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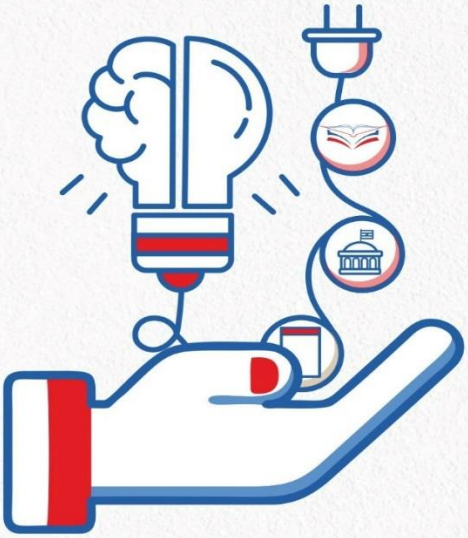
DELHI : 9 MAR, 11 AM | 13 MAR, 8 AM | 25 MAR, 5 PM
30 MAR, 8 AM | 7 APR, 11 AM

GTB NAGAR : 17 MAR, 8 AM | 25 MAR, 6 PM

AHMEDABAD: 17 JAN | BENGALURU: 23 MAR | BHOPAL: 2 JUNE | HYDERABAD: 11 MAR

JAIPUR: 10 APRIL | JODHPUR: 15 MAY | LUCKNOW: 31 MAR | PUNE: 16 MAR

OPTIONAL SUBJECT CLASSES 2027



- History (Online Mode Only)
- Political Science and International Relations
- Public Administration
- Physics

18 APRIL

- Sociology — **11 MAY**
- Geography — **27 APRIL**

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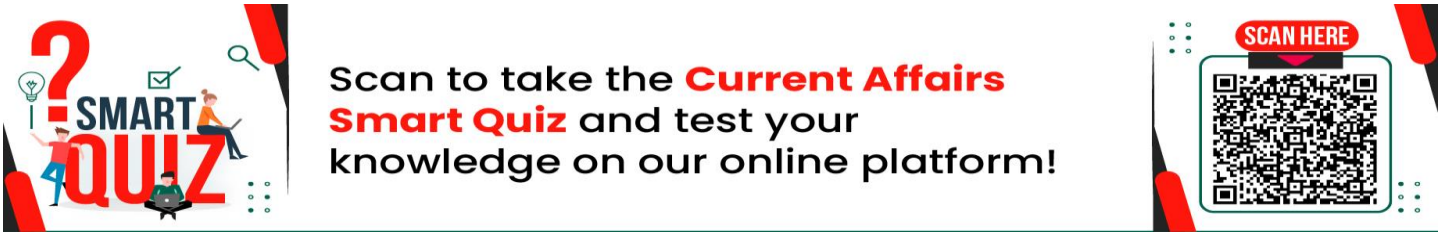

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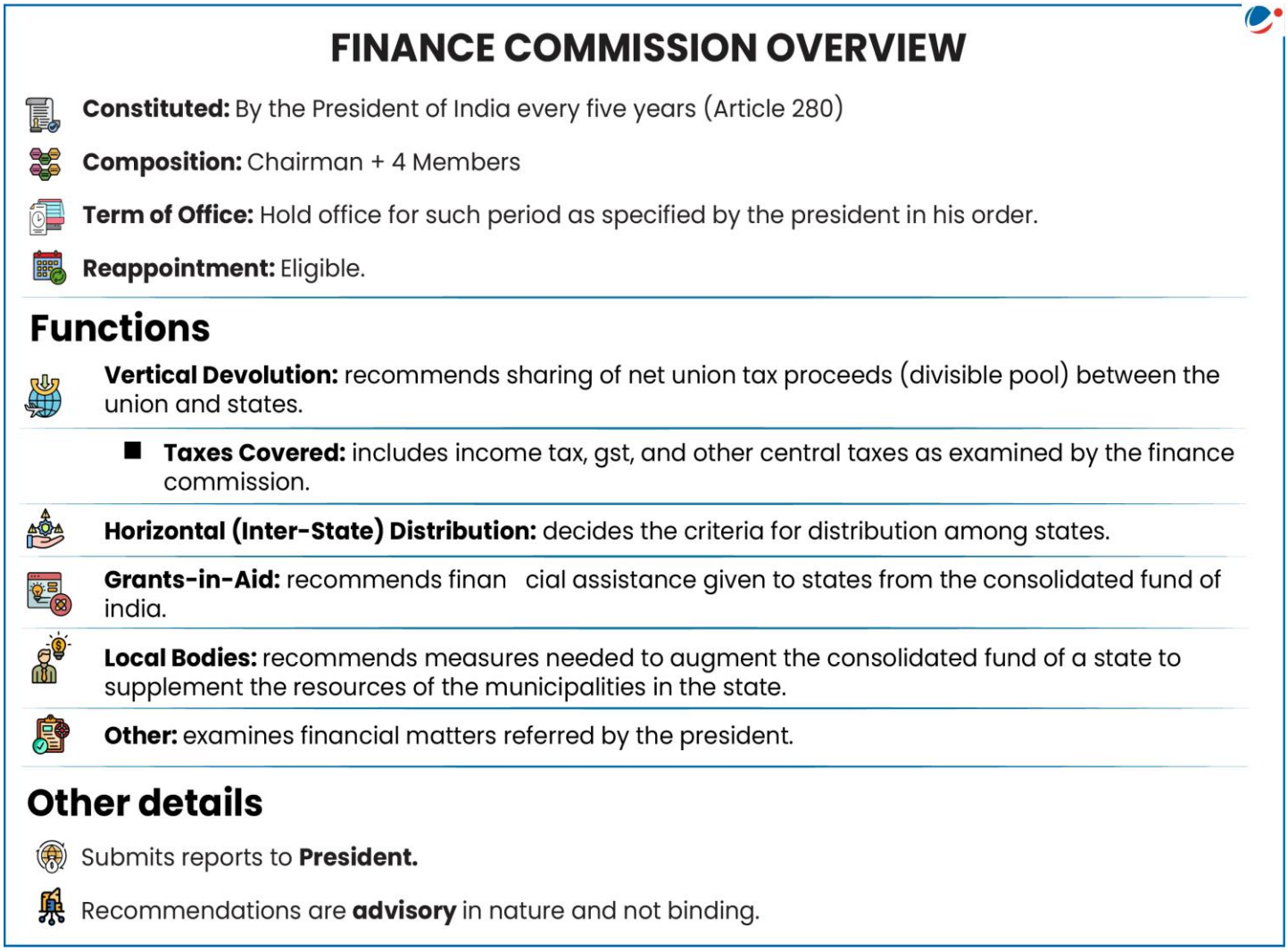
1. POLITY AND GOVERNANCE

1.1. 16TH FINANCE COMMISSION

Why in the News?

The report of the 16th Finance Commission was tabled in the Parliament.



About 16th Finance Commission

- **Composition:** Dr. Arvind Panagariya (Chairman); T Rabi Sankar, Annie George Mathew, Manoj Panda, and Soumya Kanti Ghosh (Members).
- **Award Period:** April 1, 2026 – March 31, 2031.
- **Terms of Reference:**
  - **Tax Devolution:** Distributing net tax proceeds between the Union and States (Vertical) and among the States (Horizontal).
  - **Grants-in-Aid:** Establishing principles for state grants from the Consolidated Fund of India (Article 275).
  - **Local Body Funding:** Augmenting State Consolidated Funds to supplement Panchayat and Municipality resources.
  - **Disaster Management:** Reviewing financing arrangements under the Disaster Management Act, 2005.

Resource Sharing Between Centre and States

- **Vertical Devolution:** There are **three main channels** through which resources flow from the Union to the States:
  - **Divisible Pool:** Under **Article 270(1)**, the **Union's tax revenues**, excluding cesses, surcharges, taxes accruing to the UTs, and the cost of collection, are shared between the Union and the States based on the recommendations of the FC.
  - **Grants-in-Aid:** Under **Article 275(1),** the FC recommends **specific grants** to supplement the Consolidated Funds of the States.
  - **Discretionary Grants: Article 282**, the Union provides **discretionary grants** to States, mainly through the Centrally Sponsored Schemes (CSS).
- **Horizontal Devolution:** Based on a **set of criteria** that considers **equity (population, area, per capita income, etc.) and efficiency (forest cover, tax effort, fiscal discipline, etc.)**.
  - Each **criterion is assigned a weight**, which determines the percentage of the States' total share in the divisible pool that will be shared according to that criterion.

Limitations of Finance Commission

- **Data Gaps:** Relies on official fiscal data that is often incomplete, inconsistent, or outdated**.**
- **Political Pressures:** Must balance conflicting stakeholder demands amidst shifting domestic and global landscapes.
- **GST Council Overlap:** Tax decisions by the GST Council directly alter the revenue pool the FC distributes**.**
- **Centralization vs. Federalism:** Grapples with balancing state autonomy against increasing demands for centralized expenditure.
- **Limited Local Control:** Relies entirely on State Finance Commissions for local government policies, limiting its direct impact on the third tier.
- **Advisory Nature:** Recommendations are not legally binding, making implementation and oversight difficult.

1.1.1. RECOMMENDATIONS OF 16TH FINANCE COMMISSION

Report of the 16th Finance Commission was tabled in Parliament on February 1, 2026 for the five-year period between 2026-27 and 2030-31.

Key Recommendations of the 16th Finance Commission

- **Vertical Devolution:** Retained at 41% (unchanged from the 15th FC). The 15th FC reduced it from 42% recommendation of the 14th FC.
  - However, this **excludes cesses and surcharges levied by the Centre**.
  - States argue that share of cesses and surcharges in the total revenue has risen substantially, but states remain outside its purview.
    - The share of cesses and surcharges, along with the cost of collection, reached a high of ₹13.5 for every ₹100 collected as taxes by the Centre in 2021-22, the highest ratio in at least over a decade.

Criteria for Horizontal Devolution

- **Income Distance:** Defined as the difference between a state's per capita GSDP and the average of the top three large states. Lower GSDP yields a higher share to ensure equity.

- **Population:** Based on the 2011 Census.
- **Demographic Performance:** Now based on population growth from 1971–2011, replacing the 15th FC's change in Total Fertility Rate (TFR) metric.
    - This is to **reward the States with lower population growth** (Southern States) as they will now have a higher share under this parameter.
- **Forest:** Now weighs both total forest area share and the increase in forest area (2015–2023). It now includes open forests, unlike the 15th FC which only counted dense/moderate forests.
- **Contribution to GDP:** Replaces the tax/fiscal effort parameter. It rewards national GDP contribution, calculated as the square root of a state's GSDP relative to the sum of the square roots of all states' GSDPs. (Uses average nominal GSDP from 2018-19 to 2023-24, excluding the 2020-21 pandemic year).

Criteria for Distribution of Central Taxes Among States

Criteria	15th FC (2021-26)	16th FC (2026-31)
Income Distance	45%	42.5%
Population (2011)	15%	17.5%
Demographic Performance	12.5%	10%
Area	15%	10%
Forest	10%	10%
Tax and Fiscal Efforts	2.5%	-
Contribution to GDP	-	10%
	100%	**100%**

Grants-in-Aid (Rs 9.47 lakh crore total)

- **Focus:** Urban/Rural local bodies and disaster management.
- **Discontinued:** Revenue deficit, sector-specific, and state-specific grants.

Local Body Grants

- **Allocation:** Rs 4.4 lakh crore for Rural (RLBs) and Rs 3.6 lakh crore for Urban (ULBs).
    - **For urban local bodies, this is a marked increase from 36% (15th FC) to 45% by the 16th FC.**
    - A significantly higher share for urban bodies is in recognition of the projected urbanisation level of 41% as of 2031.
- **Structure:** 80% Basic / 20% Performance-Based (split equally between local and state performance).
- **Conditions for Funds:** Proper constitution of local bodies, publishing audited accounts, and timely formation of State Finance Commissions. Performance grants require improved Own Source Revenue.
- **Tied vs. Untied:** Basic: 50% tied to sanitation/waste/water management; 50% untied.
    - **Performance:** 100% untied.
- **Special ULB Grants:** Infrastructure: Tied to wastewater management for cities with 10–40 lakh population (2011 Census).
    - **Urbanisation Premium:** One-time grant for merging peri-urban villages and formulating a Rural-to-Urban Transition Policy.

Disaster Management

- **Corpus:** Rs 2,04,401 crore for State Disaster Relief and Management Funds (SDRF/SDMF).
- **Cost Sharing:** 90:10 (Centre:State) for North-Eastern/Himalayan states; 75:25 for all others.
- **New Disasters:** Heatwaves and Lightning recommended for notification as national disasters.
- **Tech Upgrade:** NDMIS to be upgraded into a comprehensive disaster management system for both Union and States.

Four Reforms for Sound Public Finances		
Reform Area	**Core Objective / Target**	**Key Actions & Conditions**
1. Prudent Fiscal Management	• **Centre**: Reduce fiscal deficit to 3.5% of GDP by 2030-31. • **States**: Cap fiscal deficit at 3% of GSDP.	• Completely halt all off-budget borrowings. • Integrate all existing off-budget debt into official state budgets.
2. Power Sector Reforms	• Actively pursue the privatization of electricity DISCOMs.	• Create Special Purpose Vehicles (SPVs) to warehouse accumulated DISCOM debt. • State repayment/prepayment of SPV debt qualifies for Union assistance under **Special Incentive Scheme for Capital Investment**.
3. Subsidy Rationalization	• Retain only those subsidy schemes that effectively target the poor.	• Enforce clear exclusion criteria and rigorous reviews. • Implement mandatory sunset or exit clauses. • Discontinue off-budget financing for subsidies.
4. PSE Reforms	• Review and close 308 inactive State PSEs. • Formulate a targeted state-level disinvestment policy.	• Mandate a Cabinet review for any PSE incurring losses in 3 out of 4 consecutive years to decide on closure, privatization, or strategic continuation.

Conclusion

The 16th Finance Commission assumes critical importance at a time when India must balance cooperative federalism with fiscal prudence and developmental equity. Its recommendations will shape not only the sharing of resources between the Centre and the States, but also the quality of public spending, the strength of local bodies, and the resilience of States in the face of disasters and rising welfare commitments.

1.2. URBANISATION IN INDIA

Why in the News?

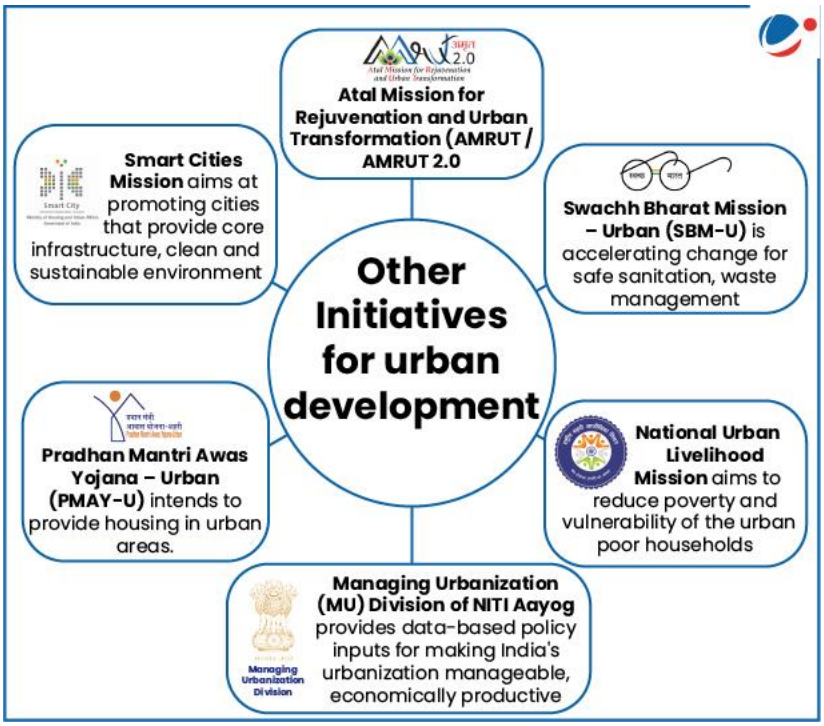
Union budget 2026-27 prioritises budgetary provisions for Urban Local Bodies (ULBs) and their implications for the long-term trajectory of urban growth.

Read our complete coverage of Budget

Key highlights of Budget announcements

- **Development of City Economic Regions (CERs):** To harness the economic potential of urban agglomerations, the government will map City Economic Regions based on their growth drivers, with ₹5,000 crore allocated per CER over five years.
  - The introduction of CERs marks **a move from managing cities as administrative units to planning them as integrated economic systems.**
- **Focus on Tier II, Tier III Cities and Temple Towns:** The budget prioritises infrastructure development in Tier II and III cities with populations above 0.5 million as emerging growth centres, along with modern infrastructure and basic amenities for temple towns.
- **Incentives for Municipal Bonds:** To promote municipal bonds as a key borrowing tool, the budget offers a ₹100 crore incentive for single issuances above ₹1,000 crore, while the AMRUT will continue to support bond issuances of ₹200 crore or less by smaller and medium towns.

- **16th Finance Commission Grants:** The budget allocates ₹1.4 lakh crore to States for 2026–27 as grants for urban and rural local bodies and disaster management.
- **Creation of University Townships:** The budget proposes five university townships near major industrial and logistics corridors, envisioned to evolve into vibrant urban centres.
- **Implementation through 'Challenge Mode':** Cities and states will compete for funding to implement their development plans and university townships through this challenge route, ensuring that financial support is directly linked to structural reforms and outcomes.
    - **Urban Challenge Fund (UCF): ₹1 lakh crore funds** approved to support **reform-driven urban projects.**



Urbanisation in India

- The **Census of India** requires settlements to be marked by **three conditions to be classified as urban**:
    - The settlement population must be greater than 5,000;
    - 75 per cent of male employment should be non-agricultural;
    - Minimum population density of 400 persons/square kilometre.
- The definition also adds those towns that have been administratively classified as statutory towns.
- According to the **census definition**, India's **urbanisation has been slowing.**
    - However, there is a growing acknowledgement of the importance of measuring urbanisation using data on mobility, labour markets, density, built-up areas, and night-time light data. (Economic Survey 25-26)
    - The Janagraha Foundation's Annual Survey of India's City Systems (ASICS) 2023 report suggests that **India may be far more urban than the Census indicates**.
- Based on satellite data from the Global Human Settlements Layer (GHSL) of the Group on Earth Observations at the European Commission, India was **63 per cent urban in 2015**, which is **nearly double the urbanisation rate** reported in the 2011 Census.

Key issues with Urbanisation in India

- **The Urban Paradox:** The Economic Survey 2026 argues that population scale has not resulted in proportionate global economic influence or liveability because infrastructure investment has lagged behind growth.
    - As a result, the potential benefits of density have been diluted by congestion, environmental stress, and informalisation.
- **New Urban conurbation**: Metropolitan expansion is overwhelmingly outward, often following transport corridors and converting agricultural land into urban use beyond statutory municipal boundaries.
    - For example, Census classifies **Kerala's urbanisation at 47.7 per cent (2011),** spatial analysis using the Degree of Urbanisation (DEGURBA) methodology places it at **roughly 80.8 per cent** when functionally urban settlements (outside municipal limits) are included.

- **Urban Mobility:** Congestion causes massive economic losses across major metros. The guiding principle is to prioritise moving people, not vehicles.
- **Waste & Cleanliness:** Economic Survey 2026 identifies cleanliness **as an institutional and behavioural challenge, not just an infrastructure one.**
    - Door-to-door waste collection has reached 98% of urban wards, but **segregation and processing capabilities lag behind.**
- **Floor Space Index (FSI) Trap:** Restrictive Development Control Regulations, specifically low FSI norms create artificial land scarcity, driving up land prices and increases the per-unit cost of delivering infrastructure.
- **Informality in Indian cities:** A structural outcome of rapid urbanisation, reflected in slums, informal labour, and unregistered enterprises, arising from gaps in formal housing, services, and employment systems.
    - Street vendors and informal labor are often treated as obstacles to be cleared. Displacing informal settlements destroys embedded capital, such as location advantages and social networks.
- **Fragmented Governance:** Overlap between Urban Local Bodies (ULBs), Development Authorities, and State Line Departments.
- **Weak Mayoral Authority:** Cities lack a single "Chief Executive" to drive a long-term vision.
- **Financial dependency:** ULBs are heavily depending on grants-in-aid from the state consolidated fund and taxes assigned by the state, rather than generating sufficient own-source revenues.
    - Cities generate <0.6% of GDP in own-source revenue (vs. 2-4% in OECD).
- **Professional Vacuum:** Deficiency of skilled workforce in planning, data analytics, and modern accounting.

Measures to be taken to improve urbanisation in India

- **Infrastructure-Led Growth**: Move from reactive to proactive investment in urban infrastructure.
    - **Urban Infrastructure Development Fund (UIDF)** is designed to finance infrastructure in **Tier-II and Tier-III cities**.
- **Improve Mobility:** Scale Namo Bharat RRTS for regional labor integration, digitize bus fleets and implement Congestion Pricing as in London/Singapore.
- **Integration of Informality:** Move from "eviction" to "spatial integration." Explicitly design streets to accommodate formalized vending.
- **Metropolitan Governance:** Establish unified authorities for mobility and land-use that account for the entire economic region, not just "city limits."

- **True Devolution:** Unconditional transfer of "Funds, Functions, and Functionaries" (3Fs) as per the 74th Amendment.
- **Fiscal Autonomy:** Implement self-updating property taxes, user charges, and access **Capital Markets** (Municipal Bonds).
- **Professional Cadres:** Create specialized municipal cadres and performance-linked capacity building.
- **Design as Nudge:** Urban design should act as a **behavioural instrument**. Legible streets with clear markings, signage, and segregated lanes reduce ambiguity and make the right action intuitive.
    - Citizens are more willing to comply when they see tangible returns on their taxes through improved services like lighting and drainage.
- **Nature-Based Solutions**: Infrastructure should be circular, integrating stormwater drains with wetlands and using tree cover to combat the urban heat island effect.
    - Building codes must mandate rainwater harvesting and grey-water reuse, similar to systems in the IIM Kozhikode campus or the solar-powered Cochin International Airport.

Conclusion

Urbanisation in India lacks the necessary institutional foundations. An integrated approach combining physical investment with a stronger civic contract is essential for shared prosperity. Ultimately, cities must be empowered to function as economic engines that are inclusive and liveable.

1.3. RURAL TRANSFORMATION THROUGH DECENTRALIZATION

Why in the News?

Union Budget allocations for Rural Development rose **over 211%** reaching **2.73 lakh crore (from 2016-17 to 2026-27**) towards strengthening rural infrastructure, livelihoods and institutional capacity.

About Decentralization

- **Meaning: Delegation or dispersal of administrative authority** among a number of individuals or units.
- **Constitutional provisions:**
  - **73rd and 74th Amendment Acts 1992:** Constitutionalized Panchayats and Municipalities with addition of **Part IX (Panchayats)** and **Part IXA (Municipalities).**
  - **Article 40**: States to take steps to organise village panchayats and endow them with necessary powers and authority.
  - **Article 243G**: Empowers State Legislature towards devolution of power and responsibilities upon Panchayat.
  - **Seventh Schedule**: **Panchayat** listed as a State subject.
- **Committees related to Decentralization**
  - **Balwant Rai Mehta Committee (1957):** Suggested **three tier system** of rural local government involving **Zila Parishad (district level), Panchayat Samiti (Block/tehsil/taluka); Gram Panchayat (village).**
    - First Panchayati Raj Institution (PRI) formed in **Nagaur, Rajasthan** on 2ndOctober, 1959.
  - **Asoka Mehta Committee (1977):** Two-tier system PRI with Zila Parishad (district level) and Mandal Panchayat (base level).
  - **Others include:** L.M. Singhvi Committee (1985); Sarkaria Commission (1986); P.K. Thungon Committee (1988), etc.

Key Features of 73rd and 74th Amendment Act, 1992

- **Structure:** Mandatory **three tier** (in states having less than 20 lakh population – two tier) structure both in rural and urban areas.
- **Periodic Elections:** In **5 years** (If dissolved earlier, fresh elections within **6 months**).
  - All posts at all levels (with two exceptions) to be filled by **direct elections** while **Indirect elections** for chairman at the intermediate and apex tiers.
- **Reservation of seats:** For SCs and STs at **all levels** in proportion to population.
- **Women Reservation:** One third of seats in panchayats and municipalities.
- **State Election Commission:** To conduct elections.
- **State Finance Commission** To be set up **every five years.**
- **Devolution of powers:** Towards **29 functions (Panchayats)** and **18 functions (Municipalities)** as per Eleventh and Twelfth Schedules respectively.
- **Planning committees:** Constitution of **District Planning Committee (DPC)** and **Metropolitan Planning Committee (MPC)**.
- **Exemption to application:** To **Fifth Schedule Areas, Sixth Schedule Areas, 1996 (PESA) and other tribal areas.**
  - Part IX dealing with panchayats has been specially extended through an Act called **Panchayats Extension to Scheduled V Areas Act (PESA)1996 to Scheduled Areas.**

Significance of decentralization for rural transformation

- **Improved Economic and Social Indicators:** NITI Aayog's **Multidimensional Poverty Index (MPI)**, indicates **Poverty Headcount Ratio** declined from 55.3% in 2005–06 to **11.28%** in 2022–23.
  - **99.6% (2024-25)** of rural households use improved drinking water sources owing to Jal Jeevan Mission; **96% villages under Swachh Bharat mission** attained Open Defecation Free (ODF) plus status by 2025; etc.
- **Democratic Spaces for Women:** Women now constitute ~40% of PRI leadership.
- **Increased finances:** As per Ministry of Panchayati Raj **Devolution Index, 2024**, the extent of devolution increased **to 43.9% (2021-22) from 39.9% (2013-14).**
- **Healthy Cooperative Federalism:** E.g., Kerala devolved all 29 functions to panchayats; Bihar adopted **"Panchayat Sarkar"** and Odisha have increased seats for women to 50%.
- **Institutionalised Setup:** Giving local bodies greater responsibility for governance & providing an element of continuity and enlarged the participatory process at grassroot.

