporting**.
- **Coastal Regulation Zone (CRZ) Notification 2018:** Construction rules along India's shorelines were **eased**, opening **ecologically sensitive coastal areas** and fishing communities' habitats to **commercial real estate and industrial activity**.

Governance and Financial Issues

- **Ministry of Environment:** Ministry was often noted for **circumventing due process** and **weakening regulations** rather than implementing them or taking proactive measures.
- **National Clean Air Programme (NCAP):** High-publicity initiatives such as NCAP were **largely underfunded**, and even the **funds allocated had not been utilised**.
- **Electoral Bonds Data:** Disclosure of electoral bonds data proved that many of the environmental clearances and policy shifts were made in light of **donations by large corporate groups** to the ruling party, raising concerns over **policymaking being up for sale**.

Manifestations of the Environmental Crisis

The crisis was illustrated through several recent events, demonstrating a failure of governmental approach.

Threat to the Aravalli Range

- **Geographical and Historical Significance:** The Aravalli range played a **significant role** in Indian geography and history, serving as a **barrier to the spread of desertification** from the Thar Desert to the Gangetic Plains.
- **Government Policy Action:** The Modi Government set a new regulation declaring that any hills in the range with an **elevation of less than 100 metres are not subject to strictures against mining**.
- **Consequence:** This policy was viewed as an **open invitation for illegal miners and mafias** to finish off **90% of the range**, which falls below the height limit set, thereby furthering the denudation already caused by **illegal mining**.

Public Health Tragedies

- **Annual Smog Season (Air Pollution):** The national capital embarked on its annual smog season, a hazy mist of **dust, smoke and particulate matter**, leading to a full-scale, **slow-motion public health tragedy**. Estimates of the human toll of this pollution were noted to go as high as **34,000 deaths in just 10 cities annually**.
- **Groundwater Contamination:** The **Central Ground Water Board (CGWB)** reported that **13%-15% of tested groundwater samples in Delhi contain uranium** beyond the permissible limit for human consumption.
  - Water samples from **Punjab and Haryana** reflected even **higher levels of uranium contamination**, raising frightening health implications for daily consumption.

Conflict: Environment vs. Local Communities

An emerging and **insidious tendency** to **pit the environment against the local communities that protect it** was noted when politically convenient for the Government.

Issues Related to Community Rights

- **Forest Rights Act, 2006:** The Forest Survey of India was accused of **mischievously attributing the loss of forest cover** over the last decade to the implementation of the Forest Rights Act, 2006, with even the Minister concerned echoing the claim.
- **Eviction from Tiger Reserves:** The National Tiger Conservation Authority called for the **eviction of almost 65,000 families** from tiger reserves across the country in June 2024.
  - This action was considered a **breach of the spirit of the Wildlife (Protection) Act, 1972**, which mandates that all relocations must be **voluntary**.
  - The move was deemed **unnecessarily inimical**, ranging the environment against local communities.

Way Forward: Need for a New Deal for the Environment

A comprehensive approach involving a resolve to **halt further harm** and a **policy-level review** is necessitated for building a safer, healthier, and more resilient India.

Immediate Actions: Halting Destruction

- **Cessation of Deforestation:** Large-scale deforestation planned or currently underway must be **halted** across the country, specifically mentioning **Great Nicobar**, **north Chhattisgarh's Hasdeo Aranya**, and **Madhya Pradesh's Dhirauli**.

- **Crackdown on Illegal Activity:** Rampant **illegal mining** in the **Aravalli range** and other eco-sensitive regions such as the **Western Ghats** must be cracked down upon.
- **Himalayan Belt:** The indiscriminate **destruction of mountains in the Himalayan belt** needs to cease, given the heavy toll in human lives exacted over the past few years.

Policy and Institutional Reforms

- **Review of Laws:** Laws and policy changes of the last decade that led to this disastrous path must be **urgently reviewed**.
  - Amendments bulldozed through Parliament in the **Forest (Conservation) Act, 1980** and the **Forest Conservation Rules (2022)**, which are anti-Adivasi and allow clearing of forests without consulting inhabitants, must be **withdrawn**.
- **Post-Facto Clearances:** The blatantly illogical and dangerous practice of providing **post-facto environmental clearances** to big corporations that violate environmental laws cannot continue.
- **Restoring NGT:** The **National Green Tribunal (NGT)**, systematically weakened by vacancies, must be **restored to its pride of place** and allowed to function **independently** of government policy and pressure.
- **Inter-Governmental Coordination:** Greater **inter-governmental coordination** is required on environmental matters.
  - The air pollution crisis in the NCR requires a **whole-of-government approach** and a **regional airshed approach**.
  - The groundwater uranium contamination issue also necessitates a coordinated effort, demonstrating a spirit of **cooperative federalism** from the Modi Government.

Conclusion

India's environmental policies must fundamentally be guided by a **deference to the rule of law**, a **commitment to work with rather than against local communities**, and an **understanding of the inextricable relationship between environment and human development**. Adopting such a worldview is essential for navigating the challenges of the 21st century.

Q. *"The recent legislative amendments to the Forest (Conservation) Act and the proposed EIA 2020 notification signal a shift from 'environmental stewardship' to 'environmental facilitation'." Critically examine the implications of these policy shifts on India's ecological security and the constitutional mandate under Article 48A.*

3.3.5. VALUE OF WATER: EVALUATING THE PRICELESSNESS OF CLEAN, POTABLE WATER

Why in the News?

A new study titled "The Value of Clean Water: Experimental Evidence from Rural India" (NBER, 2025) reveals that **households value clean drinking water far more than earlier estimates suggested**, calling for major reforms in water pricing, supply, and quality policies.

Background: India's Drinking Water Challenges

- Water is essential, yet **only ~70% of rural households have access to basic drinking water**.

- Wide disparities persist in:
- Safe drinking water availability
- Water quality
- Reliability
- Households rely on unsafe or unreliable sources → affecting **health, productivity, and well-being**.

Traditional understanding underestimated how much households are willing to pay for clean, reliable water supply due to:

- Taste/odor aversion
- Irregular availability
- Hidden burdens of collection (mostly on women)
- Low-income constraints masking 'true' preferences

Study Overview: Conducted in Odisha

Why Odisha?

- Large rural population
- 32nd out of 37 states/UTs in water access
- ~83% households rely on government water connections
- 40% villages still lack safe drinking water access (2023 survey)

How the Study Measured Water Value

a) Two Methods Used

1. **Willingness to Pay (WTP)** experiments
2. **Willingness to Accept (WTA)** compensation for switching to dirty/low-quality water

b) Innovative Randomised Controlled Trial

- Conducted across **91 villages**
- Private company supplied filtered water
- Randomisation allowed researchers to directly measure:
- Collection time
- Taste tolerance
- Water treatment behaviour
- Household preferences

c) Experimental design isolated factors such as:

- Income changes
- Seasonal scarcity
- Infrastructure quality
- Substitutes availability (protected vs unprotected sources)

Key Findings

1. Households value clean water far higher than previously believed

- WTP and WTA were significantly higher than estimates in earlier literature.
- Households are willing to **pay more or accept high compensation** to avoid unsafe water.

2. **Strong preference for quality over affordability**

   Even poor households placed:

   - **High value on reliability**
   - **High value on water source safety**
   - **Strong aversion to switching to low-quality water**

   This contradicts old assumptions that poor households:

   - Don't prioritise water quality
   - Value only cost or convenience

3. **Hidden burdens became visible**

   The study captured costs earlier ignored:

   - Time spent collecting water
   - Physical fatigue
   - Psychological stress
   - Lower well-being from uncertain water access

   These factors contributed significantly to valuations.

4. **Households prefer clean treated water even when:**

   - Free alternatives exist
   - Switching involves no financial penalty
   - Quantity available is the same

   → The preference is fundamentally **for health, safety and reduced stress**.

Implications for Policymakers

1. **Redesign water pricing & subsidies**

   - Water subsidies should prioritise:
   - **Quality of supply**
   - **Reliable delivery**
   - Not merely affordability.

2. **Strengthen rural drinking water schemes**

   (JJM, NRDWP, Swajal)

   - Shift focus from coverage to:
   - Water quality
   - Real-time monitoring
   - Grievance redressal

3. **Prioritise investments in treatment infrastructure**

   - Households clearly value safe filtered water → State intervention must ensure:
   - Water treatment plants

- Quality testing labs
- Contamination alerts

4. **Recognise behavioural aspects**
   - Choices are driven by:
   - Health preferences
   - Reliability
   - Risk perception
   - Not only price.
5. **Targeted support for vulnerable groups**
   - Women and children bear disproportionate water-collection burdens → Their well-being improves significantly with reliable piped supply.

Conclusion

The study fundamentally shifts how policymakers should view water access.

It shows that **households deeply value safe, reliable water—economically, emotionally, and health-wise**.

Future policies must recognise:

- Quality > Quantity
- Reliability > Affordability
- Well-being > Minimalist infrastructure

A reorientation towards **people-centric, quality-focused water governance** is the need of the hour.

Water Crisis: Meaning and India's Situation

What is a Water Crisis?

A **water crisis** arises when the amount of clean, usable water available in an area becomes inadequate to meet the needs of its population. As per the World Bank, water scarcity occurs when **annual per-capita water availability drops below 1,000 cubic metres**.

Water Crisis Scenario in India

Overall Stress on Water Resources

- India holds **only 4% of global freshwater**, yet caters to **17% of the world's population**, placing enormous pressure on its limited resources.
- NITI Aayog's **Composite Water Management Index (CWMI)** warns that India is undergoing its **most severe water crisis ever**, with **around 600 million people** facing high to extreme levels of water stress.
- Per-capita water availability dropped to **1,486 cubic metres (2021)** — already in the "water-stressed" category — and may further fall to **1,341 cubic metres by 2025** and **1,140 cubic metres by 2050**.

Lack of Access to Safe Drinking Water

As highlighted by CWMI:

- Nearly **200,000 deaths per year** are linked to unsafe or inadequate water.
- **Three-fourths of households** do not have assured drinking water access.
- By **2030**, about **40% of Indians** may lack access to potable water.

Groundwater Depletion and Pollution

- India is the **world's largest user of groundwater**, accounting for **over 25% of global extraction**.
- Nearly **70% of groundwater sources are contaminated**, placing India at **120th out of 122 countries** in the global water quality index.

Causes of the Water Crisis in India

1. **Escalating Water Demand**

- NITI Aayog projects that India's water demand will **double the available supply by 2030**.
- Groundwater depletion between **2041–2080** is expected to be **three times** the current rate.

2. **Agricultural Dependency on Groundwater**

- Farming heavily relies on groundwater, especially due to **water-intensive crops** like paddy grown in **Punjab and Haryana**, despite being ecologically unsuitable.

3. **Encroachment of Natural Water Bodies**

- Urban expansion has led to **destruction and encroachment** of lakes, ponds, and wetlands.
- Example: Loss of traditional lakes in **Bengaluru** due to real-estate pressure.

4. **Climate Change**

- Irregular monsoons, rising temperatures, and declining river flows — all climate-induced — are aggravating water shortages across the country.

5. **Pollution of Water Sources**

- Groundwater and surface water contamination is rising due to **industrial effluents, untreated sewage, and unregulated mining activities**.

6. **Outdated Legislation and Poor Management**

- Laws such as the **Easement Act of 1882** give landowners unrestricted access to groundwater, promoting over-extraction.
- Water management remains outdated and reactive rather than forward-looking.

7. **Fragmented Governance**

- Water governance is split between the **Centre and States** and even between departments within governments.
- Example:
- **Central Water Commission (CWC)** → surface water
- **Central Ground Water Board (CGWB)** → groundwater
- Political interference exacerbates inter-state disputes.

8. **Low Public Awareness**

- Water is often treated as a **free, inexhaustible resource**, resulting in widespread misuse and neglect.

Impacts of the Water Crisis

1. **Economic Consequences**

- The World Bank estimates that India could see a **6% loss in GDP by 2050** due to water scarcity.
- Reduced water availability hampers **agricultural productivity**, endangering food security and livelihoods.
- **Industries** like textiles, power, and manufacturing may face production declines.

2. **Ecological Effects**

- Water scarcity threatens **ecosystems**, potentially leading to loss of plant and animal species.
- Contamination by heavy metals and chemical spills disrupts **marine and freshwater biodiversity**.

3. **Social Implications**

- Consumption of polluted water leads to health issues, especially in children, diminishing **human capital**.
- Rising healthcare expenses worsen the hardships of the vulnerable population.
- Women face increased burdens — long distances to fetch water, school dropouts, and even phenomena like **"water wives"** in drought-prone regions.

4. **Strain on Federal Relations**

- Scarce resources intensify long-standing inter-state disputes such as **Cauvery, Krishna, and Godavari**.
- Competition over water fuels **regionalism** and may weaken national cohesion.

5. **International Tensions**

- Cross-border rivers become points of contention.
- Example:
- **China's dams on the Brahmaputra** affecting India's water security.
- Discussions around revisiting the **Indus Waters Treaty** with Pakistan.

India faces a severe and multidimensional water crisis driven by **growing demand, depleting groundwater, climate change, weak governance, and widespread pollution**. Its consequences are visible across the **economy, ecology, society, federal structure, and international relations**. Addressing this crisis requires urgent, coordinated, and long-term reforms in water governance, public behaviour, and sustainable management practices.

Q. *"Increasingly, the water crisis in India is not just a natural scarcity but a result of mis-governance." Analyse.*

Q. *Describe the role of technology and community participation in addressing the challenges of groundwater depletion in India.*

3.3.6. CLIMATE MOVEMENT

The **Climate Movement** refers to the **collective global, national and grassroots efforts** aimed at **mitigating climate change, adapting to its impacts, ensuring climate justice, and transforming governance systems** towards sustainability. What began as scientific advocacy and environmental activism has today evolved into a multi-layered socio-political movement, involving states, communities, civil society, youth, Indigenous peoples, and local governments.

In the contemporary phase, the climate movement is increasingly **people-centric**, emphasising **community participation, local knowledge systems, transparency, accountability, and democratic climate governance**, as exemplified by **Tamil Nadu's community-based Monitoring, Reporting and Verification (CbMRV) initiative**.

CONCEPT OF CLIMATE MOVEMENT

The **Climate Movement** encompasses diverse efforts to address **anthropogenic climate change**, primarily through mitigation (reducing emissions) and adaptation (building resilience). Key concepts include:

- **Climate Justice**: Ensuring that solutions prioritize vulnerable populations, Indigenous communities, and developing nations bearing disproportionate impacts.
- **Monitoring, Reporting, and Verification (MRV)**: Essential for transparency under frameworks like the **Paris Agreement**, tracking emissions, adaptation progress, and finance flows.
- **Just Transition**: Shifting to low-carbon economies while protecting workers and communities dependent on fossil fuels.
- **Community-Led Action**: Empowering local knowledge and participation, as seen in innovative **community-based MRV (CbMRV)** systems.

Evolution and Constitutional References

Global Evolution: The climate movement traces roots to 19th-century science, with milestones including:

- **19th Century**: Svante Arrhenius links CO_2 to warming (1896).
- **1960s-1970s**: Rachel Carson's Silent Spring (1962) sparks environmentalism; first Earth Day (1970).
- **1980s-1990s**: IPCC formation (1988); **UNFCCC** (1992); **Kyoto Protocol** (1997).
- **2000s-2010s**: Growth of groups like **350.org**; **Paris Agreement** (2015); youth-led strikes inspired by Greta Thunberg (2018-2019), mobilizing millions.
- **2020s**: COP30 reinforces adaptation goals; focus on **1.5°C** tracking.
- **2025: COP30** in **Belém, Brazil**, reinforces adaptation through the **Belém Mission to 1.5°C**, voluntary indicators for the **Global Goal on Adaptation**, and commitments to triple adaptation finance by 2035, alongside broader finance mobilization to $1.3 trillion annually for developing countries.

In India: India's environmentalism evolved in waves:

- **1730: Bishnoi Movement** in Rajasthan—Bishnois sacrifice lives hugging **khejri trees** to prevent felling by royal soldiers, leading to protection decrees. This is one of India's earliest documented eco-sacrifices.
- **1973**: **Chipko Movement** in Uttarakhand—Villagers hugged trees to prevent logging; results in 1980 ban on commercial felling in Himalayan forests.
- **1970s-1980s**: **Save Silent Valley Movement** in Kerala—Protects biodiversity-rich rainforest from hydroelectric project; leads to national park declaration in 1985.
- **1983**: **Appiko Movement** in Karnataka—inspired by Chipko, embraces trees against deforestation.
- **1982**: **Jungle Bachao Andolan** in Bihar (now Jharkhand)—Tribals oppose replacement of natural forests with teak plantations.
- **1985 onward**: **Narmada Bachao Andolan (NBA)**—Led by Medha Patkar and Baba Amte, protests **Sardar Sarovar Dam** for displacement and environmental impacts; highlights rehabilitation failures and questions large-dam development.
- **1990s-2000s**: Alignment with global frameworks **post–Rio Summit (1992).**
- **21st Century**: Youth activism via **Fridays for Future India**; integration into national policies.

Constitutional References

India's Constitution, originally silent on environment, was amended to prioritize it:

- **42nd Amendment Act, 1976**: Influenced by the 1972 Stockholm Conference, added key provisions during the Emergency period.
- **Articles 48A** (environmental protection) and **51A(g)** (citizen duty to protect environment) provide foundational support, enabling movements and policies.

India's Nationally Determined Contributions (NDCs) and Key Policies

NDC (2022) – "Panchamrit" (Five Elements):

India has progressively strengthened its **NDC commitments** with the following ambitious targets:

- **Emissions Intensity Reduction: 45% reduction** by 2030 from 2005 levels.
- **Non-Fossil Fuel Energy: 50% of installed electric power capacity** from non-fossil sources by 2030.
- **Carbon Sinks:** Creation of **2.5-3 billion tonnes equivalent additional carbon sink** through forest enhancement.
- **Net Zero Target:** Achieving **Net-zero emissions by 2070**.
- **One Billion Tonnes Emissions Reduction:** Pledges to **reduce total projected carbon emissions by one billion tonnes** from 2030 onwards.

Key National Policies and Programs

- **National Action Plan on Climate Change (NAPCC):** The **overarching framework** comprising **nine national missions** focusing on key areas: **solar energy**, **enhanced energy efficiency**, **water**, **agriculture**, **Himalayan ecosystem**, **sustainable habitat**, **green India**, **human health**, and **strategic knowledge on climate change**.

- **State Action Plans on Climate Change (SAPCs): 34 states and union territories** have developed SAPCs, which are **aligned with NAPCC**, translating national frameworks into **state-specific action plans**.
- **National Green Hydrogen Mission (2023):** Targeting **5 million tonnes per annum green hydrogen production by 2030** with **125 GW renewable energy capacity**. This addresses **decarbonization** in **hard-to-abate sectors** including **steel, fertilizer, and mobility**.
- **Green Climate Company Model:** India's innovative institutional approach exemplified by the **Tamil Nadu Green Climate Company (TNGCC)**, established in 2022 as a **not-for-profit special purpose vehicle** for implementing **state-level climate missions**.
- **National Solar Mission:** A flagship initiative that drove a dramatic scale-up of solar power capacity, positioning India as a global leader in renewable energy deployment.

Present Status of the Climate Movement

India demonstrates the **Climate Movement's real-world manifestation** in a major developing economy.

Renewable Energy Achievement

- **Historic Milestone (July 2025):** India reached **50% of installed electricity capacity from non-fossil sources**, achieving this target **five years ahead of the 2030 commitment**.
- **Cumulative Capacity:** Total **non-fossil fuel-based energy capacity** reached **217.62 GW** as of January 20, 2025.
- **Solar Expansion:** India has installed over **100 GW of solar capacity** as of 2025, with record capacity additions of **22 GW** in the first six months of 2025.
- **Manufacturing Growth: PM Surya Ghar Muft Bijli Yojana** targets **1 crore rooftop solar installations**; 50 solar parks with capacities of **500+ MW each**.
- **Renewable Investment:** Between 2023 and 2024, investments in **renewable energy projects** increased by **91.5%**.

Emissions Intensity Progress

- India maintains **one of the lowest per capita emissions globally** while supporting over **1.4 billion people**.
- Strong progress toward the **45% reduction target by 2030** from 2005 levels.

Youth and Community Dimensions

- **Youth-Led Climate Activism in India**
- **Fridays for Future (FFF) India:** Conducting **school strikes** and **policy advocacy**; FFF India gained attention when their website was **blocked in July 2020** amid **Environmental Impact Assessment** protests.
- **Indian Youth Climate Network (IYCN): Climate Solutions Road Tour** spanning **3,500 kilometers and 15 cities**; nationwide **youth dialogues** ahead of COP30.
- **Community Stewardship Models**
- **Indigenous Peoples' Leadership:** Indigenous peoples protect an estimated **22% of the planet's surface** and **80% of biodiversity**.

- **Local Communities and Indigenous Peoples Platform (LCIPP):** Established under the **Paris Agreement** to strengthen **Indigenous and local knowledge**.

Significance of the Climate Movement

The Climate Movement is a pivotal force driving global change, ensuring that climate action is recognized as a **moral, economic, and political imperative**.

- **Policy and Accountability:** Pushes governments to set and meet ambitious **net-zero targets** and strengthens **legal accountability** through climate litigation.
- **Economic Shift:** Drives the **divestment movement** away from **fossil fuels** and accelerates massive **green investment** into renewable energy and clean technologies.
- **Scientific Benchmark:** Established the **1.5 degree C limit** as the definitive global threshold for policy-making and corporate planning.
- **Climate Justice:** Successfully reframed climate action as an issue of **equity and human rights**, ensuring solutions address the most **vulnerable and frontline communities**.
- **Public Awareness:** Elevated climate change to a **top-tier political concern**, influencing consumer behavior and electoral outcomes globally.
- **Youth Mobilization:** Injected unprecedented **moral urgency** and intergenerational accountability through global **youth-led activism** (e.g**., Fridays for Future**).
- **Decentralized Governance:** Fosters innovative, **bottom-up stewardship models** (like **CbMRV in Tamil Nadu**), integrating local knowledge into formal governance and data systems.

Challenges Facing the Global Climate Movement

Despite its massive scale, the climate movement faces significant structural and political hurdles that impede the necessary pace of change.

- **Political and Corporate Resistance:** The challenge of the **Entrenched Fossil Fuel Lobby and Political Influence** is paramount. Powerful, well-funded fossil fuel interests actively resist policy change, fund **climate misinformation**, and maintain deep influence over regulatory bodies, leading to legislative inertia.
- **Climate Finance Gap and Global Inequity:** The **Climate Finance Gap and North-South Divide** is a major trust issue. Developed nations' failure to meet the **$100 billion climate finance commitment** perpetuates the fundamental challenge of **"Common but Differentiated Responsibilities,"** stalling vital mitigation and adaptation efforts in the Global South.
- **Policy Inconsistency and Short-Term Focus:** The conflict between **Short-Term Political Cycles vs. Long-Term Crisis** means democratic systems often prioritize immediate economic gains over the **long-term, systemic investments** required for decarbonization, resulting in policy backtracking and a lack of sustained commitment.
- **Misinformation and Symbolic Action:** The **Risk of Greenwashing and Symbolic Action** is high, as corporations and governments make vague **net-zero pledges** while masking continued high-carbon activities. This creates an illusion of progress, diverting attention and resources away from genuine systemic change.
- **Equity and Implementation Hurdles:** Challenges related to **Socio-Economic Inequality and Just Transition Hurdles** mean policies like carbon taxes often face resistance due to the risk

of **disproportionately impacting the poor** or workers without clear, funded pathways to **new green livelihoods**, severely complicating the essential **"Just Transition."**

People-Led Climate Intelligence Movement in Tamil Nadu – Case Study

Tamil Nadu's **community-based environmental MRV (CbMRV)** initiative, launched in 2023 under the UK PACT programme, is a direct response to this need. It formally integrates **community-generated environmental intelligence** into the state's climate governance system.

The CbMRV Model in Action:

- **Local Knowledge Weaving:** The initiative was piloted in three ecologically distinct landscapes: **Aracode in the Nilgiris** (mountain forests), **Vellode in Erode** (agriculture/wetlands), and **Killai in Cuddalore** (mangroves/coastal fisheries).
- **Data Indicators:** It meticulously weaves **traditional ecological knowledge** with field-based monitoring of metrics such as:
- Rainfall, Temperature, Soil, and Water Health.
- Biodiversity, Fish Catch, and Cropping Patterns.
- Livelihoods, Carbon Stocks, and Emissions.
- **Community Climate Stewards:** A key achievement is the emergence of **35 Key Community Stakeholders (KCS)**—farmers, fishers, women, youth, and tribal knowledge-holders—who are trained as the **first community climate stewards**. They collect, interpret, and translate this **real-time, village-scale environmental data** into daily local decisions.
- **Integration with Governance:** The evidence is integrated into a **digital dashboard** that informs decision-making across all levels:
- **Panchayat Level:** Complements **Gram Panchayat Development Plans** and programmes like the **Climate Resilient Village**, strengthening vulnerability assessments and resource management.
- **State Level:** Enhances the evidence base for the **Tamil Nadu Climate Tracker**, the **State Action Plan on Climate Change**, and the **Green Tamil Nadu Mission**.
- **Impact and Vision:** By making climate intelligence locally produced and owned, CbMRV reframes governance as a **partnership**, not a top-down exercise. The long-term aim is **institutionalization** by integrating training modules into community colleges and ITIs, creating a **permanent green workforce** capable of maintaining long-term environmental baselines and replicating the system.

Way Forward: Action Plan for the Climate Movement

The path forward for the global Climate Movement demands **radical acceleration**, **equity-focused implementation**, and a sustained **ground-up institutionalization** of action.

- **Mandate Rapid Decarbonization and Carbon Pricing:** Relentlessly push for **global treaties and national laws** to mandate the **complete and equitable phase-out of all new fossil fuel exploration and subsidies by 2030**. Simultaneously, advocate for robust **Global Carbon Pricing** and **Carbon Border Adjustment Mechanisms (CBAMs)** to internalize emissions costs and incentivize clean production worldwide.

- **Integrate Justice and Finance:** Demand developed nations **exceed the $100 billion annual climate finance commitment**, ensuring funds flow through transparent mechanisms directly to **adaptation and resilience projects** in vulnerable communities. Furthermore, secure funding to **Champion the Just Transition** for workers in high-carbon sectors through **retraining** and **green job creation**.
- **Scale Decentralized Climate Intelligence:** Replicate and institutionalize models like the **Tamil Nadu CbMRV initiative globally**. This involves investing in **community-led monitoring**, training local stewards, and integrating **real-time, hyperlocal data** into high-level policy dashboards for bottom-up governance.
- **Drive Sectoral and Financial Transformation:** Mobilize the **Financial Divestment and Green Investment** movement to redirect capital from fossil fuels into clean technologies. Drive policy changes that enforce **circular economy principles** in industry and promote a massive shift to **sustainable, regenerative agriculture**.
- **Strengthen Accountability and Dialogue:** Support and expand **climate litigation** against governments and major corporations that fail to meet their targets or engage in **greenwashing**. Establish formal, mandated dialogue channels to **Bridge the Political-Activist Divide**, translating **scientific urgency into immediate political action** and legislative reform.

CONCLUSION

The **Climate Movement offers a pathway of hope amid the climate crisis**, as people-centred initiatives like **Tamil Nadu's CbMRV** demonstrate how **democratic, ground-up governance rooted in local knowledge** can make climate action more **resilient and equitable**. By empowering communities as climate stewards, such efforts advance **SDG 13 (Climate Action)** while strengthening **SDG 16 (inclusive institutions)** and supporting **SDGs 11 and 15** for sustainable communities and ecosystems—making **urgent action imperative now**.

Q. *"The success of the Climate Movement increasingly depends on integrating local knowledge with formal climate governance systems." Critically examine this statement in the context of community-led climate intelligence initiatives in India.*

3.3.7. ATOMS FOR AMBITION: DECARBONIZING THE INDIAN GRID

Context: India's nuclear policy is a sophisticated blend of strategic restraint and ambitious civilian energy expansion. It is essential to distinguish between the **Nuclear Weapon Doctrine** (security) and the **Nuclear Power Programme** (governance and energy).

Why need Civil Nuclear Programme:

I. The "Net Zero" & Decarbonization Imperative

India has committed to achieving **Net Zero emissions by 2070**.

- **Data:** In 2024–25, coal still accounted for roughly **75%–78%** of India's total electricity generation.

- **Example:** To decarbonize while demand grows, India needs "baseload" power that isn't coal. Unlike solar/wind (which are intermittent), nuclear provides stable, 24/7 power with near-zero CO_2 emissions.
- **Goal:** The **Nuclear Energy Mission** aims to reach **100 GW of nuclear capacity by 2047** to replace aging coal plants.

II. Energy Security & Strategic Autonomy

Relying on imported oil and gas makes India vulnerable to global price shocks (e.g., the 2022-2025 energy price fluctuations).

- **Data:** India holds **25% of the world's thorium reserves** but only ~2% of global uranium.
- **Example:** India's unique **"Three-Stage Nuclear Power Programme"** is designed specifically to eventually use its vast thorium deposits.

III. Economic Efficiency & Grid Stability

While the initial cost of building a nuclear plant is high, the long-term operational costs are significantly lower than fossil fuels.

- **Data:** In FY 2024–25, Indian nuclear plants achieved a **Plant Load Factor (PLF) of 87%**, significantly higher than the thermal (coal) PLF of ~60-70%.

Civil Nuclear Governance and Energy:

India's civilian program is governed by the **Atomic Energy Act, 1962**.

Institutional Framework

1. **Department of Atomic Energy (DAE):** Under the direct charge of the Prime Minister. It executes all nuclear-related activities.
2. **Atomic Energy Commission (AEC):** The apex body for formulating policy and directing research.
3. **Atomic Energy Regulatory Board (AERB):** An independent body that ensures nuclear safety and radiation protection.
4. **NPCIL & BHAVINI:** Public sector units responsible for the construction and operation of nuclear power plants.

The 3-Stage Nuclear Power Programme

Designed by **Dr. Homi Bhabha** to utilize India's vast thorium reserves (25% of global reserves) since uranium is scarce.

Stage	Technology	Fuel Used	Key Feature
Stage 1	Pressurized Heavy Water Reactors (PHWR)	Natural Uranium	Generates electricity and **Plutonium-239**.
Stage 2	Fast Breeder Reactors (FBR)	Plutonium-239	"Breeds" more fuel than it consumes.
Stage 3	Thorium-Based Reactors (AHWR)	Thorium-232 + U-233	Ultimate goal for energy independence.

Current Developments:

The SHANTI Bill, 2025: A Governance Overhaul

The **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill** was introduced to repeal and replace the **Atomic Energy Act, 1962** and the **Civil Liability for Nuclear Damage (CLND) Act, 2010**.

I. Key Governance Shifts

- **Ending State Monopoly:** The Bill removes the exclusive mandate of the Nuclear Power Corporation of India (NPCIL) and BHAVINI. It allows **private Indian companies** and **joint ventures** to build, own, and operate nuclear plants.
- **Statutory Status for AERB:** For decades, the Atomic Energy Regulatory Board (AERB) functioned under the Department of Atomic Energy (DAE). The Bill finally confers **statutory status** to the AERB, aimed at enhancing its independence and safety oversight.
- **Unified Legal Framework:** By merging liability and operational laws into a single statute, the government aims to reduce "transaction costs" and "legal ambiguity" for new investors.
- **Target 2047:** Aiming for **100 GW** of nuclear capacity by 2047 (currently ~8.8 GW).

II. Addressing the "Liability" Deadlock

- **Supplier Accountability:** The new Bill restricts the "Right of Recourse." Operators can now only claim damages from suppliers if it is **explicitly written in a contract** or if there is "intent to cause damage." This protects equipment suppliers (like GE or Westinghouse) from open-ended liability.
- **Liability Caps:** Maximum operator liability is now capped at **₹3,000 crore** (approx. 300 million SDRs).
- The Central Government will cover damages exceeding this cap.
- For "severe breaches," penalties are limited to **₹1 crore**, a point of contention for some critics regarding its adequacy as a deterrent.

III. Governance Gaps & Concerns

A. Regulatory Independence

Despite statutory status, the AERB's leadership appointments are still heavily influenced by the **Atomic Energy Commission (AEC)** and the Centre. True independence—essential for public trust—requires a selection process shielded from the executive branch of the DAE.

B. Public Accounting and Insurance

The Bill requires private operators to maintain insurance but **exempts government-owned installations** from the same. Critics argue this creates a dual standard and lacks transparency in public accounting for potential disasters.

C. Compensation Adequacy

The ₹3,000 crore cap is viewed by some as insufficient for "environmental remediation" and victim compensation in the event of a large-scale catastrophe, potentially shifting the financial burden onto the taxpayer.

IV. Strategic & Operational Reforms

- **Small Modular Reactors (SMRs):** Governance is pivoting toward "Bharat Small Reactors" (220 MW). These are easier to finance and can be located near industrial clusters (e.g., steel/cement) to provide captive green power.

- **Foreign Participation:** While foreign technology is welcome, the Bill ensures that **sensitive fuel cycles** (enrichment, reprocessing, and uranium mining) remain strictly under **State Control** to prevent proliferation risks.
- **New Redressal Bodies:** The Bill proposes an **Atomic Energy Redressal Advisory Council** and **Claims Commissioners** to handle disputes, moving away from traditional slow-moving civil courts.

Comparison: Old vs. New Governance

Feature	Atomic Energy Act, 1962	SHANTI Bill, 2025
Operator	Only Govt PSUs (NPCIL/BHAVINI)	PSUs, Private Firms, JVs
AERB Status	Administrative Body (under DAE)	**Statutory Body** (Independent)
Supplier Liability	High (Right of Recourse)	Limited (Contractual only)
SMR focus	Minimal	High (Specialized Licensing)

Key Challenges:

1. **Legislative & Legal Challenges**

The most significant debate in the current Winter Session of Parliament revolves around the dilution of liability norms.

- **Dilution of Supplier Liability:** Critics argue that by removing the "Right of Recourse" against suppliers for defective equipment (formerly Section 17(b) of the CLND Act), the government is granting a "free pass" to global vendors. This raises the risk of sub-standard technology entering the Indian market without legal accountability for the manufacturer.
- **Exclusion of Civil Courts:** Section 81 of the SHANTI Bill bars civil courts from hearing nuclear damage claims, vesting power solely in a **Nuclear Damage Claims Commission**. Opponents argue this undermines the "Right to Justice" and the doctrine of separation of powers.
- **Penalties vs. Risks:** The maximum penalty for a "severe breach" by an operator is capped at **₹1 crore**. Critics argue this is a "pittance" compared to the catastrophic environmental and health risks involved in nuclear operations.

2. **Safety & Regulatory Concerns**

With the entry of private players, the regulatory burden on the state increases exponentially.

- **AERB's "Statutory" vs. "Real" Independence:** While the Bill grants statutory status to the **Atomic Energy Regulatory Board (AERB)**, it remains answerable to the Centre. Without financial and administrative autonomy from the DAE, there is a perceived "conflict of interest" where the promoter (DAE) and the regulator (AERB) are closely linked.
- **Oversight of Private Players:** Transitioning from a state-only model to a multi-operator model (JVs and private firms) requires a massive scale-up in specialized inspection manpower, which India currently lacks.

- **Spent Fuel Management:** The Bill keeps "spent fuel" and "enrichment" under state control. Managing a larger volume of high-level radioactive waste from private plants will put a severe strain on India's storage and reprocessing infrastructure.

3. Financial & Economic Hurdles

The capital-intensive nature of nuclear power remains its Achilles' heel.

- **The Funding Gap:** While the goal is **100 GW by 2047**, requiring nearly **₹15 lakh crore**, current budget outlays (e.g., ₹20,000 crore for the Nuclear Energy Mission) are a drop in the ocean.
- **Commercial Viability of SMRs:** Small Modular Reactors (SMRs) are "factory-built," but the per-unit cost of electricity remains higher than solar and wind. Private players may be reluctant to invest unless the government provides **Viability Gap Funding (VGF)** or assured high-tariff Power Purchase Agreements (PPAs).
- **Insurance Pool Limitations:** The **Indian Nuclear Insurance Pool (INIP)** has a limited capacity. If multiple private plants are commissioned, the pool may be insufficient to cover the required liability insurance, forcing operators to look for expensive global re-insurance.

4. Strategic & Social Challenges

- **The "NIMBY" Syndrome:** "Not In My Backyard" protests remain the biggest hurdle to land acquisition. Protests seen in **Kudankulam** and **Jaitapur** are likely to intensify if private corporations are seen as profiting at the cost of local environmental safety.
- **Uranium Dependency:** India still relies on imports for 75% of its uranium requirements. Increasing nuclear capacity without securing long-term "fuel tie-ups" or joining the **Nuclear Suppliers Group (NSG)** makes our energy security vulnerable to global geopolitical shifts.
- **Cyber-Security:** Digitalizing nuclear controls to accommodate modern SMR designs increases the "attack surface" for state-sponsored cyber-terrorism, requiring a sophisticated **Nuclear Cyber Command**.

Way forward:

1. Strengthening the Regulatory Ecosystem

- **Functional Independence of AERB:** Granting statutory status is the first step. The way forward involves ensuring that the **Atomic Energy Regulatory Board (AERB)** has financial autonomy and a transparent selection process for its leadership, free from the influence of the Department of Atomic Energy (DAE).
- **Harmonization with IAEA Norms:** As private players enter, India must align its safety and inspection protocols with International Atomic Energy Agency (IAEA) standards to build global investor confidence.

2. Unlocking Private and Foreign Capital

- **Operationalizing Joint Ventures (JVs):** The government should expedite JVs between NPCIL and private giants (like Tata Power, Reliance, or Adani). The "49% minority equity" model needs clear guidelines on **profit repatriation** and **operational risk-sharing**.
- **Global Strategic Partnerships:** With the "Right of Recourse" deterrent removed, India should revive stalled projects like **Jaitapur (France)** and **Kovvada (USA)**. This will bring in Light Water Reactor (LWR) technology to complement indigenous PHWRs.

3. **Scaling Small Modular Reactors (SMRs)**

- **Industrial Decarbonization:** SMRs (like the Bharat Small Reactor) should be deployed in **Public-Private Partnership (PPP)** modes near "hard-to-abate" sectors like steel and cement.
- **Regulatory Sandbox:** Create a "regulatory sandbox" for SMRs to test factory-based modular manufacturing, which can significantly reduce the 10-15year gestation period of traditional plants.

4. **Public Trust and Social License**

- **Transparent Communication:** Nuclear energy still faces the "Fukushima Shadow." The government must move beyond top-down implementation to a **stakeholder-led approach**, involving local communities in environmental impact assessments (EIA).
- **Enhanced Liability Fund:** While the operator's liability is capped at ₹3,000crore, the **Nuclear Liability Fund** must be robustly funded through a "Nuclear Cess" or insurance pools to ensure that in an extreme event, compensation is swift and sufficient.

5. **Completing the Nuclear Fuel Cycle**

- **Uranium Security:** While opening up mining, India must continue its "strategic hedging" by diversifying uranium imports (Kazakhstan, Canada, Australia) and securing long-term supply contracts.
- **Stage 2 & 3 Acceleration:** While the SHANTI Bill focuses on the immediate "Power" stage, the long-term way forward remains the commercialization of the **Fast Breeder Reactor (PFBR)** to eventually unlock the vast **Thorium** potential.