Recent Initiatives towards Decentralisation of Powers to Rural Areas

- **Rashtriya Gram Swaraj Abhiyan (RGSA):** A revamped Centrally Sponsored Scheme implemented since 2022-23 for capacitating PRIs through training, etc.
- **Devolution Index**: Ranks for all States/UTs based on 6 identified dimensions, namely, Framework, Functions, Finances, Functionaries, Capacity Enhancement, and Accountability; **'AuditOnline'** for audits of Panchayat accounts; etc.
- **eGramSwaraj**: Web-based portal, integrated with Public Financial Management System for online transfer of **Central Finance Commission funds** by States to PRIs.
  - It has been integrated with Government e-Marketplace (GeM) for transparency in public procurement.
- **Fiscal decentralisation**: Increased from around **₹2.36 lakh crore** under 15th Finance Commission (FC) (2021-2026) to nearly **₹4.35 lakh crore** under 16th FC (2026-2031).
- **Digitization Initiatives:**
  - **Mission Mode Project on e-Panchayats (MMP-ePanchayat**), a Central component of RGSA;
  - **SVAMITVA scheme** for **drone-based mapping** to formalise rural property rights;
  - **Namo Drone Didi** initiative supports women's participation in digital economy;
  - **Digital India Land Records Modernisation Programme (DILRMP)** for land governance reforms.
  - **Unique Land Parcel Identification Numbers** (ULPIN/Bhu-Aadhaar), etc.
- **Empowering Various Sections**:
  - **Youth**: **Model Youth Gram Sabha (MYGS)** promotes democratic engagement.
  - **Women**: **Samaveshi Aajeevika Yojana** (2023) under DAY-NRLM, adopts **Ultra-Poor Graduation Approach** to promote sustainable livelihoods among rural women.
    - **SHE-Marts for Rural Women-led Enterprises** in Union Budget 2026-27.
- **Employment and Skilling**
  - **Viksit Bharat Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, 2025**, offers legal entitlement of 125 days of unskilled wage employment per rural household annually;
  - **Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)** offering demand-driven skill training.

Issues persisting in Decentralization

- **Lack of Devolution:** As 73rd and 74th Amendment Acts do not mandate devolution of functions, **local bodies have limited functional capacities** with some states having very little devolution.
- **Inter-Governmental Hierarchy:** Third-tier **lacks power of policy making** and functions as **instruments of state government** challenging the very notion of local-self-governance.

- **Fiscal Constraints:** Local bodies dependent on **state governments** for grants; low own sources of revenue (OSR); etc.
  - E.g., According to the RBI, the OSR of Panchayats was only 1.1% of their total revenue.
- **Corruption amongst local body officials:** Low level of awareness coupled with prevalence of **caste, class and gender hierarchies** has stymied public participation in local governance. E.g., 'Sarpanch Pati' culture.
- **Lack of Jurisdictional Clarity:** Sphere of activity of each tier under each item has **not been defined** and is left to discretion of the concerned state governments.
- **Other issues:** Irregular Constitution of State Finance Commissions (SFCs); issues in the functioning of the District Planning Committee (DPC); Inadequate Functionaries etc.

Way Forward on Ensuring Rural Decentralization

- **Policy Shift from Welfare Delivery to Decentralised Partnerships:** Shifting from purely **government led model of development** to more community driven decentralized approaches.
- **Empowering Gram Sabha:** Ensuring **periodic meetings** with maximum participation of people, ensuring benefits reach the needy.
- **Innovative Resource Mobilisation:** Generation of income from **entrepreneurial activities**, productive land, proper tax collection machinery instead of dependence on grants.
- **Promoting Coordination:** Among three levels of PRIs on one hand and bureaucracy on the other related to **distribution of powers and functions** amongst three tiers of PRIs.
- **Strengthening Community Networks/Institutions:** Build capabilities of poor, security of livelihood and safeguard against destitution, hunger, disease and alienation.
- **Role of States:** Providing support for building local institutions, legal framework and creating an **enabling environment** for participation of people.
- **Role of Non-Governmental Organizations (NGOs):** Essential to fill gaps in government and provide underprivileged areas with **specialized knowledge and resources.**

Conclusion

Success of **decentralized governance** hinges on empowerment of 3Fs: Funds, Functions, and Functionaries.

1.4. FREEBIES

Why in the News?

In 'Tamil Nadu Power Distribution Corporation Limited v. Union of India' case, the Supreme Court (SC) raised concerns about **the 'Freebies' culture** across states.

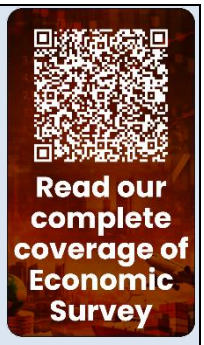
Highlights of SC Observations

- **Direct cash transfer schemes** without distinction between those who can and cannot afford certain services may **disincentivise work and earning with dignity and self-respect.**
- Indiscriminate largesse **funded by taxpayers** could **undermine fiscal discipline** and **economic stability** and hamper **nation-building.**
- States should focus on long-term development plans, than such election promises.

About freebies

- RBI defined freebies as "a **public welfare measure** such as that is provided free of charge".
  - E.g. Provisions of free electricity, free water, free public transportation, loan waivers, etc.
- As per RBI, freebies can be **distinguished from public or merit goods** such as education which have wider and long-term benefits.

Śreya vs Preya in the context of Freebies



The **Katha Upanishad** draws a timeless **distinction** between ***Śreya* (the enduring good)** and ***Preya* (the fleeting comfort),** urging the mature mind to **choose long-term benefit over immediate gratification.** This can be **applied to fiscal policy i**n the context of the **freebie culture.**

- As per **Economic Survey 2025-26**, aggregate spending on **unconditional cash transfers (UCTs)**, particularly those targeted at **women**, is estimated **at ₹1.7 lakh crore** (FY 2025-26).
- Between 2022-23 and 2025-26, the number of **states** running such schemes is projected to **increase more than fivefold**, with nearly **half** of them expected to face **revenue deficits**.

In other words, the country stands to gain immensely when it follows **delayed gratification and national discipline.** By choosing ***Shreya***, the state prioritizes **capital expenditure (CapEx)** on infrastructure, which offers a **higher multiplier effect** on growth, over the ***Preya*** of UCTs.

Constitutional and Legal Perspectives of freebies

- **Directive Principles of State Policy (DPSP):**
  - **Articles 38:** The State to secure a social order for the promotion of the people.
  - **Article 39:** Ensure men and women have adequate means of livelihood; prevent concentration of wealth.
  - **Article 41:** Right to work, to education and to public assistance in certain cases
- **Supreme Court judgement:**
  - **Subramaniam Balaji case (2013):** SC upheld distribution of colour TVs, laptops, etc. to deserving persons as consistent with the DPSPs.
    - **Section 123 of The Representation of the People Act (RPA), 1951** prohibits "bribery," defined as any gift, offer, or promise by a candidate or their agent to induce an elector to vote.
- **Election Commission of India Guidelines for election manifestos**: Included in the **Model Code of Conduct (MCC),** require parties to avoid promises that vitiate the purity of elections.

Positive Impact	Negative Impact
• **Fulfilment of Basic Needs:** Provisioning of food and nutrition, healthcare, housing, education can alleviate burden of poor. • **Social Empowerment**: Promotes inclusivity and social mobility. E.g. Providing laptops or bicycles to school girls increases enrolment. • **Political Participation:** Freebies can attract disengaged voters and increase electoral participation in a democracy. • **Economic growth**: Provision of basic needs free of cost increases disposable income of people, increasing their purchasing power, propelling national economic growth. • **Income Equality**: Freebies reduce income disparity by redistributing wealth and resources in a more equitable manner. • **Public Trust**: Government freebies can increase public trust in governance as they demonstrate responsiveness and accountability to the people.	• **Financial Burden:** It leads to strained government budgets, increased fiscal deficits and reduced spending on infrastructure development, job creation. ○ Combined gross fiscal deficit of States rose from 2.6% of GDP in FY22 to 3.2% in FY25. (Economic Survey 2025-26) • **Free Rider issues**: Freebies promote dependency culture as they are seen as entitlements. This leads to low productivity and erodes incentives for private investment. • **Undermine Sustainable Growth**: E.g. Free electricity, water can lead to depletion of ground water and increased burden on future generations. (CAG report) • **Distorts Democratic Politics**: Violates **Article 14** (Equality) by hindering level playing field required for free and fair elections. • **Weakens Institutions**: E.g., Loan waivers & free power weaken banks, DISCOMs.

Way forward

- **Policy Reforms**
  - **Fiscal Prudence and Debt Management:** Prioritize sustainable welfare schemes, maintaining fiscal discipline and debt sustainability. E.g. prior analysis of cost-benefit of a scheme
  - **Prevent Leakages and Corruption:** Improve targeting of Subsidies, eliminating inclusion-exclusion errors.
  - **Others:** Expand Insurance Coverage as a safeguard mechanism for vulnerable sections; building political consensus and public awareness against the misuse of welfare schemes.
- **Subramaniam Balaji v. Tamil Nadu (2013):** States should work to open avenues for employment (welfare) instead of giving non-merit freebies.
- **Economic Survey 2025-26:** Deliver more durable gains in incomes and productivity than an ever-expanding set of open-ended transfers.
  - E.g., Cash transfers linked to school attendance and health check-ups in Mexico's Progresa or Brazil's Bolsa Família.

Conclusion

The **Freebies**, which act as instruments of welfare and empowerment, often lack **fiscal oversight** and put **strain on state finances**. They lack a growth-oriented vision and prioritize **short-term gains over long-term sustainable development**. It is important to **nudge behavior** of political institutions, governments and citizens to bring change in this systemic issue.

1.5. PM RAHAT (ROAD ACCIDENT VICTIM HOSPITALIZATION AND ASSURED TREATMENT)

Why in the News?

Government has approved the launch of the PM RAHAT scheme.

About the Scheme

- **Objective:** Ensure **timely medical assistance for road accident victims**. (Institutionalizing "Golden Hour" Trauma Care).
- **Ministry:** Ministry of Road Transport and Highways (MoRTH).
- **Cashless Treatment**: Up to **₹1.5 lakh per accident victim** covered for **7 days from the date of accident**.
- **Stabilization Treatment:** Up to 24 hours (non-life-threatening injuries) and upto 48h (Life-Threatening)
- **Eligibility:** Applicable to **road accident victims** on **any category of road.**
- **Funding Mechanism:**
  - **Reimbursement to Hospitals:** Through **the Motor Vehicle Accident Fund (MVAF).**
  - **Insured vehicles:** Paid through contributions **from General Insurance Companies**.
  - **Uninsured / Hit-and-Run cases**: Paid through **Government of India budgetary allocation**.
  - **Claim settlement**: Approved claims **paid within 10 days by the State Health Agency.**
- **3 Tier Monitoring and Grievance Redressal**
  - **National Level: Inter-Ministerial Steering Committee (Policy Implementation)**
  - **State Level: State Road Safety Council (SRSC) (Nodal Agency)**
  - **District Level: District Road Safety Committee (DRSC) and a** Grievance Redressal Officer **nominated** by the **District Road Safety Committee** to handle complaints
- **Other:**
  - Integrated with 112 **Emergency Response Support System (ERSS):** Accident victims or Good Samaritans (Rah-Veer) can call 112 to quickly access the nearest hospital, ambulance support etc**.**
  - Integration of **Electronic Detailed Accident Report (eDAR)** platform of the MoRTH with the **Transaction Management System (TMS 2.0)** of the National Health Authority.

Conclusion

By ensuring that no accident victim is denied life-saving treatment due to financial constraints, PM RAHAT marks a decisive step towards **saving lives of road accident victims** and strengthening India's emergency care ecosystem.

Related News: UN Sustainable Financing for Road Safety in India

- **Funding:** UN Road Safety Fund
- **Technical support:** WHO, UNICEF, and the UNESCAP.
- **States:** Rajasthan, Kerala, Tamil Nadu, and Assam.

About the UN Road Safety Fund (UNRSF)

- **Established** in **2018** to mobilise financing for road safety in low- and middle-income countries.
- **Supports** evidence-based policy, legislation, and capacity-building projects.
- **Works with** governments, civil society, and private sector partners.

1.6. NEWS IN SHORTS

1.6.1. CORRUPTION PERCEPTION INDEX (CPI)

India's rank improved from 96th to **91st** out of 182 countries and territories (with score of 39) on CPI 2025.

About Corruption Perceptions Index (CPI)

- **Released By**: Transparency International annually.
- **Methodology:** Ranks **180 countries and territories** by their **perceived levels** of public sector corruption on a scale of **0 (highly corrupt) to 100 (very clean).**
  - It is a **composite index**, a combination of **at least 3 and up to 13 surveys and assessments** of corruption, collected by a variety of reputable institutions.
- **CPI Excludes:** Citizens' **direct perceptions or experience of corruption; Tax fraud; Illicit financial flows; Enablers of corruption** (lawyers, accountants, financial advisors etc.); **Money-laundering; Private sector corruption; Informal economies and markets.**
- **Key Highlights of CPI 2025**
  - **Top Position: Denmark (score 89)** was **ranked first** for eighth consecutive time.
  - **Bottom Ranks:** Mostly conflict-affected and highly repressive countries are amongst **lowest scorers** like **Venezuela (score 10)** and **Somalia and South Sudan (Both scoring 9).**
  - **Key drivers of Corruption:** Limited or eroding democratic checks and balances; politicisation of justice systems; undue influence over political processes; and a failure to safeguard civic space.

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1.6.2. WEAKENING OF INDIA'S ENVIRONMENTAL LAWS

Of late, **systematic "watering down" of environmental protections** have been observed , characterized by the judicial recall of progressive judgments, the adoption of reductionist definitions for protected areas (such as the Aravalli hills), etc.

Systematic Dilution of Environmental Regulation

- **EIA Process Undermined:** Since December 18, 2025, for non-coal mining projects, land acquisition can occur before an Environmental Impact Assessment (EIA), and EIAs can be conducted without specific details regarding location and area.
- **Judicial recalls**: The recall of **Vanashakti vs Union of India (2025) diluted the ban on retrospective clearances,** signalling a **retreat from pro-environment jurisprudence.**
- **Aravalli Hills Controversy:** The Court accepted a **100-metre height-based definition, excluding large ecologically vital areas from protection** impacting violation of **Article 21, weakens article 48A.**
- **Mangroves & Coastal Ecology:** Judicial approval for destruction of **mangroves (e.g., Raigarh, Maharashtra for Adani Cementation Ltd.)** reflects reliance on **compensatory afforestation, which ignores ecological science.**
- **Strategic Defense vs. Ecology:** Court allowed wider roads based on strategic defense needs despite recognizing the area's ecological importance. **(Citizens for Green Doon vs Union of India, 2021).**
  - This "balancing act" has been linked to subsequent flash floods and ecological disturbances in Uttarakhand.

Constitutional and Jurisprudential Implications

- **Constitutional provisions at risk:** Article 14 (principle of non-arbitrariness and equality before law), Article 21 (right to clean and healthy environment), **Article 51A(g)** (fundamental duty of citizens to safeguard the environment), etc.
- **Erosion of Public Trust doctrine:** Established in **M.C. Mehta vs. Kamal Nath (1996),** the **Public Trust Doctrine** asserts that natural resources belong to the state in trust for the people and cannot be sold for private exploitation.
  - Current judicial trends that approve environmental degradation appear to contradict this foundational jurisprudence.

1.6.3 GENDER BUDGET

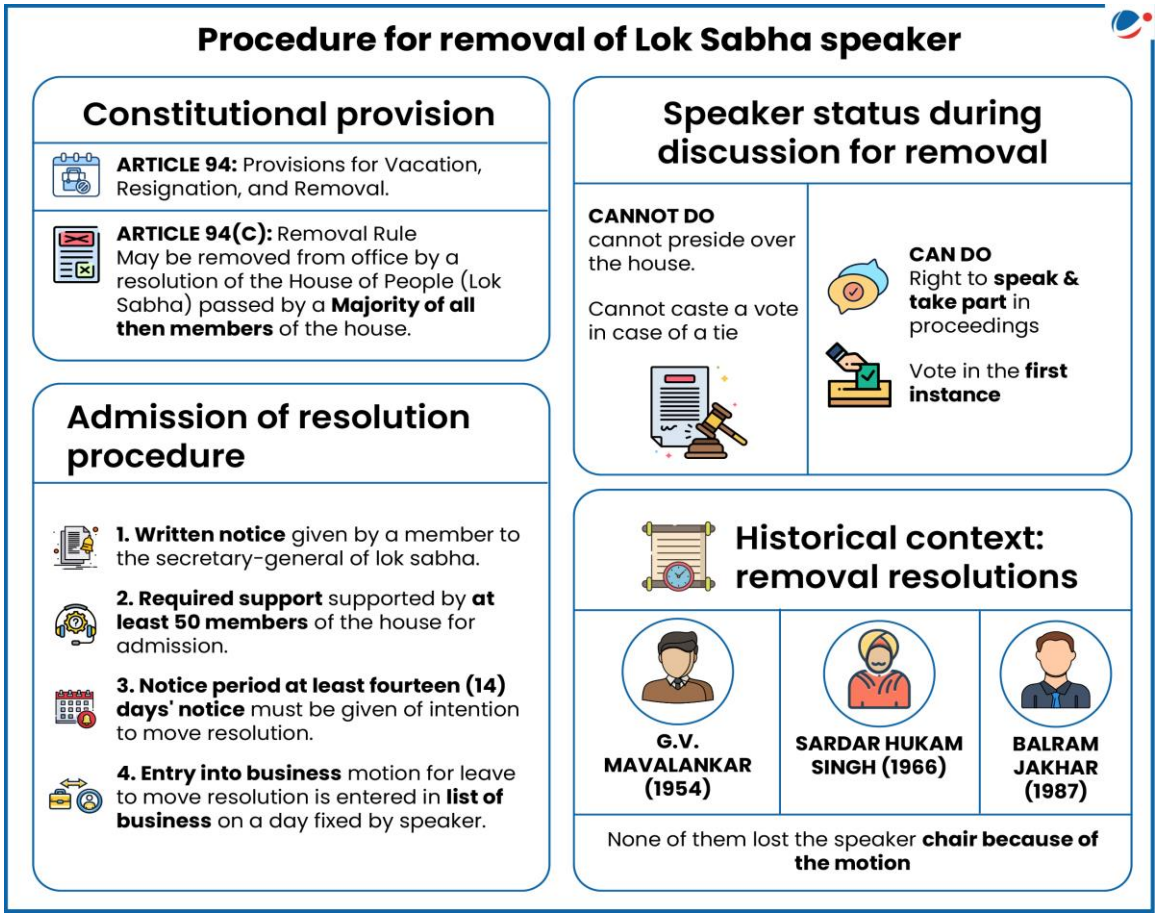
Share of Gender Budget in total Union Budget **increased to 9.37%** with total **53 Ministries/Departments** and five UTs reporting allocations this year.

Gender Budget (GB) in India

- **Meaning:** Mechanism for establishing whether **government's gender equality commitments** translate into **budgetary commitments.**
  - It does not seek to create **separate budgets** for gender concerns, rather views the Government Budget from a gender perspective.
- **Adoption in India:** India formally adopted GB in **2004-05.**
  - India has institutionalized GB at both **national and state levels**, with **Gender Budget Cells established across ministries and departments**.
  - **Gender Budgeting Scheme:** Under **'Samarthya'** sub-scheme of **Mission Shakti** scheme of Ministry of Women and Child Development (MWCD).
    - It aims for **100% coverage of GB in all central and state Ministries/Departments**, rural and urban local bodies.
  - States like Odisha and Karnataka have also adopted Gender Budgeting.
- **Parts of GB:**
  - **Part A**: Schemes with **100% provision for women**.
  - **Part B**: Schemes where allocations for women constitute **at least 30%. .**

1.6.4. REMOVAL OF THE LOK SABHA SPEAKER

Recently opposition moved a Resolution for removal against Lok Sabha Speaker Om Birla.



1.6.5. MOTION OF THANKS

Protests in Lok Sabha prevent Prime Minister's reply to the Motion of Thanks.

About Motion of Thanks

- **Article 87 (1)** provides that at the commencement of the **first session after each general election to the Lok Sabha** and at the commencement of the **first session of each year** the President shall address both Houses of Parliament assembled together and inform Parliament of the causes of its summons.
- **Under Rule 17 of the Rules of Procedure and Conduct of Business in Lok Sabha, discussion on matters referred to in the President's Address takes place on a Motion of Thanks** moved by a member and seconded by another member.
- **Amendments allowed:** Opposition members may move amendments expressing regret that the Address omitted or inadequately covered certain issues.

1.6.6. NOTA (NONE OF THE ABOVE) OPTION IN ELECTIONS

The Supreme Court noted that more than a decade after its introduction, NOTA has had little impact on the choice of candidates fielded by political parties.

- In NOTA, citizens choose to vote by **not giving a vote** to any political candidate.
- In 2013 in **PUCL vs Union of India,** Supreme Court directed the ECI to include a NOTA option on Electronic Voting Machines (EVMs).

- **First Implementation:** NOTA was first implemented in the 2013 legislative assembly elections in Chhattisgarh, Mizoram, Rajasthan, Madhya Pradesh, and Delhi.

Challenges with NOTA

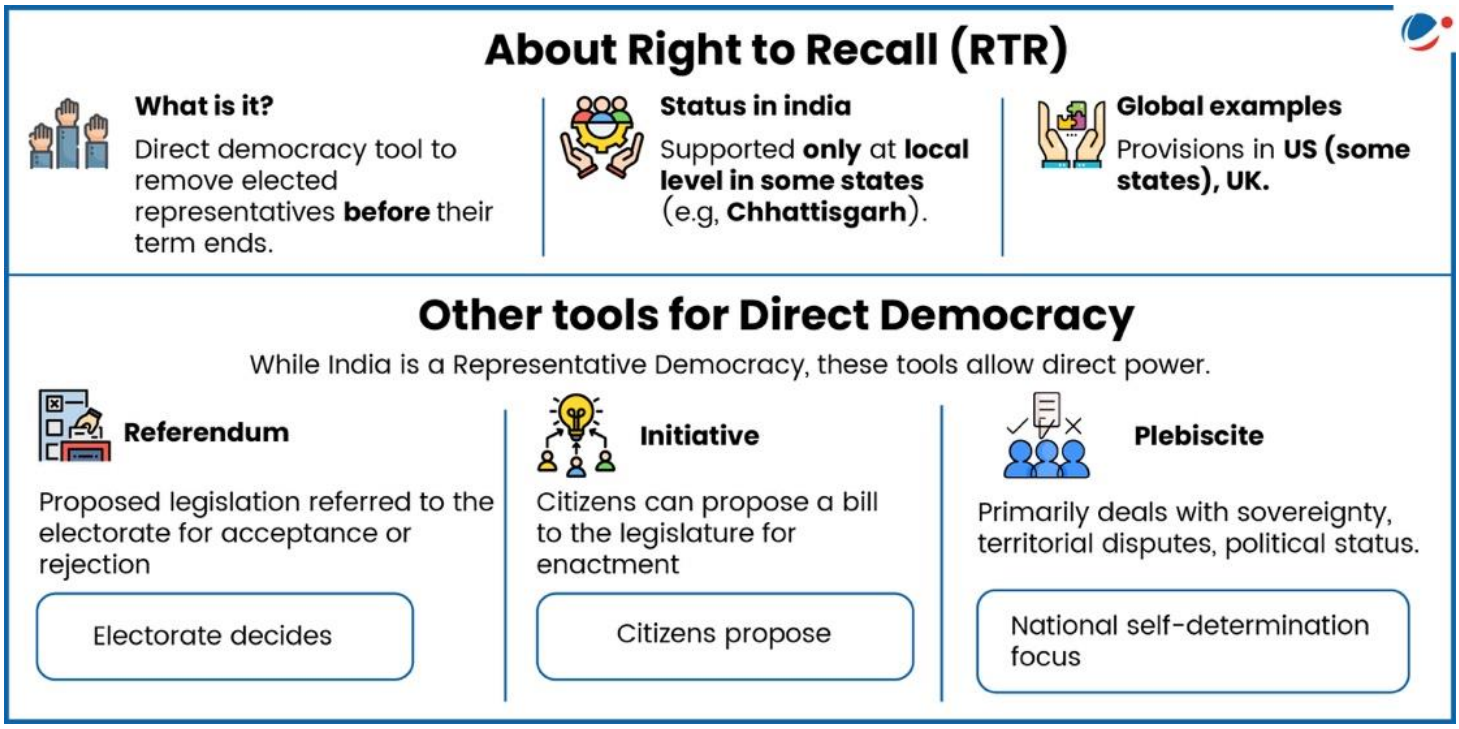
- **Uncontested Elections:** Voters cannot exercise the NOTA option in constituencies where a candidate is elected unopposed.
- **No Impact on Election Results:** Even if NOTA gets the highest votes, the candidate with the next highest votes is declared the winner.
- **Ineffectiveness Against Criminality:** As political parties continue to select candidates based on electability rather than moral considerations.

Way Forward

- **The 50%+1 Rule and Candidate Bans:** Under this rule, re-elections happen if NOTA gets 51% of valid votes, with the previous candidates barred from contesting again.
  - This is done in **Columbia**.
- **State-Level Initiatives:** The State Election Commissions of Maharashtra and Haryana have taken positive steps by treating NOTA as a fictional candidate and ordering re-elections when NOTA secures a majority.

1.6.7. RIGHT TO RECALL

Recently a Member of Parliament in Rajya Sabha floated the idea of introducing '**Right to Recall**' in India's parliamentary democracy.



1.6.8. ARTICLE 3 OF THE CONSTITUTION

Union Cabinet has approved the change of name from Kerala to Keralam.