Conclusion

India's nuclear policy is at a **historic inflection point**. The transition from the restrictive **Atomic Energy Act of 1962** to the reformative **SHANTI Bill of 2025** signals India's intent to integrate nuclear energy into its broader **"Viksit Bharat @ 2047"** vision.

The shift toward a **liberalized governance model**—characterized by private sector participation, statutory regulatory independence, and Small Modular Reactors (SMRs)—is no longer a choice but a necessity to meet the **Net-Zero 2070** commitments.

Q. *With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy.*

3.3.8. THE ARAVALLI AUDIT: ANCIENT HILLS, MODERN HURDLES

Context: A landmark development in **early 2025** is the Supreme Court's reinforcement of the **T.N. Godavarman (1996)** judgment. The court has stayed any state-level attempts (particularly in Haryana) to redefine "forest" in a way that would exclude Aravalli hill tracts.

Significance of the Aravalli Range:

1. Barrier Against Desertification

The Aravallis act as a **natural topographic barrier** that prevents the eastward expansion of the **Thar Desert**. Without this range, the fertile plains of Haryana, Punjab, and Delhi-NCR would likely succumb to "sand-drift" and desertification.

2. Climate & Monsoon Regulator

- **Rainfall Patterns:** The range influences the South-West monsoon. Although it runs parallel to the Arabian Sea branch (which is why Rajasthan remains dry), it guides the Bay of Bengal branch of the monsoon towards the Northern Plains.
- **Urban Heat Island Mitigation:** For the National Capital Region (NCR), the Aravalli hills and forests act as a "green lung," helping to lower local temperatures and combat the Urban Heat Island effect.

3. "Water Tower" for Northern India

- **Groundwater Recharge:** The fractured rocks of the Aravallis allow for high rates of percolation. It serves as a primary recharge zone for groundwater in water-stressed cities like Gurugram, Faridabad, and Delhi.
- **Catchment Area:** It is the source of several rivers, including the **Banas, Luni, Sahibi, and Sakhi**.

4. Biodiversity Hotspot

The range is a critical wildlife corridor, connecting the **Sariska Tiger Reserve** in Rajasthan to the **Asola Bhatti Wildlife Sanctuary** in Delhi. It hosts:

- **Fauna:** Leopards, Striped Hyenas, Golden Jackals, and various species of deer.
- **Flora:** Over 400 species of native plants, including the ecologically vital **Dhok (Anogeissus pendula)** tree.

5. Economic & Mineral Significance

The Aravallis are exceptionally rich in minerals, which has historically driven the regional economy:

- **Non-Ferrous Metals:** Large deposits of Copper (Khetri), Zinc, and Lead.
- **Construction Material:** High-quality Marble, Granite, and Sandstone (used in historical monuments like the Red Fort and modern infrastructure).

Challenges Faced by the Aravallis:

1. The "Definition" Crisis

The most pressing challenge in 2025 is the **new uniform definition** of the Aravallis accepted by the Supreme Court.

- **The Issue:** The definition now classifies "Aravalli Hills" as landforms with an elevation of **100 meters or more** above local relief.
- **The Threat:** An internal assessment by the **Forest Survey of India (FSI)** found that only about **9%** of the 12,081 hills mapped in Rajasthan meet this 100-meter criterion.
- **Consequence:** Nearly **90% of the hills, ridges, and slopes**—which are lower but ecologically vital—could lose their protective "Aravalli" status, potentially opening them to legal mining and real estate development.

2. Systematic "Vanishing" of Hills (Illegal Mining)

- **Physical Erasure:** In Rajasthan alone, at least **31 out of 128 mapped hills** have completely disappeared due to rampant illegal mining.
- **Resource Depletion:** The range is being razed for "Badarpur sand," marble, and granite to feed the construction hunger of the NCR.
- **Effect:** The loss of these hills creates **gaps in the desert barrier**, allowing Thar Desert sand to drift into the Indo-Gangetic plains.

3. Acute Hydrological Stress

- **Puncturing Aquifers:** Deep mining has punctured underground water tables. In districts like Mahendergarh (Haryana), groundwater levels have plummeted to **1,500–2,000 feet**.
- **Loss of Catchment:** Natural cracks in Aravalli rocks once recharged **2 million liters of water per hectare**. Urbanization and cementing have blocked these recharge zones, turning Gurugram and Faridabad into "Dark Zones" where water extraction exceeds 200% of recharge.

4. Fragmentation of Wildlife Corridors

- **Human-Wildlife Conflict:** The range is a vital corridor for leopards and hyenas between **Sariska (Rajasthan)** and **Asola Bhatti (Delhi)**.
- **The Barrier:** Massive infrastructure projects, such as the proposed highway plans through Aravalli forests, are cutting these corridors, leading to frequent leopard sightings (and deaths) on roads.

5. Invasive Species (The "Green Desert")

- **Prosopis juliflora (Vilayati Kikar):** This invasive species has taken over large tracts. While it looks green, its allelopathic nature prevents native plants from growing and its deep taproots further deplete groundwater.

Recent Government & Judicial Steps:

1. Landmark Judicial Steps

The Supreme Court (SC) of India has recently passed several critical orders to end the "regulatory vacuum" that allowed illegal mining for decades.

- **Uniform Definition:** For the first time, the SC accepted a standardized definition for the Aravallis.
- **"Aravalli Hill":** Any landform in designated districts with an elevation of **100 meters or more** above local relief.
- **"Aravalli Range":** A collection of two or more such hills within **500 meters** of each other.
- **Interim Ban on New Mining:** The Court has **banned the grant of all fresh mining leases** and renewals across Delhi, Haryana, Rajasthan, and Gujarat until a comprehensive **Management Plan for Sustainable Mining (MPSM)** is finalized.
- **Protection of PLPA Lands (2025):** The Court reiterated that lands protected under the **Punjab Land Preservation Act (PLPA)** in Haryana are to be treated as "forests," making any diversion for non-forest use (like real estate) illegal without prior Central approval.

2. Recent Government Steps

The Union Government and State administrations have launched multi-pronged initiatives to restore the "Green Shield" of Northern India.

- **Aravalli Green Wall Project (AGWP) Expansion:**
- Stretching **1,400 km** from Porbandar to Panipat, the project is creating a **5 km wide green buffer**.
- **Context:** In June 2025, the PM integrated the **'Ek Ped Maa Ke Naam'** campaign into the AGWP, aiming to restore **1.1 million hectares** of degraded landscape by 2027.
- **Management Plan for Sustainable Mining (MPSM):**
- The MoEF&CC, through the **Indian Council of Forestry Research and Education (ICFRE)**, is drafting a geo-referenced plan.
- It will categorize the range into **Core/Inviolate Zones** (No mining) and **Regulated Zones** (Scientific mining allowed only for strategic minerals).
- **The 2025 Action Plan:** Unveiled by the Environment Ministry in May 2025, it emphasizes **Native Species Plantation** (Dhok, Salai, etc.) and the removal of invasive species like Prosopis juliflora.

Way Forward: How to Protect the Aravallis?

1. Revisiting the Legal Definition (The "100m Challenge")

The most critical task is ensuring that smaller hills are not left vulnerable.

- **Slope-Based Mapping:** Instead of a strict height cutoff, the government should adopt the **Forest Survey of India's (FSI)** recommendation of a **3 to 4.5-degree slope** criterion. This ensures that even low-lying ridges, which act as vital windbreaks and groundwater recharge zones, remain protected.
- **"Relict Landscape" Protection:** The Aravallis are relict mountains; many of their most ecologically significant parts are now low-elevation. Legislation must recognize **geological age** (rocks of the Aravalli Supergroup) rather than just physical height.

2. Unified Aravalli Management Authority

Currently, the range is managed by four different states (Gujarat, Rajasthan, Haryana, Delhi) with varying laws.

- **Statutory Body:** A central authority modeled after the **National Mission for Clean Ganga (NMCG)** should be established to ensure uniform land-use policies.
- **Natural Conservation Zone (NCZ) Integrity:** The **Regional Plan 2041** for NCR must be strictly enforced, keeping Aravalli lands under the NCZ category where construction is restricted to **0.5%**.

3. Implementing the "Saranda Model" for Sustainable Mining

The Supreme Court has directed the creation of a **Management Plan for Sustainable Mining (MPSM)**, similar to the one used for Jharkhand's Saranda forests.

- **Inviolate Zones:** Identify "No-Go" zones for mining, specifically in wildlife corridors (e.g., between Sariska and Asola Bhatti) and primary aquifers.
- **Ecological Restoration Bond:** Mining leases should only be granted if the company deposits a "Restoration Fund" upfront to be used for mandatory **reclamation of abandoned pits** once mining ends.

4. Scaling the Aravalli Green Wall Project (AGWP)

The **1,400 km x 5 km corridor** must be treated as a National Priority Project.

- **Native Species Re-wilding:** Replacing invasive Prosopis juliflora (Vilayati Kikar) with native species like **Dhok, Salai, and Kair**.
- **The "Whole-of-Society" Approach:** Using **MGNREGA** and the **Green Credit Programme** to involve local villagers in nursery development and tree planting, ensuring the "Ek Ped Maa Ke Naam" campaign has high survival rates.

5. Digital Monitoring & Community Vigilance

- **Satellite Audits:** Real-time monitoring through **ISRO's Bhuvan** portal to issue automated alerts for any topographic change or illegal construction.
- **"Van Panchayats":** Empowering village-level committees to manage "Gair Mumkin Pahar" (uncultivable hilly lands) through eco-tourism and non-timber forest produce (NTFP), giving them a financial stake in conservation.

Conclusion:

The Aravallis are not merely "hills" but a life-support system for the National Capital Region. Their destruction would lead to the irreversible desertification of North-West India. As noted in recent environmental summits, protecting the Aravallis is a vital component of India's commitment to the **Bonn Challenge** (restoring 26 million hectares of degraded land by 2030).

Q. *"The recent adoption of a uniform 100-meter height criterion for defining 'Aravalli Hills' has raised significant scientific concerns regarding the protection of India's oldest fold mountains. Analyze how such a height-based classification ignores the geomorphological reality of relict mountains and its implications for land degradation in Northwest India."*

3.4. INTERNAL SECURITY

3.4.1. SANCHAR SAATHI APP MANDATE

Why in the News?

A debate was **recently** sparked following directives from the **Department of Telecommunications (DoT)** aimed at curbing sophisticated cybercrimes, including a mandate for **smartphone manufacturers to pre-install the Sanchar Saathi app** on all new devices by March 2026, a measure which has been criticised as an **overkill** concerning privacy and state surveillance.

Background: The Challenge of Cybercrime

The government's directives were initiated in response to the growing sophistication and urgency of cybercrimes, which exploit existing security gaps in the telecom ecosystem.

Security Vulnerabilities Exploited by Cybercriminals

- **Instant Messaging Anonymity:** Cybercriminals have exploited a security gap where user accounts on instant messaging apps **remain functional even after the associated SIM card has been removed**, allowing for **anonymous, large-scale cross-border scams** such as **"digital arrests"** and **government impersonation fraud**.
- **Device Tracking Difficulty:** The **rampant use of spoofed or tampered International Mobile Equipment Identity (IMEI) numbers** has made tracking perpetrators nearly impossible for law enforcement agencies.

Government's Dual Directives (November 28 and December 1)

The DoT issued two directives seeking sharper tools to address these software and hardware vulnerabilities:

- **Directive 1: SIM Binding (Security Patch)**
  - Mandates **"SIM binding,"** ensuring that a user's instant messaging account is **disabled if the physical SIM is removed**.
  - This measure is considered a **security patch** that could inconvenience **WhatsApp/Internet messaging users**.
- **Directive 2: Sanchar Saathi App Pre-installation (Cure or Damage?)**
  - Mandates that **smartphone manufacturers must pre-install the Sanchar Saathi app** to verify device authenticity in all new devices by March 2026.
  - This measure is cautioned against, being reminiscent of the saying that the road to hell is often paved with good intentions, as the solution could potentially be **more damaging than the disease** of counterfeit handsets and spoofed **IMEI numbers.**

Concerns: Privacy, Surveillance, and Legal Tests

The mandatory pre-installation of the Sanchar Saathi app has attracted severe scrutiny regarding its potential for misuse and its compliance with constitutional principles.

Potential for Misuse and Surveillance

- **Higher Security Clearance:** The directive explicitly instructs that the app must be **"readily visible and accessible to the end users at the time of first use or device setup and that its functionalities are not disabled or restricted."**
  - This suggests the app will be **given a higher security clearance** within the phone's operating system.
- **Intrusive Access:** The elevated clearance is feared to allow the app **more intrusive access to features** such as **camera, phone, or SMS access**.
- **Risk of Surveillance:** The **potential for misuse of this app for state surveillance** and its utilisation by a malicious entity after compromise to **target millions of users is very present and clear**.
- **Precedent of Misuse:** This fear is not considered empty, given the past reported **use of Pegasus software to target the political opposition, journalists, and activists**.
- **Panopticon Functionality:** Notwithstanding the clarification by **Union Minister Jyotiraditya Scindia** that users could delete the app, the directive's text mandating that the app cannot be disabled suggests that it will function more as a **Panopticon** and less as a simple verification tool.

Constitutional and Legal Framework

K.S. Puttaswamy Judgment (2017): Right to Privacy Standards

Supreme Court of India's landmark judgment in K.S. Puttaswamy case (2017) established constitutional framework for evaluating state intrusions into privacy rights of citizens.

Tests Established for State Intrusion into Privacy:

- **Test of Legality:** Any state intrusion into privacy must be authorized by valid law and must not be arbitrary or unauthorized executive action
- **Test of Necessity**: Intrusion must be demonstrated as necessary for achieving legitimate state aim and must not be merely convenient or desirable
- **Test of Proportionality**: Measures adopted must be proportionate to objective sought and must not exceed what is necessary to achieve legitimate purpose

Application of Proportionality Standard To Sanchar Saathi Directive

Sanchar Saathi app mandate has been evaluated against proportionality standard established by Supreme Court, revealing failure to satisfy constitutional requirements.

Proportionality Analysis:

- **Less Intrusive Alternatives Exist:** Government already possesses less intrusive means to verify device genuineness without mandatory app installation
- **Sanchar Saathi Web Portals:** Already operational web-based verification systems enable device authenticity checking without app installation
- **SMS-Based Checks**: Existing SMS-based verification mechanisms provide device authentication without requiring intrusive app access
- **USSD Codes: Universal Supplementary Service Data** codes offer alternative verification method requiring no app installation or enhanced system access
- **Failure of Proportionality Standard**: By ignoring these less invasive alternatives, directive on Sanchar Saathi fails proportionality standard required by constitutional jurisprudence
- **Constitutional Non-Compliance**: Directive represents state intrusion exceeding what is necessary when effective less intrusive alternatives are available and operational

Industry Response and Compliance Concerns

Privacy-Conscious Manufacturer Refusal

Directive has encountered resistance from smartphone manufacturers prioritizing user privacy in their device design and operational philosophy.

Manufacturer Response:

- **Apple** has **reportedly refused** to comply with order mandating Sanchar Saathi app pre-installation.
- **Refusal attributed** to **manufacturer's privacy-conscious approach** to device design and user data protection.
- Apple's resistance characterized as unsurprising given company's established reputation for **prioritizing user privacy over governmental compliance demands.**
- Manufacturer **refusal creates implementation challenges** for directive and raises questions regarding enforcement mechanisms.

Way Forward: Upholding Rule of Law and User Choice

For addressing cybersecurity threats effectively while respecting fundamental rights, government action must be re-evaluated to prioritise less invasive measures and adhere to constitutional mandates.

- The **proportionality standard** established by the Supreme Court must be rigorously upheld when drafting and implementing policies that impact the **fundamental right to privacy**.
- Less invasive, existing mechanisms like the **Sanchar Saathi web portal, SMS, and USSD codes** should be adequately promoted and leveraged for device genuineness checks.
- Clear, unambiguous assurance must be provided that the app's access rights will be strictly limited to its stated purpose, **mitigating the potential for state surveillance** or misuse by malicious entities.
- **User consent and choice** should be paramount, ensuring citizens have the ability to **refuse, control, or remove** any app that functions outside their explicit consent, without compromising device functionality.

Conclusion

- The mandatory pre-installation of the Sanchar Saathi app exemplifies a critical tension between the State's legitimate need to combat **cybercrime** and the citizen's **right to privacy**.
- While the intent to curb threats like **spoofed IMEI numbers** and **digital arrests** is valid, the current solution, by potentially granting high-level access and ignoring less intrusive alternatives, is judged to be an **overkill** that fails the essential test of **proportionality**.
- Future cybersecurity initiatives must prioritise **transparency, user control, and adherence to constitutional safeguards** to prevent the cure from becoming potentially more damaging than the disease.

3.4.2. RIGHT TO PRIVACY VS. CYBERSECURITY

The rise of the **Digital Economy** and **e-Governance** in India has made both the protection of individual data rights and the security of digital infrastructure paramount. The **Right to Privacy**, affirmed as a **Fundamental Right** under **Article 21** by the Supreme Court in the landmark **K.S. Puttaswamy v. Union of India (2017) judgment**, seeks to protect informational self-determination.

In parallel, **Cybersecurity** refers to the measures taken to protect systems, networks, and data from cyber threats, which is vital for **National Security** and **Critical Information Infrastructure (CII)**. The relationship is symbiotic, yet often conflicting, forming a central dilemma in modern governance.

Conceptual Distinction

Feature	Right to Privacy (Data Privacy)	Cybersecurity (Data Security)
Core Principle	**Right to be Let Alone** and the right to **control** one's personal data. It is a fundamental right.	**Protection** of digital assets (data, systems, networks) from unauthorized access, attacks, and damage.

Objective	**Ethical and Legal Use** of personal data. Ensures data is collected, processed, and shared lawfully, with consent, and for a legitimate purpose.	**Confidentiality, Integrity, and Availability (CIA Triad)** of data and systems against cyber threats.
Focus	**The Data Principal (Individual)**: Their rights, consent, transparency, and control over their own data.	**The Data (System)**: The mechanisms (tools, technology, processes) to keep the data safe.
Legal Basis in India	**Article 21** of the Constitution (K.S. Puttaswamy v. UOI, 2017 Judgment). Facets protected under the **Digital Personal Data Protection (DPDP) Act, 2023**.	**Information Technology (IT) Act, 2000** (especially Section 43A and 66). Policies like the **National Cyber Security Strategy**.
Failure Example	**Privacy Failure:** A company securely stores user data but **sells it** to a third party without informed consent (e.g., Cambridge Analytica scandal).	**Cybersecurity Failure:** A hacker **breaches** a company's encrypted server and **steals** user data (e.g., a Ransomware attack).
Mantra	**Data Protection by Design** and **Data Minimisation**.	**Zero Trust Architecture** and **Advanced Threat Detection**.

Conflict/Tension in Policy & Implementation

Area of Conflict	Right to Privacy Perspective	Cybersecurity/National Security Perspective
Surveillance & Interception	**Mass surveillance** (e.g., government monitoring of digital communications) is a clear violation of privacy and fundamental rights. Requires judicial/legislative oversight.	**Lawful interception** and real-time monitoring of communications are essential to prevent terrorism, organised crime, and ensure national security. Needs access to encrypted data.
Data Retention	Data must be retained for the **shortest necessary period (Data Minimisation)**. Extended retention increases the risk of a breach and privacy infringement.	Cybersecurity forensics and incident response require **retention of logs, traffic data, and other records** for extended periods to track and prosecute cybercriminals/state actors.
Data Localisation	Can be viewed as a threat if it leads to greater **State surveillance** within national borders without adequate legal safeguards.	**Necessary** for national security and law enforcement, ensuring data of critical importance is within the sovereign jurisdiction and accessible during a crisis or investigation.
Encryption	**End-to-end encryption** is paramount to safeguard informational privacy and freedom of expression (secure communication).	Encryption can be a **"safe haven"** for criminals and terrorists. Government advocates for a **"backdoor"** or "key escrow" for legitimate law enforcement access.
Transparency & Accountability	State actions must be **transparent, necessary, and proportionate** (Puttaswamy Test). Individuals must have the right to know what data is being collected.	Public disclosure of surveillance capabilities or cybersecurity vulnerabilities can be a **threat to national security** by alerting adversaries.

Way Forward: Balancing and Synergy

Strategy	Description	How it Achieves Balance
Proportionality and Necessity	Any state intrusion on privacy must pass the **triple test** (Puttaswamy Judgment): **Legality**, **Legitimate State Aim**, and **Proportionality**.	Ensures security measures (like surveillance) are the **least intrusive** necessary to achieve a legitimate public or national security goal.
Privacy by Design (PbD)	Incorporating **privacy and data protection into the design and architecture of IT systems**, networks, and business practices **from the outset**, not as an afterthought.	Ensures that robust cybersecurity (the 'security') is built in a way that respects the individual's right to control their data (the 'privacy').
Pseudonymisation	Techniques to **strip data of direct identifiers or replace them** with a pseudonym, making it difficult to link data to an individual without a key.	Allows security analysis (e.g., threat detection, anomaly monitoring) on a large dataset without compromising the individual's identity/privacy.
Clear, Specific Legal Frameworks	Implementing a robust **Data Protection Law (like DPDP Act)** and simultaneously reviewing and updating archaic laws **(e.g., Indian Telegraph Act)** with clear surveillance guidelines.	Provides a definitive legal basis for both privacy rights and legitimate state access, reducing ambiguity and preventing arbitrary action.

Conclusion

- The debate between the Right to Privacy and Cybersecurity is not one of elimination but of **harmonisation**. In a democratic framework like India's, the approach must be to build a **human-centric digital ecosystem** where **robust security** serves as the **technical foundation** for the **fundamental right to privacy**.
- The successful implementation of the **Digital Personal Data Protection Act, 2023**, with its focus on accountability and consent while providing legitimate exceptions for state security, will be the key to achieving this necessary **constitutional balance** in the age of digital transformation.

Q. *Examine the scope of Fundamental Rights in the light of the latest judgement of the Supreme Court on Right to Privacy.*

3.4.3. CYBER CRACKDOWN: STRENGTHENING INDIA'S RESPONSE TO DIGITAL ARREST SCAMS

Why in the News?

- Recently, a **Supreme Court direction** was issued to the **CBI** (Central Bureau of Investigation) to conduct a **pan-India investigation** into **cyber-crimes**, specifically prioritizing the **"digital arrest" scam**.
- This directive is viewed as **extraordinary**, as such investigations typically require **State**

government consent, but it signifies the Court's acknowledgment of the **severity of the menace** that **transcends State jurisdictions and boundaries**.

Nature and Scale of Cyber Frauds

Targeted 'Digital Arrest' Scam

- **Modus Operandi:** Fraudsters **impersonate police or government officials** using a **video call**, then **falsely accuse victims** (often **senior citizens**) of crimes, and subsequently **pressure them to transfer money** to avoid a fraudulent arrest.
- **Economic Loss:** This specific scam has been estimated by the government to have resulted in losses **exceeding ₹3,000 crore**, fully justifying its prioritization by the Court.
- **Broader Scope:** The CBI has been subsequently asked to investigate other cyber-crimes, including **investment schemes** and **part-time job scams**.
- **Overall Trend:** Data from the **National Crime Records Bureau** indicates that the **severity of cyber frauds** has **risen significantly**.

Transnational Dimension and Human Trafficking

- **Transnational Nature:** The problem has a **transnational dimension**, meaning domestic policing alone can only address symptoms within India.
- **Scam Centres:** The growth of **"scam centres"** is noted in **conflict-ridden zones of Southeast Asia**.
- **Modern Slavery:** These centres are compounds where **trafficked workers** are forced to run online fraud operations, unable to escape due to **violence, confiscated documents, or debt bondage**, effectively operating as **modern-day slavery sweatshops**.
- **Myanmar as a Hotbed: Myanmar** remains a **hotbed** for these operations, primarily because the **illegally ruling junta** benefits from **taxing the proceeds** of such crimes.

Judicial Directives and Domestic Crackdown

Strengthening Financial Investigation and Intermediary Accountability

- **Targeting Financial Facilitators:** The CBI has been asked to target not only the scammers but also **banking officials** who facilitate the creation of **"mule" accounts**.
- **Malleable Financial Architecture:** This necessity arises because these scams depend on a **malleable financial architecture**.
- **Role of RBI and Technology:** The **RBI** has been instructed to intervene by employing **Artificial Intelligence** and **Machine Learning** to trace the **"layering" of proceeds** through multiple accounts.
- **Online Intermediary Cooperation: Online intermediaries** have been asked to cooperate with the CBI, with the Court invoking the **IT Rules 2021** to enforce this.

Way Forward

Global Action for Systemic Disruption

- **International Diplomacy:** Tackling this issue necessitates **robust international diplomacy**, moving beyond reliance on bilateral requests.
- **Cohesion and Sanctions: New Delhi** must act **in cohesion with ASEAN and the UN** to **sanction the illegal regime** in **Myanmar** and **cut off the financial lifelines** of these slavery sweatshops.

- **Global Precedent:** The **U.S. has established a Scam Center Strike Force** to tackle this issue, setting an example for global action.

Enhancing Domestic Capacity and Awareness

- **Digital Literacy Deficit:** The domestic battle must also be fought on the grounds of **digital literacy** and **capacity**, addressing the **glaring deficit in cyber awareness** among the population as daily life becomes increasingly digitized.
- **Widespread Campaigns: States, local administrations, and the RBI** must launch **widespread awareness campaigns**.
- **Police Modernization:** Simultaneously, there is an **urgent need to upgrade the digital capabilities of State police**.

Conclusion

- The Supreme Court's decisive **pan-India direction** for the investigation of **digital arrest scams** validates the severe and **transnational** nature of the cyber-crime menace.
- Effectively addressing this requires a comprehensive strategy: domestically, by **strengthening the investigative architecture** through agencies like the **CBI and RBI (leveraging AI/ML to disrupt mule accounts),** and internationally, by pursuing **robust international diplomacy** and sanctions against regimes that profit from **scam centres** in conflict zones.
- Crucially, the long-term solution depends on improving **digital literacy** and **upgrading the capacity of State police** to combat cyber threats at the grassroots level.

Evolving Landscape of Cybercrime

Cybercrime refers to any criminal activity that involves a computer, computer network, or networked device. As the world becomes increasingly **digitally integrated**, cybercrime has evolved from simple hacking to a sophisticated, global, and highly profitable industry. Its pervasive nature poses an existential threat to **national security**, **economic stability**, and **individual privacy**.

Concept and Evolution of Cybercrime

- **Concept:** Cybercrime fundamentally involves the use of information technology as either the **target** of the crime (e.g., hacking, DoS attacks, data breaches) or the **instrument** of the crime (e.g., phishing, online fraud, cyber-trafficking). It leverages the accessibility and interconnectedness of the internet for criminal gain.
- **Early Evolution (1980s-1990s):** This era was characterized by individual hackers creating **computer viruses** and worms (like Melissa or ILOVEYOU) and early forms of **rudimentary internet fraud**. The motives were often focused on notoriety, intellectual challenge, and low-level financial gain.
- **Modern Evolution (2000s-Present):** This period is marked by the **professionalization** and **industrialization** of cybercrime. Threats moved to sophisticated **Organized Cybercrime Groups** and **state-sponsored attacks** (cyber espionage and warfare). The landscape now includes advanced persistent threats (APTs), highly customized **Ransomware-as-a-Service (RaaS)** models,

and attacks leveraging emerging technologies like **AI-generated deepfakes**, **5G vulnerabilities**, and poorly secured **IoT devices**.

- **Contemporary Shifts:** The shift to **Cloud Computing** and remote work environments has expanded the attack surface, making supply chain attacks and cloud misconfigurations key vectors.

Key Data Reports and Present Status

The current status reflects an alarming surge in the sophistication, financial impact, and frequency of attacks:

- **Global Financial Impact:** Global losses from cybercrime are conservatively estimated to reach over **$10.5 trillion annually by 2025**, making it one of the largest economic drains worldwide.
- **Attack Volume:** High-volume attacks like **phishing**, **Business Email Compromise (BEC)**, and **online financial fraud** continue to dominate, accounting for a significant percentage of reported incidents and financial losses.
- **Target Diversity:** Targets range from individuals and Small and Medium-sized Enterprises (SMEs) to **large corporations** and **Critical Information Infrastructure (CII)**—including banking, telecommunications, energy, and healthcare sectors. The **targeting of CII makes national resilience a primary concern.**
- **Data Breach Costs:** The average cost of a data breach continues to climb, driven by increased regulatory fines **(like GDPR),** post-incident remediation costs, and lost business revenue.

Significance of Combating Cybercrime

Combating cybercrime is not merely a matter of technical defense; it is a **fundamental imperative** for safeguarding the stability, security, and prosperity of modern, digitally-driven societies. The significance is multifaceted, touching upon **economic vitality, national security, critical infrastructure,** and **individual rights**.

Protecting Global and National Economic Stability

Cybercrime acts as a **massive, unregulated tax** on the global economy, directly threatening financial stability and business competitiveness.

- **Massive Financial Cost:** Cybercrime is estimated to inflict damages totaling over **$10.5 trillion annually by 2025**. If measured as a country, this "cyber-economy" would be the **world's third-largest economy** after the US and China. Combating it is essential to prevent this immense **wealth transfer** to criminal entities.
- **Loss of Intellectual Property (IP):** The theft of **intellectual property**, trade secrets, R&D data, and proprietary business information by both nation-state actors (cyber espionage) and organized criminal groups is arguably the **most expensive form of cybercrime**. This loss undercuts a nation's **competitive advantage** and hampers **innovation** by reducing the return on investment for inventors and businesses.
- **Business Disruption and Recovery Costs:** Attacks like **Ransomware** and Distributed Denial of Service (DDoS) lead to severe **operational downtime**, loss of productivity, and high recovery expenses (including forensic investigation, system restoration, and mandatory regulatory fines). Combating these threats ensures business continuity and market efficiency.
- **Systemic Financial Risk:** Financial institutions are primary targets. Successful attacks on major banks or stock exchanges pose a **systemic risk** to the entire global financial ecosystem. Defense

is critical to maintaining **consumer and investor confidence** in online banking and trading platforms.

Securing Critical Information Infrastructure (CII)

The modern world is dependent on interconnected systems for essential services. Cyberattacks on these systems can lead to **physical, real-world devastation**.

- **Disruption of Essential Services:Critical Information Infrastructure (CII)**—including the **energy grid, water supply systems, telecommunications, healthcare networks,** and **transportation systems**—are increasingly managed by Industrial Control Systems (ICS) and SCADA systems that are connected to the internet.
  Example: A successful attack on the power grid could cause widespread blackouts, leading to massive public disorder and economic paralysis.
  Example: Attacks on hospital networks (e.g., using ransomware) can disrupt patient care, delay surgeries, and even endanger lives.
- **National Security Threat:** Attacks on CII, especially when sponsored by hostile nation-states, are viewed as acts of **cyber warfare**. Robust defense of these assets is now a core component of **national security strategy**, as critical vulnerabilities can be exploited to achieve strategic military or geopolitical aims.

Preserving National Sovereignty and Public Safety

Cybercrime extends beyond financial loss to threaten the democratic process and the safety of citizens.

- **Cyber Espionage and Foreign Influence:** Combating cybercrime includes detecting and neutralizing sophisticated state-sponsored groups (APTs) that engage in **espionage**, steal government data, conduct **disinformation campaigns** to influence elections, and undermine **democratic institutions**.
- **Law Enforcement and Counter-Terrorism:** Cyberspace is used by criminal organizations and terrorist groups for **recruitment, planning, communication, and financing** (e.g., through dark web markets and cryptocurrency). Combating cybercrime is essential for effective **counter-terrorism** and dismantling transnational criminal networks.
- **Protecting Vulnerable Populations:** Combating online child exploitation, cyber-trafficking, and severe financial fraud (like **"digital arrest"** scams in India) is a moral and legal duty. Active intervention protects the most **vulnerable members** of society from psychological and financial harm.

Upholding Individual Rights and Trust

At the individual level, cybercrime erodes the fundamental expectations of privacy and safety in the digital domain.

- **Protecting Personal Data and Privacy:** Cyberattacks frequently result in the mass theft of **Personally Identifiable Information (PII)** and sensitive data. Robust cyber defenses and laws **(like the DPDP Act in India**) are crucial to protect citizens from **identity theft, financial fraud,** and potential misuse of their data by malicious entities or foreign intelligence agencies.
- **Maintaining Public Trust: Frequent, high-profile breaches and scams** lead to an **erosion of public trust** in **digital systems, e-governance initiatives, and online commerce**. Effective crime

fighting restores and maintains the confidence necessary for the continued growth of the **Digital Economy**.

- **Ensuring Digital Freedom and Safety:** Combating cyber-harassment, cyber-stalking, and the creation of **deepfake media** protects individuals' freedom, safety, and reputation online, ensuring the internet remains a safe space for expression and interaction.

Challenges in Combating Cybercrime

Combating cybercrime is fraught with significant challenges that stem from the **borderless nature** of the internet, the **rapid evolution of technology**, and persistent gaps in both **human expertise** and **global cooperation**. These challenges create a constant state of **asymmetry** between defenders and attackers.

- **Trans-Border Jurisdiction and Delayed International Cooperation**: Most sophisticated cybercrimes originate from or are routed through **foreign countries** (Nigeria, Cambodia, Myanmar, Russia, North Korea). The **Mutual Legal Assistance Treaty (MLAT)** process still takes **10–18 months** on average.
  Example: In the **₹1,203 crore digital arrest scam** traced to Cambodia-based call centres in 2025, Indian agencies could not obtain server logs or arrest suspects for over 14 months despite repeated requests.
- **Anonymity and Anti-Forensic Tools Used by Criminals**: Offenders routinely use **Tor**, **I2P**, **bulletproof hosting**, **privacy coins (Monero)**, and **burner devices** to remain untraceable.
  Example: The **LockBit 3.0 ransomware gang** continues to operate in 2025 despite multiple global takedown attempts because they use triple-layered encryption and anonymous infrastructure.
- **Extreme Speed and Automation of Attacks:** AI-driven tools now launch **millions of phishing emails** or **brute-force attempts** per hour, making real-time blocking almost impossible without false positives.
  Example: In August 2025, a single AI-generated **UPI phishing campaign** sent 4.7 crore fraudulent messages in just 48 hours across India.
- **Acute Shortage of Skilled Cyber Investigators and Digital Forensics Experts**: India has only **~8,500 trained cyber police personnel** against a requirement of over **1 lakh** (MHA estimate 2025). Most states still depend on 1–2 officers per district.
  Example: In Uttar Pradesh, a single cyber cell handled **1.42 lakh complaints** in 2024 with just 43 personnel.
- **Massive Under-Reporting of Incidents**: Only **10–15 %** of victims report cyber financial fraud in India (RBI & I4C joint survey 2025). **Reasons:** fear of social stigma, lack of faith in police, and belief that money cannot be recovered.
  Example: Sextortion and **"digital arrest"** victims rarely report due to embarrassment, allowing criminals to target hundreds more.
- **Rapid Evolution of Attack Techniques Using Generative AI and Deepfakes**: Criminals now create **hyper-realistic deepfake videos of police officers** and **real-time voice cloning** in regional languages, bypassing traditional detection.
  Example: In 2025, a Gurugram businessman transferred approx. **₹252 crore** after a **9-hour video call** where fraudsters used an **AI-cloned voice and deepfake video of a "CBI officer".**

- **Over-Reliance on Third-Party and Supply-Chain Ecosystems**: A single weak vendor can compromise thousands of organizations.
  Example: The **2024–25 MOVEit supply-chain attack** (still active) affected over **2,700 Indian organizations**, including banks and government departments, because of one unpatched vulnerability.
- **Cryptocurrency and Mule Account Networks**: Stolen money is instantly laundered through **thousands of mule accounts**, **crypto mixers**, and **overseas exchanges** within minutes.
  Example: In 2025, Indian agencies blocked approx **4.4 lakh mule bank accounts**, yet new ones are created daily using synthetic KYC and deepfake Aadhaar videos.
- **Low Conviction Rates and Lenient Punishment**: Conviction rate under **IT Act cases** remains below **4 %** (NCRB 2024). Many accused get bail immediately because of weak evidence collection and lengthy trials.
  Example: Major **"digital arrest**" masterminds arrested in 2024–25 are still out on bail and continue to operate from jail using smuggled phones.
- **Lack of Mandatory Cyber Incident Reporting for Private Sector**: Unlike the **USA (CISA 72-hour rule) or EU (NIS2),** India still has **no mandatory timeline** for private companies to report breaches, delaying threat intelligence sharing.
  Example: A major Indian stock brokerage platform suffered a breach affecting 64 lakh customers in March 2025 but informed authorities only after 41 days.
- **Public Apathy and Low Digital Literacy:** Despite repeated campaigns, millions still click suspicious links, share OTPs, or join video calls with unknown **"officers".**
  Example: In October–November 2025 alone, approx. **1.1 lakh fresh digital arrest victims** lost money even after nationwide alerts on television and social media.
- **Social Engineering Exploitation:** Attacks that exploit **human psychology**—such as fear, greed, or negligence—are highly effective and cannot be stopped by firewalls or antivirus software.
  Example (Phishing/Vishing): An employee in a targeted company is the one who ultimately clicks the malicious link in a **spear-phishing email** or provides confidential credentials during a **vishing (voice phishing) call**, making the user the weakest defense layer.

'Digital Arrest' Scam: Psychological Warfare and Extortion

The **'Digital Arrest'** scam is a highly sophisticated form of cyber-enabled extortion that has become one of the most significant cybercrime threats in India, resulting in **losses crossing ₹3,000 crore** nationally. This crime leverages advanced social engineering tactics to exert intense psychological pressure on victims, leading to significant financial losses and, in some tragic cases, severe trauma or suicide.

Aspect	Precise Description	Key Significance
I. Concept	Cybercriminals **impersonate high-authority Law Enforcement Agencies (LEAs)** (e.g., CBI, ED, RBI) to fabricate charges (money laundering, drug trafficking) against a victim.	Exploits the victim's **fear of authority** and legal process; core method is **psychological coercion** and isolation.
II. Modus Operandi		

The Hook	Initial call (often **spoofed**) claiming the victim's parcel/ID was involved in illegal activity.	Establishes immediate panic and urgency.
Confinement	Victim is coerced into joining a **continuous, uninterrupted video call** (Skype/WhatsApp), simulating **"digital custody"** in a virtual "police station."	The primary technique for **isolation** and shutting down the victim's ability to seek help or think rationally.
Evidence & Threat	Scammers send **forged legal documents** (fake FIRs, arrest warrants) and aggressively threaten **immediate public arrest** or bank account freezing.	Creates extreme psychological pressure to comply with the subsequent extortion demand.
Extortion	Demand for a large sum of money to be transferred to a **"safe government account"** or "security deposit" for "verification" or "bail."	Money is immediately siphoned into **mule accounts** and rapidly transferred offshore, making fund recovery extremely difficult.
III. Response & Advisory		
National Response	**Supreme Court of India** intervention directed a **pan-India CBI probe** to tackle organized syndicates, and mandated **RBI/DoT** coordination to freeze mule accounts.	Recognition of the scam as a severe, organized **national security threat**.
Safety Advisory	**Real LEAs/RBI will NEVER:** ask for money or private financial details over a call, or conduct arrests/trials via video chat. **Verify identity** in person.	The most effective defense is **awareness** and immediate reporting via **Helpline 1930** / **cybercrime.gov.in**.