About Article 3

- It empowers the **Parliament to**:
  - Form a new State
  - Increase, diminish or alter the boundary of a State
  - Change the name of a State

- **Process:**
  - **President Recommendation:** Such bill requires prior recommendation of the President.
  - **View of State Legislature:** The President has to refer the concerned State Legislature for its view within a specified period
    - The President (or Parliament) is not bound by the view of the State Legislature.
  - The bill is passed by the **Parliament by Simple Majority to change the name**.
- A constitutional amendment under Article 368 is not needed for change of name.

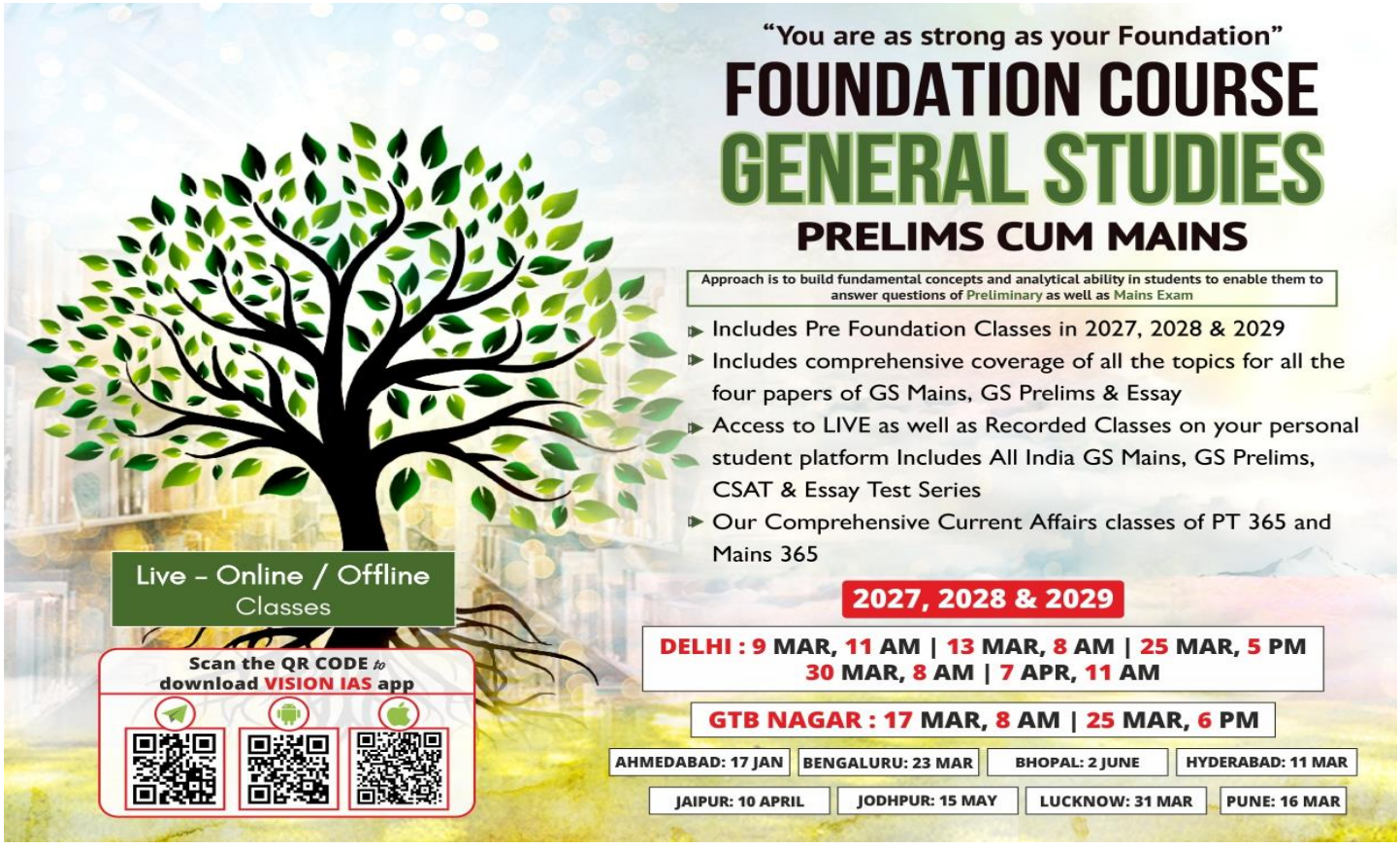
1.6.9. FRONTIER NAGALAND TERRITORIAL AUTHORITY (FNTA)

Historic Agreement between Government of India, Nagaland and representatives of **Eastern Nagaland Peoples' Organisation (ENPO)** was signed for the creation of FNTA.

- ENPO is an apex body representing **eight** recognised Naga tribes (Konyak, Sangtam, Chang, Khiamniungan, Yimkhiung, Tikhir, Phom and Sumi) of the **six Eastern districts of Nagaland.**

About FNTA

- **Districts Covered:** Tuensang, Mon, Kiphire, Longleng, Noklak and Shamator**.**
- **Key Provisions:**
  - **Devolution of powers** in respect of **46 Subjects to the FNTA.**
  - **Mini-Secretariat** headed by Additional Chief Secretary/Principal Secretary.
  - **Significance:** Overall development through financial autonomy, enhanced decision-making, etc.
- FNTA does not affect the provisions of **Article 371(A)** of Constitution concerning **special provision with respect to the State of Nagaland.**



2. INTERNATIONAL RELATIONS

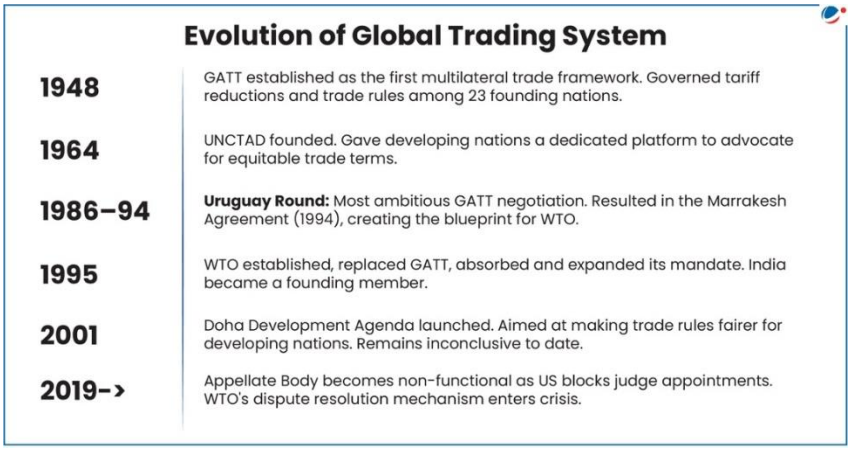
2.1. GLOBAL TRADING SYSTEM

Why in the News?

Recently, the chief of the World Trade Organization (WTO) highlighted the need to reform the Global Trading System.

Why the Global Trading System Needs Reform?

The current system is under pressure from four distinct directions:



- **The Geopolitical Pivot:**
  - **Protectionism:** Policies like "Make America Great Again" (MAGA) use tariffs as weapons, sparking trade wars (e.g., US-China) that hinder developing nations.
  - **Fragmented Trade:** Priorities have shifted from "lowest cost" to **national security** and **strategic autonomy**.
  - **New Shoring:** Global Value Chains are moving toward **Friend-shoring** (allies) and **Near-shoring** (geographical proximity).
- **Logistical & Supply Chain Fragility:**
  - **The "Efficiency" Trap:** Decades of **Just-In-Time (JIT)** manufacturing created brittle chains with zero buffer for shocks.
  - **Choke Points:** Conflicts in the **Red Sea** and **Strait of Hormuz** force expensive rerouting around the Cape of Good Hope, causing delays and inflation.
- **Emerging "Green" & "Digital" Barriers:**
  - **Green Protectionism:** Measures like the EU's **Carbon Border Adjustment Mechanism (CBAM)** act as unilateral trade barriers against developing states like India.
  - **Regulatory Chaos:** A lack of unified rules for **AI and cross-border data** hinders the potential of the digital economy.
  - **Regionalism:** The rise of blocs like **RCEP** threatens to bypass and undermine the universal multilateral system.
- **Institutional Paralysis (The WTO Crisis):** The WTO is facing a severe institutional crisis, primarily due to the **Dispute Settlement Impasse.** (see box below)

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Key Issues with WTO
• **Dispute Settlement Impasse:** The Appellate Body has become largely non-functional; United States has persistently blocked the appointment of new judges.
• **Negotiating Trade Agreements:** Doha Development Agenda (started in 2001) remains unfinished after 25 years
• **Decision-Making Gridlock:** The Consensus Rule allows any single member to block a global decision.
• **Divide over Special and Differential Treatment (S&DT):** Advanced economies argue that some large emerging economies (like China and India) should not qualify for such exemptions.
• **Agriculture and Food Security**: Persistent deadlocks over **agricultural subsidies** and market access remain unresolved.

Ways to Strengthen the Global Trading System

- **Qualified majority voting :** Transitioning from full consensus to a qualified majority voting system for appointing **Appellate Body members** could prevent **individual nations** from **blocking the process** and paralyzing the system
- **Reduce Protectionist Measures:** Countries should limit tariffs, quotas, and subsidies that distort trade.
  - Strengthening the institutional capacity of the WTO can ensure **effective resolutions** of the **trade wars** arising due to imposition of unilateral tariff imposition, etc.
- **Harmonizing Trade Rules with Climate Action:** Trade policy must be leveraged to accelerate the green transition without resorting to disguised trade barriers such as CBAM.
- **Formulating Rules for Digital Trade:** Establishing global norms for **e-commerce**, **cross-border data flows**, and **digital taxation** can regulate the rapidly growing **digital economy**. E.g., WTO Agreement on Electronic Commerce.

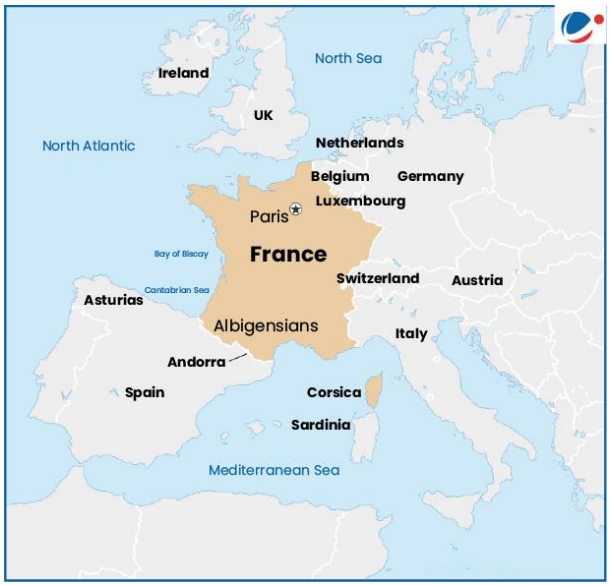
Conclusion

Global trading system remains a cornerstone of international economic cooperation but is increasingly strained by geopolitical tensions, protectionism, and institutional challenges. Reforming the World Trade Organization and strengthening multilateral rules will be essential to ensure a fair, predictable, and resilient trading system. A reformed framework must also balance development needs, digital trade governance, and climate objectives to sustain inclusive global growth.

2.2. INDIA-FRANCE RELATIONS

Why in the News?

The President of the French Republic paid an official visit to India.



Key Outcomes of Visit

- Partnership Status: Elevated to "Special Global Strategic Partnership".
- **Monitoring Mechanism:** New **Annual Foreign Ministers' Comprehensive Dialogue** to track the **Horizon 2047 Roadmap**
- **Defence & Industrial "Firsts":**
  - H125 Final Assembly Line: India's first private-sector helicopter facility (Tata + Airbus)
  - Engine Ecosystem: Establishment of MRO (Maintenance, Repair, and Overhaul) hubs for LEAP and M-88 engines.
  - **Precision Tech:** Joint Venture for HAMMER smart munitions (BEL (India) + Safran (France)).
  - **R&D:** Formation of the **Joint Advanced Technology Development Group** for military tech supply chains.
- **Economy & Future-Infrastructure:**
  - **Tax Sovereignty:** Amended **India-France Double Taxation Avoidance Convention**, 1992, to include provisions of the Base Erosion and Profit Shifting (BEPS) Multilateral Instrument (MLI) while removing the Most Favoured Nation (MFN) clause.
  - **Clean Energy R&D:** Exploration of **Small & Advanced Modular Reactors (SMR/AMR)**.
  - **Next-Gen Rail:** Joint focus on **High-Speed Rail** and **Hydrogen-powered trains**.
  - **Critical Minerals:** Joint Declaration of Intent for Cooperation in Critical Minerals and Metals to deepen cooperation in **exploration, extraction, processing and recycling technologies.**
  - **Innovation:** Jointly inaugurated the 2026 India-France Year of Innovation.

Converging Interests of India and France

India–France relations were established in **1947**, elevated to a **Strategic Partnership in 1998**, deepened through the **2008 civil nuclear cooperation agreement**, and further strengthened with the adoption of the **Horizon 2047 roadmap in 2023**.

- **Strategic & Multilateral:**
  - **Indo-Pacific Reorientation:** India has expanded its strategic outlook from a primarily Indian Ocean Region (IOR) focus to a comprehensive Indo-Pacific Roadmap (2023), leveraging enhanced surveillance opportunities, including from Réunion Island.
  - **Trilateral Co-operation in Africa:** India and France partnership can lower the costs of development projects and doing business in Africa, which can provide viable alternatives to the growing intervention of China**.**
  - **Global Order:** French support for India's permanent **UNSC seat**.
  - **Connectivity:** France key stakeholder in **IMEC** (India-Middle East-Europe Economic Corridor).
- **Defense & Security:**
  - **Procurement & Production:** France is India's 2nd largest supplier; 2024 Defence Industrial Roadmap pivots to co-design/co-production (AMCA, HAMMER).
  - Naval/Air Legacy: 6 Scorpene submarines (P-75) and Rafale delivery.
  - Military exercises: VARUNA (Navy), FRINJEX (Army), and La Perouse (Multilateral), ORION (Multilateral).

- **Trade & Investment**
  - France is India's **3rd largest trading partner** within the EU (following Netherlands and Germany).
  - **11th largest foreign investor** in India.
- **Frontier Technology**
  - Space: TRISHNA satellite (ISRO-CNES); French support for Gaganyaan 2027.
  - **Digital:** UPI launched in France.
- **Sustainability & Energy**
  - **Climate Leadership:** Co-presidents of **ISA** (Solar) and **CDRI** (Disaster Resilience).
  - **Nuclear:** Cooperation in project at **Jaitapur (Maharastra)** ; new R&D in **Small Modular Reactors (SMRs)**.

Key Challenges in India-France Relations

- **Limited Economic Engagement:** Bilateral trade between the two nations is just Euros 12.67 billion (in 2024-25).
- **Strategic Differences in Global Issues:** For e.g. differing stances on the Russia-Ukraine conflict (French denunciation vs. Indian strategic restraint).
- **Limited People-to-People and Cultural Engagement:** Compared to other Western countries, student mobility, tourism, and cultural exchange remain relatively limited.
- **EU Regulatory Barriers:** Strict environmental and digital regulations affect Indian exports. E.g., Carbon Border Adjustment Mechanism (CBAM) of EU.

Conclusion

The India-France relationship serves as a case study in **Strategic Autonomy**, demonstrating how India can maintain a "special" partnership with a Western power while practicing **strategic restraint** on global conflicts like Russia-Ukraine.

Beyond security, this is an **Innovation Partnership**; by integrating **UPI** and co-developing **Small Modular Reactors (SMRs)**, France is helping through high-tech leapfrogging. This collaboration is vital for India's leadership of the **Global South**, as seen in their co-presidency of the **ISA**, which bridges the gap between Western capital and developing-world energy needs.

2.3. NEWS IN SHORTS

2.3.1. INDIA AND THE UNITED STATES SIGN LANDMARK TRADE AGREEMENT

About the Trade Agreement

- US reciprocal tariffs on Made in India products will now be **reduced from 25% to 18% effective immediately.** US has also **withdrawn the additional 25% duty.**
  - **In August 2025,** the US imposed a tariff of up to **50%** comprising a **25%** reciprocal tariff plus an **additional 25% duty** over **Russian oil imports**.
- As reported by the US, **India** has agreed to scale up **imports** of **American goods**, including over **$500 billion** worth of energy, technology products, and nuclear equipment.
  - India will **progressively reduce its Tariffs and Non-Tariff Barriers** against the US.

Read our previous coverage on India – U.S.A Relations

Significance of the Deal

Economic Expansion	Technologi -cal Access	Strategic Reset	Geopolitical Enhancement	Macroeconomic Stability
Creates opportunities for farmers, MSMEs, skilled workers and entrepreneurs	Enables access to advanced US technologies	Eases tariff tensions and strengthens trust in India-US economic and strategic relations	Enhances India's role in global supply chains, countering China's dominance	Supports capital flows, strengthens rupee and boosts investor confidence amid global uncertainity

About India-US trade

- **Largest Trading Partner**: The US is one of India's top trading partners; India runs a **trade surplus** with the US, driven mainly by services and high-value goods exports.
    - Bilateral trade has stood at a record US$ 132.2 billion in FY25 as against US$ 119.71 billion in FY24.
- **FDI investment**: USA is the 3rd largest investor in India with cumulative foreign direct investment (FDI) inflows of US$ 70.65 billion (2000-2025).
- **Key Indian exports to US**: Pharmaceuticals, engineering goods, electronics, gems & jewellery etc.
- **Key US exports to India**: Crude oil, LNG, aircraft and parts, defence equipment etc.

2.3.2. TERMS OF REFERENCE FOR INDIA–GCC FREE TRADE AGREEMENT (FTA)

Earlier, **Framework Agreement** of **Economic Cooperation** to explore the possibility of **FTA between India and GCC** was signed in **New Delhi in 2004.**

Significance of India-GCC FTA for India

- **Unlock Full potential of Economic relationship:** GCC countries are a market of **US$ 2.3 trillion** in terms of GDP at current prices.
- **Reinforce Relations amidst prevailing global uncertainties:** Helping strengthen **long-term supply security** and **trade expansion.**
- **Diversifying India's Energy Sources**
- **Enhance Trade and Investment:** India's trade with GCC stood at **USD 178.56 billion** in **FY 2024-25, (15.42% of India's global trade).**
    - Region is also a significant source of **Foreign Direct Investment (FDI)** with investments exceeding **USD 31.14 billion** (September 2025).
- **Enhance People to people ties:** GCC is home to nearly **ten million members** of Indian community.

About GCC

- **Genesis:** Cooperative agreement among **six-nation bloc**, established by an agreement concluded on 25 May **1981.**
- **Members (6):** United Arab Emirates; Kingdom of Bahrain; Kingdom of Saudi Arabia; Oman; Qatar; Kuwait.

- **Headquarters: Riyadh,** Kingdom of Saudi Arabia.
- **Objective:** Effect coordination, integration and inter-connection between Member States to **achieve unity between them.**
- **Main Organizations under GCC: Supreme Council** with attached Commission for Settlement of Disputes; The **Ministerial Council;** The **Secretariat General.**

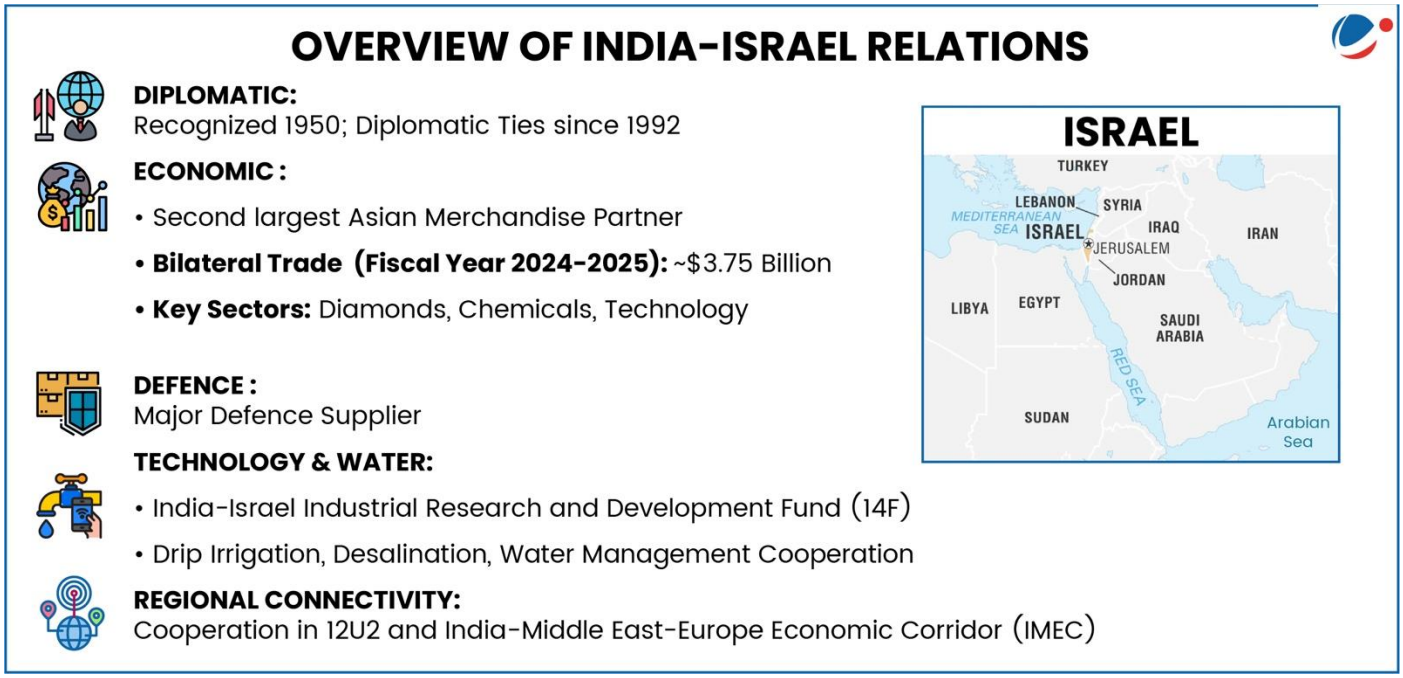
Digital Current Affairs
Read our previous coverage on FTAs

2.3.3. PRIME MINISTER'S VISIT TO ISRAEL

During the Prime Minister's recent visit, India and Israel agreed to further deepen and expand their bilateral cooperation across key strategic and economic sectors.

Key Outcomes of the Visit

- **Upgradation of ties**: To a **"Special Strategic Partnership for Peace, Innovation & Prosperity".**
- **New initiative on Critical & Emerging Technologies (CET):** Led by National Security Advisors of both countries covering AI, cybersecurity, semiconductors, quantum computing, biotechnology and space.
  - MoU on Artificial Intelligence; launch of Horizon Scanning/Strategic Foresight Mechanism.
- **Labour mobility:** Quota of up to 50,000 Indian workers over next 5 years.
- **Cybersecurity Cooperation:** Developing Multi-year cybersecurity roadmap; establishment of India–Israel Centre of Excellence in Cybersecurity in India; etc.
- **Agriculture & Water Technology Partnership:** MoU for establishment of India–Israel Innovation Centre for Agriculture (IINCA); 20 Joint Fellowships in Agricultural Research; etc.
- **Others:** Exploring UPI–Israel payment linkage; launch of India–Israel Academic Cooperation Forum; India-Israel Parliamentary Friendship Group etc.



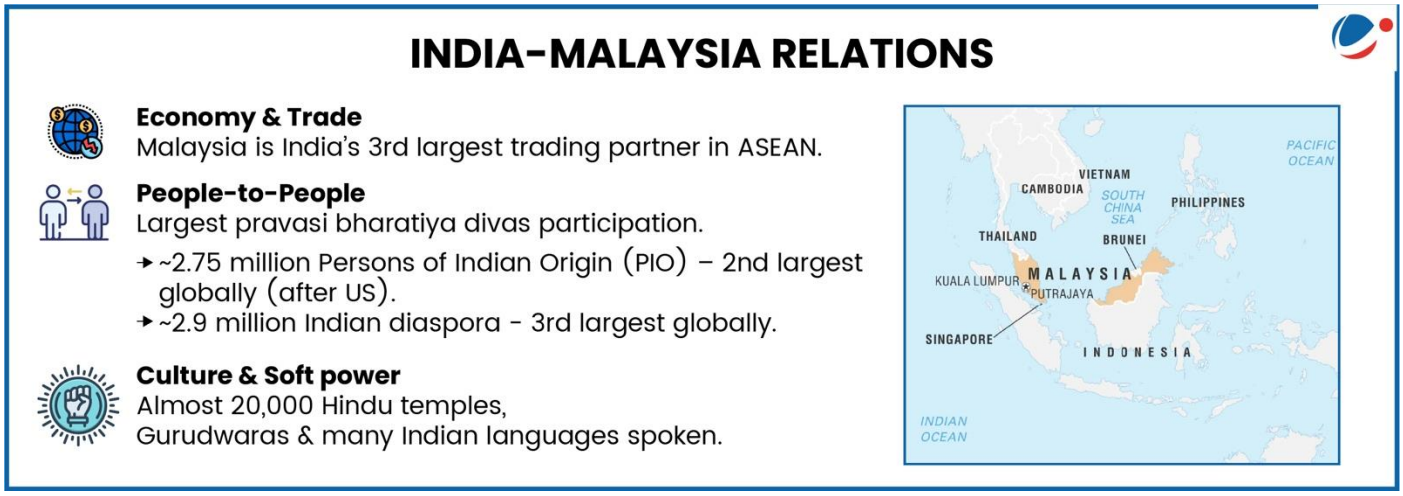
2.3.4. PRIME MINISTER'S VISIT TO MALAYSIA

During the Official visit, the joint statement emphasizes a shared commitment to regional stability, economic integration, and technological synergy.

- India-Malaysia diplomatic relations were elevated to a **Comprehensive Strategic Partnership (CSP) in August 2024**.