Best Practices and Regulatory Frameworks

Effective cyber resilience requires a layered, collaborative, and continually evolving strategy across technology, process, and people.

Global Best Practices

- **Zero Trust Architecture (ZTA):** Moving away from perimeter security, ZTA adopts the principle of **"never trust, always verify."** It requires **strict verification** for every person, device, and application attempting to access network resources, regardless of whether they are internal or external to the network.
- **Cyber Hygiene and Patch Management:** Implementing fundamental practices like mandatory **Multi-Factor Authentication (MFA)**, strict **access controls (Least Privilege)**, regular and prompt **software updates/patching**, and continuous employee training.
- **Threat Intelligence Sharing:** Fostering **global public-private cooperation** and establishing frameworks for real-time sharing of threat intelligence, indicators of compromise (IoCs), and vulnerability information (e.g., through national CSIRTs and ISACs).

- **Resilience Planning:** Developing and regularly testing robust **incident response (IR) plans** and **Disaster Recovery (DR) procedures** to ensure rapid containment, forensic analysis, remediation, and swift operational recovery after a breach.

Indian Regulatory and Strategic Frameworks

- **Information Technology (IT) Act, 2000 (and Amendments):** The foundational legal framework that provides legal recognition to electronic transactions, addresses various cybercrimes (e.g., hacking, data theft, publishing obscene material), and prescribes penalties. It established the appellate tribunal for digital disputes.
- **National Cyber Security Strategy (NCSS):** A high-level document aiming to create a **secure and resilient cyber ecosystem** by establishing regulatory standards, enhancing domestic capabilities, promoting research, and, crucially, prioritizing the **Protection of Critical Information Infrastructure (CII)**.
- **Cert-In (Indian Computer Emergency Response Team):** The national nodal agency responsible for coordinating responses to cyber security incidents, issuing **alerts** and advisories, and publishing guidelines for system hardening.
- **Digital Personal Data Protection (DPDP) Act, 2023:** A landmark law that strengthens data handling requirements, imposes significant penalties for data breaches, and establishes new rights for data principals (citizens), making organizations more accountable for data security.

Way Forward: A Proactive and Resilience-Focused Strategy

The way forward in combating cybercrime requires a fundamental shift from a **reactive security posture** to a **proactive, resilience-focused, and collaborative strategy**. This involves concurrent efforts across policy, technology, capacity building, and international cooperation.

Strategic Policy and Governance Shifts

- **Cyber Resilience Mandate:** National policies must move beyond mere **"cyber security"** (prevention) to prioritize **"cyber resilience"** (the ability to rapidly detect, respond, and recover).
  - This means adopting comprehensive frameworks like the **NIST Cybersecurity Framework (CSF) 2.0** functions: **Govern, Identify, Protect, Detect, Respond, and Recover.**
- **Strengthening Critical Information Infrastructure (CII) Protection:** Enforce **mandatory, rigorous, and auditable security standards** for all designated CII entities (Energy, Finance, Health, Telecom).
  - Establish real-time threat sharing requirements between CII operators and the national nodal agency (e.g., **Cert-In** in India).
- **Dynamic Legal Frameworks:** Review and update foundational laws (like India's **IT Act, 2000**) to address emerging threats like **Deepfakes, AI-driven fraud,** and the legal complexities surrounding **crypto-asset tracing**.
  - Legal frameworks must be flexible enough to handle evidence from cloud environments and cross-border crimes.
- **Third-Party Risk Management (TPRM):** Implement **strict contractual security clauses** and continuous monitoring requirements for all third-party vendors and supply chain partners. A successful attack often exploits the **weakest link** in the supply chain.

Technological and AI Integration

- **Adoption of Zero Trust Architecture (ZTA):** Mandate the transition from perimeter-based security to a **Zero Trust** model, where no user, device, or application is trusted by default, regardless of its location (inside or outside the network).
- **Leveraging AI/ML for Defense:** Utilize AI/ML for **Security Orchestration, Automation, and Response (SOAR)** to accelerate incident containment.
  - Deploy AI-driven analytics for **real-time anomaly detection** and behavioral monitoring, which are essential for identifying stealthy, fileless, and polymorphic attacks that evade traditional signature-based tools.
- **Counter-AI Strategy:** Actively invest in research and development to build **indigenous counter-AI defense mechanisms** capable of detecting and neutralizing attacks generated by malicious AI tools (e.g., deepfakes used in **Business Email Compromise (BEC)** or voice fraud).
- **Secure Digital Public Infrastructure (DPI):** Prioritize the security, privacy, and ethical design of national DPI systems (like Aadhaar, UPI, etc.), ensuring **security-by-design** and **privacy-by-design** are baked in from conception.

Capacity Building and Public Awareness

- **Closing the Skill Gap:** Launch **national-level certification and specialized training programs** for students and professionals in niche areas like **cloud security, OT/ICS security, and digital forensics**.
  - Encourage public-private academic partnerships to nurture a large, skilled cybersecurity workforce.
- **Specialized Law Enforcement Cells:** Establish **dedicated, well-funded cybercrime investigation wings** within police forces, trained specifically in handling digital evidence, tracing crypto-transactions, and prosecuting cases under complex cyber laws.
  - The **Indian Cyber Crime Coordination Centre (I4C)** must be further strengthened with state-of-the-art tools and collaboration mandates.
- **Mass Public Awareness Campaigns:** Conduct **intensive, multi-lingual, and targeted awareness campaigns** focused on social engineering tactics, such as **phishing, deepfake voice scams,** and the **"digital arrest"** fraud. This should focus heavily on vulnerable groups like senior citizens and first-time digital users.
  - **Example**: Promoting the use of the **1930** helpline for immediate reporting of financial fraud in India.
- **Cyber Hygiene Mandates:** Promote and enforce basic **cyber hygiene** for all users, emphasizing the mandatory use of **Multi-Factor Authentication (MFA)** and strong, unique passwords across all personal and official accounts.

International Cooperation and Diplomacy

- **Harmonization of Laws:** Advocate for and participate actively in global forums (like the G20, UN, and Interpol) to develop **harmonized global standards** and legal frameworks for cybercrime, particularly concerning **data sharing** and **cross-border investigations**.
- **Streamlined MLAT Processes:** Push for reforms to significantly **accelerate the Mutual Legal Assistance Treaty (MLAT)** process to enable the timely seizure of volatile digital evidence and funds before criminals can dissipate them.

- **Threat Intelligence Fusion:** Establish formal, **real-time threat intelligence sharing agreements** with key international partners and law enforcement agencies (e.g., FBI, Interpol, Europol). This ensures that countries are aware of global attack campaigns (like new RaaS variants) immediately.
- **Digital Diplomacy:** Use platforms like the **G20** (as India has done) to lead discussions on **ethical AI governance** and the security of the digital economy, positioning India as a global leader in responsible cyber space development.

Conclusion

- Cybercrime is the defining security and economic challenge of the digital age. It demands a sustained, **multi-stakeholder approach** that integrates advanced technological solutions, robust **legal and regulatory frameworks** (like **India's DPDP Act and IT Act)**, and continuous, widespread **public education and awareness**.
- Only through such coordinated, **proactive strategies**—where security is designed into systems rather than added on later—can the vast potential of the digital future be secured against an ever-evolving adversary.

Q. *What are the different elements of cyber security? Keeping in view the challenges in cyber security, examine the extent to which India has successfully developed a comprehensive National Cyber Security Strategy.*

Q. *Keeping in view India's internal security, analyse the impact of cross-border cyber attacks. Also, discuss defensive measures against these sophisticated attacks.*

3.4.4. NEW DELHI'S RELATIVE ISOLATION, INDIA'S TRYST WITH TERROR

Why in the News?

India is facing a renewed phase of security challenges marked by the resurfacing of sophisticated terror modules targeting urban centres, especially New Delhi. This threat emerges at a time when India's regional diplomatic environment is fragile, making counter-terror efforts more complex.

India's Regional Setting & Strategic Isolation

India, despite being a major power in world affairs, appears increasingly on the sidelines on key geopolitical issues. Several regional developments contribute to this:

- **Volatile neighbourhood from West to East** – Afghanistan remains unstable, Pakistan dysfunctional yet hostile, and India's ties with Bangladesh experience periodic friction.
- **Pakistan factor remains central** – Political instability and strengthening of the military establishment in Pakistan continue to empower elements hostile to India.
- **Erosion of past diplomatic buffers** – Earlier, cooperative neighbourhood engagement diluted security pressures. Today, mistrust dominates.

This strategic isolation amplifies India's security burden, especially in defending its capital city — the political heart of the country.

Escalating Hostility from Pakistan & Its Implications

- Pakistan's leadership cycles have led to rising influence of hard-line military actors.
- India must remain alert to the persistent possibility of cross-border terrorism resuming at scale.
- Diplomatic engagement is minimal, which reduces avenues for tactical de-escalation.

A deterioration in bilateral ties increases space for terror groups to escalate operations with geopolitical justification.

The New Face of Terror in India

Urban terrorism has evolved significantly compared to earlier decades:

Key Characteristics

- **High professionalism** — meticulous planning, logistical coordination, advanced explosive materials
- **Network-based operations** — links across states and even countries
- **Use of legitimate cover** — professionals like doctors and engineers aiding concealment
- **Target preference** — densely populated urban hubs and symbolic state institutions

Urban India is now the primary battleground because disruption here yields maximum national and global impact.

Evidence from Recent Investigations

- Explosive recoveries in Delhi indicate capabilities for mass casualty strikes.
- Past attacks like the 2008 Mumbai attacks and various blasts in Delhi continue to guide current terror strategies.
- A module in Jammu & Kashmir funded by Pakistan recently exposed.
- Radicalisation and financing through charity fronts still active.

Thus, both **old groups are re-emerging** and **new cells are being incubated**.

Understanding the Threat and National Response Priorities

Emerging Pattern in Terror Threat	What It Means for India	Necessary Response
Professional, networked terror modules	Capable of coordinated, high-impact attacks	Pre-emptive intelligence and integrated operations
Local enablers + cross-border support	Complex to detect; deeper penetration into society	Stronger policing and community engagement
Affinity with ideological polarisation	Greater recruitment & concealment opportunities	Social unity and counter-radicalisation measures
Capital as primary target	Attack on governance, morale, stability	Hardening urban infrastructure and surveillance

Governance Challenges in Securing Delhi

- **Multiple agencies** share responsibility → chances of coordination gaps
- **Dense population & heritage structures** make emergency response more complex
- **Political sensitivities** restrict preventive policing strategies

Ensuring urban safety demands seamless cooperation among central agencies, state police, local administration, and civil society.

Re-evaluating India's Counter-Terror Approach

India must simultaneously act **inside and outside** its borders.

Internal Measures

- Strengthen intelligence sharing among agencies
- Upgrade policing, surveillance, and forensic investigation
- Community-based early warning systems to detect radicalisation
- Public preparedness drills for emergencies

External Measures

- Diplomacy to isolate terror sponsors
- Regional cooperation for intelligence & extradition
- International pressure on nations sheltering terrorist outfits

Balancing strong security action with constitutional rights is essential to retain moral and democratic legitimacy.

The Way Forward

India's capital is not just a city — it is the symbol of national power, governance, and identity. Terror outfits understand this; therefore, India's security strategy must prioritise:

- **Urban resilience**
- **Regional diplomatic recalibration**
- **Institutional capacity building**
- **National unity against extremism**

Ensuring security in Delhi reflects India's capability as a strong, stable, modern nation prepared to face evolving threats.

Q. *Terrorism is a global scourge. How has it manifested in India? Elaborate with contemporary examples. What are the counter-measures adopted by the State?*

Q. *Analyse the complexity and intensity of terrorism, its causes, linkages and obnoxious nexus. Also suggest measures required to eradicate the menace of terrorism.*

3.4.5. GOVERNANCE CHALLENGES IN FIFTH SCHEDULE AREAS

Why in the News?

- Governance in the **Fifth Schedule areas** of India has been discussed recently following growing attention toward **post-Maoist governance reforms**.
- These areas had historically become **hotbeds of Maoist insurgency** due to **administrative neglect, discontent,** and **lack of representation of tribal communities in local bodies.**

- The issue has been examined in the context of the failure of **governance frameworks** and the need for a **new governance charter** to address alienation and ensure inclusion of adivasi populations.

Background: Governance-Development Context

The **Maoist insurgency** has evolved through multiple phases since the **Naxalbari uprising of 1967**, with its modern form largely confined to **Fifth Schedule areas** in **central and eastern India**, regions characterised by significant **tribal populations**.

- These areas, known as **the Red Corridor**, emerged as centres of insurgency due to **administrative neglect**, which intensified discontent and resulted in inadequate representation of tribal groups in local bodies.
- Dominant narratives on the **Maoist movement's expansion** in the 1990s and early 2000s primarily attribute it to **underdevelopment and structural socio-economic issues**, as reflected in numerous official, non-official, and scholarly studies on **root causes**.
- **State Response:** The Indian state has historically relied on a **"two-pronged" approach**—combining **security** precision with **developmental push**—to address the acute material needs of impoverished tribes.
- **Missing Discourse:** While development is prioritized, the role of **governance challenges** in intensifying the insurgency is often neglected.
- The **Oxford Multidimensional Poverty Index (2010)** ranked these regions worse than **Sub-Saharan Africa**, highlighting that the region was reduced to penury due to **poor oversight despite its abundant natural resources**.

Analysis of Constitutional and Legal Framework

1. **The Fifth Schedule (Article 244(1))**

   The Fifth Schedule was conceptualized as a **"new social contract"** for **adivasis**, providing a legal framework for the governance of tribal homelands.

- **Core Provisions:** It mandates the establishment of **Tribal Advisory Councils (TAC)** (**with 3/4th members from the adivasi population**) and a special financial provision via the **tribal sub-plan**.
- **Governor's Discretionary Powers:** The Governor is constitutionally assigned to oversee the enforcement of these provisions, particularly to check **land alienation**.
- **Governance Failure:** Despite these extensive provisions, not a single Governor has acted in these regions since Independence. The retention of **colonial administrative structures** has made the modern justice system incomprehensible to **low-literacy tribal groups**.

2. **PESA Act, 1996 (Extension to Scheduled Areas)**

   The **Panchayat Extension to Scheduled Areas (PESA) Act** was enacted to provide **"self-governance"** and address tribal under-representation.

- **Empowerment:** It envisions democratic forums where adivasis take decisions on welfare, land, and cultural preservation.
- **Status of Implementation:** Key provisions are routinely **violated** by appointed officials. The **Expert Committee Report (2008)** found flagrant violations, specifically regarding mandatory consultation for **land acquisition**.

3. **Forest Rights Act (FRA), 2006**

The FRA is a key legal tool protecting the rights of forest dwellers to access resources for sustenance.

- **Challenges:** The act is currently **"battling for survival"** due to judicial interventions and amendments that have diluted its original mandate. Core provisions are frequently violated by state institutions.

4. **Compensatory Afforestation Fund (CAF) Act, 2016**

- **Concern:** The enactment and expansion of the **CAF Act** have **grossly diluted** legal safeguards.
- **Impact:** It is identified as a major factor affecting the **livelihoods of forest dwellers** by overriding local resource rights in favor of state-led afforestation projects.

Unpacking Governance Challenges

The vacuum created by **governance deficits** and **low political priority** facilitated the rise of the Maoist movement:

- **Absence of Locals:** Administrative units are overwhelmingly staffed by **"outsiders"** who bring **inherent biases** into day-to-day tasks.
- **Failure of Apex Bodies:** The **Mungekar Committee (2009)** noted that the **Ministry of Tribal Welfare** and the **National Commission for Scheduled Tribes** did little to halt exploitation.
- The **trust deficit with the state** led many adivasis to **align with the Maoists**, viewing them as **mechanisms of justice** against corrupt and oppressive state agencies such as the **police, forest, and revenue departments**.
- The **Dandakaranya region**, marked by underdevelopment, was among the earliest zones taken over by Maoists in the 1990s through promises of **land and forest ownership** under the slogan of **"Jal, Jungle, Zameen" (water, forest, land).**
- **Parallel Governance (Janatan Sarkar):** In several strongholds, **parallel governments (Janatan Sarkars)** provided basic services such as **schools, paramedics, food rations,** and **kangaroo courts**, exploiting state failure in welfare delivery.

Recent Developments and Improvements

- In recent years, **welfare functions and infrastructure** (**roads, electricity, telecom, digital delivery**) have shown improvement in **Maoist-affected areas**.
- **Digital technology** and **direct cash transfers** have strengthened administrative outreach.
- However, **justice, health, education, policing,** and **revenue institutions** remain weak and under-staffed.
- Persistent **under-representation of locals continues** to restrict administrative efficiency and trust-building.

Way Forward: Governance Reimagined for Post-Maoist India

- **Effective operationalisation of Fifth Schedule provisions under Article 244(1)** must be ensured so that the constitutional vision of **special governance arrangements for Scheduled Areas** is translated into everyday administrative practice rather than remaining a formal safeguard.

- **Active and accountable role of Governors in Scheduled Areas governance** must be institutionalised, ensuring that oversight responsibilities related to **land protection, welfare of Scheduled Tribes and enforcement of special provisions** are exercised regularly and transparently.
- **Reversal of political and administrative under-representation of adivasis** must be prioritised through **local recruitment, sustained capacity-building and culturally sensitive administrative practices**, enabling governance systems to reflect local realities and improve trust.
- **Strengthening of self-governance institutions under PESA, 1996** must be undertaken by ensuring that **Gram Sabhas exercise real authority** over matters related to **land acquisition, mining activities, forest resources, local development planning and cultural preservation**.
- **Protection and faithful implementation of rights-based legislations**, particularly the **Forest Rights Act**, must be ensured by preventing dilution of its core provisions and aligning administrative action with its objective of securing **livelihood and resource rights of forest-dependent communities**.
- **Reinforcement of justice delivery and service institutions** in Scheduled Areas must be prioritised by improving **accessibility, responsiveness and accountability** of **policing, revenue administration, judiciary, healthcare and education systems**.
- **Decentralised governance arrangements inspired by Sixth Schedule practices** may be explored to provide **greater administrative and financial autonomy**, while remaining within the constitutional framework applicable to Fifth Schedule Areas.
- **Rebuilding trust between the State and adivasi communities** must be made a central objective by aligning **development interventions, infrastructure expansion and economic activities** with **community consent, ecological sustainability and cultural continuity**, thereby addressing historical grievances that enabled Maoist mobilisation.
- **Harmonizing CAF with Tribal Livelihoods:** Conflicting legislations like the **CAF Act** must be reviewed to ensure they do not undermine the **Forest Rights Act** or the authority of the **Gram Sabha**.

Conclusion

The future of governance in post-Maoist India hinges on transforming the **Fifth Schedule** from a **"lofty vision"** into a functional reality. By reversing the **political and administrative under-representation** of the **adivasis** and protecting their rights over **land and forests**, the state can dismantle the fertile ground upon which insurgent ideologies flourish. A shift from a "security-first" mindset to a **"governance-first" charter** is the only sustainable path forward.

Q. *Article 244 of Indian Constitution relates to Administration of Scheduled areas and tribal areas. Analyze the impact of non-implementation of the provisions of fifth schedule on the growth of Left- Wing Extremism.*

Scan to attempt more questions...

3.5. SCIENCE AND TECHNOLOGY

3.5.1. NEUROTECHNOLOGY AND BRAIN-COMPUTER INTERFACES

Why in the News?

The burgeoning field of **neurotechnology** has been recently discussed, emphasising its potential to explore and shape the functioning of the **human brain**, positioning it as a critical area for **scientific advancement**, **healthcare improvement**, and **economic opportunity** for India.

Background and Context

- The brain has been consistently regarded as **humanity's final frontier**, and the coming decades are projected to witness neurotechnology stretching the boundaries of understanding and influencing its operations.
- Drawing on rapid advancements across **neuroscience**, **Artificial Intelligence (AI)**, **engineering**, and **computing**, these devices are capable of sensing or stimulating brain signals in **real time**.

Understanding Neurotechnology and Brain-Computer Interfaces (BCIs)

Definition of Neurotechnology

Neurotechnology is essentially the application of mechanical tools to directly communicate with the brain, encompassing systems that can **record, monitor, or even influence neural activity**. This opens avenues for better comprehension of the mind's function and, consequently, its potential **repair or enhancement**.

Core of the Revolution: Brain-Computer Interface (BCI)

The **Brain-Computer Interface (BCI)** stands at the heart of this revolution, representing a technology that merges **neuroscience** and **computing** to translate **thoughts into action**.

- **Functionality:** BCIs are designed to **listen to the brain**, **decode its signals**, and subsequently convert them into **digital commands** or **instructions** for control systems.
- **Applications:** These commands can be used to control a **computer cursor**, a **wheelchair**, or even a **robotic arm**.
- **Methodology:**
- Some systems utilise **non-invasive sensors**, such as **EEG headsets**.
- Other systems employ **implanted electrodes** for achieving more precise control.
- **Current Human Applications:** Current human applications remain primarily **therapeutic**, focusing on areas such as **rehabilitation**, **neuroprosthetics**, and **mental health**.

Potential for Human Enhancement and Military Advantage

- The idea of employing such interfaces for **human enhancement** or gaining a **military advantage** is considered **technically likely**.

- However, the use of BCIs in these domains will necessitate **fierce ethical debate** before any adoption is considered.

India's Need and Potential Benefits from Neurotechnology

Addressing the Disease Burden

India carries a **significant neurological disease burden**, covering a wide spectrum of ailments.

- **Growing Prevalence:** Between 1990 and 2019, the share of **non-communicable and injury-related neurological disorders** in India's overall disease load experienced a steady rise, with **stroke** emerging as the single largest contributor.
- **Therapeutic Solutions:**
- **Neuroprosthetics** could potentially **restore mobility and communication** for individuals living with paralysis.
- **Targeted neural stimulation** offers the possibility of **reducing long-term dependence on medication** for mental health patients.

Economic Opportunity and Global Competence

The opportunity presented by neurotechnology extends significantly beyond healthcare, representing a major economic frontier.

- **Intersectional Domain:** Neurotechnology is situated at the intersection of **biotechnology**, **engineering**, and **AI**, sectors where India is rapidly developing **global competence**.
- **Competitive Advantage:** India's **genomic diversity**, the presence of available **expertise**, and increasing awareness about **brain research** collectively position the nation as a **potential hub** for the development of these technologies.

Current Status of Neurotechnology in India

India is in the process of creating strengths in neurotechnologies within both the academic and private sectors.

- **Research and Development:**
- **IIT Kanpur** researchers recently unveiled a **BCI-based robotic hand**, demonstrating its potential usefulness for **stroke patients**.
- Key research centres include the **National Brain Research Centre in Manesar** and the **Brain Research Centre at IISc, Bangalore**.
- **Startup Innovation:**
- **Dognosis**, a startup, is employing neurotechnology to study brain signals in dogs, with the objective of detecting the neural patterns that occur when they recognise the scent of **cancer in human breath samples**.
- This represents an application of neurotechnology used in animals but holds the potential to **revolutionise cancer screening in humans**.

Global Advancements in Neurotechnology

Other nations are making significant advancements, often through large-scale, coordinated initiatives.

- **United States (U.S.):**

- The U.S. is considered the **global leader** in neurotechnologies.
- The **NIH's Brain Research Through Advancing Innovative Neurotechnologies® Initiative (The BRAIN Initiative®)** is a partnership accelerating the development of innovative neurotechnologies.
- **Neuralink** received approval from the **Food and Drug Administration (FDA)** in May 2024 for **in-human trials** of its BCI, demonstrating its capacity to restore some **prosthetic-enabled motor function** in paralytic patients.
- **China:**
- The **China Brain Project (2016-2030)** is focused on key areas: **understanding cognition**, developing **brain-inspired AI**, and **treating neurological disorders**.
- **Regulation and Ethics:**
- The **EU** and **Chile** are pioneering laws concerning **BCIs** and **neurorights**, indicating a global focus on the ethical and regulatory aspects of the field.

Way Forward: Policy and Regulation

For India to fully capitalise on the benefits of neurotechnology, appropriate policy and regulatory steps must be taken.

- **Regulatory Support:** Inadequate regulatory support could potentially **thwart BCI development and adoption** in India.
- **Public Engagement:** A **public engagement strategy** is necessary to discuss both the **benefits and risks** of BCIs, thereby assisting in understanding **public perception** of these technologies.
- **Tailored Regulatory Pathways:** Instead of a singular policy for all BCIs, the development of **tailored regulatory pathways** is recommended, where the assessment of different types of BCIs is based on their unique **benefits and risks** within the Indian context.
- **Technical and Ethical Assessment:** A regulatory pathway that comprehensively assesses BCIs on both **technical and ethical aspects** is of utmost need, with a crucial focus on ensuring **data privacy** and **user autonomy**.

Conclusion

- Neurotechnologies constitute a set of **emerging technologies** with a wide array of applications, extending from **healthcare** to **gaming** and **recreation**.
- Given the **nascency of the field**, significant progress is yet to be made; however, the combined factors of India's strategic advantages and the growing need to address the neurological disease burden underscore the necessity for proactive development and a **robust, ethics-focused regulatory framework** to harness its potential.

Q. *"Neurotechnology, particularly Brain-Computer Interfaces (BCIs), is being hailed as the next frontier in human-machine convergence." Discuss the potential of neurotechnology in mitigating India's burgeoning non-communicable neurological disease burden. Furthermore, evaluate the strategic importance of developing indigenous competence in this sector to ensure global competitiveness.*

3.5.2. AI MUST PAY: DPIIT WORKING PAPER ON AI AND COPYRIGHT ISSUES

Why in the News?

The **Department for Promotion of Industry and Internal Trade's (DPIIT)** recently published **working paper on AI and Copyright Issues** has received attention, being considered a **good start** towards resolving the major conflict between **AI firms** and **content producers** regarding the **use of data for model training.**

Background and Driving Factors of LLM Growth

The rapid progress of **Large Language Models (LLMs)** in terms of **quality, depth of information, and sophistication of reasoning** is primarily **fuelled by two major factors**.

- **Technological Advancements: Iterative advancements** in **applied machine learning techniques**, which continuously **improve the performance of LLMs**, are key drivers.
- **Data Access: Growing access to text, data, and multimedia** used in **training these models** is the second factor.

Central Conflict

- **AI Firms' Argument: AI hyperscalers and developers** have argued that **information on the Internet should be freely usable** for such training.
- **Content Producers' Argument:** They note that reproduction and similar acts of syndication by any **non-AI entity** would be subject to a **licence fee and consent** by the content producer, indicating a need for compensation. This debate **pits the interests of AI developers against content producers** (news, entertainment, and book publishing).
- **Current Litigation Status: Lawsuits** pitting AI firms against the publishers of the content they train models on are **ongoing**, with **no uniform judicial thinking** having materialised on the subject.

DPIIT Working Paper's Solution

The DPIIT working paper's proposal is considered a **welcome step** toward a solution where **content providers are remunerated**, without simultaneously creating a system that could **put India's AI ecosystem at a disadvantage**.

Proposed Mandatory Licensing Framework

The paper's solution is centred on a **mandatory licensing framework**.

- **Data Scraping Access:** AI data scraping tools would be permitted to **limitlessly scrape public information from the Internet**.
- **Non-Profit Collection Body:** A **non-profit copyright society-like body** would be tasked with the collection of payments.

- **Basis for Payment:** Payments would be collected from **AI developers** based on the **revenue accrued** to them through the **benefits of training their models on Indian content producers' data**.

Underlying Rationale for Mandatory Licensing

- **Practical Shrewdness:** The drafting committee reasoned that **opting out of data scraping** and the enforcement of wishes when ignored by AI developers **is not practical for every content producer**.
- **Data Processing as a Right:** The framework is also driven by a belief in **data processing as a right for AI models**, as they do not usually **reproduce content** they are trained on, but rather **synthesise fresh outputs**.

Issues in Implementation

Issues have been raised regarding the methodology for determining compensation within the proposed remuneration system.

- **Royalty Calculation Challenge:** There are **issues with how the royalty amount would be decided**.
- **Remuneration Disparity: Small publishers** who invest significant **effort and investment** in their work may **chafe at receiving as much remuneration a piece** as a **big media house** putting out hundreds of articles a day.

Way Forward

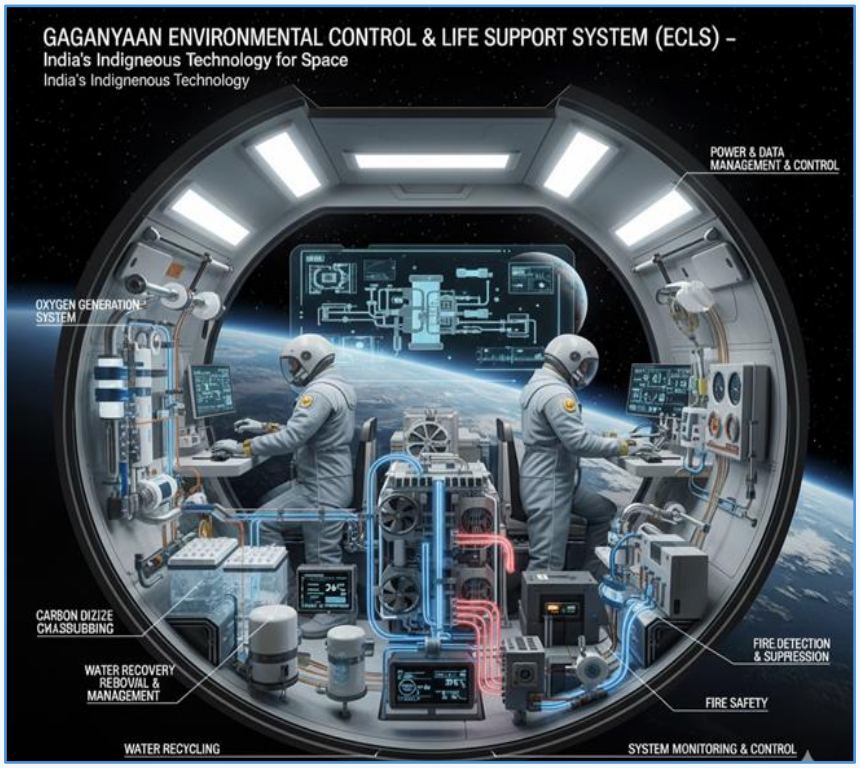
- Mandatory **licensing mechanism** should be operationalized so that data scraping by AI tools is permitted while remuneration for use of content is institutionalized through central collection body.
- **Non-profit copyright society-like body** should be constituted and empowered to collect payments from AI developers on basis of revenue benefits derived from use of Indian content.
- **Royalty determination framework** should be designed with sensitivity to differences in scale and investment across content producers so that small publishers are protected from disproportionate disadvantage.
- **Provisional regulatory action** should be taken without awaiting final judicial determinations so that market distortions caused by absence of licence regime are avoided.
- **Government support** should be extended to working paper initiative to enable collaborative policy development involving industry, publishers and civil society.
- **Dispute-resolution mechanisms** should be foreseen to handle disagreements over royalty allocation, scope of permissible scraping and enforcement of collection, with options for specialist tribunal or expedited judicial review.
- **Monitoring and impact assessment** should be institutionalized so that concentration of remuneration with large players or chilling effects on independent content creation can be detected and corrected.
- **Stakeholder consultations** should be continued to incorporate dissenting views of tech industry while protecting rights and incentives of content producers.

Conclusion

The DPIIT working paper provides a timely and practical approach to integrating **AI innovation** with the necessity of **protecting copyright holders' interests**. By proposing a **mandatory licensing framework** and a structured compensation mechanism, a crucial step has been taken toward creating a **legal and commercial certainty** that is vital for both the **Indian AI ecosystem** and the sustainability of the **content production industry**.

Q. *"The 'One Nation, One Licence, One Payment' framework proposed by the DPIIT seeks to resolve the existential friction between AI hyperscalers and content producers." Critically analyze how a mandatory licensing regime for data scraping balances the need for technological innovation with the economic rights of human creators.*

3.5.3. GAGANYAAN: INDIA'S INDIGENOUS MANNED SPACE MISSION



Context: Human-Spaceflight Transition: India is moving from launching satellites to **launching humans into space** under the Gaganyaan Mission, requiring systems designed with **near-zero tolerance for failure**.

I. Significance and Objectives

The mission's importance extends far beyond space exploration:[3]

- **National Prestige and Global Leadership:** Success will place India in an **elite group of four nations** (after the USA, Russia, and China) with the capability to undertake human spaceflight. This significantly boosts India's global prestige, showcasing its technological prowess and enhancing its strategic standing.
- **Technological Advancement and Spinoffs:** The project necessitates the indigenous development of several complex and cutting-edge technologies, including the **Environmental Control and Life Support System (ECLSS)**, crew escape systems, and advanced re-entry mechanisms. These technologies will have significant spinoff benefits for medicine, engineering, advanced materials, and public applications.
- **Economic Growth and Employment Generation:** The mission provides a massive stimulus to the domestic aerospace industry, public sector units (PSUs), private industries, and MSMEs. It is expected to create **thousands of high-skilled employment opportunities** and foster a wider industrial-academic ecosystem.

- **Catalyst for Research and Academia:** Gaganyaan establishes a unique platform for **microgravity research** in life sciences, materials science, and physics. It promotes collaboration between ISRO, national academic institutions, and research labs, encouraging youth to pursue careers in STEM (Science, Technology, Engineering, and Mathematics).
- **Foundation for Future Exploration:** Gaganyaan is the stepping stone for a **sustained Indian Human Space Exploration Programme**. It lays the groundwork for future advanced missions, including the development of an **Indian Space Station** and potential exploratory missions to the Moon and Mars.

II. Technological Impacts

The mission's requirements force innovation in core areas:

- **Human-Rated Launch Vehicle (HLVM3):** The existing heavy-lift launcher, LVM3 (GSLV Mk-III), has been re-configured and rigorously tested to achieve **human-rating**. This involves adding redundancy and ensuring the vehicle adheres to safety standards far stricter than those for unmanned missions, specifically concerning structural integrity, propulsion, and reliability (requiring a failure probability of approx 0.2% or less).
- **Crew Escape System (CES):** This is a critical safety system using **quick-acting, high-burn-rate solid motors** to pull the Crew Module (CM) away from the launch vehicle in milliseconds during an emergency at the launch pad or during ascent. Successful testing of the CES demonstrates a paramount commitment to crew safety.
- **Orbital Module (OM) Development:** This module comprises the **Crew Module (CM)**, which is the habitable, pressurised space with an Earth-like environment, and the **Service Module (SM)**, which provides propulsion, power, and thermal control in orbit. The CM requires a specialised **Thermal Protection System (TPS)** for re-entry and a sophisticated **deceleration and flotation system** (multi-parachute deployment) for ocean recovery.

III. Critical Challenges and Issues

The complexity of human spaceflight presents formidable challenges:

- **Human-Rating Certification and Reliability:** Achieving and maintaining the necessary **fail-safe reliability** across all systems remains the most critical challenge. This involves testing components under off-nominal conditions and building **quadruple redundancy** into major active systems.
- **Life Support Systems (ECLSS):** Developing a fully indigenous **Environmental Control and Life Support System** to manage oxygen supply, carbon dioxide removal, humidity, temperature control, and waste management within the confined Crew Module for three days is a major technological hurdle.
- **Astronaut Training and Simulation Facilities:** While generic training was provided through international cooperation (e.g., Russia's Roscosmos), India is rapidly developing its own advanced training infrastructure, including **simulators and training centres** in Bengaluru, to cater to specific mission dynamics and zero-gravity familiarisation.
- **Microgravity and Health Issues:** Managing the physiological and psychological effects of the space environment on the 'Vyomanauts'—including radiation exposure, bone density loss, muscle atrophy, and potential for isolation-related stress—requires rigorous **aeromedical and bioastronautics research**.

- **Budgetary and Timeline Constraints:** Executing a project of this scale and complexity requires **sustained, judicious funding allocation** and continuous efforts to meet the revised timelines, which have been impacted by global events.

IV. Government Interventions

The government and ISRO have taken specific, multi-pronged steps to mitigate risks and ensure success:

- **Precursor Missions (Uncrewed Flights):** The plan mandates two **uncrewed test flights (G1 and G2)** before the crewed mission.[23] The G2 mission will carry the female humanoid robot **'Vyommitra'** to simulate human functions and monitor critical parameters like microgravity effects on life support systems.
- **Critical Test Vehicle (TV) Flights:** The launch of **Test Vehicle (TV-D1)** demonstrated the in-flight performance of the **Crew Escape System (CES)** and the parachute-based recovery sequence, validating the crucial 'abort' mechanism.
- **Dedicated Institutional Mechanism:** The establishment of the **Human Space Flight Centre (HSFC)** in Bengaluru as the dedicated lead centre spearheads all mission activities, including human rating, crew selection, and training.
- **International Collaboration:** India has leveraged international expertise, notably from **Russia (Roscosmos)** for generic astronaut training and **France (CNES)** for cooperation in space medicine, to fill technology gaps and build capacity.
- **Private Sector Engagement:** The government is actively promoting private sector participation through reforms and the establishment of **IN-SPACe**, allowing Indian industry to develop critical hardware and sub-systems, thus building a resilient supply chain.

WAY FORWARD

- **Strengthen Redundancy:** Build systems with **multiple backups** to minimise single-point failures.
- **Expand Testing Ecosystem:** Create India's first **Space Environment Simulation Facility (SESF)** for radiation, vacuum, microgravity.
- **Boost Private Participation:** Encourage startups in **life-support, materials, sensors**, under IN-SPACe and NSIL.
- **International Benchmarking:** Adopt NASA's **Human-Rating Requirements (HRR-8705.2**) and ESA equivalent standards.
- **Accelerate Space Medicine Research:** Create a dedicated **Indian Institute of Space Medicine** for astronaut health & rehabilitation.
- **Develop Long-Term Roadmap:** Move from Gaganyaan → **Indian Space Station (2035)** → **Lunar Human Mission (2040)**.

BEST PRACTICES

NASA – Crew Escape Reliability: Integrated abort modes from launchpad to orbit—India should ensure continuous abort capability.

Russia – Redundancy in Systems: Soyuz spacecraft uses **triple-layer redundancy**, making it the world's safest crew transport.

SpaceX – Rapid Prototyping & Testing: Iterative development with frequent testing accelerates learning and improves safety.

ESA – Integrated Astronaut Training: European Astronaut Centre model for holistic training: medical, psychological, operational.