Key Highlights of the Joint Statement

- **Strategic & Defence Cooperation**
  - **Establishment of Strategic Affairs Working Group (SAWG)** and **Su-30 Forum for technical/maintenance cooperation** between both the air forces**.**
  - Conducted **joint military exercise Harimau Shakti (5th edition)**
- **Energy & Tech:** Malaysian companies investment in India's green energy (solar, hydrogen) and joint workforce development in semiconductors.
- **Food Security & Agriculture:** Malaysia reaffirmed commitment as a r**eliable palm oil supplier.**

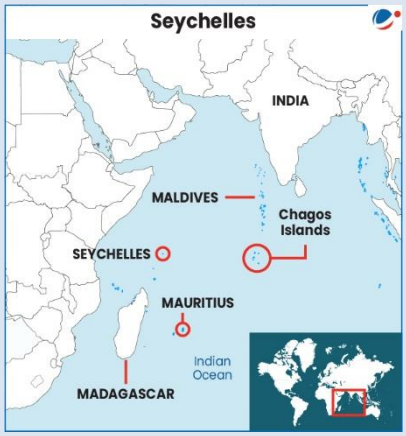


2.3.5. PRESIDENT OF SEYCHELLES VISIT TO INDIA

Key Outcomes

- **Regional Cooperation:** Seychelles to become a full member of the **Colombo Security Conclave (CSC)**.
  - **CSC** is a regional security grouping comprising India, Sri Lanka, Mauritius, Maldives and Bangladesh.
  - It aims to promote regional security by addressing transnational threats and challenges of common concern to the Member States.
- **Disaster Resilience:** Seychelles agreed to join the **Coalition for Disaster Resilient Infrastructure (CDRI)**.
- **Health:** Seychelles to recognize **Indian Pharmacopoeia**, book of standards for the drugs, to procure affordable, quality medicines.
- **Digital Transformation:** India agreed to undertake comprehensive efforts to build Digital Public Infrastructure (DPI) in Seychelles.
- **Maritime cooperation:** Seychelles will set up a **Hydrographic Unit** with Indian assistance.
- **Special Economic Package:** India announced a package totaling USD 175 million, aimed at development projects, capacity building, and maritime security.

Significance of Seychelles for India



- **Vision MAHASAGAR & SAGAR:** Seychelles is a central pillar in India's vision of **SAGAR** (Security and Growth for All in the Region) and the recently articulated Vision **MAHASAGAR** (Mutual and Holistic Advancement for Security and Growth Across Regions).
- **Geostrategic:** Its location near critical **Sea Lines of Communication** enables monitoring of key shipping routes, particularly the **Mozambique Channel**.
  - E.g., India's quest to develop **Assumption Island** to boost surveillance.
- **Balancing China's expansion:** E.g., deployment of **the Coastal Surveillance Radar** System in Seychelles by India for Maritime domain awareness.
  - China is increasing its influence in the Indian Ocean through String of Pearls, Two Ocean Strategy, and Belt and Road Initiative (BRI).
- **UNSC Bid:** Seychelles supports for India's permanent membership at the UN Security Council.
- **Defence Cooperation:** E.g., joint maritime exercise **LAMITYE**

2.3.6. PRESIDENT OF BRAZIL VISIT TO INDIA

During the visit both nations **revised** their bilateral trade goal from $20 billion to $30 billion by 2030.

- The nations emphasized **enhanced cooperation across diverse sectors, including space, renewable energy, and agriculture.**
- Adopted a **Joint Declaration/Action Plan on a Digital Partnership for the Future.**

India-Brazil relations

- **Diplomatic relations** established in **1948;** upgraded to **Strategic Partnership (2006)**
- **Work closely at plurilateral fora** such as BRICS, BASIC, G-20, G-4, IBSA, and larger multilateral bodies such as the UN, WTO, UNESCO, and WIPO
- **Trade:** In 2025, the bilateral trade grew by over **25% reaching USD 15.21 billion.**
  - Engagement under **India-MERCOSUR Preferential Trade Agreement.**
- **Renewable Energy:** Brazil became the co-founder member of **Global Biofuel Alliance.**
- Brazil ratified the **International Solar Alliance (ISA)** Agreement in 2022.

2.3.7. POWER GAP INDEX

Economic Survey 2025-26 cited the **Power Gap Index** to show that India is operating below its full strategic potential.

Read our complete coverage of Economic Survey

About Power Gap Index

- It is a **secondary analysis** derived from the **Asia Power Index,** an **annual index** produced by the **Australia-based Lowy Institute.**
- It measures **resources and influence** to rank the **relative power of states in Asia.**
- Ranks **27 countries and territories** through **131 indicators across 8 thematic measures:**
  - Military capability and defence networks, Economic capability and relationships, Diplomatic and cultural influence, as well as Resilience and Future resources.
- As per 2025 Edition, India is **operating below its full strategic potential** with a **power gap score of -4.0.**

2.3.8. INDIAN OCEAN NAVAL SYMPOSIUM (IONS)

India assumed chairmanship of **the Indian Ocean Naval Symposium**.

About IONS

- It is a **voluntary and inclusive multilateral forum (25 nations)** of navies of the Indian Ocean Region, established in 2008.
- **Initiated by** the Indian Navy.
- **Objective**: Enhancing maritime **co-operation** among **littoral states** of the **Indian Ocean Region.**
  - It provides a platform for **constructive engagement, enabling navies** to address **shared challenges** and contribute to regional stability.

2.3.9. COMBINED MARITIME FORCES

India assumed the first-ever command of Combined Task Force-154, a key multinational training task force under the Combined Maritime Forces (CMF).

About CMF

- **Multinational maritime partnership** (coalition of the willing) upholding the International Rules-Based Order (IRBO).
- **Membership: 47 nations**, including India; voluntary and flexible contributions.
- **Mandate:** Counter illicit non-state actors; ensure maritime security, stability and free flow of global commerce.

2.3.10.FORGE INITIATIVE

The United States announced the launch of the **Forum on Resource, Geostrategic Engagement (FORGE)** during the inaugural Critical Minerals Ministerial.

- **Ministerial was hosted by US** in Washington DC, bringing together delegations from over **50 countries (including India)** to advance collaboration on securing and diversifying global critical mineral supply chains.

About FORGE

- FORGE has been created as a **successor to the Minerals Security Partnership (MSP)**.
  - MSP aimed to bolster critical minerals supply chains to support economic prosperity and climate objectives.
- **Objective:** FORGE partners will collaborate at the policy and project levels to advance initiatives that strengthen **diversified, resilient, and secure critical minerals supply chains**.

2.3.11. PROJECT VAULT

Recently, the **United States unveiled Project Vault.**

About Project Vault

- It is a supply chain security initiative establishing the **U.S. Strategic Critical Minerals Reserve**
- It is an independently governed **public-private partnership** that will buy and store critical minerals and rare earth elements.

2.3.12. NEW START TREATY

Experts warn that the expiry of the New START Treaty will remove the last legal restraint on the world's two largest nuclear arsenals.

New START Treaty (Signed: 2010, Entered into force: 2011)

- It stands for New Strategic Arms Reduction Treaty (New START)
- **Limit nuclear warheads:** Caps deployed strategic nuclear warheads of the U.S. and Russia at 1,550 each.
- **Restrict delivery systems:** Limits ICBMs, SLBMs and heavy bombers to prevent arms build-up.
- **Strengthen arms control regime:** Serves as the last legally binding bilateral nuclear arms control treaty, reinforcing global non-proliferation norms.

2.3.13. U.S. DEPARTURE FROM INTERNATIONAL RADIATION SAFETY STANDARDS

The US Department of Energy (DOE) announced the **elimination of the "As Low As Reasonably Achievable" (ALARA) philosophy** from its directives and regulations for global radiation protection.

- This represents a shift to a **risk-informed** approach, **prioritizing operational efficiency and cost-effectiveness.**
- It **risks increasing worker exposure** by removing the mandate to minimize doses below statutory limits.

Foundations of Radiation Protection

The global framework for radiation safety has historically rested on two primary pillars:

- **ALARA:** A core safety principle dictating that radiation exposure should be kept **as low as reasonably achievable**, balancing social and economic factors.
- **LNT (Linear No-Threshold):** The **scientific model behind ALARA**, which assumes that any radiation dose, no matter how small, carries some cancer risk.

2.3.14. ARCTIC SENTRY

North Atlantic Treaty Organization (NATO) launched a new mission, **Arctic Sentry,** to bolster security in the Arctic.

About Arctic Sentry

- **Led by: Joint Force Command Norfolk** (JFC Norfolk) that serves as a bridge between North America and Europe for NATO.
- **Strategic Purpose:** Safeguard NATO members, protect territory, and maintain stability in challenging scenarios like increased military activity from Russia and growing interest from China.

2.3.15. CONFLICT AREAS IN NEWS

- **Rafah Crossing (Gaza):** Rafah crossing border partially **reopened.**
  - Southernmost post of exit from Gaza and borders Egypt's Sinai Peninsula.
  - There are **only two other border crossings from and into the Gaza Strip** – **Erez** and **Kerem Shalom.**
- **Donetsk region (Eastern Ukraine):**
  - One of the two key regions of **Donbas** (other: Luhansk).
  - **Borders** Sea of Azov (connected to Black Sea through Strait of Kerch) to south and Russia to east.
- **Chagos Archipelago:** United States urged United Kingdom to not hand over Chagos to **Mauritus.**
  - **Diego Garcia is the largest island** in Chagos archipelago, and is used as joint military base by UK and US.

- **Location**: **Indian Ocean** in the **northeast of Mauritius.**
- Following the 2019 ruling by International Court of Justice and building international pressure, UK signed an agreement with Mauritius in **2025** to return **Chagos** while keeping **Diego Garcia military base on a 99-year lease.**

- **El-Fasher (Sudan):** Reported indications of genocide in the siege **of El-Fasher city** by a paramilitary group. **Major Places affected in Sudan conflict include**
  - **Khartoum** (Capital city)
  - **Darfur Region** (West Sudan), **El Geneina, Zamzam Displacement Camp etc.**
  - **Other regions:** Kordofan region(capital- El Obeid), Blue Nile state
- **Communities affected:** Masalit, Zaghawa, Fur

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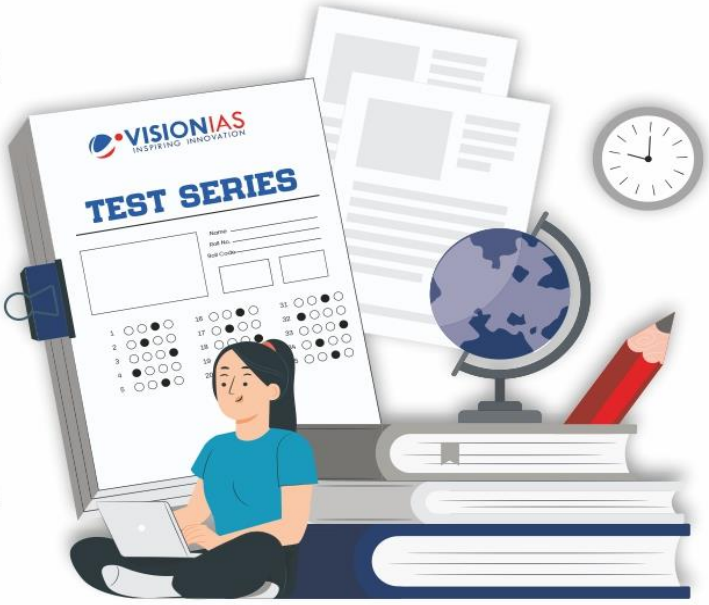

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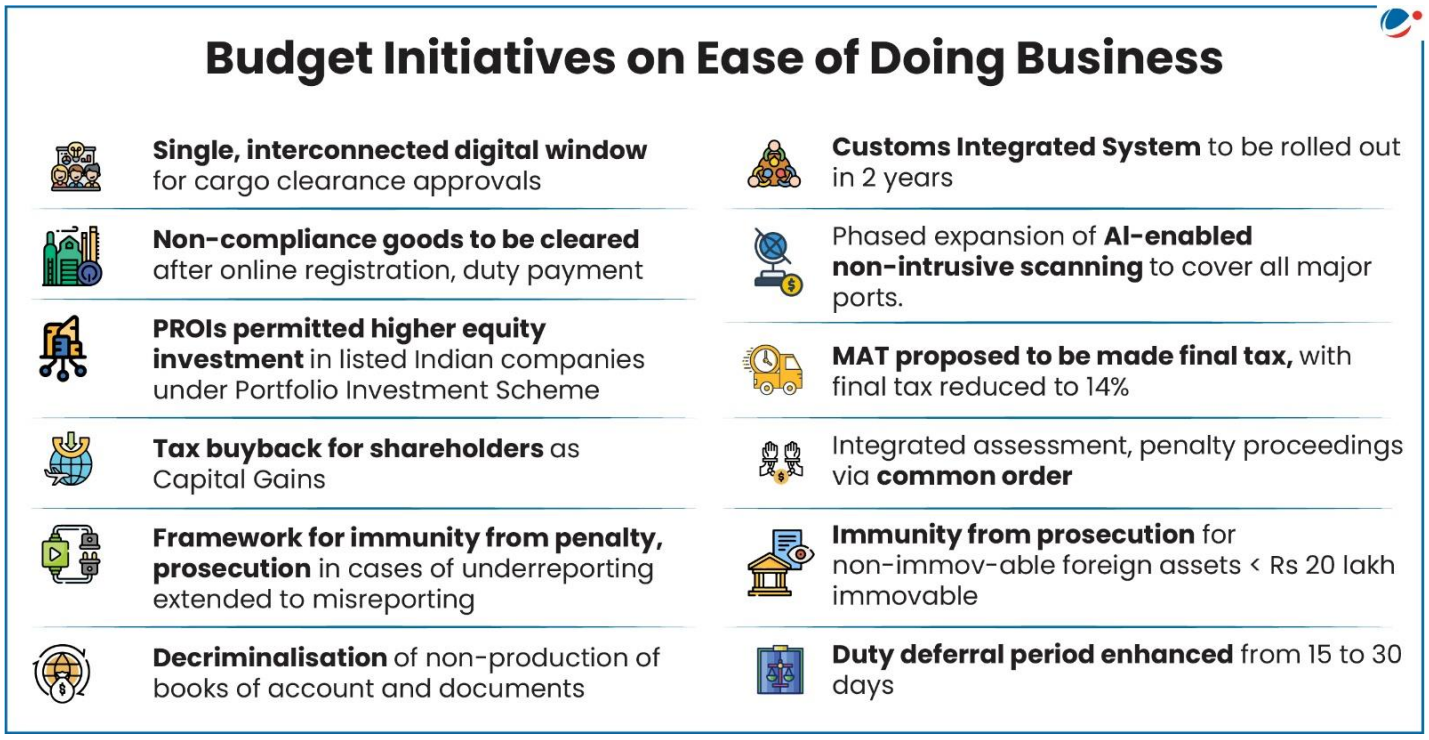
3. ECONOMY

3.1. EASE OF DOING BUSINESS IN INDIA

Why in the News?

The **Union Budget 2026-27** has reinforced Ease of Doing Business (EoDB) as a foundational pillar for economic growth and development. (see infographic)



About Ease of Doing Business (EoDB)

- It refers to the quality of a nation's regulatory and institutional framework that determines how effortlessly businesses can start, operate, comply, and exit within an economy.
- **Status of EoDB in India:**
  - **Global ranking:** As per World Bank Group's as Doing Business Report 2019, **India ranked at 63** (improvement of 79 ranks in the 5 years).
  - **Growth in Business registrations:** ~27% growth in 5 years (2020–21 to 2025–26).

Read our complete coverage of Budget

Significance of EoDB

- **Attracting Investment and Global Trade:** Clear and stable rules such as **Production Linked Incentives** (PLI) have helped India join global supply chains, turning the country into a major exporter of goods like electronics.
- **Helping Small Businesses (MSMEs):** Simplifying rules removes unnecessary hurdles for MSMEs.
  - Platforms like **Udyam Registration and TReDS** help them get officially recognized and give them quicker access to cash flow.
- **Good Governance: Faceless Tax Assessments** and the **National Single Window System** eliminate discretionary human interface, curbing corruption.

- **Creating Jobs:** Lowering the barriers to starting a business encourages new entrepreneurs (like through Start-up India) and helps creating jobs for India's large, young population.
- **Boosting Efficiency and Innovation:** By lowering logistics and transaction costs via master plans like PM Gati Shakti, firms can redirect capital from compliance management toward Research and Development (R&D).

Challenges Associated with EoDB

- **Slow Legal System:** With over 4.6 crore pending cases, a massive amount of money (~ ₹25 lakh crore) is stuck in commercial disputes, which makes long-term investors nervous.
- **Disproportionated towards large corporations:** The recent improvements in doing business have mostly helped large corporations due to their capability to adapt new systems like GST compliance, e-invoicing etc.
- **Implementation Divergence:** While states like Uttar Pradesh and Haryana have fully adopted business reforms, others are falling behind leading to foreign investment mostly going to a few top-performing states.
- **Land and Labor Bottlenecks:** Land remains a complex State subject plagued by a lack of clear, digitized titles.
    - Furthermore, a severe formal skill gap in the workforce creates a mismatch between capital-intensive growth and the needs of labor-intensive manufacturing.

Other reforms Supporting Ease of Doing Business

- **Business Reforms Action Plan (BRAP):** Launched in 2014 by Department for Promotion of Industry and Internal Trade (DPIIT) to streamline regulations, reduce compliance burdens, and implemented digital solutions to improve the business environment in India.
- **Regulatory Compliance Burden (RCB) initiative**: Launched in 2020, for Central Ministries/Departments and States/UTs to undertake a self-identification exercise to reduce burdensome compliances for businesses and citizens.
    - ~ 47,000 compliances were reduced during the last 5 years.
- **Legislative reforms**:
    - **Jan Vishwas (Amendment of Provisions) Act, 2023**: It decriminalizes 183 provisions under 42 Acts administered by 19 Ministries/ Departments.
    - **Sabka Bima, Sabki Raksha (Amendment of Insurance Laws) Act, 2025:** Introduces comprehensive reforms by amending the Insurance Act, 1938, the Life Insurance Corporation Act, 1956, and Insurance Regulatory and Development Authority Act, 1999 strengthening policyholder protection, deepen insurance penetration, accelerate sectoral growth.
- **Digital Initiatives**
    - **National Single Window System (NSWS):** To facilitate clearances and approvals for businesses,
    - **MCA21 Version 3:** An AI-driven platform for end-to-end registry services with e-scrutiny and e- adjudication features.
    - **SPICe+ Form:** Consolidates 10 essential procedures, including DIN, PAN, TAN, and GSTIN, into a single web form.
    - **PM GatiShakti NMP:** Uses spatial planning data to reduce logistics costs and improve last-mile connectivity.
    - **ULIP (Unified Logistics Interface Platform):** Integrates 35+ systems from various ministries for real-time cargo tracking.
- **Other measures:**
    - **Credit Assessment Model (CAM) for MSMEs:** It improves EoDB by enabling **automated loan appraisal** using digitally fetched and verifiable data,

Digital Current Affairs
Read our previous coverage on GST 2.0

- **Labour Reforms:** The consolidation of 29 Central labour laws into four Labour Codes has significantly enhanced Ease of Doing Business by simplifying compliance, reducing approval timelines, and providing greater operational flexibility, particularly for MSMEs.
- **GST 2.0:** It strengthens Ease of Doing Business by **simplifying tax slabs, reducing rates across key sectors, thus lowering tax incidence and improving price competitiveness.**
- **Support to India's startup ecosystem:** Through schemes like Startup India, Atal Innovation Mission, GENESIS, TIDE 2.0, NIDHI etc.
- **Credit guarantee schemes:** Provides collateral-free, or third-party guarantee-free, loans for MSMEs and startups, e.g., Credit Guarantee Scheme for Micro & Small Enterprises (CGTMSE), Credit Guarantee Scheme for Startups (CGSS), etc.

Way Ahead

- **Judicial Efficiency & ADR Mainstreaming:** Establish specialized commercial courts at the district level to bring dispute resolution times from the current ~1,400 days closer to the global average of 400 days.
  - Mandating ADR as a pre-litigation step can reduce case pendency and lower the cost of contract enforcement.
- **Localization via D-BRAP:** Shift the focus of reforms from State capitals to Municipalities through the District Business Reform Action Plan (D-BRAP).
  - Urban Local Bodies (ULBs) must be equipped with the digital infrastructure to handle construction permits and utility connections seamlessly.
- **Land Reform via U-PIN:** Expedite the nationwide rollout of the Unique Land Parcel Identification Number (U-PIN), acting as an "Aadhaar for Land," to create dispute-free digital titles and de-risk industrial land acquisition.
- **Trust-Based Governance:** Implement universal decriminalization of minor administrative lapses so that businesses do not operate under the threat of imprisonment.
  - Move micro-enterprises to **a self-certification model with randomized, risk-based audits**.
- **Aligning with ESG & B-READY Standards:** To secure top rankings in the World Bank's upcoming B-READY index, India must deeply integrate **Environmental, Social, and Governance (ESG) standardized** reporting and leverage its Digital Public Infrastructure (DPI) for a truly paperless compliance journey.

Conclusion

Ease of Doing Business should be seen as a wider state-capacity reform that shapes investment, enterprise growth, export competitiveness, and employment generation.
In India's context, better EoDB can deepen formalisation, improve MSME survival, reduce friction between citizen and state, and make growth more geographically broad-based. It's true success lies not merely in improving rankings, but in creating a predictable, transparent and locally efficient ecosystem where entrepreneurship becomes easier without diluting labour welfare or environmental responsibility..

3.2. MANUFACTURING SECTOR IN INDIA

Why in the News?

Union Budget 2026–27 proposes a **two-track manufacturing strategy** i.e. strengthening capabilities in **technology-intensive sectors** while sustaining **scale and employment in labour-intensive industries**.

Key Budget announcements

- **Strategic and Frontier Manufacturing Initiatives**
  - **Biopharma SHAKTI:** ₹10,000 crore to promote biologics and biosimilars.
  - **India Semiconductor Mission (ISM) 2.0:** Focus on fabrication, packaging, and equipment.

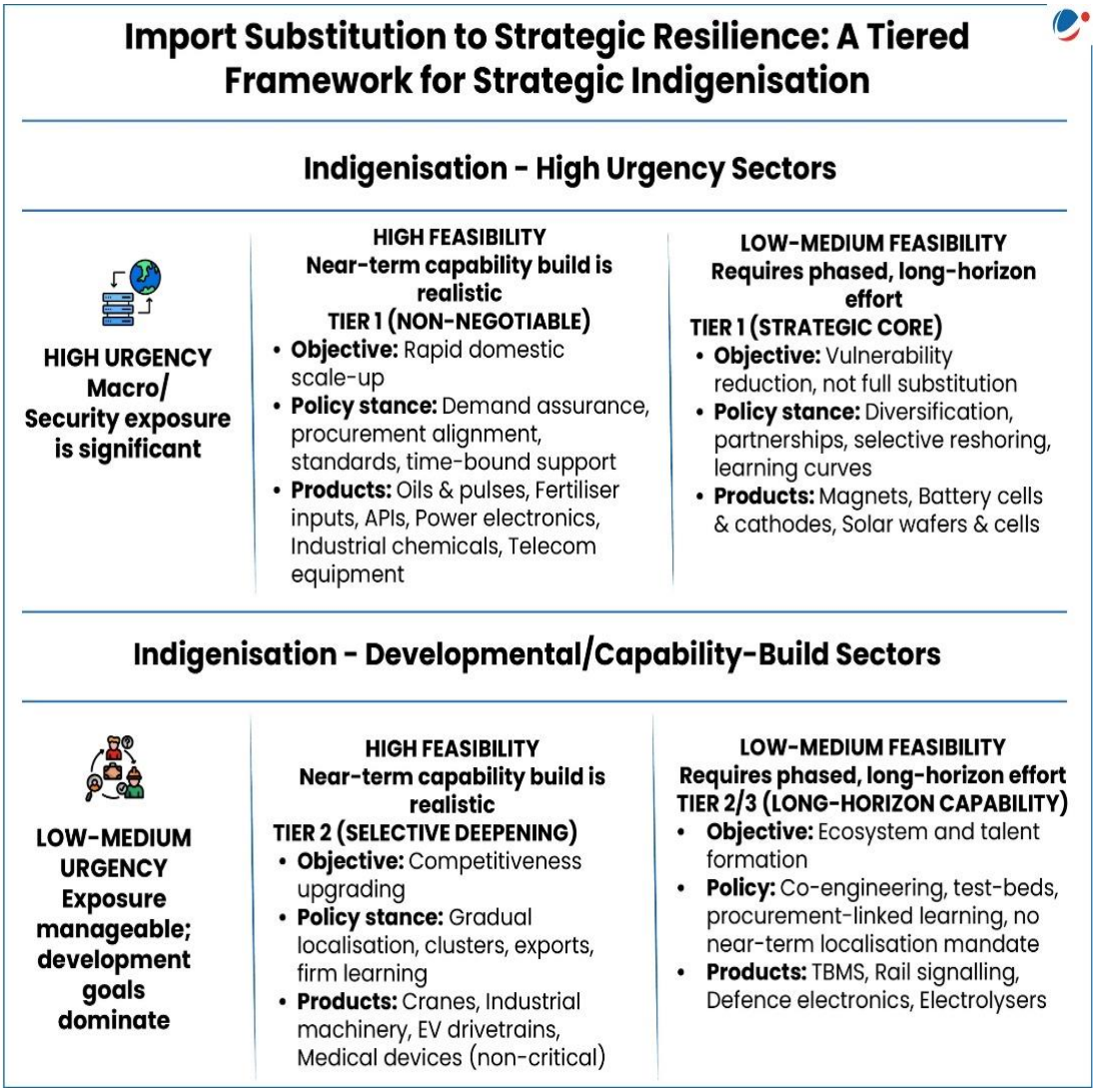
- **Electronics Components Manufacturing Scheme (ECMS):** Outlay increased **from ₹22,919 crore to ₹40,000 crore.**
- **Rare Earth Magnet Initiative:** Dedicated rare earth corridors in Odisha, Kerala, Andhra Pradesh and Tamil Nadu to promote local mining, processing and magnet manufacturing.
- **Chemical Parks:** Three plug-and-play parks to reduce import dependence.
- **Construction and Infrastructure Equipment (CIE) Scheme:** New scheme to strengthen domestic manufacturing of high-value and technologically-advanced CIE.

- **Support for Labour-Intensive and Legacy Industries**
  - **Textiles Sector:** Launch of an integrated programme covering fibre self-reliance, modernisation of clusters, Mega Textile Parks developed in challenge mode and the Mahatma Gandhi Gram Swaraj initiative to strengthen khadi and handlooms.
  - **Sports Goods:** A dedicated initiative to enhance manufacturing, innovation and R&D in sports equipment and material sciences.
  - **Legacy Clusters:** A dedicated scheme to revive 200 legacy industrial clusters through technology and infrastructure upgradation.
- **Measures for MSME Growth**
  - **Financial Support:** Creation of a dedicated ₹10,000 crore SME Growth Fund to support high-potential enterprises, and a ₹2,000 crore top-up for the Self-Reliant India Fund for micro-enterprises.
  - **Liquidity and Compliance:** Mandating the Trade Receivables Discounting System (TReDS) as the settlement platform for all CPSE purchases from MSMEs to ease liquidity stress.
- **Tax and Customs Reforms**
  - **Direct Tax Incentives:** 5-year exemption for non-residents supplying capital goods.
  - **Customs Duty Reductions:** Exemption from basic customs duty on specified parts used for manufacturing microwave ovens and aircraft components.
  - **Trade Facilitation:** Introduction of a deferred duty payment window for trusted manufacturers and Customs Integrated System (CIS) alongside a single digital window to streamline multi-agency cargo clearances.

Significance of the change in Manufacturing strategy

- **Two-Track Manufacturing Strategy**: The announcements reflect a dual approach- deepening capabilities in strategic, technology-intensive sectors (like semiconductors and biologics) while simultaneously scaling up employment and export diversification through labour-intensive sectors (like textiles and sports goods).
- **Shift to Strategic Indispensability**: The budget charts a deliberate path for India to transition from mere "strategic autonomy" to "strategic indispensability," ensuring that India becomes a critical and irreplaceable node in Global Value Chains (GVCs).
- **Disciplined swadeshi for strategic resilience**: Swadeshi must be a disciplined strategy, as not all import substitution is either feasible or desirable.
  - Protection without productivity-enhancing investment, capability upgrading, and export orientation creates fragility rather than strength.
- **Moving Up the "Smiling Curve"**: Several measures aim to move India up the “smiling curve” by shifting from low-value assembly to higher-value activities like design, R&D, and component manufacturing.

- **Smiling Curve** is a concept in global value chains showing that **higher value is generated in upstream activities (R&D, design) and downstream activities (branding, marketing)**, while **manufacturing and assembly in the middle create relatively lower value.**



- **Geo-economic Hedging and Supply Security**: By localising critical upstream inputs, India aims to reduce import dependence and strategic vulnerabilities.
  - For instance, the Rare Earth Permanent Magnets scheme seeks to build domestic capacity for EVs and renewables, while Biopharma SHAKTI helps hedge against potential US tariffs on branded drugs.
- **Broad-Based and Inclusive Growth**: Reviving 200 legacy industrial clusters aims to broaden growth beyond high-tech hubs by boosting productivity through shared infrastructure and knowledge spillovers
- **Nurturing MSME "Champions"**: The three-pronged support - equity, liquidity via TReDS and compliance assistance recognises MSMEs as a key growth engine and aims to scale them into globally competitive industry champions.
- **Infrastructural Reforms Driving Manufacturing Expansion:** Government-led infrastructure and logistics reforms are enabling manufacturing expansion through continued investments in connectivity, industrial infrastructure, and skilling support.

Conclusion

Amid a rapidly evolving global order, the stages of Aatmanirbharta are increasingly overlapping rather than sequential. This necessitates a simultaneous pursuit of **import substitution** (reducing import dependence), **resilience** (continuity and security of supply chains), **and indispensability** (global leadership and enabling leverage in negotiations). By treating manufacturing as an institutional stress test and aligning intent with execution, India can evolve from a recipient of stability to a source of global influence.

3.3. BIOPHARMA SHAKTI

Why in the News?

Union Budget 2026-27 announced '**Biopharma SHAKTI** (Strategy for Healthcare Advancement through Knowledge, Technology & Innovation)' to position India as a Global Biomanufacturing Hub.

About the Biopharma SHAKTI scheme

- **Objective:** Develop India into a global biopharmaceutical manufacturing hub by building the ecosystem for domestic production of biologics and biosimilars.
  - **Biologics** are a class of medicines that are made from natural and living sources like animal and plant cells, and microorganisms.
    - These include vaccines, blood and blood components, somatic cells, gene therapy, proteins etc.
  - **Biosimilars** are copies of biologics that are highly similar to biologics and have no clinically meaningful differences from the reference product.
- **Funding:** Outlay of ₹ 10,000 crores over the next 5 years.
- **Strategy:**
  - **Biopharma-focused network** with 3 new National Institutes of Pharmaceutical Education and Research (NIPER) and upgrading 7 existing ones.
  - **Creating a network of over 1000** accredited India Clinical Trials sites.
  - Strengthening the **Central Drugs Standard Control Organisation (CDSCO)** to meet global standards and approval timeframes through a dedicated scientific review cadre and specialists.

About the Biopharma and Bioeconomy

- **Definition: Biopharma or biopharmaceuticals** involves production, manufacturing, or extraction of therapies through biological organisms, such as human cells, fungi, or microbes.
  - **Examples:** Some of the most widely used modern medicines fall under biopharma includes vaccines, antibody treatments, gene therapies, cell implants, modern insulin, and recombinant protein drugs.
  - Biopharmaceuticals are pharmaceutical products that are produced using biotechnology techniques.
- Biopharma **is subsector** of the larger economic sector called as **Bioeconomy.**
  - **Bioeconomy** uses renewable resources like plants, animals, and microorganisms to produce food, energy, and industrial goods.
    - **India's bioeconomy grew from** USD 10 billion (2014) to USD 165.7 billion (2024), targeting USD 300 billion by 2030.
    - **It contributes** 4.25% to the national GDP.
    - India's bioeconomy is powered by **four key subsectors:** BioIndustrial (47%), BioPharma (35%), BioAgri (8%), and Bioresearch (9%).

Key Applications of Biotechnology in Medicine

Therapeutics: Produces recombinant insulin, erythropoietin for anemia, and monoclonal antibodies for cancer.

Vaccines: DNA-based vaccines (ZyCoV-D for COVID-19) and cures for Hepatitis B.

Personalized Medicine: Tailors treatment based on genetic profile for HIV, asthma, depression, etc.

Gene and Cell Therapy: Treats genetic disorders like cystic fibrosis and cancer; stem cell therapy for various conditions.

Molecular Diagnostics: PCR and ELISA techniques for rapid disease detection; over 1,000 gene tests identify genetic mutations.

Tissue Engineering: Lab-grown tissues and organs for transplantation; biocompatible implants.

Challenges of the biopharmaceutical industry in India

- **Complex Regulatory Hurdles**
  - **Multiple agencies:** Industry is governed by multiple agencies, including the CDSCO and various state drug control authorities with slow regulatory approval processes.
  - **International compliance:** Internationally, meeting the stringent standards of bodies like the US FDA and European Medicines Agency (EMA) is both resource-intensive and time-consuming.
- **High R&D Costs:** Developing a new drug in India can cost up to $800 million taking 8-10 years.
- **Supply Chain Vulnerabilities:** Industry is heavily dependent on imported Active Pharmaceutical Ingredients (APIs), primarily from China, making the industry vulnerable to geopolitical tensions or global crises.
- **Patent Conflicts**: Conflicts with multinational pharmaceutical companies over patent rights and patent "evergreening" are frequent, leading to costly and time-consuming legal battles.
  - **Evergreening** is a strategy used by pharmaceutical companies to extend the patent protection of brand-name drugs nearing expiration, often by making minor, non-essential modifications to the original product.
- **Price Controls:** Government-imposed price caps on essential medicines through the Drug Price Control Order (DPCO) based on the National List of Essential Medicines (NLEM) restrict profitability and impact new research.

Initiatives taken to boost biopharmaceuticals

- **The National Biopharma Mission (NBM) – Innovate in India (i3):** Co-funded by the World Bank and implemented by the Biotechnology Industry Research Assistance Council (BIRAC) **under the** Department of Biotechnology (DBT).
  - Focuses on the development of new vaccines, bio-therapeutics, diagnostics and medical devices
- **Production Linked Incentive (PLI) Scheme for pharmaceuticals:** It incentivises the domestic manufacturing of critical Active Pharmaceutical Ingredients (APIs), medical devices, etc.
- **Promotion of Bulk Drug Parks:** Supported by an outlay of ₹3,000 crore, three world-class bulk drug parks are being developed in Gujarat, Himachal Pradesh, and Andhra Pradesh.
- **Promotion of Research and Innovation in Pharma-MedTech (PRIP)** scheme: Launched in 2023 to fund early- and late-stage R&D in biosimilars etc.
- **BioE3 Policy:** Focuses on establishing biomanufacturing, Bio-AI hubs and Biofoundry to address climate, food, and health challenges.
- **Regulatory Reforms**: To attract capital and technology, the government permits **up to 100% FDI through the automatic route** for Greenfield pharmaceutical projects, and up to 74% for Brownfield projects.

Way forward

- **Targeting Niche Therapies:** Indian biopharma can pivot toward high-value, underserved markets such as rare and orphan drugs leveraging the country's growing AI and genomic capabilities.
- **R&D Incentives:** Similar to Brazil and Chile, India should can targeted incentives specifically for multinational enterprises establishing advanced Research and Development (R&D) strategic sectors like biotechnology.
- **Private sector participation**: The Anusandhan National Research Foundation (ANRF) and the Research, Development & Innovation (RDI) Fund can be utilised to crowd-in private R&D, provide strategic direction, and translate research into scalable industrial capacity.
- **Fast-Track Licensing:** May emulate Vietnam's "Decree 19," which establishes special investment procedures to streamline licensing for high-tech industries.
- **Shared Infrastructure:** India can establish and leverage Translational Research Centres (TRCs) as shared national assets.

3.4. MICRO, SMALL, AND MEDIUM ENTERPRISES (MSMES)

Why in the news?

Union Budget 2026-2027 announced various steps to create "Champion MSMEs" through a three-pronged approach to accelerate and sustain economic growth for Viksit Bharat.

More on the news

The three-pronged approach includes

- **Equity Support**
  - **SME Growth Fund**: Dedicated ₹10,000 crore specialized **SME Growth Fund** for incentivizing enterprises based on select criteria.
  - **Self-Reliant India Fund**: Proposed to top up the **Self-Reliant India Fund** set up in 2021, with ₹2,000 crore to micro enterprises.
- **Liquidity Support**
  - **TReDS**: Maximising the potential of the **TReDS (Trade Receivables Discounting System)** platform through **four specific measures:**
    - **Mandatory TReDS Use:** All CPSE purchases from MSMEs to be settled via TReDS.
    - **Credit Guarantee Support:** Introduce a credit guarantee support mechanism through **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)** to provide guarantees for invoice discounting on TReDS, reducing lender risk.
      - ✓ CGTMSE aims to provide credit guarantees for the credit facilities extended to MSEs by the Member Lending Institutions (MLIs), without collateral security or third-party guarantees.
    - **GeM–TReDS Integration:** Linking GeM with TReDS to share government purchase data with financiers, enabling faster and cheaper MSME credit.
    - **Secondary Market Development:** Introduction of TReDS receivables as asset-backed securities to boost liquidity.
- **Professional Support**
  - **Corporate Mitras**: **Accredited para-professionals** who will help MSMEs meet compliance requirements at affordable costs.
    - **Professional institutions:** Like ICAI, ICSI, and ICMAI will be facilitated to design short-term, modular courses to train corporate Mitras especially in Tier-II and Tier-III towns.

Trade Receivables Discounting System (TReDS)

- **Genesis:** In 2018 by Reserve Bank of India.
- **TReDS is an electronic platform** for facilitating the financing / discounting of trade receivables of Micro, Small and Medium Enterprises (MSMEs) through multiple financiers.
  - These receivables can be due from corporates and other buyers, including Government Departments and Public Sector Undertakings (PSUs).
- **Participants:** Sellers, buyers and financiers are the participants on a TReDS platform.
  - **Sellers:** Only MSMEs can participate as sellers in TReDS.
  - **Buyers:** Corporates, Government Departments, PSUs and any other entity.
  - **Financier in TReDS:** Banks, NBFC - Factors and institutions as permitted by the RBI.

What are MSMEs?

- **Criteria:** The Micro, Small and Medium Enterprises is based on the Investment in Plant, Machinery or Equipment values (excluding land and building) and Annual Turnover.
- The classification of Micro, Small and Medium Enterprises is defined under the Micro Small and Medium Enterprise Development Act 2006 (amendment 2020).
  - **Union Budget 2025-26** has increased the investment and turnover limits for classification by 2.5 times and 2 times, respectively, effective from 01.04.2025.

Enterprises	Investment		Turnover	
	Old	Revised	Old	Revised
Micro	1	2.5	5	10
Small	10	25	50	100
Medium	50	125	250	500

Significance of MSMEs

- **Employment Generation:** MSMEs are the second-largest employer in India, trailing only behind agriculture.
  - There are over 7.47 crore MSME enterprises in the country, employing more than 32.82 crore individuals (Economic Survey 2025-26).
- **Instrument of inclusive growth**: These industries require low capital costs, which heavily contributes to alleviating poverty in rural areas and among the working poor, women, youth, and vulnerable communities.
- **Economic Output:** The sector is a massive driver of the national economy, accounting for **31.1% of India's GDP** (Economic Survey 2025-26).
- **Backbone of industrial sector**: As per the Economic Survey 2025-26, MSMEs represent approximately **35.4% of the nation's total manufacturing.**
- **Driving Exports:** MSMEs play a pivotal role in meeting both domestic and global market demands, contributing to **48.58% of India's total exports.**
- **Rural Development:** Distribution of MSMEs is marginally in favour of rural areas, which account for 51% of the total.

Issues faced by MSMEs

- **Access to financial sources:** It is identified as the biggest obstacle by 21.5% of MSMEs in India. (World Bank)
  - Banks are often hesitant to lend due to high risk perception, lack of collateral, high transaction costs, and difficulties in verifying the creditworthiness of small applicants.
- **"Missing Middle" Phenomenon:** Stringent business regulations and compliance costs disproportionately affect smaller firms, leading to a tendency to remain small and informal to stay "under the regulatory radar".
  - As of November 2023, 97.92% of registered MSMEs were micro-enterprises, while only 0.01% reached "medium" status.

- **Low Innovation Rates**: Only 5.8% of Indian MSMEs introduce new products or services, compared to 24.9% in South Asia and 36% globally.
- **Infrastructure Bottlenecks:** Poor roads, **unreliable power supply, and inadequate digital critical infrastructure** hinder business operations.
- **Market Access:** Although MSMEs account for nearly 45% of total exports, only about 1.1% of registered MSMEs on the Udyam portal are actually engaged in export activities.

Various initiatives by India for promotion of MSMEs

- **The Udyam Registration Portal:** It was launched in 2020 to facilitate ease of registration for MSMEs and access to all the Schemes and benefits. The registration process is free of cost, paperless and digital.
- **Udyam Assist Platform (UAP) Portal (2023):** For bringing Informal Micro Enterprises (IMEs) into the formal ambit, and for availing Priority Sector Lending (PSL) benefits.
  - **More than 7.30 crore enterprises** have registered on Udyam Registration Portal and Udyam Assist Platform till December 2025.
- **Prime Minister's Employment Generation Programme (PMEGP):** Supports micro-entrepreneurs by offering margin money subsidies on bank loans.
- **PM VISHWAKARMA (**2023): To provide end-to-end support to artisans and craftspeople of 18 trades who work with their hands and tools.
- **Raising and Accelerating MSME Performance (RAMP) Scheme:** World Bank-supported Central Sector Scheme aimed at improving access of MSMEs to market, finance and technology upgradation.
- **Public Procurement Policy for Micro and Small Enterprises:** It mandates 25% annual procurement from MSEs by Central Ministries/Departments/Central Public Sector Enterprises (CPSEs).
- **MSME Champion Scheme:** To identify and nurture select enterprises by upgrading their processes, minimizing inefficiencies, improving competitiveness, and supporting their growth to achieve excellence in both domestic and international markets.
  - The Scheme has three components, namely, 'MSME-Sustainable (ZED)', 'MSME Competitive (LEAN)' and 'MSME-Innovative (Incubation, Design & IPR)'.

Way forward

A holistic strategy is needed to strengthen MSMEs, expanding credit through the Small Industries Development Bank of India, integrating them into global value chains, and building skilled human capital. Alongside, digital platforms, shared research infrastructure, and better market access can drive innovation, efficiency, and global competitiveness

3.5. STARTUP RECOGNITION FRAMEWORK

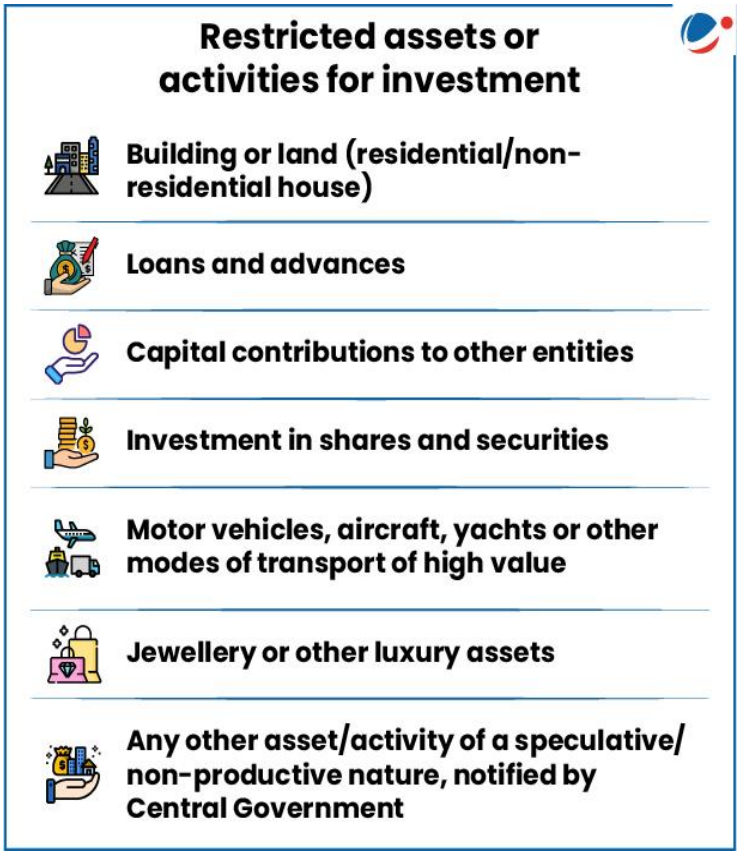
Why in the News?

Government revised the **Startup Recognition Framework** under the **Startup India Action Plan** to make it more inclusive for scaling and innovation-led businesses.

Key Features of India's New Startup Recognition Framework

- **Eligibility criteria for Startup recognition**:
  - **Incorporated or registered in India**: As a-
    - **Private limited company** (under Companies Act, 2013);
    - **Partnership firm** (under Partnership Act, 1932);
    - **Limited liability partnership** (under Limited Liability Partnership Act, 2008);
    - **Multi-State Cooperative Society (newly included)** under the Multi-State Cooperative Societies Act, 2002; or

  - > **Cooperative Society (newly included)** registered under any State/UT Cooperative Societies Act.
  - **Restrictions:** Should not be formed by splitting up or reconstruction of an existing business.
  - **Age limit:** 10 years
  - **Turnover limit:** ₹200 crore for any financial year **(doubled from earlier ₹100 crore)**
  - **Nature of work**: Working towards products/processes/services, or is a scalable business model with a high potential of **employment generation or wealth creation**
- **Eligibility criteria for Deep Tech Startup (new sub-category)**: An eligible startup with following distinct criteria-
  - **Nature of work:**
    - > **Development of solutions** based on new or evolving scientific/engineering knowledge, including multidisciplinary area;
    - > **High percentage of expenditure on** R&D activities relative to revenue/funding
    - > Owns/in process of creating **significant novel intellectual property (IP)** and commercializing it;
    - > Facing **extended development timelines**, **long gestation periods**, **high capital** and **infrastructure requirements**, and carrying large **technical or scientific uncertainty.**
  - **Age limit:** 20 years
  - **Turnover limit:** ₹300 crore
- **Conditions for investment:**
  - **Funds to be deployed primarily towards its core business activities**, innovation, research, scaling, or operational requirements.
  - **Not allowed to invest in certain assets or activities**, other than when it is integral to its core business operations (See infographic)
- **Authority responsible for recognition:** Department for Promotion of Industry and Internal Trade (DPIIT)



Conclusion

The revised Startup Recognition Framework broadens eligibility and introduces targeted provisions for deep-tech enterprises, reflecting a shift towards supporting innovation-driven and high-impact ventures.

Related News: Startup India FoF 2.0

- Recently, **Startup India Fund of Funds 2.0** (Startup India FoF 2.0) has been launched with a total corpus of **Rs. 10,000 crore.**
- It aims to **mobilize venture** capital for India's Startup Ecosystem.
- It will have a targeted, segmented funding approach to:
  - Support **Deep tech and tech-driven innovative manufacturing**
  - Empower **early-growth stage founders**
  - Address **high-risk capital gaps**
  - Strengthen India's **domestic venture capital base**

3.6. ORANGE ECONOMY

Why in the news?

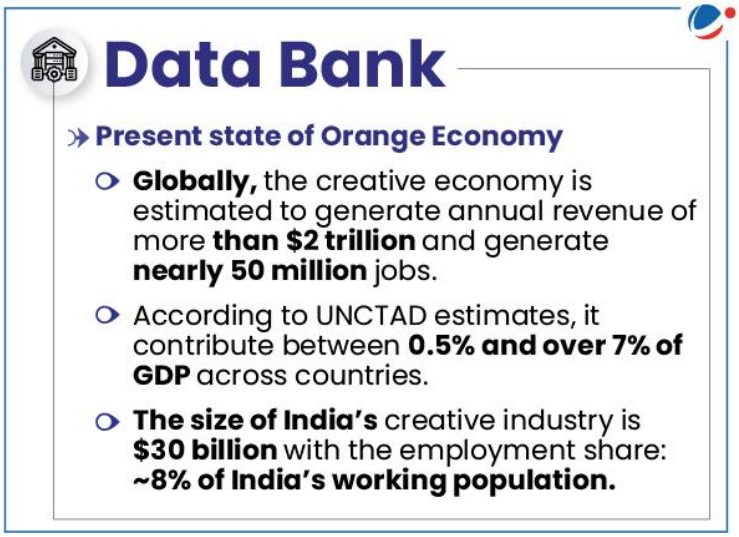
The Union Finance Minister announces plans to boost the **Orange Economy (Creative Economy)** in the Union Budget 2026-27, recognizing its role in employment generation, innovation, exports, and soft power.

Various announcements in the budget

- **AVGC Content Creator Labs:** The government proposed supporting the Indian Institute of Creative Technologies (IICT), Mumbai, to **set up AVGC content creator labs in 15,000 secondary schools and 500 colleges.**
- **Growth projection:** The budget stated that India's Animation, Visual Effects, Gaming, and Comics (AVGC) sector is projected to require 2 million professionals by 2030.
- **New National Institute of Design:** To address the shortage of Indian designers, the Budget proposed **establishing a new National Institute of Design in the eastern region of India**.
    - India currently has seven NIDs, all recognized as institutes of national importance.

What is the Orange economy?

- **Origin:** The term was coined by former Colombian President Iván Duque Márquez and former culture minister Felipe Buitrago in their 2013 book, **"The Orange Economy: An Infinite Opportunity".**
    - They chose the color orange because it has historically and religiously been associated with **culture, creativity, and identity.**
- **Definition:** The "Orange Economy" (creative economy) is defined as a group of linked activities through which ideas are transformed into cultural goods and services, with their value determined primarily by intellectual property.
- **Concept:** Orange Economy centers on industries that use creativity and intellectual capital as their primary inputs. It encompasses a wide array of activities including:
    - **Animation, Visual Effects, Gaming, and Comics (AVGC)**
    - **Audiovisual media,** filmmaking, television, and radio
    - **Music, performing arts**, and visual arts
    - **Architecture, design, fashion**, and crafts
    - **Software, research and development**, and digital expressions of communication, etc.



Importance of the Orange economy for India

- **Export Potential:** It is a significant driver of foreign exchange; creative exports surged by 20% in 2023-24 to earn more than $11 billion.
- **Job Creation**: The creative sector is fundamentally talent-driven. It currently supports over 10 million livelihoods, both directly and indirectly.

- **Leveraging Cultural Heritage:** It is a mechanism to turn the country's rich cultural heritage and diversity into tangible economic opportunity.
  - Five days of the Jaipur Literature Festival contribute over ₹100 crore to the local economy.
- **Building "Smart Power":** Nearly 25% of the total viewership for Indian OTT content originates from overseas, successfully building emotional and cultural connections across continents.
- **Youth and Women-Driven:** Globally, 23% of its workforce is between 15 and 29 years old (more than any other sector), and women hold 45% of creative occupations.
- **Cost Competitiveness** India offers a 40 to 60 % cost advantage in animation and VFX services, supported by a large, skilled workforce.
  - This comparative edge has transformed India from an outsourcing destination into a sought-after hub for high-value creative collaboration, such as productions like Avatar and Game of Thrones.