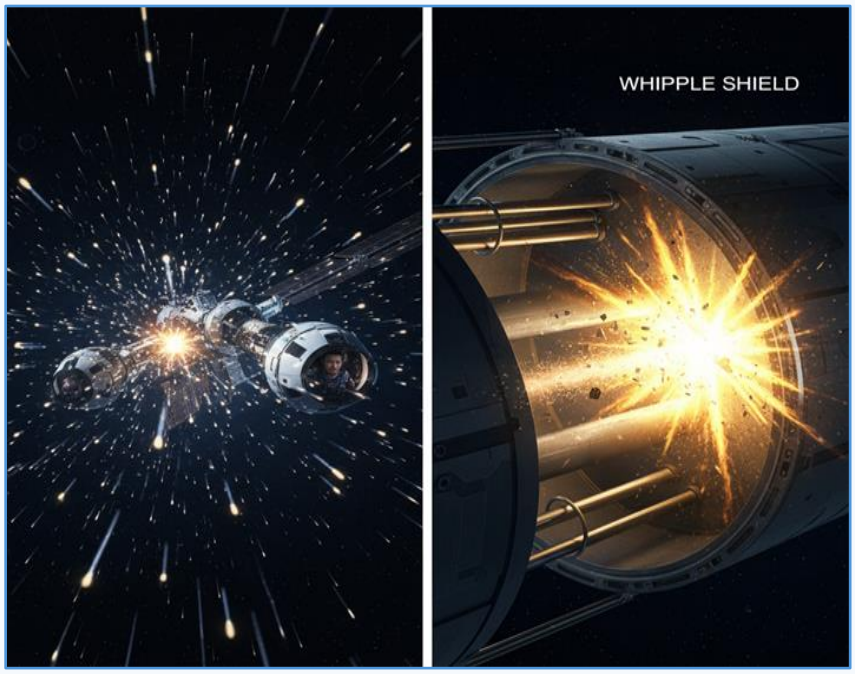
Conclusion

Human-rating is the **heart of Gaganyaan**, transforming India from a satellite launch nation to a **human spaceflight power**. It underpins safety, global credibility, and technological depth. While challenges are formidable—from life-support to mission reliability—India's systematic approach, global collaborations, and investment in R&D place it on the right track. Gaganyaan and human-rating are not just technological milestones—they mark India's arrival in the new frontier of **human space exploration and strategic capability**.

Q. *India has achieved remarkable successes in unmanned space missions including the Chandrayaan and Mars Orbitter Mission, but has not ventured into manned space mission, both in terms of technology and logistics? Explain critically.*

3.5.4. PROTECTING ASTRONAUTS FROM SPACE DEBRIS

What is Micrometeoroids and Orbital Debris (MMOD):



The Two Components of MMOD

1. **Micrometeoroids (Natural)**

- **Origin:** These are naturally occurring fragments of dust and rock from space, often shed by comets or asteroids.
- **Characteristics:** They have been a threat since the beginning of spaceflight. They travel at extremely high speeds, often much faster than man-made debris.

2. **Orbital Debris (Man-made)**

- **Origin:** Often called "space junk," these are objects created by humans.
- **Examples:** Flecks of dried paint, frozen coolant, nuts, bolts, or fragments from satellite collisions and anti-satellite (ASAT) tests.
- **The "Kessler Syndrome" Concern:** A major issue discussed in today's editorials is the risk of a chain reaction where one collision creates thousands of new debris pieces, eventually making certain orbits unusable.

The Nature of the Threat:

Space debris is primarily concentrated in the **Low Earth Orbit (LEO)**, between 200 km and 2,000 km altitude.

- **Micrometeoroids and Orbital Debris (MMOD):** These range from tiny flecks of paint to large defunct satellites. Because they travel at hyper-velocities (about 11 to 72 km/s), even a 1 cm fragment carries the kinetic energy equivalent of a heavy moving object on Earth.
- **Recent Incident:** The article notes a minor crack in the window of the Chinese crewed vehicle **Shenzhou-20** caused by a debris strike, which rendered the return capsule unusable for crew travel.

Defence Mechanism:

A. Physical Defense: Whipple Shields

For debris that is too small to track, spacecraft rely on **passive defense systems** known as Whipple shields.

- **How they work:** Analogous to sea waves breaking against tetrapods, these shields consist of an outer **"bumper"** and an inner **"rear wall"** with a standoff gap between them.
- **Energy Dissipation:** The bumper shatters the high-velocity debris into a cloud of smaller fragments. As this cloud expands across the gap, its momentum is distributed over a wide area, allowing the rear wall to absorb the impact without failing.

B. Operational Defense: Avoidance Maneuvers

For larger, trackable debris (typically objects >10 cm), space agencies use active maneuvers.

- **Tracking Catalogs:** Agencies maintain detailed catalogs of these objects.
- **Collision Avoidance:** When a potential collision is projected, the spacecraft fires its thrusters to slightly alter its orbit and move out of the projected impact zone.

C. ISRO's Gaganyaan Protection Scheme

As India prepares for the **Gaganyaan** mission, ISRO is employing stringent safety standards:

- **Passive Shields:** The MMOD protection for Gaganyaan utilizes Whipple shields validated at **DRDO's Terminal Ballistics Research Laboratory (TBRL)** in Chandigarh.
- **Validation:** ISRO uses a "gas gun" facility to fire 7 mm spherical projectiles at velocities up to 5 km/s to test shield durability.
- **Vulnerability Analysis:** Specialized software tools perform "MMOD flux" analysis to determine the probability of failure for critical components over the mission's duration.

International Standards and "Soft Law":

- **Inter-Agency Space Debris Coordination Committee (IADC):** This is the primary technical body (including ISRO, NASA, and ESA) that generates the foundational standards for debris mitigation.
- **UNCOPUOS Guidelines:** The United Nations Committee on the Peaceful Uses of Outer Space adopted the IADC's standards in 2007. These guidelines focus on:
- Limiting debris released during normal operations.
- Minimizing the potential for on-orbit break-ups (explosions).
- **Post-Mission Disposal (PMD):** Ensuring satellites are removed from useful orbits at the end of their life.

Challenges of MMOD:

1. **The "Invisibility" Problem (Tracking Gaps)**

- **The Size Threshold:** Earth-based radars can generally track objects larger than **10 cm**. However, most MMOD particles are between **1 mm and 1 cm**.
- **The Issue:** Because they are too small to be tracked, astronauts cannot "maneuver" away from them. Collision Avoidance Maneuvers (CAM) are useless against MMOD; the only defense is passive shielding.

2. **Hyper-velocity Impact Physics**

- **Kinetic Energy:** MMOD particles travel at average relative speeds of **10 km/s to 15 km/s**.
- **The Issue:** At these speeds, a tiny fleck of paint possesses the kinetic energy of a **bullet**, and a 1 cm aluminum sphere can hit with the force of a **hand grenade**. This causes "hyper-velocity cratering," which can breach pressurized modules or shatter solar panels.

3. **The "Kessler Syndrome" Trigger**

- **Chain Reaction:** Each collision between MMOD and a satellite doesn't just damage the satellite; it creates thousands of new MMOD fragments.
- **The Issue:** We are reaching a "critical density" in Low Earth Orbit (LEO). This leads to a self-sustaining cascade of collisions that could eventually render specific orbital altitudes (like the 400-800 km band) unusable for centuries.

4. **Vulnerability of Critical External Components**

- **Solar Arrays and Radiators:** These cannot be heavily shielded because they need to be lightweight and exposed to work.
- **The Issue:** Constant MMOD bombardment causes "pitting" and erosion, which degrades power output over time. For long-duration missions like the **Bharatiya Antariksha Station**, this significantly shortens the operational lifespan of the hardware.

5. **The "Soft Law" Enforcement Gap**

- **Policy Failure:** International standards for debris mitigation are currently **non-binding**.
- **The Issue:** While agencies like ISRO follow strict "passivation" (venting leftover fuel to prevent explosions), many commercial actors in the "New Space" era do not. This lack of a "Global Space Traffic Management" system means the MMOD population continues to grow unchecked.

Way Forward:

1. **Implementing the "Zero-Junk" Policy**

- **The DFSM 2030 Mandate:** India has declared a goal to achieve **Debris-Free Space Missions (DFSM) by 2030**. The way forward involves ensuring that every satellite—whether governmental or private—is designed for **Post-Mission Disposal (PMD)**.
- **Tightening the De-orbiting Window:** While international standards historically allowed a 25-year window for satellites to burn up in the atmosphere, ISRO is now advocating for a **5-year limit**. This reduces the time a "dead" satellite remains a "sitting duck" for collisions.
- **Passivation:** To prevent "on-orbit break-ups" (explosions), all future upper stages of rockets (like PSLV and GSLV) must be **passivated**—meaning all excess fuel and stored energy are vented out after the mission.

2. Active Debris Removal (ADR)

- **Robotic "Garbage Collectors":** Technologies like harpoons, magnets, and lasers are being explored to capture and pull defunct satellites into a "graveyard orbit" or back into the atmosphere.
- **SPADEX Mission:** ISRO's upcoming **Space Docking Experiment (SPADEX)** is a critical step toward developing the robotic capability to dock with and move non-functional objects.

3. Enhanced Space Situational Awareness (SSA)

- **Project NETRA:** India is expanding its **Network for Space Object Tracking and Analysis (NETRA)**. The way forward involves building more high-precision radars and telescopes to track objects as small as **10 cm** up to a range of 3,400 km.
- **Global Data Sharing:** As space traffic becomes congested, agencies must move toward **"automated collision avoidance"** where satellites can "talk" to each other and coordinate movements without human intervention.

4. From "Soft Law" to "Hard Regulation"

The **Inter-Agency Space Debris Coordination Committee (IADC)** guidelines must be integrated into national laws.

- **National Space Legislation:** India is in the process of drafting a comprehensive **Space Act** that would make debris mitigation a mandatory condition for receiving a launch license.
- **Inclusive Zoning:** Protecting the **400 km orbital shell** specifically for human spaceflight (Gaganyaan, ISS, and the future Bharatiya Antariksha Station) to ensure a safe "orbital highway."

Conclusion:

The era of expanding human presence beyond the Moon can only be secured if the global community collectively addresses the risks of debris and adopts stringent zero-junk practices to ensure a safe, sustainable orbital highway for all.

Q. *Micrometeoroids and Orbital Debris (MMOD) pose a growing threat to space assets and long-term sustainability of outer space. Discuss the sources, risks and mitigation strategies for MMOD, with special reference to India's space programme.*

3.5.5. STRATEGIC SOVEREIGNTY: BUILDING INDIA'S DEFENCE INDUSTRIAL BASE

1. Introduction: Defining the DIB

The Defence Industrial Base refers to the collective capacity of a nation's public and private sectors to design, develop, manufacture, and maintain military equipment. As per the **MoSPI 2025 Report**, India's defence production reached a record **₹1.54 lakh crore in FY 2024-25**, marking a 16.7% growth.

2. Strategic Significance

- **Strategic Autonomy:** Reducing the **9.8% share** of global arms imports (where India is the largest importer) ensures that foreign policy isn't compromised by "Sanctions" or "Supply Chain disruptions" during conflicts (e.g., the Russia-Ukraine impact).

- **National Security:** Enables a **"Lifecycle Support"** system where equipment can be upgraded and repaired domestically, avoiding dependency on original equipment manufacturers (OEMs) during war.
- **Economic Multiplier:** The sector involves over **16,000 MSMEs**. A strong DIB drives the "Make in India" initiative, creating high-skill jobs and boosting the manufacturing GDP.
- **Export as Diplomacy:** Defence exports reached **₹23,622 crore (2024-25)**. Exporting platforms like BrahMos and Tejas to friendly foreign countries (FFCs) strengthens India's role as a "Net Security Provider" in the Indo-Pacific.

a) Government Framework & Initiatives:

1. Defence Acquisition Procedure (DAP) 2020

- **Buy (Indian-IDDM):** The highest priority category. It stands for Indigenously Designed, Developed, and Manufactured.
- **Make-I and Make-II:** Encourages private sector participation in prototype development.
- **Latest 2024-25 Amendment:** Streamlined the "Acceptance of Necessity" (AoN) process to ensure that the time taken from tender to contract is reduced by **30-40%**.

2. Defence Procurement Manual (DPM) 2025

- **Digital Integration:** Mandates the use of the **GeM (Government e-Marketplace)** for all recurring defense needs.
- **MSME Facilitation:** Provides relaxations in "Prior Experience" and "Prior Turnover" criteria to help startups compete for maintenance contracts.

3. Positive Indigenisation Lists (PILs)

- **Mechanism:** These lists place a **ban on the import** of specific items (e.g., specific sensors, artillery components, and naval systems) after a set deadline.
- **Impact:** Over **5,000 items** have been earmarked for domestic production, creating a guaranteed market for Indian manufacturers.

b) Key Operational Initiatives:

1. Innovations for Defence Excellence (iDEX)

- **SPRINT Challenges:** A collaborative project (specifically with the Navy) to induct 75+ indigenous technologies.
- **iDEX Prime:** Provides grants up to **₹10crore** to startups for developing high-end technology.

2. Defence Industrial Corridors (DICs)

- **Uttar Pradesh DIC:** Focuses on nodes like Agra, Aligarh, and Kanpur (Aerospace and Land systems).
- **Tamil Nadu DIC:** Focuses on Chennai, Coimbatore, and Hosur (Missiles and Naval systems).
- **Current Status:** As of late 2025, these corridors have attracted cumulative investments exceeding **₹12,000crore**.

3. Strategic Partnership (SP) Model

- **Target Areas:** Fighter aircraft, Helicopters, Submarines, and Armoured Fighting Vehicles.
- **Goal:** To move away from **"Licensed Production"** toward "**Technology Transfer**" and **"Joint Ownership."**

c) Fiscal and Administrative Support

- **FDI Reforms:** FDI limit is **74% via Automatic Route** and up to **100% via Government Route** for cases resulting in access to modern technology.
- **Dedicated R&D Budget:** In the **2025-26 Budget**, 25% of the Defence R&D budget was earmarked for industry, startups, and academia.
- **BrahMos Model:** Scaling the success of the BrahMos Joint Venture to other platforms like the **Fifth Generation Advanced Medium Combat Aircraft (AMCA)**.

Strategic & Structural Challenges in India's DIB:

1. The "Critical Technology" Gap

- **Engine Technology:** Despite decades of the "Kaveri" project, India still imports jet engines for the Tejas (GE-404/414).
- **Dependency on Raw Materials:** We are highly dependent on imports for **specialized alloys, carbon fibers, and semiconductors** (the "brains" of modern missiles and drones).

2. R&D and Innovation Hurdles

- **Low Investment:** India's Gross Expenditure on R&D (GERD) remains stagnant at **~0.64% to 0.7% of GDP**, whereas China and the US spend over 2.4% and 3.4% respectively.
- **DRDO-Industry Gap:** The transition of technology from DRDO labs to private production lines is often slow, leading to "technological obsolescence" by the time the product is mass-produced.

3. Private Sector Participation vs. DPSU Dominance

- **Level Playing Field:** Defense Public Sector Undertakings (DPSUs) like HAL and Mazagon Dock still receive the majority of large "Nomination-based" contracts.
- **Capital Intensity:** Defense is a "high-risk, long-gestation" sector. MSMEs often struggle with **high cost of capital** and the lack of guaranteed long-term orders, making it difficult for them to invest in specialized machinery.

4. Bureaucratic and Procedural Red Tape

- **The "L1" Syndrome:** The government's traditional preference for the "Lowest Bidder" (L1) often compromises quality and discourages innovation-led firms that have higher R&D costs.
- **Trial and Evaluation Delays:** The process of "Field Evaluation Trials" (FET) in diverse terrains (Himalayas to Thar) is exhaustive and can take years, delaying the induction of critical equipment.

5. Quality Control and Safety Standards

- **Standardization:** There is a lack of a unified **National Defense Quality Assurance** framework that aligns Indian standards with global NATO or MIL-SPEC standards, which hinders the export potential of Indian components.

A Multi-Pronged Roadmap for India's DIB:

1. Technological Leapfrogging (Beyond Assembly)

- **Focus on High-End Propulsion:** India must address its "Propulsion Gap." Reviving the **Kaveri Engine** project or entering into co-development deals (like the **GE-F414** for AMCA) is critical for true aerospace autonomy.
- **Dominance in Emerging Domains:** Shift R&D focus toward "Non-Kinetic" warfare—**AI-driven autonomous systems, Quantum communication, and Directed-Energy Weapons (DEWs)**.

- **Defense "Unicorns":** Following the Defense Minister's 2025 call, the government should provide **"Catalytic Capital"** to help at least one Indian defense startup achieve Unicorn status, signaling a mature innovation ecosystem.

2. **Fiscal & Procedural Streamlining**

- **Predictable Order Pipeline:** Under **DPM-2025**, startups should be provided with **assured 5+5 year orders**. This predictability allows private firms to secure long-term capital and invest in specialized machinery.
- **Defense Budget Realignment:** Aligning with the **Shekatkar Committee** recommendations, India should aim to move its defense budget toward **2.5% – 3% of GDP**, with a larger slice specifically for **Capital Modernization** rather than just revenue expenditure (salaries/pensions).
- **L1 to T1 (Quality over Cost):** Transition from the "Lowest Bidder" (L1) model to a **"Value-Based Procurement"** that rewards technological superiority and lifecycle costs.

3. **Institutional & Regulatory Reforms**

- **Civil-Military Fusion:** Breakdown the "silos" between DRDO, private industry, and the Academia. Establishing a **National Defence University (NDU)** can create a cadre of "technologist-commanders" who understand both battlefield needs and industrial capacity.
- **Single-Window Testing:** Create **Public-Private Partnership (PPP)** testing facilities within the Defense Industrial Corridors. This reduces the time-to-market for indigenous products.
- **Theater Commands & Logistics:** Implementing **Integrated Theatre Commands** will streamline the "Statement of Case" (SoC) for equipment, ensuring the DIB produces what the services collectively need, rather than fragmented service-specific demands.

4. **Export-Led Growth (Global Footprint)**

- **Comprehensive Defense Diplomacy:** Offer "Full-Package Deals"—not just the hardware (Tejas, BrahMos) but also **Training, Maintenance, and Repair (MRO)** services to Friendly Foreign Countries (FFCs).
- **Strategic Lines of Credit:** Use Defense Lines of Credit to help Southeast Asian and African nations purchase Indian-made platforms, as seen with the Philippines-BrahMos deal

Conclusion:

The transformation of the Indian Defence Industrial Base from a **"Buyer's Base" to a "Builder's Hub"** is the cornerstone of India's strategic autonomy. By merging **Mission Vatsalya-style digital tracking** for project management with **BrahMos-style joint ventures**, India can secure its borders while fueling its $5 trillion economy.

Q. *A strong defence industrial base is a prerequisite for strategic autonomy, military preparedness and economic resilience. In this context, examine the significance of a robust defence industrial base for India. What policy measures have been taken in recent years to strengthen indigenous defence manufacturing, and what challenges still remain?*

Scan to attempt more questions...

3.6. INFRASTRUCTURE

3.6.1. TURBULENCE AND TAKE-OFF: UNPACKING INDIA'S AVIATION SECTOR

Context- In the first few days of December, **IndiGo** saw a near-total meltdown of its operations, with over 5,000 "flights cancelled in the first 10 days, carrying on from delays and nearly 900 "flights cancelled in November

Introduction

The Civil Aviation sector is a critical pillar of India's economy, being the **third-largest domestic aviation market** globally (376 million passengers in FY24) and projected to rise from a $15 billion market in 2025 to $25 billion by 2030. It contributes about **1.5% of the GDP** and supports over **7.7 million jobs**.

Significance and Role in the Economy:

Civil Aviation plays a crucial **multiplier role** in the economy, impacting GDP, employment, and trade.

- **Economic Catalyst:**
- **GDP Contribution:** Directly contributes to the GDP and indirectly supports allied industries like tourism, hospitality, and trade.
- **Data:** India is the **third-largest domestic civil aviation market** globally. Domestic air passenger traffic is expected to cross one billion annually by 2047 (MoCA Vision 2047).
- **Enhanced Connectivity and Inclusive Growth:**
- Links remote and underserved regions to major cities, fostering balanced regional development.
- Crucial for connecting the North-Eastern States, Hill States, and Islands.
- **Employment Generation:** Provides large-scale direct and indirect employment (pilots, ground staff, MRO, air traffic control, etc.).
- **Data:** The sector is projected to support **25 million jobs by 2047**.
- **Strategic Importance:** Supports national security, disaster relief operations, and medical evacuations.
- **Trade and Logistics:** Facilitates swift movement of high-value, time-sensitive, and perishable goods (e.g., pharmaceuticals, electronics, agricultural produce).