Impediments in growth of the Orange economy

- **Breach of Intellectual Property (IP):** Protecting intellectual property in a digital environment where content is easily copied and redistributed is a major obstacle resulting in revenue losses for the film and television industries.
- **Market Concentration and Monopoly Power** The digital creative economy is highly concentrated, with a few large tech companies and "gatekeeper" platforms dominating areas like publishing, streaming, and social media.
  - **For example,** in the publishing industry, an estimated 90% of revenues are absorbed by publishers, distributors, and retailers, leaving only 10% for the actual creators.
- Artificial intelligence: It raises concerns regarding the unauthorized appropriation of artists' work without compensation.
- **Labor Conditions:** Creative industry workers frequently face high job insecurity. Work is often project-based and self-employment that strips workers of standard social security protections, like paid sick or maternity leave.
- **Systemic inequalities:** Women remain heavily underrepresented in leadership and decision-making roles (such as film directing), and creative employment is often heavily concentrated in urban centres, leaving rural talent behind.

Initiatives taken to promote Orange/creative economy

- **Global Initiatives**
  - **International Year of Creative Economy: UN** General Assembly declared 2021 as the **"International Year of Creative Economy for Sustainable Development"**.
  - **Bali Agenda on Creative Economy (2018):** Established at the World Conferences on Creative Economy.
  - **Bridgetown Covenant**: By the UNCTAD has explicitly mandated placing culture and creativity at the center of trade, technological innovation, and economic diversification.
- **Indian Initiatives**
  - **Indian Institute of Creative Technologies (IICT):** It was unveiled in Mumbai, Maharashtra, in 2024 as the National Centre of Excellence for AVGC-XR.
  - **Film Facilitation and Anti-Piracy:** The **Cinematograph (Amendment) Act, 2023** introduced stringent anti-piracy provisions, including jail time and heavy fines, to protect digital IP.
  - **India Cine Hub (ICH):** As a single-window digital platform to streamline film shooting permissions and centralize production incentives.
  - **National Broadcasting Policy**: Developed to create a modern, inclusive, and growth-oriented framework for India's broadcasting ecosystem. It will focus on promoting **content diversity, fair competition, and investment**.
  - **World Audio Visual and Entertainment Summit (WAVES)**: The platform serves as a convergence point for policymakers, industry leaders, creators, and investors across the film, television, OTT, animation, VFX, gaming, and XR sectors.

Conclusion

Harnessing the creative potential of the Orange Economy can boost jobs and growth in India. Strengthening IP protection, digital infrastructure, skill development, cultural exports, and startup support can unlock its full economic and soft power potential.

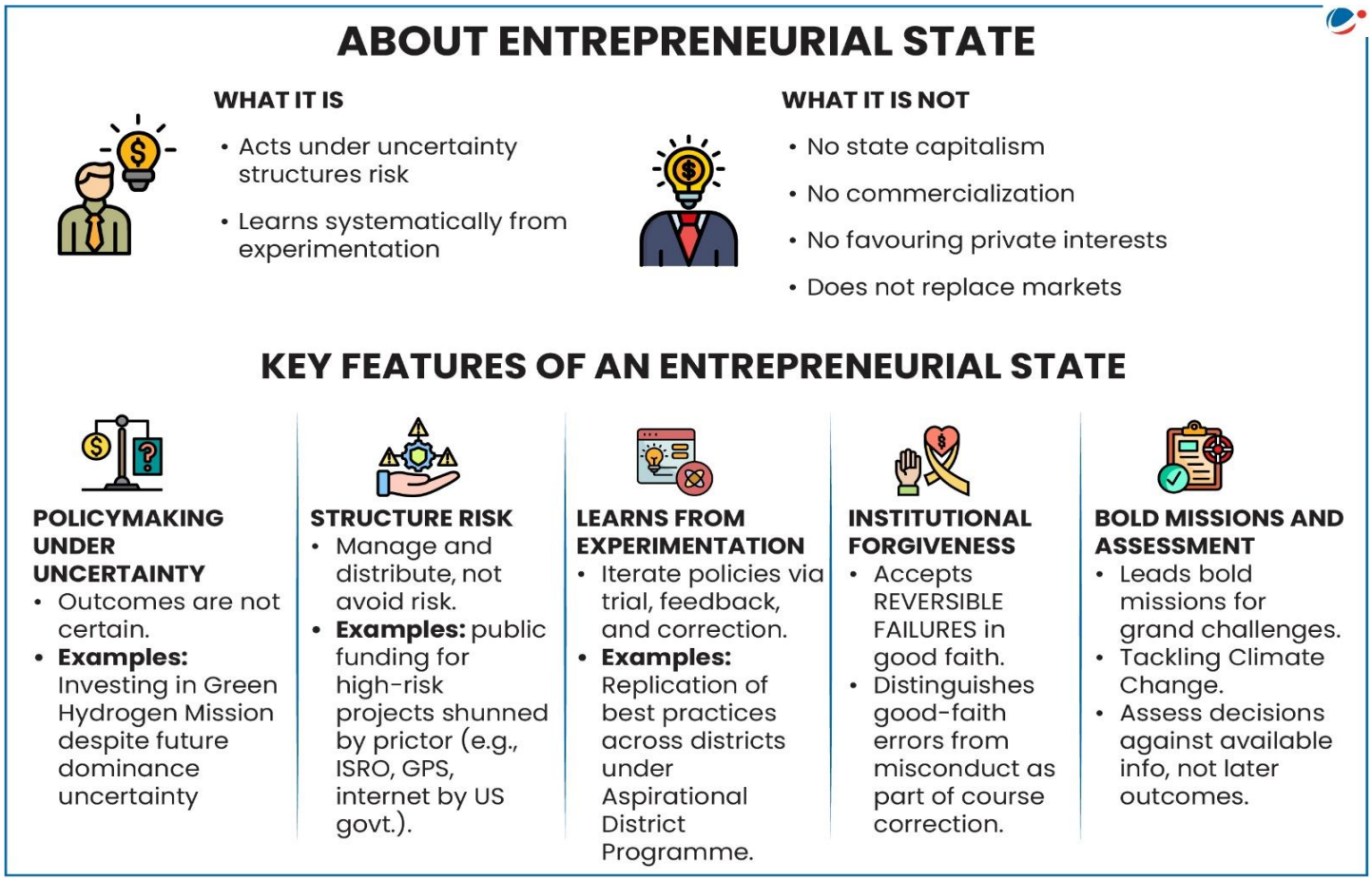
3.7. ENTREPRENEURIAL STATE

Why in the news?

Economic Survey 2025–26 recently called for India's transition towards an 'Entrepreneurial State" a term borrowed from economist **Mariana Mazzucato.**

More on news

- Survey places entrepreneurial state central to transition towards strategic indispensability.
  - **Strategic indispensability**: To build capabilities that others depend upon, making India a source of stability and value rather than only a participant in global markets.



Barriers to an Entrepreneurial State

- **Action is Punished, Inaction is Safe**: Officials are more likely to get in trouble for trying a new visible solution than for following an outdated procedure.
- **Irreversibility Creep:** Temporary measures become permanent, deterring experimentation. (Eg. subsidies/loan waivers harden into commitments).

- **Retrospective Scrutiny:** Good-faith decisions are later examined through audits, vigilance, and judicial review, often ignoring the uncertainty of the times.
    - Eg. **In the 2G spectrum case**, where licence cancellations amid retrospective scrutiny led to policy paralysis, even though the accused were later acquitted.
- **Co-ordination challenge:** Populist pressures by politicians and bureaucratic risk-aversion can hinder experimentation and bold policy action.
- **Unintended consequences of RTI act:** Excessive disclosure of internal deliberations chills candid discussion and risk-taking, leading to cautious, defensive decision-making.

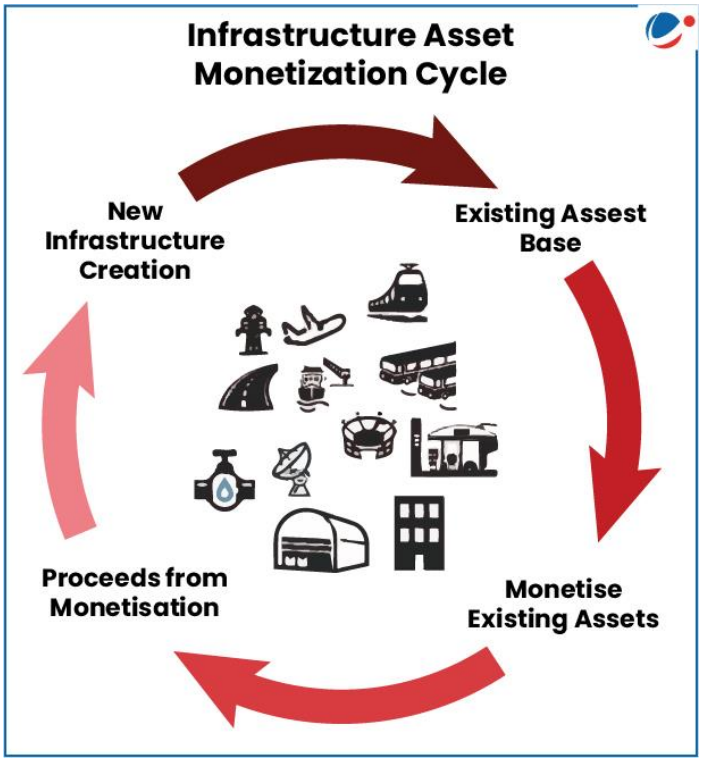
Conclusion

Transforming governance from a culture of rigid procedural compliance to one of dynamic problem-solving requires embracing global best practices in accountability and innovation. By adopting Japan's model of "fair accountability" which prioritizes well-reasoned decisions over flawlessly error-free outcomes and mirroring South Korea's use of bounded safe spaces to judge experimentation based on available information rather than hindsight, administrations can empower officials to take calculated risks.

3.8. ASSET MONETISATION

Why in the News?

Recently, Union Minister for Finance has launched the **second phase of asset monetisation pipeline** of Central ministries and public sector entities - '**National Monetisation Pipeline 2.0 (NMP 2.0)**'.



More on the News

- NMP 1.0, **introduced in 2021**, is meant to serve as an essential roadmap for the **Asset monetisation of various brownfield infrastructure assets**.
    - **Brownfield infrastructure** involve upgrading or redeveloping existing infrastructure, providing faster market entry at a lower initial cost but with legacy limitations.
- The estimated aggregate asset monetisation pipeline target was of INR 6 Lakh Crore over the **four-year period of FY22 to FY25.** NMP 1.0 **achieved 89% of its target.**
- NMP 1.0 **covered 13 sectors**. Highways, railways, power, petroleum and natural gas pipelines, and telecom accounted for 72% of the total target.
    - Remaining sectors included warehousing, coal mining, aviation, urban real estate, ports and stadiums.

About NMP 2.0

- Developed by **NITI Aayog,** the second phase of the pipeline is based on the mandate for '**Asset Monetisation Plan 2025-30'** as announced in **Union Budget 2025-26**.
- **Objective**: To provide **medium-term roadmap** for public asset owners, along with **visibility on potential assets to private sector.**

- **PPPs are an important mode of monetisation** under NMP 2.0 which helps in reducing public debt through **capital recycling** and **attracting private sector investment**.
- **Key Highlights of NMP 2.0**
  - **Aggregate Monetisation Potential:** It targets to achieve Rs. 16.72 Lakh Crore (including private sector investment of 5.8 lakh crore rupees) from assets belonging to **12 sectors**, during **five years (FY26 to FY30).**
    - **12 Sectors**: Highways (including MMLPs, ropeways) (26%), Power (17%), Railways (16%), Ports (16%), Coal (13%), Petroleum and natural gas, Civil aviation, Warehousing and storage, Urban infrastructure, Mines, Telecom, and Tourism.
  - **Proceeds under NMP 2.0:** Largest portion is accrued to **Consolidated Fund of India**, followed by direct investment (private), PSU or Port Authority allocation and State Consolidated Fund.
  - **Guiding Principles for Considering Assets for Monetisation:**
    - **Core Vs non-core assets**: In line with NMP 1.0, NMP 2.0 focuses on **core assets** (central to service objectives of Government) **only.**
      - ✓ Monetisation of **non-core assets** (land, building, pure play real estate assets), has been included where project **envisages further development on these assets.**
    - **Investment by private sector in PPP projects:** Models like **Design-Build-Finance-Operate-Transfer (DBFOT)** has been considered.

About Asset Monetisation

- It is an **alternative mode of financing** which generates revenue from under-utilised public assets via private participation, without increasing fiscal deficit.
  - The idea of Asset monetisation was first suggested by **Vijay Kelkar Committee in 2012**. It is commonly referred to as **asset or capital recycling.**
  - **Additional capital** that is unlocked through asset monetisation is **reinvested in creation of more assets**.
- **Process of Asset Monetisation**:
  - It involves the **license/lease of a government-owned asset to a private sector entity** for a specific period.
  - The **transfer of rights** in exchange for payments is governed by a **concession agreement** that facilitates balanced risk-sharing between the public authority and the private party.
    - **Concession Agreement** is a contract that gives a company the right to operate specific business within a government's jurisdiction or on another firm's property, subject to particular terms.
- **Significance of Asset Monetization:** Infrastructure financing by monetization of brownfield assets, unleashing '**creative destruction**' for improved efficiency and optimization of public assets, etc.
- **Other steps taken for Asset Monetization: National Land Monetization Corporation (NLMC),** a 100% government-owned company, to carry out monetization of non-core assets of CPSEs, Asset Monetization Dashboard, etc.

Asset Monetization model use two different approaches

- **Direct Contractual models: Brownfield Public-private Partnership (PPP) Concessions**
  - **Operate-Maintain-Transfer (OMT):** Private entity maintains and operates an asset for a defined amount of time (used in road maintenance).
  - **Toll-Operate-Transfer (TOT):** Publicly funded operational projects, such as highways, are monetised for two years and put out to bid. **Investors make a one-time lump-sum investment** in exchange for a 15- to 30-year right to earn an appropriation fee.
  - **Operations-Maintenance-Development (OMD)**: **Private sector raises money** based on strength of existing assets and/or gets project financing in addition to equity contributions.
  - **Rehabilitate-Operate-Maintain-Transfer (ROMT):** An existing asset should ideally be upgraded or augmented before operations and revenue collection can be resumed.
- **Structure Financing Models**

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- **Infrastructure Investment Trusts (InvITs):** InvITs use funds gathered from various investors to make direct investments in infrastructure. Hence, they are comparable to mutual funds.
- **Real estate Investment Trusts (REITs):** Firm owns, manages, or finances real estate and capital is raised from investors, which is then invested.

Challenges associated with Asset Monetisation

- **Asset Valuation:** Assessing the fair market worth of various assets is intricate, which may result in undervaluation or overvaluation.
- **Asymmetrical performance:** There has been a **lack of uniform performance** throughout the various sectors with severe under performance from Ministry of Railways that met only 30% of its revised goals.
- **Operational Constraints:** E.g., In railways sector, train operations are still carried out by Indian Railways, restricting the operational autonomy of private players and affect the feasibility of monetising passenger train services.
- **Dispute Resolution:** Disputes between the asset-owning authority and private player can **delay projects and increase operational risks, discouraging private participation**, and weakens investor confidence in long-term infrastructure contracts.
- **Public Perception:** Asset monetisation is sometimes misconstrued as privatisation, leading to resistance from stakeholders and political opposition.

Way Forward

- **Transparent Valuation and Bidding:** Develop and adopt standardised valuation methodologies to ensure transparent bidding processes to and build investor confidence.
- **Enhance Centre–State Coordination:** States possess significant untapped potential for asset monetisation. Structured support from the Union government, such as risk guarantees or bundling of central and state assets, can help reassure investors and improve the attractiveness of monetisation projects.
- **Enhance Policy and Regulatory Clarity:** Enhance clarity and stability in regulatory frameworks, particularly regarding dispute resolution, operational regimes, etc. to reduce risks and attract private sector.
- **Funding:** Financial institutions such as India Infrastructure Finance Company Limited and National Bank for Agriculture and Rural Development can play a proactive role in developing structured bonds and innovative infrastructure financing instruments to broaden the investor base.
- **Stakeholder Collaboration:** Promoting involvement from the government, private sector, and civil society to support inclusive decision-making.
- **Continuous Evaluation:** Regularly assessing the impact of monetization measures and adjusting approaches based on feedback and performance metrics to enhance efficiency.

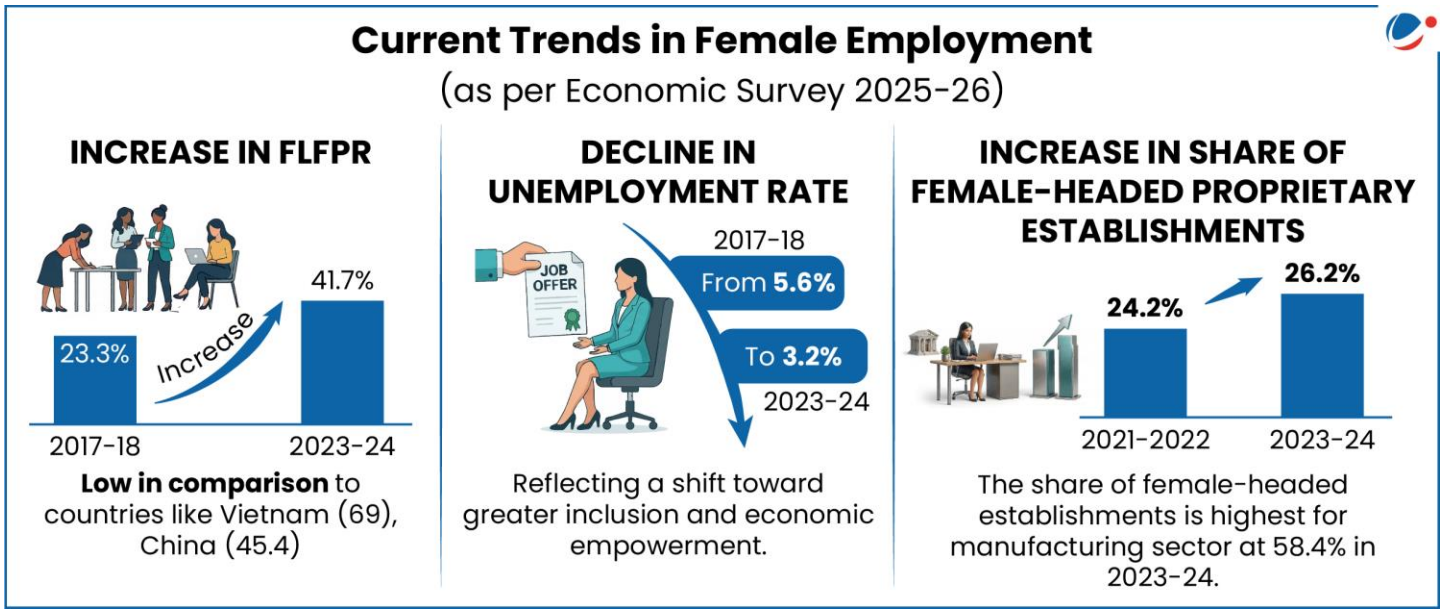
Conclusion

By deepening Centre–State collaboration, strengthening institutional capacity, and ensuring that monetisation proceeds are efficiently recycled into new infrastructure creation, India can transform idle public assets into engines of growth. In this sense, NMP 2.0 has the potential to move beyond a fiscal tool and **emerge as a structural reform** that supports long-term infrastructure expansion and the broader vision of a resilient and competitive economy.

3.9. FEMALE LABOUR FORCE PARTICIPATION IN INDIA

Why in the News?

As per **Economic Survey 2025-26,** increasing **Female Labour Force Participation Rate (FLFPR)** participation to **~55% by the 2050** could be critical for maintaining a high annual GDP growth trajectory.



As per WEF's **Global Gender Gap Report 2025**, **India slipped 2 places** (131 in2025 from 129 in 2024) and ranked in **bottom 5** of Economic Participation and Opportunity subindex, highlighting significance of enhancing FLFPR in India.

Reasons for Low Employment among Women

- **Claudia Goldin's U-curve (Nobel Prize 2023):** It demonstrates that women's participation in the labour market is influenced by Social Norms/Legislative gaps, Parenthood Effect and Technological Innovations.
  - It says that the **FLFPR drops during early industrialisation** (women leave agriculture but lack factory-ready skills/social permission) and **rises again only when education levels cross a threshold** and service-sector jobs expand.
- **Limited access to STEM careers**: In India women constitute 43% of STEM graduates, but only an estimated 27% participate in the STEM (Science, Technology, Engineering, and Mathematics) workforce.
- **Growth in rural jobs**: Rural FLFPR is considered the primary driving force behind overall increase in women's workforce participation
- **Mobility-related barriers:** According to a World Bank study (2021), 31% of women cited commuting as a barrier to working.
  - **13% and 19%** women reported childcare responsibilities and domestic duties respectively as barriers to commuting for work.
- **Inflexible work arrangements:** Women's caregiving role demands flexible work arrangements.
  - E.g., 41% of females aged 15-59 years participated in caregiving for their household members (21.4% for males).
- **Unpaid labour:** Women spent 363 min/day on unpaid work vs. 123 min/day for men.
- **Low share in gig economy:** As per estimates, women currently make up 28% of platform economy workers and face barriers like safety risks; lack of maternity leave and welfare benefit; Gender segmentation etc.
- **Other issues:** Lack of affordable housing; Workplace Discrimination; Sexual Harassment; Lack of Family Support; etc.

Measures taken to Enhance Women Employment

- **Provisions under the Labour Codes:**
  - Proportionate representation of women in **Grievance Redressal Committee**.

- Up to **26 weeks of paid maternity leave,** along with 12 weeks for adoptive and commissioning mothers.
- **Prohibiting gender-based discrimination** in wages and conditions of employment.
- **Promoting creche facilities** for children below six.
- Adequate safeguards by establishments before **engaging women in any hazardous or dangerous processes.**

- **Safety at Workplace:** Initiatives like **"She-Box"** by **Ministry of Women and Child Development** encompassing various provisions of **'Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013'.**
- **SHE-Mart initiative:** Launched in **Union Budget 2026-27,** to provide better markets for products made by **self-help groups and rural women.**
- **Expanding employment opportunities for women:**
  - **Removal of Prohibitions** on women's employment in designated 'hazardous' industries by 17 states/UTs.
  - **Permitting night-time work for women** in factories by around 22 states/UTs, as well as in commercial establishments by 33 states/UTs.

Way Forward: Recommended Measures to Enhance Female LFPR

- **Extending safety infrastructure and providing affordable intermediate transport:**
  - **Boosting women police visibility** in high-traffic zones during off-peak hours. E.g., Kochi's Women Police Control Room vans and Hyderabad's SHE Teams.
  - **Gender-responsive walking/cycling infrastructure** with lighting and safe crossings. E.g., Chennai's inclusive street design manual.
- **Women centric industrial clusters and manufacturing:** E.g., Sakhi Niwas scheme of the Ministry of Women and Child Development creates a supportive ecosystem for women navigating work and mobility.
- **Affordable housing:** E.g., Tamil Nadu's Working Women's Hostels Corporation ('Thozhi Hostels').
- **Easing unpaid care burden**:
  - **Bridge re-entry barriers**: E.g., initiatives such as 'Back to Work' and 'Returnship programmes' for women re-entering workforce.
  - **Promote flexible work, hybrid models, and gender-responsive standards**: E.g., newly enacted Labour Codes allow women workers to work from after availing themselves of the maternity benefit.
- **Public-private partnership**: E.g., Telangana's WE-Hub connects women with start-up ecosystems and investors.
- **Other measures:** Encouraging women's participation in STEM disciplines; expanding the network of Anganwadi centres; integrating community crèches; incentivising employer-linked childcare; Aligning training programmes with industry demand; etc.

Conclusion

Women's labour participation is central to India's long-term economic transformation and achieving **SDG 5 (gender equality and empower all women and girls).** Higher female employment supports fairer labour market outcomes, strengthens household welfare and contributes to building a more inclusive, resilient, and productive economy on the path to Viksit Bharat by 2047.

3.10. LAKHPATI DIDI

Why in the News?

The government has achieved the milestone of 3 crore Lakhpati Didis a year ahead of the March 2027 target and has now set a new goal of 6 crore by March 2029.

About Lakhpati Didi Initiative

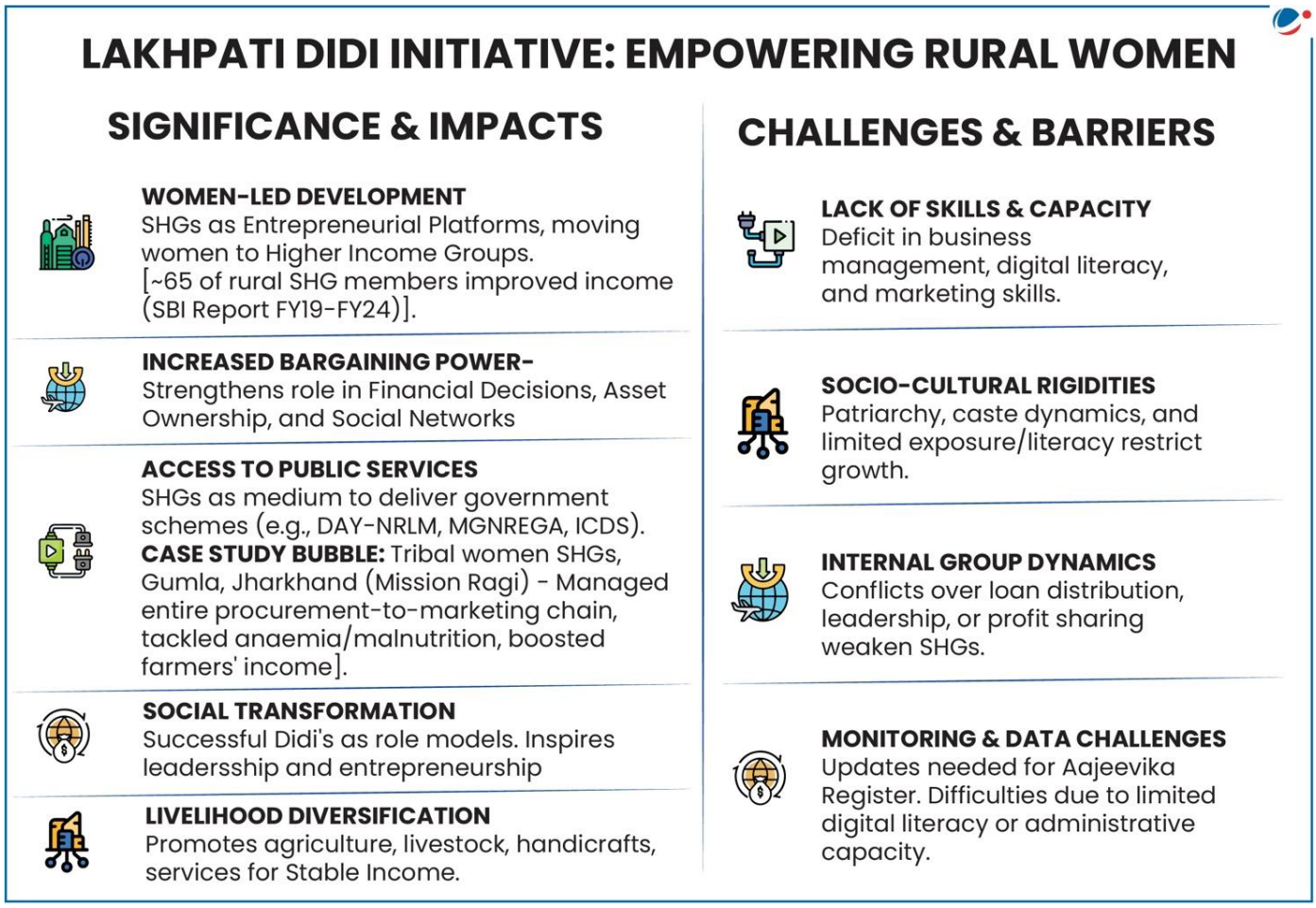
- **Objective**: Enable women associated with SHGs to earn a sustainable annual household income above ₹1 lakh.
- **Ministry:** Ministry of Rural Development
- **Launched:** in 2023 under **the Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM).**
- A Lakhpati Didi is a **woman member** of a **SHG** who **earns more than ₹1,00,000** annual household income.
    - The income should be **sustainable** with an average monthly income **of at least ₹10,000, maintained for four agricultural seasons or business cycles**.
- **Criteria for identifying lakhpati didi**
    - A SHG member who has completed a minimum of two years and has availed of the Community Investment Fund (CIF).
    - A beneficiary of livelihood intervention through the mission and practising at least two livelihood activities.

Know the term

- **Self Help Groups (SHGs)**
    - Voluntary collectives (10-20 members from a similar socio-economic background) leveraging pooled savings for internal credit and socio-economic upliftment.

Financial Assistance under the Lakhpati Didi Initiative

Fund/Programme	Purpose
Revolving Fund (RF)	• Catalyse internal lending, meet immediate credit needs • **Amount/Support:** Rs. 20,000 to Rs. 30,000 per eligible SHG
Community Investment Fund (CIF)	• Strengthen creditworthiness, improve financial management • **Amount/Support:** Up to ₹2.5 lakh per SHG
Capitalization Support	• Collateral-free loans, interest subvention, overdraft facility • **Amount/Support:** Up to ₹20 lakh per SHG ○ Interest subvention on loans up to ₹3 lakh at 7% interest, and ₹5,000 overdraft facility for SHG members with Jan-Dhan accounts.
Women Enterprise Acceleration Fund	• Credit guarantee, collateral support, incentives • **Amount/Support:** Up to ₹5 lakh (individual), up to ₹2 crore (collective), up to ₹25 lakh (incentives)
Community Enterprise Fund (CEF)	• Support individual/group enterprises • **Programmes:** SVEP, OSF, clusters, incubators
Viability Gap Fund (VGF)	Cover operational expenses until sustainability
Bank Linkage	Connect SHG members with banking system
Start-Up Village Entrepreneurship Programme (SVEP)	Promote rural enterprises of SHG women, training, financial support
One Stop Facility (OSF)	Block-level incubation centres, business development services
Micro Enterprise Development (MED)	Support non-farm enterprises, training, handholding, financial support
Incubation and Cluster Promotion	Support women-led enterprises, enhance productivity, market linkages
Aajeevika Grameen Express Yojana (AGEY)	Subsidised loans for rural transport services



Way Ahead

- **Strengthen Access to Finance**: Expansion of **Business Correspondent (BC) Sakhis** providing doorstep banking has improved credit access for SHGs and reduced loan **NPAs to around 1.76%. (Rural Development Ministry).**
- **Strengthen Institutional Support**: Improve coordination between government departments, financial institutions, NGOs, and private sector **partners for better governance.**
- **Technological advancement**: Promote the use of technology **in SHG operations by enhancing digital literacy and access. E.g., Project EShakti by NABARD.**
- **Leverage Artificial Intelligence:** AI-driven tools help SHGs move beyond manual record-keeping. They analyze group savings and repayment patterns to predict credit needs and identify members ready for larger enterprise loans.
- **Regional focus:** Target initiatives like the scheme for promoting Women SHGs (WSHGs) **in backward and LWE-affected districts.**

3.11. ELECTRONICS COMPONENTS MANUFACTURING SCHEME

Why in the News?

The Union Budget 2026–27 has announced an increase in the outlay for the Electronics Components Manufacturing Scheme (ECMS) to ₹40,000 crore.

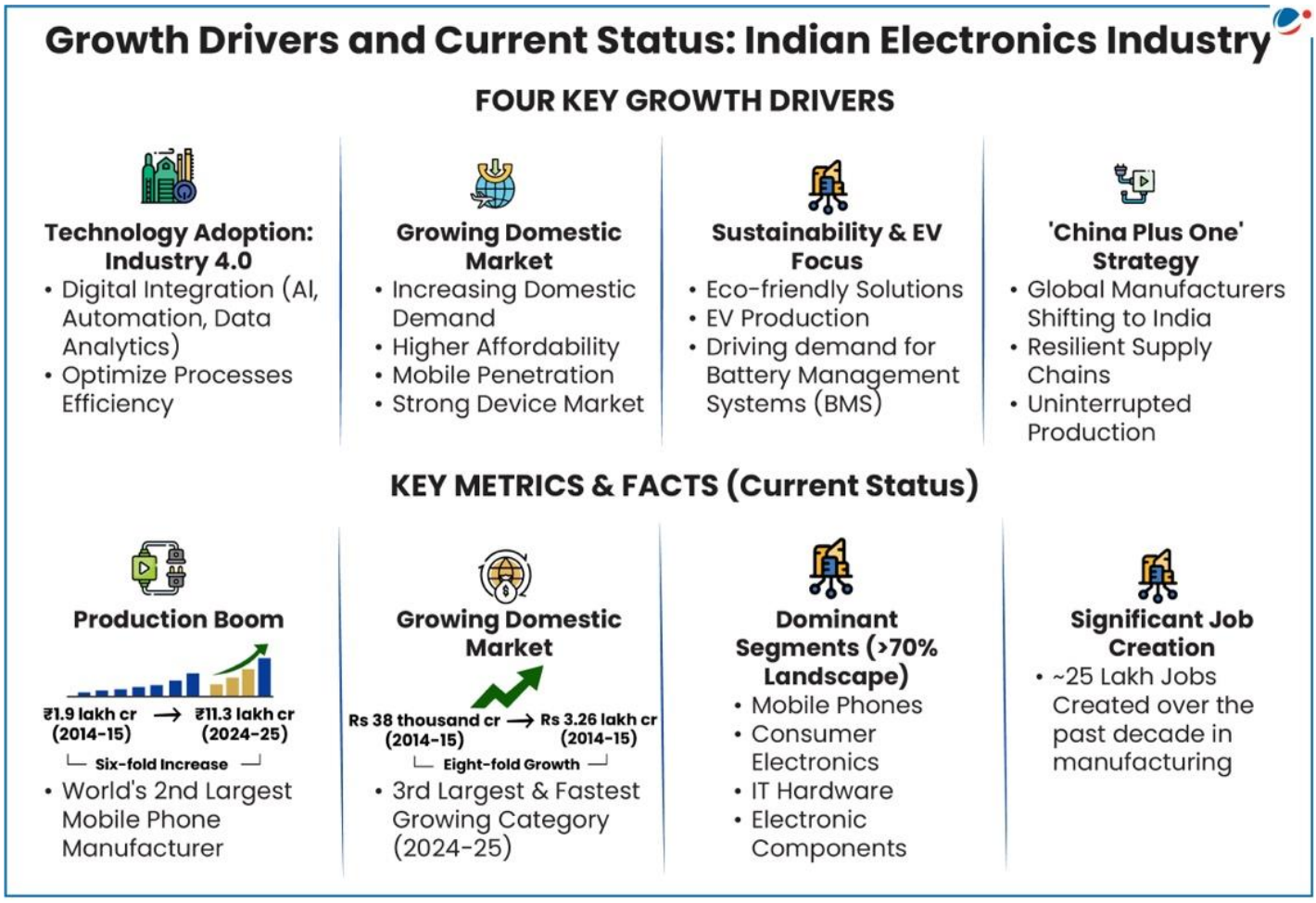
About ECMS

- **Aim:** To create a **self-sustaining ecosystem for domestic component manufacturing**.

- **Integrate India's electronic industry with global value chains** by encouraging production of essential components, sub-assemblies, and raw materials within the country.

- **Ministry:** Ministry of Electronics and Information Technology (MeitY).
- **Incentives:** Scheme provides differentiated fiscal incentive on target segment products in terms of turnover:
  - Turnover linked incentive (for 6 years, with one year optional gestation period) for display module, camera module, multilayer printed circuit board, etc.
  - Capex incentive for 5 years.
  - Hybrid incentive
- **Targeted Components:** Include display modules, sub-assembly camera modules, printed circuit board assemblies, lithium cell enclosures etc.

Read our complete coverage of Budget



Challenges to Electronics Industry

- **Heavy Import Dependency:** India remains a "net importer" for core components.
  - **Sources:** Primarily China, South Korea, and Vietnam.
  - **Components:** Semiconductor devices, Printed Circuit Boards (PCBs), and integrated circuits.
  - **Impact:** Increases the trade deficit and creates **Supply Chain Vulnerabilities** (e.g., disruptions during geopolitical tensions).
- **The Cost-Competitiveness Gap:** Manufacturing in India is **10–20% more expensive** than in China, Vietnam, or Mexico.

  - **Drivers:** High import duties on inputs, expensive raw materials, and high logistics costs.
  - **Structural Issue:** A lack of large-scale domestic corporations (lack of economies of scale).
- **Indigenous R&D Deficit:** India's electronics sector is largely **assembly-oriented** rather than design-oriented.
  - A weak R&D infrastructure limits the domestic design of high-value advanced components.
- **The E-Waste Crisis:** Global e-waste is set to hit 82 million metric tons by 2030; India's share is expected to surge to **5 million metric tons**.
  - **Challenge:** Lack of formal recycling infrastructure and environmental hazards.

Initiatives to boost electronics sector

The Government of India has adopted a **"Plug-and-Play" and "Incentive-Linked" approach** to transform India into an ESDM (Electronics System Design and Manufacturing) hub.

- **Fiscal & Manufacturing Incentives**
  - **Production-Linked Incentive (PLI) Scheme:** It covers 14 sectors, focusing on mobile phones and IT hardware to boost exports and technology adoption.
  - **SPECS (Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors):** Offers a 25% financial incentive on capital expenditure. It aims to move India from "assembly" to "high-value component manufacturing."
  - **Modified Electronics Manufacturing Clusters (EMC 2.0):** Provides financial aid to create "world-class infrastructure" and common facility centres for electronics companies.
  - **Semicon India Program (2021):** A flagship program providing financial support for Semiconductor Fabs, Display Fabs, Design Linked Incentive (DLI) etc. for domestic semiconductor industry.
- **Investment & Policy Framework**
  - **National Policy on Electronics (NPE) 2019:** to position India as a global ESDM hub.
  - **100% FDI:** Automatic route for 100% Foreign Direct Investment has attracted over USD 4 billion since FY2020-21.
- **Budgetary & Tax Reforms (2026-27)**
  - **Customs Duty Exemptions:** Targeted relief on inputs for specific goods like microwave ovens.
  - **Social Welfare Surcharge (SWS) Waivers:** Exemptions on parts used for manufacturing electronic toys to promote domestic toy manufacturing.

Conclusion

With a strategic focus on reducing import dependency, lowering production costs, and fostering innovation, India is well-positioned to build a competitive and sustainable ecosystem. As India moves towards a USD 300 billion electronics production target by 2026, its robust policies and skilled workforce are paving the way for sustained growth, positioning the nation as a key player in the global electronics and semiconductor industry.

3.12. STRENGTHENING CAPITAL GOODS SECTOR

Why in the News?

Union Budget FY 2026-27 has announced various support measures for capital goods sector.

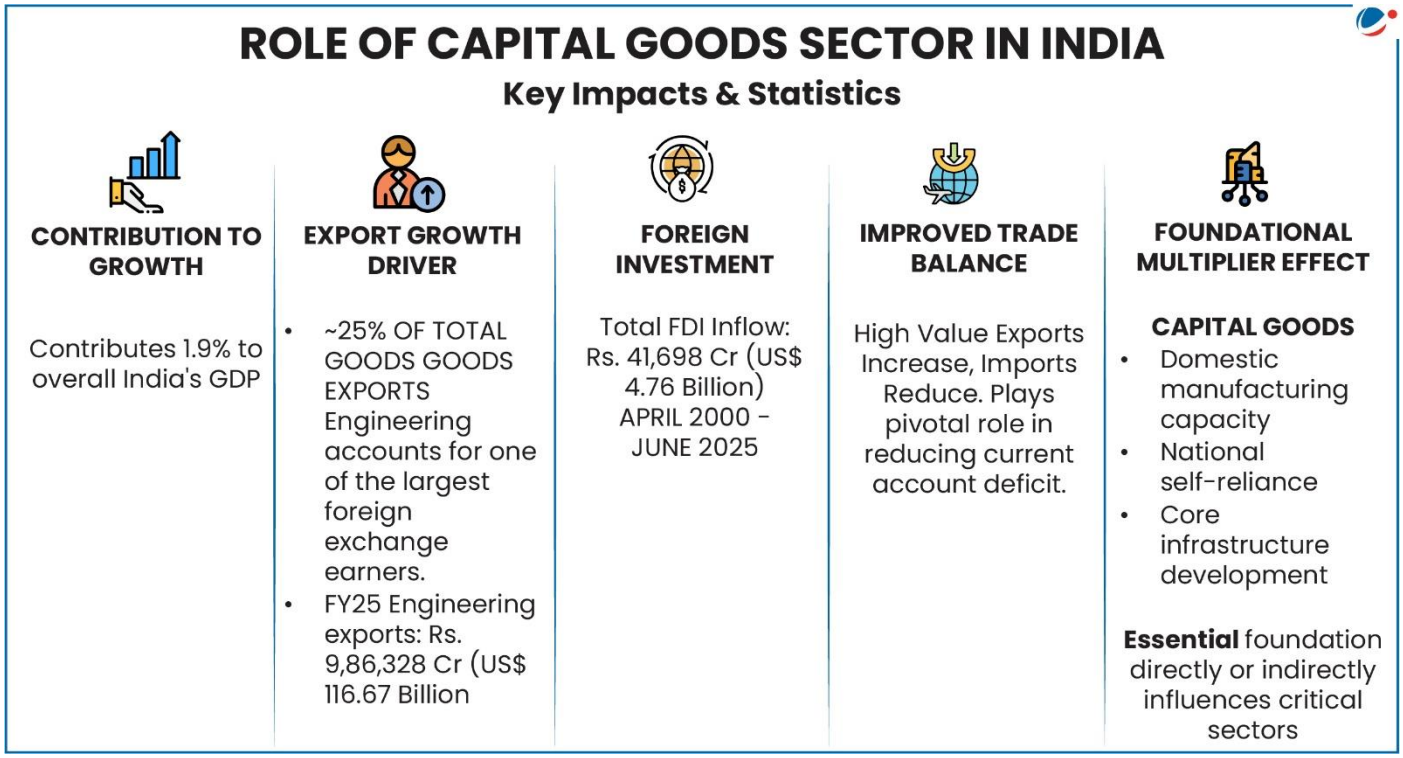
Provisions of Union Budget FY 2026-27 for Capital Goods Sector

- **Public CapEx:** Increased by ~9% to ₹12.2 lakh crore.
- **Scheme for Enhancement of Construction and Infrastructure Equipment (CIE) Scheme:** Initiative to boost domestic manufacturing of advanced construction and infrastructure equipment (e.g., lifts, fire-fighting gear, tunnel-borers).

- **Toll & Electronics Manufacturing:** 5-year income tax exemption for non-resident entities supplying capital goods/tooling to toll manufacturers in bonded zones.
- **Energy Transition:** Basic customs duty exemption on capital goods extended to include Lithium-Ion cell manufacturing for battery energy storage systems.
- **Hi-Tech Tool Rooms:** CPSEs to establish two automated facilities for localized design, testing, and manufacturing of precision components.
- **Container Manufacturing:** ₹10,000 crore allocated over 5 years.

About Capital Goods Sector

- **Capital goods =** plant/machinery/equipment needed directly or indirectly for production or service delivery.
  - Also **covers assets for replacement**, modernisation, tech-upgradation, or capacity expansion.
  - They are **not for direct consumption** but create production capacity.
- **Sub-Sectors:** Sector comprises machine tools, textile machinery, electrical equipment, mining machinery, plastics processing machinery, moulds and press tools, food processing machinery etc.
- **Status in India:** With a total market size of US$ 92 billion and production valued at US$ 32 billion, Capital Goods sector, contributes to around 12% of India's manufacturing output.
- **The Mahalanobis Model,** which formed the basis of India's Second Five-Year Plan (1956–1961), **prioritised heavy and basic industries** to build a robust capital goods sector for long-term economic self-reliance.



Challenges faced by capital goods sector

- **High import dependence in advanced machinery**: Due to weak domestic R&D, around 40% capital goods are imported in India.
  - **R&D Investment** in sector is ~0.9% of GDP, well below the National Capital Goods Policy target of 2.8%.
- **Infrastructure & Capital Burdens:** Infrastructure deficits create ~ 5% cost disadvantage for Indian manufacturers vs. global competitors.

- **Precision Ecosystem Deficit:** A critical lack of domestic capacity for globally competitive, high-precision manufacturing.
- **Tax & Duty Inefficiencies:** Inverted duty structures and state-wise tax variations lead to ~ 24% cost disadvantage from indirect taxes.
- **Severe Skill Gaps:** ~60% of the workforce (aged 15–59) lacks vocational training, causing a shortage of industry-ready labor.
- **Sector Fragmentation:** The industry is dominated by MSMEs whose small operating scale restricts their ability to acquire technology or develop new products.
- **Export Barriers:** Untapped export potential hindered by a lack of long-term financing, non-tariff barriers, and inadequate trade incentives.

Policies/Schemes promoting Capital Goods

Policy Support:

- **National Capital Goods Policy, 2016**: It aimed to boost India's capital goods sector by raising its manufacturing share from 12% in 2016 to 20% by 2025.
  - However, it couldn't achieve its objectives. To further streamline this, a Draft National Capital Goods Policy 2025 has been formulated.
- **Department for Promotion of Industry and Internal Trade (DPIIT**): The role of DPIIT is to promote industrial Development of the Country by facilitating investment in new and upcoming technology, accelerate & foreign direct investment and support a balanced development of industries & trade.
- **Production Linked Incentive (PLI) Schemes:** Attract investment, enable tech adoption, and boost global competitiveness.
  - These include PLI Scheme for Automobile, Advanced Chemistry Cell (ACC) Battery Storage etc.
- **Scheme for Enhancement of Competitiveness in the Indian Capital Goods Sector:** Industry-academia demand-driven model, projects are proposed by industry for govt funding.
- **PM Gati Shakti Mission:** It is a digital infrastructure development platform integrates planning and execution across 16 key ministries, creating a unified approach to industrial development.
- **Liberal Policy:** De-licensed engineering sector, 100% FDI under the automatic route (except from land-border nations), unrestricted technology transfer payments, and no import or export restrictions.
- **Skill Development**: The Capital Goods Skill Council (promoted by FICCI and Dept of Heavy Industries) is a unique initiative for quality training and skill development for the Capital Goods sector.
- **Washington Accord (WA):** India became a permanent member of the Washington Accord (WA) which is an elite international agreement on engineering studies and the mobility of engineers.
- **Make in India:** Seeks to increase the **manufacturing sector's contribution to GDP**, **generate employment**, and **improve technological capabilities**.

Conclusion

Capital Goods (CG) sector functions as the foundational multiplier of the Indian economy. Beyond its 1.9% GDP contribution, it determines the technological intensity of the entire manufacturing landscape. With sustained policy support and 0ns away from sole reliance on China, by giving attracting incentives for investments.

3.13. TEXTILES SECTOR IN INDIA

Why in the News

Union Budget 2026-27 outlines government initiatives to strengthen textiles, support weavers and artisans, boost exports, and create employment.

Textile Sector in India

- **GDP Contribution:** ~2% to total GDP of the Country
- **Manufacturing Sector Contribution:** 11% of total manufacturing GVA
- **Export:** 6th largest exporter of Textiles & Apparel in the world.
  - USA and EU together account for about 47% of India's textile and apparel exports.
- **Employment:** 2nd largest employment generator in the country.
- **Support MSME ecosystem:** ~80% of the industry's capacity is spread across MSMEs.

Key Announcements in Budget 2026-27

- **Integrated Programme for the Textile Sector**: It is structured around five key sub-components-
  - **National Fibre Scheme** for domestic fibre self-reliance
  - **Textile Expansion and Employment Scheme** to modernize traditional clusters
  - **National Handloom and Handicraft Programme** to unify artisan support
  - **Tex-Eco Initiative** for sustainable manufacturing
  - **Samarth 2.0** skilling program.
- **Mega Textile Parks and Technical Textiles**: Setup of **Mega Textile Parks in challenge mode** to provide integrated infrastructure and scale efficiencies.
- **Mahatma Gandhi Gram Swaraj Initiative:** It aims to strengthen the khadi, handloom and handicraft sectors by improving global market linkages, modernising processes and supporting the One District One Product (ODOP) initiative.

Other Government Initiatives

- **Production Linked Incentive (PLI) Scheme for Textiles**
- **PM MITRA (Mega Integrated Textile Region and Apparel) Parks**
- **Amended Technology Upgradation Fund Scheme (ATUFS):** To provide capital subsidies targeting the MSME-driven textile industry
- **National Technical Textiles Mission (NTTM)**
- **Textile Cluster Development Scheme (TCDS)**
- **Tex-RAMPS:** Textiles Focused Research, Assessment, Monitoring, Planning and Start-up Scheme
- **Silk Samagra Scheme**

Read our previous coverage on PM MITRA

- **Export Promotion Measures:** The export obligation period was extended from 6 to 12 months to provide greater flexibility to exporters of textile garments, footwear and leather products made using duty-free imported inputs.
- **Liquidity Support for MSMEs through TReDS**:
  - The government enhanced the Trade Receivables Discounting System (TReDS) by mandating its use by Central Public Sector Enterprises (CPSEs)
  - Providing credit guarantee support through Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) for invoice discounting on TReDS;
  - Linking Government e-Marketplace (GeM) with TReDS.
- **SME Growth Fund**: A ₹10,000 crore SME Growth Fund has been created to support micro-enterprises and develop future "Champion SMEs" in the textile ecosystem.

Read our Weekly Focus coverage on India's textile sector

Challenges with textile industry

- **Raw Material Constraints**: poor cotton quality, climate-hit cotton yields, and import-dependence for synthetic fibres.
- **Intense Global Competition**: competition from Bangladesh and Vietnam, dumping of cheap man-made fibre (MMF) fabrics from China.
- **Recent geopolitical challenges:** for e.g. steep 50% US tariff on Indian goods.
- **Lack of Automation:** heavy reliance on manual labour leading to error and reduced productivity.
- **Skill Shortages**: and highly fragmented nature, with over 90% of weaving units in the unorganised sector.
- **Complex Regulatory Frameworks:** DGFT red tape, inconsistent GST rates, and costly Quality Control Orders (QCOs) impede competitiveness.

Way Forward

- **Adopt Advanced Automation:** Integrate smart looms, AI-driven demand forecasting, and RFID traceability.
- **Invest in Infrastructure and R&D:** Establish Mega Textile Parks equipped with plug-and-play digital infrastructure to enable scale efficiencies.
- **Focus on Technical Textiles:** Diversify into high-value, specialized segments like technical and performance fabrics to capture new global demand.
- **Boost Domestic Man-Made Fibres (MMF):** Reduce reliance on imported synthetic fibers by encouraging domestic production of MMF and new-age fibers under the National Fibre Scheme.
- **Enhance Cotton Supply Chains:** Improve transparency and global acceptance of Indian cotton through digital tools like the Kapas Kisan app and branding initiatives like 'Kasturi Cotton Bharat'.
- **Leverage Free Trade Agreements:** Actively utilize agreements like the India-EU FTA to gain zero-duty access to major international markets.
- **Upskill the Workforce:** Counter the severe skill shortage by providing vocational training and utilizing the upgraded Samarth 2.0 program.
- **Empower Traditional Artisans:** Support village industries, handlooms, and khadi through the Mahatma Gandhi Gram Swaraj Initiative, improving global market linkages, branding, and modernizing traditional clusters.
- **Sustainability-Linked Finance:** Introduce financing models for MSMEs where benefits are tied directly to positive environmental outcomes.

3.14. GRAIN STORAGE SYSTEM IN INDIA

Why in the News?