Regulatory and Institutional Framework:

The sector is primarily governed by the **Ministry of Civil Aviation (MoCA)**, with several key regulatory bodies:

1. **Directorate General of Civil Aviation (DGCA)-** Primary safety regulator; issues licenses, monitors airworthiness, and enforces safety standards (Administered by MoCA, but ICAO recommends an independent oversight body).
2. **Airports Authority of India (AAI)-** Manages and operates 137+ airports, provides Air Traffic Management (ATM), Communication, Navigation, and Surveillance (CNS) services.
3. **Bureau of Civil Aviation Security (BCAS)-** Regulatory authority for civil aviation security in India.

4. **Airports Economic Regulatory Authority (AERA)-** Regulates tariffs and other aeronautical charges for major airports.

Major Challenges and Issues:

- **Infrastructure and Capacity Constraints**
- **Airport Saturation:** Major airports like Delhi (IGIA) and Mumbai are operating close to or at saturation, leading to congestion and delays.
- **Air Traffic Management (ATM):** Modernization of Air Traffic Infrastructure (ATI) is crucial for managing the busy airspace.
- **Aviation Safety and Regulatory Oversight:**
- **Regulatory Independence:** The **International Civil Aviation Organization (ICAO)** warned in 2006 for an independent aviation authority. The Directorate General of Civil Aviation (**DGCA**) remains under the Ministry, leading to concerns about regulatory capture and commercial interests being prioritized over safety.
- **Manpower Shortage:** Key regulatory bodies like DGCA and Bureau of Civil Aviation Security (BCAS) face significant staff shortages (e.g., up to 53% vacancy in DGCA), hindering effective oversight and timely investigations.
- **Financial and Operational Viability:**
- **High Operating Costs:** Aviation Turbine Fuel (ATF) constitutes a large percentage of operating costs. Dollar-denominated costs increase expenses when the Rupee weakens.
- **MRO (Maintenance, Repair, and Overhaul):** The MRO sector is under-developed due to high Customs Duties and GST, which discourages domestic maintenance and leads to airlines sending aircraft abroad for major checks.
- **Route Mortality:** Over 100 UDAN routes closed after VGF subsidies ended due to a lack of commercial viability, highlighting sustainability issues in regional connectivity.
- **Recent Issue: IndiGo Operational Crisis and FDTL Norms (December 2025):**
- The implementation of stricter **Flight Duty Time Limitations (FDTL)**, which included increasing weekly rest from 36 to 48 hours and extending the night operation window, revealed a **structural problem of chronic understaffing** in major airlines like IndiGo.
- The subsequent mass flight cancellations (over 2,000 flights canceled by IndiGo) due to pilot shortages forced the DGCA to temporarily relax the FDTL norms, highlighting the **tension between safety regulations and operational stability/commercial pressures**. This incident was a clear example of regulatory weakness and the consequences of insufficient crew buffers.

Key Government Initiatives and Policies:

A. National Civil Aviation Policy (NCAP), 2016

- Aims to make flying affordable, create an integrated ecosystem, and ensure safe, secure, and sustainable growth.
- **Key Provisions:**
- **UDAN Scheme (RCS):** Central element, focus on regional connectivity.
- **MRO Hub:** Rationalised taxation (e.g., uniform **5% IGST** for MRO services) to make India a global Maintenance, Repair, and Overhaul (MRO) hub.
- **FDI: 100% FDI** is allowed under the automatic route for Greenfield airport projects.

B. UDAN (Ude Desh Ka Aam Nagrik) Scheme

- **Objective:** To stimulate regional air connectivity and make air travel affordable for the common man.
- **Mechanism:** It caps airfare at **₹2,500 for a one-hour flight** to unserved/underserved airports, offering Viability Gap Funding (VGF) to airlines for operational losses.
- **Achievements:** As of late 2025, over **157 lakh passengers** have travelled, and **93 airports** (including heliports and water aerodromes) have been made operational under the scheme.
- **Related Schemes:**
- **Krishi UDAN:** Launched in 2020 to transport agricultural produce and perishables, especially to benefit the North-Eastern and tribal regions, by offering freight subsidies.

C. Infrastructure and Technology Initiatives

- **NABH (NextGen Airports for Bharat) Nirman:** Focuses on modernising and expanding airport capacity.
- **Goal:** The number of operational airports has nearly doubled from 74 in 2014 to **148** (as of early 2025). The target is **over 200 airports by 2025** and over **350 by 2047**.
- **DigiYatra:** Biometric-based seamless passenger processing using facial recognition technology.
- **Data Example:** Over **12.1 million** users have downloaded the app (till late 2025), enhancing security and passenger experience.
- **GAGAN (GPS-Aided GEO Augmented Navigation):** Joint effort by ISRO and AAI to improve flight navigation accuracy and operational efficiency.
- **Legal Modernization:** The passage of the **Bharatiya Vayuyan Adhiniyam, 2024** modernized the sector by replacing the colonial-era Aircraft Act, 1934, and the **Protection of Interest in Aircraft Objects Bill, 2025** to align with the Cape Town Convention, 2001, to reduce aircraft leasing costs.

D. Aircraft Leasing & Financing at GIFT City: Aims to develop India's domestic aircraft leasing ecosystem to **reduce dependence on foreign leasing firms** and address currency risk (dollar-denominated costs).

Way Forward:

- **Strengthening Regulation and Safety:**
- **Empowering DGCA:** Granting administrative and financial autonomy to DGCA and increasing its staffing and technical capacity for rigorous, **preventive audits** (instead of reactive inspections after accidents) as per ICAO standards. India's ICAO Effective Implementation (EI) score of 85.65% is above the global average, but continuous improvement is necessary.
- **Pilot Fatigue Management:** Implementing stricter FDTL norms in phases while ensuring airlines comply with mandatory crew requirements to prevent fatigue-related risks.

Boosting MRO and Manufacturing:

- **Tax Rationalization:** Lowering GST on MRO services to 5% and removing high custom duties on spares to attract OEMs and make India a global hub for aircraft maintenance. The government is promoting the **'Make in India' – Aviation** initiative.
- **Sustainable Regional Connectivity:**

- Focusing on long-term viability of UDAN routes through market creation, non-aeronautical revenue generation, and improving allied infrastructure like tourism.
- **Modernizing Airspace:**
- Implementing technologies like the **Instrument Landing System (ILS)** at all airports to mitigate flight disruptions caused by adverse weather conditions (like fog/smog).
- **Bring ATF under GST:**
- **Rationalise taxes** to reduce operational costs and enhance airline profitability, as recommended by industry experts and parliamentary committees.

Conclusion:

The Civil Aviation sector, with its robust policy framework and ambitious growth plans (like the **Vision 2047**), is strategically positioned to be the **"Skyway to Viksit Bharat,"** connecting the nation, boosting trade, and strengthening India's global stature.

Q. *Discuss the role of the civil aviation sector in India's economic growth. What are the key challenges faced by this sector?*

***

Scan to attempt more questions...

GENERAL STUDIES 4

4.1. ETHICS

4.1.1. ATTITUDE BEATS APTITUDE IN THE MODERN WORKPLACE

- In the contemporary workplace, especially in an era shaped by **rapid technological change and artificial intelligence**, the traditional emphasis on aptitude alone is increasingly insufficient. While aptitude refers to an individual's technical skills and intellectual capabilities, **attitude encompasses values, mindset, ethics, adaptability, and willingness to learn**.
- Modern organizations are progressively recognizing that **attitude often outweighs aptitude** in determining long-term effectiveness, leadership potential, and ethical conduct.

Attitude over Aptitude in the Modern Workplace- What it is?

- The idea that attitude outweighs aptitude reflects the increasing recognition that an individual's mindset and behavioural attributes, such as a willingness to learn, a sense of responsibility, adaptability, perseverance, and the ability to work collaboratively- play a more decisive role in career advancement than mere technical competence, particularly during the initial stages of professional life.

Understanding Attitude and Aptitude

- **Aptitude denotes** measurable abilities such as technical knowledge, analytical skills, and professional expertise.
- **Attitude reflects** behavioral and ethical traits such as integrity, commitment, emotional intelligence, resilience, and openness to feedback.
- In a dynamic work environment, skills may become obsolete, but a positive and ethical attitude enables continuous learning and adaptation.

Importance of Aptitude in the Workplace:

1. **Facilitates effective job performance:** For example, a software engineer with strong logical aptitude can write efficient code and debug programs quickly.
2. **Enables faster learning and adaptation**: For instance, an employee with high numerical aptitude can easily adapt to new data analysis tools or accounting software.
3. **Enhances problem-solving ability:** A civil engineer uses spatial and analytical aptitude to design structurally sound bridges and buildings.
4. **Improves efficiency and accuracy:** A laboratory technician with scientific aptitude can conduct experiments precisely, reducing errors and ensuring reliable results.
5. **Builds professional credibility:** A financial analyst with quantitative aptitude can accurately interpret market trends, earning the trust of clients and employers.

6. **Supports performance in specialized roles:** For example, a mechanical technician relies on mechanical aptitude to diagnose and repair complex machinery effectively.

Why Attitude Matters More Today?

1. **Rapid Technological Change:** AI-driven workplaces demand constant upskilling. Employees with a growth-oriented attitude adapt more easily than those relying solely on existing skills.
2. **Teamwork and Collaboration:** Modern organizations function through interdisciplinary teams. A cooperative, respectful, and empathetic attitude enhances collective performance, even when individual aptitudes vary.
3. **Ethical Decision-Making:** Aptitude without ethical grounding can lead to misuse of power or technology. Attitude rooted in integrity and responsibility ensures ethical application of skills.
4. **Leadership and Ownership:** Leaders are not defined merely by competence but by accountability, vision, and moral courage. A proactive attitude fosters ownership and trust.

Challenges to Developing the Right Attitude in the Workplace:

- **Resistance to change:** Employees may be reluctant to adopt new ideas, technologies, or work practices due to comfort with established routines.
- **Rigid organizational culture**: A hierarchical or inflexible work environment can discourage initiative, openness, and constructive feedback.
- **Lack of motivation and recognition**: When efforts are not acknowledged, employees may develop apathy or disengagement.
- **Poor leadership and role modelling**: Ineffective leadership can fail to inspire positive attitudes such as accountability, integrity, and collaboration.
- **Workplace stress and burnout**: Excessive workload and unrealistic deadlines can negatively affect morale and resilience.

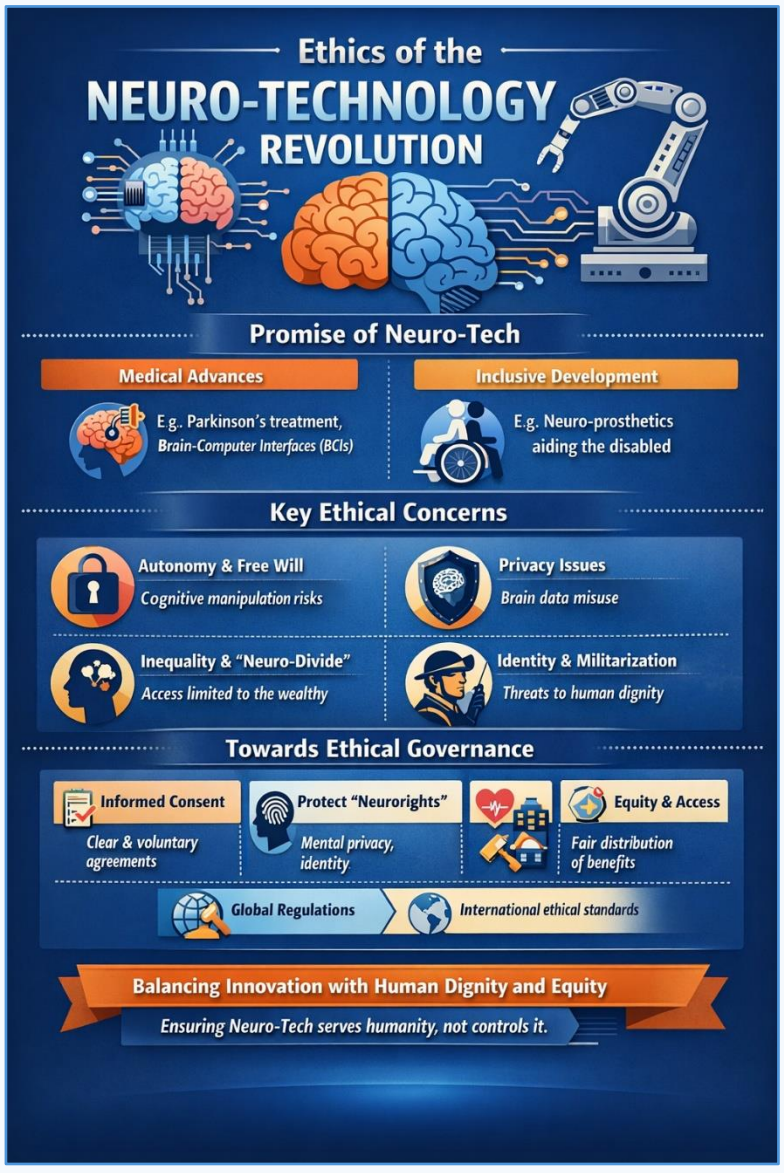
Methods to Instill Attitude and Aptitude in Modern Adults:

1. **Continuous learning and skill development:** Encouraging participation in training programmes, workshops, and online courses to strengthen both mindset and competencies.
2. **Mentorship and coaching:** Exposure to experienced mentors helps inculcate professional values, work ethics, and practical problem-solving skills.
3. **Experiential and project-based learning:** Real-world tasks and simulations foster adaptability, collaboration, and application of aptitude in practical settings.
4. **Constructive feedback mechanisms**: Regular, goal-oriented feedback promotes self-awareness, accountability, and improvement in performance.
5. **Positive organizational culture**: Creating an environment that values innovation, respect, and teamwork nurtures the right professional attitude.
6. **Role modelling by leadership**: Leaders who demonstrate integrity, resilience, and commitment influence similar behaviour among employees.
7. **Use of technology-enabled learning tools**: Digital platforms, AI-based assessments, and interactive modules help adults identify strengths and develop aptitudes efficiently.

In the modern workplace, **attitude acts as the ethical compass that directs aptitude**. While skills are essential, it is attitude that determines how those skills are used- for personal gain or collective good. In line with Ethics, cultivating the right attitude- anchored in integrity, adaptability, and public spirit-is indispensable for sustainable success in both professional and public life.

Q. *In the modern workplace, professional growth often depends more on attitude than on technical skills. Discuss the relevance of attitude over aptitude in contemporary organizational settings. Suggest measures that individuals and organizations can adopt to foster the right attitude for professional success.*

4.1.2. ETHICS OF THE NEURO-TECHNOLOGY REVOLUTION



- The neuro-technology revolution refers to the **rapid advancement** of technologies that **directly interface with the human brain and nervous system**, such as brain- computer interfaces (BCIs), neural implants, neuro-imaging, deep brain stimulation, and AI-driven cognitive tools.
- While these innovations promise **breakthroughs in healthcare and human capability**, they also raise serious ethical concerns related to autonomy, privacy, equality, and human dignity. Thus, neuro-technology represents a critical ethical frontier in modern governance.

What is Neuro-technology?

- Neuro-technology refers to a broad set of technologies designed to understand, monitor, interact with, or influence the human nervous system, particularly the brain.
- Neuro-technology involves the application of engineering, neuroscience, and computing to **record neural activity, stimulate neural circuits, or enhance cognitive and motor functions**. It enables direct or indirect communication between the brain and external devices.

1. **Key Components:**

- **Brain–Computer Interfaces (BCIs):** Allow direct communication between the brain and machines (e.g., Neuralink).

- **Neuroimaging Technologies:** Such as EEG, fMRI, and PET scans used to study brain activity.
- **Neurostimulation Devices:** Including Deep Brain Stimulation (DBS) used in treating Parkinson's disease and depression.
- **Cognitive Enhancement Tools:** Technologies aimed at improving memory, attention, or learning.

2. **Applications:**

- **Healthcare:** Diagnosis and treatment of neurological disorders.
- **Rehabilitation:** Assisting paralyzed or disabled individuals.
- **Defense and Security:** Monitoring cognitive states (controversial).
- **Education and Workplaces:** Enhancing learning and productivity.

Ethical Promise of Neuro-Technology:

1. Enhancing Human Well-Being (Beneficence): Neuro-technology has immense therapeutic value; **Example:** Deep Brain Stimulation (DBS) has significantly reduced symptoms of Parkinson's disease and epilepsy.

   From an **ethical perspective, such applications** uphold the principle of beneficence by alleviating suffering and improving quality of life.
2. **Inclusive Development and Social Justice:** Assistive neuro-technologies can empower persons with disabilities and those suffering from mental health disorders; **Example:** Neuro-prosthetics restoring mobility to amputees support the ethical goal of inclusive growth and constitutional values of equality.

Major Ethical Concerns:

1. **Autonomy and Cognitive Liberty:** Neuro-technologies can influence or alter brain activity, potentially undermining free will and informed consent.

   Example: If neural implants influence emotions or decisions, it becomes difficult to distinguish between voluntary choice and technological intervention.

   This raises the ethical concern of cognitive liberty—the right of individuals to control their own mental processes.
2. **Privacy and Mental Data Protection:** Neural data is far more intimate than biometric or digital data, as it may reveal thoughts, intentions, or emotional states.

   Example: Misuse of brain-signal data by corporations for targeted manipulation or by states for surveillance could lead to ethical violations.

   Existing data protection laws are insufficient to safeguard "brain data," necessitating stronger ethical and legal frameworks.
3. **Inequality and the 'Neuro-Divide':** Cognitive enhancement technologies risk deepening socio-economic inequalities.

   Example: If only the wealthy can afford memory-enhancing neural implants, it could create unfair advantages in education, employment, and leadership.

   This challenges the ethical principle of justice and equal opportunity.
4. **Human Identity and Moral Responsibility:** Blurring boundaries between humans and machines raises questions of identity and accountability.

Example: If a person commits an offence under the influence of a neural implant malfunction, determining moral and legal responsibility becomes complex.

Such scenarios complicate ethics in criminal justice and public administration.

5. **Dual-Use and Militarisation:** Neuro-technology may be used for coercive or military purposes.

   Example: Technologies that enhance soldiers' endurance or suppress fear may violate ethical norms of human dignity and international humanitarian law.

   This contradicts the principle of non-maleficence—"do no harm."

Ethical Governance: Way Forward

1. **Human-Centric Regulatory Frameworks:** Policies must prioritise human dignity, autonomy, and well-being over unchecked innovation.
2. **Strong Informed Consent and Oversight:** Individuals must be fully informed of risks, long-term consequences, and data usage. Independent ethics committees should oversee research and deployment.
3. **Protection of Neurorights:** Emerging global discourse on neurorights mental privacy, identity, and free will should guide national legislation.
4. **Equity and Accessibility:** Therapeutic neuro-technologies should be made accessible through public health systems to prevent elitism.
5. **UNESCO's 2025 Key Recommendation on the Ethics of Neurotechnology:** Individuals must preserve autonomy over their own mental processes, and any unauthorized access, collection, or misuse of neural data should be strictly prohibited.

The neuro-technology revolution presents both unprecedented opportunities and profound ethical risks. While it holds the power to heal, assist, and empower, it also threatens autonomy, privacy, and equality if left unregulated. Ethical governance must ensure that neuro-technology remains a tool for human welfare rather than a means of control. For future civil servants and policymakers, balancing innovation with ethical restraint is essential to uphold constitutional morality and public trust.

Q. *The rapid advancement of neuro-technology presents opportunities for healthcare and human enhancement but also raises critical ethical concerns. Discuss the ethical challenges posed by neural data collection and cognitive interventions. How can policy and governance ensure that individuals retain autonomy over their mental experiences while promoting responsible innovation?*

Scan to attempt more questions...

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