The government has fast tracked the procedures for approval of doubling the credit target for the **Agriculture Infrastructure Fund**, to ensure **safe storage of Food grains.**

Food Grain Storage Systems in India

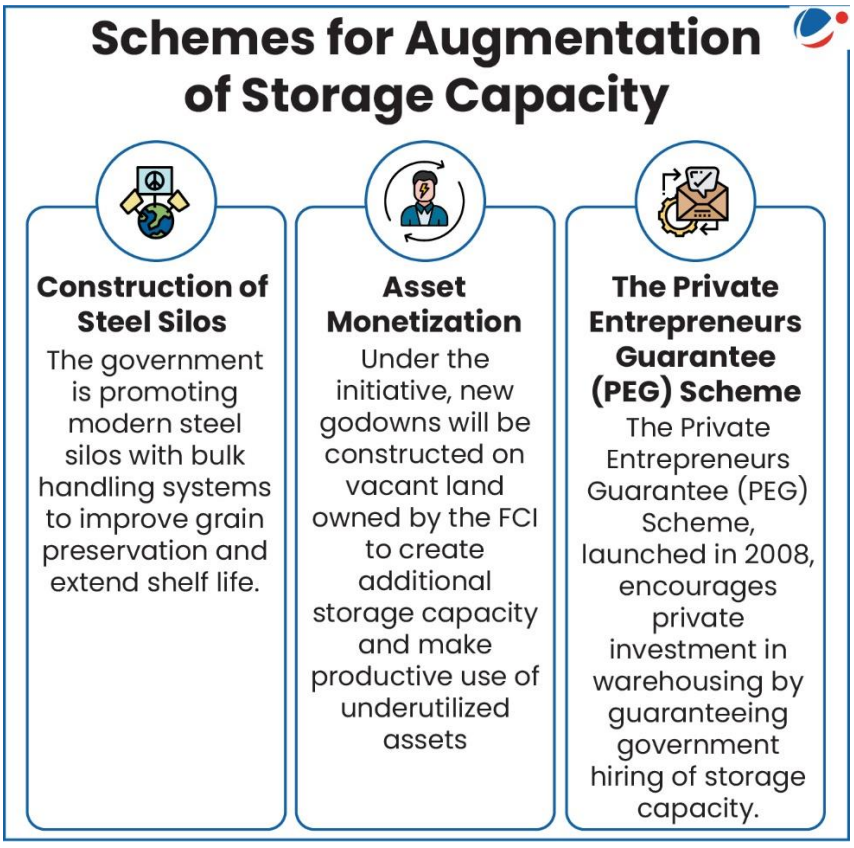
According to the **Third Advance Estimates for 2024–25**, India achieved **a record foodgrain production of 353.96 million tonnes.**

- **Centralized Storage:** Under the centralized procurement system, food grains are procured either **directly by Food Corporation of India (FCI) or by State Government Agencies**, which later transfer the **stocks to the Central Pool.**
  - FCI procures grains at the **Minimum Support Price (MSP)** to protect farmers' incomes and maintain adequate **buffer stocks.**
  - As of July 1, 2025, the Storage Capacity available with FCI and State agencies for the storage of Central Pool foodgrains stood at 917.83 Lakh Metric Tonnes (LMT).

- **Decentralized Storage:** Carried out through rural godowns, Primary Agricultural Credit Societies (PACS), and on farm storage by farmers.
    - Around **60-70%, of food grain produced is stored at household** level using various indigenous traditional storage structures.
    - Decentralized storage through PACS was also recommended by **Ashok Dalwai Committee** on Doubling Farmers' Income (2018).

Major Schemes to Strengthen storage of Foodgrains

- **Agriculture Infrastructure Fund (AIF):** The scheme, launched in 2020, supports the development of **warehouses, cold storage facilities, sorting and grading units, and logistics infrastructure.**
- **Agricultural Marketing Infrastructure (AMI):** It provides **financial assistance** for the **construction and renovation** of warehouses and godowns in rural areas.
    - This scheme is a component of the **Integrated Scheme for Agricultural Marketing** (ISAM).
- **Pradhan Mantri Kisan SAMPADA Yojana (PMKSY):** It is a comprehensive scheme designed to build modern infrastructure for the food processing sector, creating a smooth and efficient supply chain from the farm gate to retail.
- **World's Largest Grain Storage Plan in the Cooperative Sector:** It aims to develop **storage and other agri-infrastructure** at the **PACS level** through **convergence of schemes** such as AIF, AMI etc.



Why do we need better storage?

- **Losses**: According to **the World Bank Report**, the food grains and perishables wasted due to **improper storage** could be sufficient to **feed one-third of the India's poor population.**.
- **Price Stability**: Improved storage allows the government **to release stocks during shortages and control price fluctuations.**
- **Supporting Public Distribution System (PDS**): Strong **storage infrastructure** is required **for smooth distribution of grains to million**s of beneficiaries under food security programmes.
- **Reducing Farmer Distress:** Better storage facilities **help farmers avoid distress sales** by allowing them to store produce and sell later at **better prices** moving toward **Doubling the Farmers Income**.

Challenges in Food grain storage in India

- **Regional Imbalance in Storage**: Storage infrastructure is concentrated in major procurement states such **as Punjab and Haryana**, while many **eastern and northeastern states lack adequate facilities**. This creates **logistical challenges** in transporting and distributing grains.

- **Delay in Creation of Storage Infrastructure:** Storage projects under schemes like **PEG (Private Entrepreneur Guarantee Scheme) faced major delays.**
  - **Example**: Contracts for godown construction were awarded **late and godowns were completed after delays of 2–7 years.**
- **Climate Change:** Rising temperatures and erratic humidity accelerate spoilage and fungal growth.
- **Storage Structures at Farmer Level:** The major construction materials for storage structures in rural areas are mud, bamboo, stones, and plant materials. They are neither rodent-proof, nor secure from fungal and insect attack.

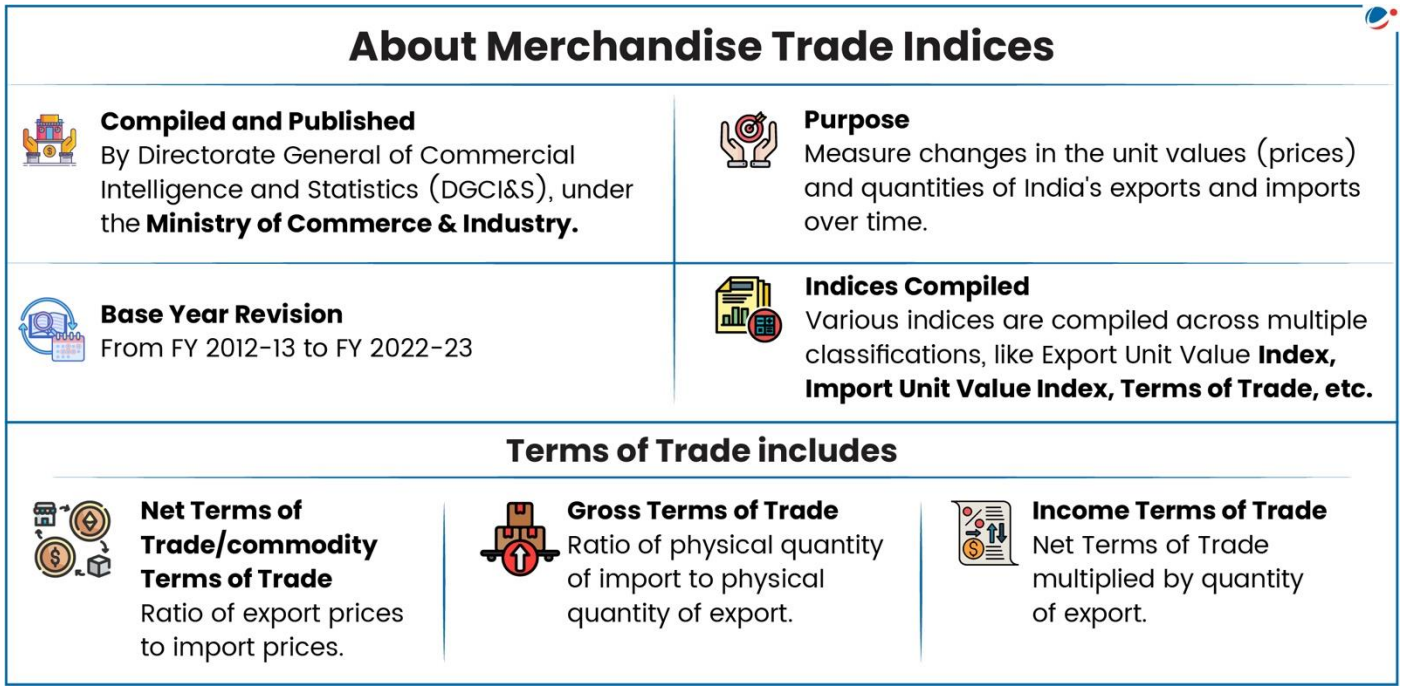
Way Forward

- **CAG Performance Audit Report (2023)**
  - **Augment Scientific Storage Capacity**: The Government **should complete the augmentation of storage facilities** planned under the **National Policy on Handling, Storage and Transportation of Food Grains.**
  - **Phase out CAP (Open) Storage**: **Covered and Plinth (CAP) storage** should be gradually **eliminated and replaced with modern storage infrastructure.**
- **Shanta Kumar Committee (2014)**
  - **Computerization of Storage Management**: The committee emphasized the need for **real-time digital tracking of food grain stocks** across **procurement centres, warehouses and distribution points**.
  - **Private Sector Participation:** FCI's old conventional storages **can be converted to silos** with help of **private sector** and other stocking agencies.
  - **Promotion of Negotiable Warehouse Receipt System**: The committee recommended expanding **the Negotiable Warehouse Receipt (NWR) system**, under which farmers can store their produce in **registered warehouses** and **obtain bank credit** against the stored produce.

3.15. NEWS IN SHORT

3.15.1. MERCHANDISE TRADE INDICES

Merchandise Trade Indices have been revised to better reflect the evolving structure of India's trade and changing global trade patterns.



3.15.2. ADVANCE PRICING AGREEMENT (APA)

Union Budget 2026-27 rationalizes **Advance Pricing Agreement (APA)** rules indicating a more investor-friendly tax regime.

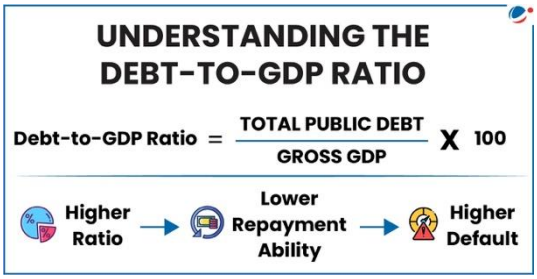
Key Changes for IT sector

- Consolidation **of IT services** into a single category **of Information Technology Services** with a **uniform safe harbour** margin to reduce disputes and litigation.
  - Threshold for **safe harbour eligibility** raised (₹300 crore to ₹2,000 crore); automated, rule-based approvals.
- **Advance Pricing Agreement (APA)** process **fast-tracked** to be completed within 2 years (extendable 6 months).
  - **APA is a pre-emptive arrangement** between a **taxpayer and tax authorities** that determines transfer pricing methodology for specified transactions in advance, ensuring **tax certainty and reducing disputes**.
  - **Transfer Pricing** means **fixing fair prices** for transactions between related companies so that **profits are not shifted to avoid tax.**

3.15.3. DEBT-TO-GDP RATIO

India is on track to reach **debt-to-GDP ratio of 50±1 percent by 2030-31** as debt-to-GDP ratio is estimated to be 55.6 % of GDP in Budget Estimates 2026–27.

- **Debt-to-GDP ratio** is being increasingly used as the **primary policy target** instead of **fiscal deficit–GDP ratio used** under **Fiscal Responsibility and Budget Management Act, 2003**.
- FRBM Act aims to guide **the government's fiscal policy towards a sustainable path,** thereby promoting economic stability.



3.15.4. LIBERALIZED REMITTANCE SCHEME

Union Budget 2026-27 cut the **Tax Collected at Source** (TCS) rate for education and medical expenses abroad under the **Liberalised Remittance Scheme (LRS).**

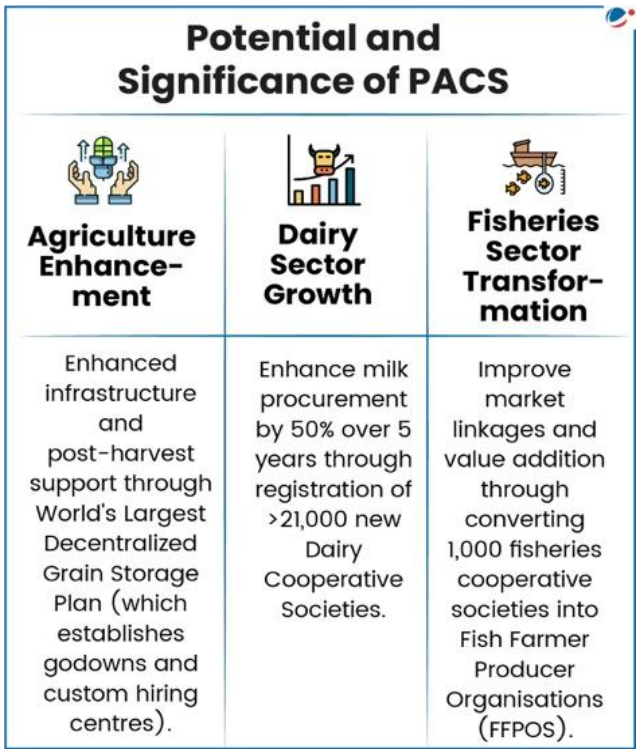
- TCS is an additional tax collected by sellers from buyers at the time of sale for specific goods/services under **Section 206C of the Income Tax Act, 1961.**

About Liberalised Remittance Scheme

- **Overview:** All resident individuals (including minors) are allowed to freely remit up to **USD 2,50,000** per financial year for permissible current or capital account transaction or a combination of both.
  - It is **not available** to corporates, partnership firms, Hindu Undivided Family (HUF), Trusts etc.
- **Introduced:** 2004 by Reserve Bank of India (RBI)
- **Prohibited under LRS**: Gambling & Lottery, Trading & Speculation

3.15.5. PRIMARY AGRICULTURAL CREDIT SOCIETIES (PACS)

The Government aims to establish new multipurpose PACS/dairy/fisheries cooperatives to cover all panchayats and villages over the next 5 years.



About PACS

- PACS are the **grass-root level institutions** of the **short-term co-operative credit structure** and it acts as a last-mile **link** between borrowers and higher financing institutions such as Scheduled Commercial Banks and RBI/NABARD.
- **Status: PACS sanctioned (**79,630), **new PACS registered (**32,802), **PACS digitized (**61,478).
- **Regulation:**
  - **Multi State PACS**: Entry 44 of Union List of the Constitution and are centrally administered by **Central Registrar of Cooperative Societies (CRCS)** under provisions of **Multi-State Co-operative Societies Act, 2002.**
  - **Single State PACS**: Entry 32 of State List of the Constitution and are administered by the concerned **State Registrar of Cooperative Societies (RCS)** under respective **State Cooperative Societies Act.**

Initiatives taken for PACS Promotion

- **PACS Computerization Project:** Computerization of PACS under a common ERP-based national software.
- **National Cooperation Policy (NCP) 2025**: Membership expansion and leadership roles for women and weaker sections.
- **Adoption of Model Bye-laws:** Enabling PACS to function as multipurpose service centres (PM Kisan Samriddhi Kendras, Common Service Centers, warehousing, custom hiring centers, primary processing).
- **Inclusive Governance:**
  - Mandatory representation of women and SC/ST members in cooperative boards under **Multi-State Cooperative Societies (Amendment) Act, 2023**.
  - Inclusion of SHGs, small & marginal farmers and tribal communities.

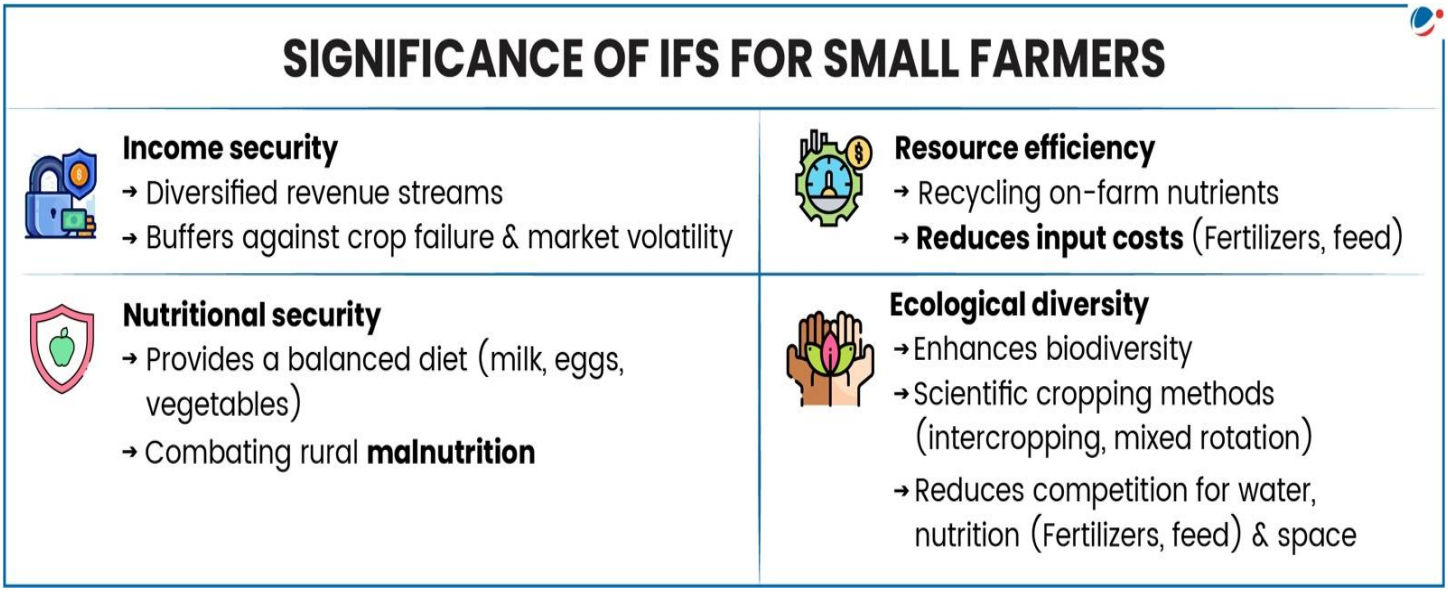
Digital Current Affairs
Read our previous coverage on National Cooperative Policy 2025

3.15.6. INTEGRATED FARMING SYSTEMS

The Union Agriculture Minister urged scientists to develop Integrated Farming Systems for small farmers.

About Integrated Farming System (IFS)

- A **synergistic approach integrating multiple components**: crops, livestock, horticulture, fishery, poultry, and apiary, **on a single farm unit**.
  - **~89.4%** of Indian farmers are operating on small landholdings (<2 hectares).



Challenges

- **Capital Intensive:** Establishing allied sectors (e.g., cattle sheds, fishponds) requires **high initial investment.**
- **Knowledge Gap:** Traditional farmers may lack technical skills to manage complex, multi-layered systems**.**
- **Labour Requirement:** IFS is labour-intensive**.**

Government Initiatives

- **National Mission for Sustainable Agriculture (NMSA)- Rainfed Area Development (RAD):** The primary mission promoting **location-specific IFS clusters.**
- **Rashtriya Krishi Vikas Yojana (RKVY):** Provides states flexibility to fund **diverse** IFS models and infrastructure.
- **Paramparagat Krishi Vikas Yojana:** Promotes **organic nutrient cycling** between livestock and crop components.
- **Viksit Krishi Sankalp Abhiyan:** Aims to bridge the **lab-to-land gap**, deploying scientists to disseminate region-specific IFS models.
- **ICAR-AICRP:** The **All India Coordinated Research Project (AICRP)** on **IFS** is developing location-specific models across **25 states** to optimize productivity for different agro-climatic zones.

3.15.7. REGIONAL RAPID TRANSIT SYSTEM (RRTS)

Prime Minister of India inaugurated India's first Namo Bharat Regional Rapid Transit System (RRTS).

About Namo Bharat RRTS

- It is a new rail-based, semi-high-speed (upto 180 km/ hr), commuter transit system
- It is **different from Metro** as it caters to longer-distance travel with fewer stops at higher speed.
- It is **different from conventional trains** as it provides high-frequency, point-to-point regional travel on a dedicated pathway.
- **Implementing agency:** National Capital Region Transport Corporation (joint venture between the centre and Rajasthan, UP, Haryana, Delhi.

Significance of RRTS

- **Addressing urban Congestion:** More than 40% urban population to live in urban areas by 2030.

- **Reducing travel Time and enhanced labour productivity** e.g., Delhi Merrut RRTS to reduce travel time to 60 minutes from 3 hours.
- **Balanced Regional development** -By encouraging commuters to live in suburban and regional areas it supports polycentric economic development.
- **Environmental Sustainability:** apart from being electrically-powered, it can reduce reliance on private cars.
- **Social Empowerment**: The project is a landmark for "Nari-Shakti," with women comprising the majority of train operators and station control staff.

Conclusion

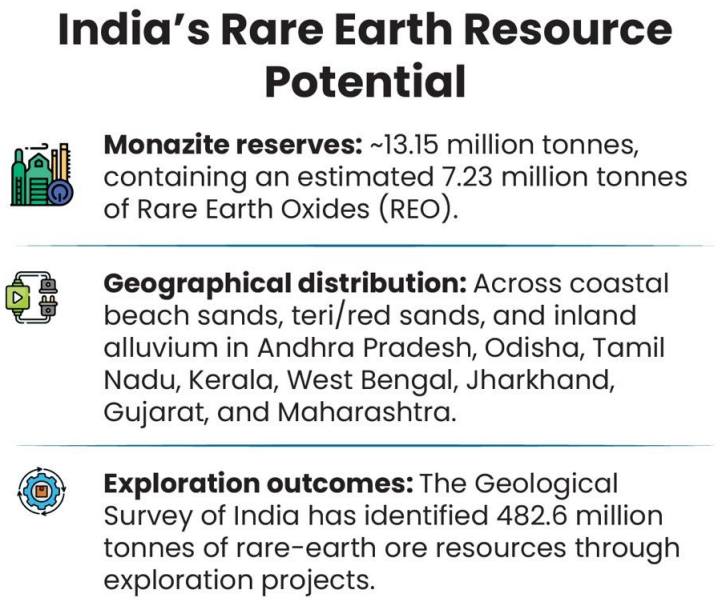
By enabling fast, reliable, and sustainable regional mobility, the Namo Bharat RRTS can become a catalyst for decongesting cities, boosting productivity, and fostering balanced urban growth. With strong multimodal integration, innovative financing, and institutional coordination, it can redefine the future of regional transport and urban development in India.

3.18.8. DEDICATED RARE EARTH CORRIDORS

Union Budget 2026-27 announced dedicated corridors to be developed in **Odisha, Kerala, Andhra Pradesh, and Tamil Nadu** for mining, processing, research, and manufacturing of **Rare Earth Permanent Magnets (REPMs).**

What are REPMs?

- They are amongst the **strongest types of permanent magnets with** high magnetic strength and stability.
- **Applications**: Advanced engineering applications such as **electric vehicle motors, wind turbine generators etc.**
- **Significance**: REPM demand is expected to **double by 2030.**



Significance for India

- **Strategic Self-Reliance**: Ensures access to **critical materials reducing India's heavy dependence on imports,** particularly from **China.**
  - India imported **60-80% (value-wise)** and **85-90% (quantity-wise)** REPMs from China (2022-25).
- **Climate Goals**: REPMs **support India's clean-energy transition and Net Zero 2070 vision.**
- **National Security**: Ensures reliable domestic supply for **defence equipment and precision sensors,** reducing vulnerability to global supply chain disruptions.

Key government Initiatives

- **REPM Manufacturing Scheme**: 7,280 crore Scheme to establish an **integrated domestic REPM manufacturing ecosystem with 6,000 MTPA capacity,** covering the full value chain from rare-earth oxides to finished magnets.
- **National Critical Minerals Mission (NCMM):** Creation of a long-term, **end-to-end supply chain for critical minerals including rare earths**.
- **MMDR Amendment Act, 2023 and MMDR Amendment Act, 2025**: Amendments to the **Mines and Minerals (Development and Regulation) Act, 1957**, providing Dedicated list of **critical and strategic minerals, Auction of mineral concessions, Establishment of Mineral Exchanges etc.**

3.15.9. CHEMICAL PARKS

Union Budget 2026–27 has proposed three New Chemical Parks.

- The initiative, backed by a **₹600 crore allocation**, aims to transform India into a global manufacturing hub through a **cluster-based, infrastructure-led** approach.

Status of Chemical Industry in India

- Contributes **7% to national GDP.**
- Accounts for **8.1%** of **manufacturing GVA** (Gross Value Added) (FY24)
- India is **6th largest** chemical producer **globally** and **3rd largest in Asia**.

Challenges faced by Chemical Industry

- **Import Dependency:** Heavy reliance on imports led to a **USD 31 billion trade deficit** in 2023.
- **Infrastructure & Logistics:** Outdated industrial clusters and **high logistics costs** create a significant price disadvantage compared to global competitors.
- **Missed Opportunities:** Focusing on **bulk production (upstream)** instead of **high-value specialty products** (downstream).
- **Low R&D:** Investment in R&D stands at only **0.7%** (against global average of 2.3%).
- **Environmental compliance (EC) hurdles:** Long processing times, complex clearance requirements, and overlapping regulatory scrutiny at state and central levels.
- **Skill Gap:** A **30% shortfall** in skilled professionals, particularly in niche areas like green chemistry, nanotechnology, etc.

Other Initiatives for promotion of Chemical Industry:

- **Plastic Parks:** Focuses on plastic waste management, recycling, and synergizing capacities of processing industry.

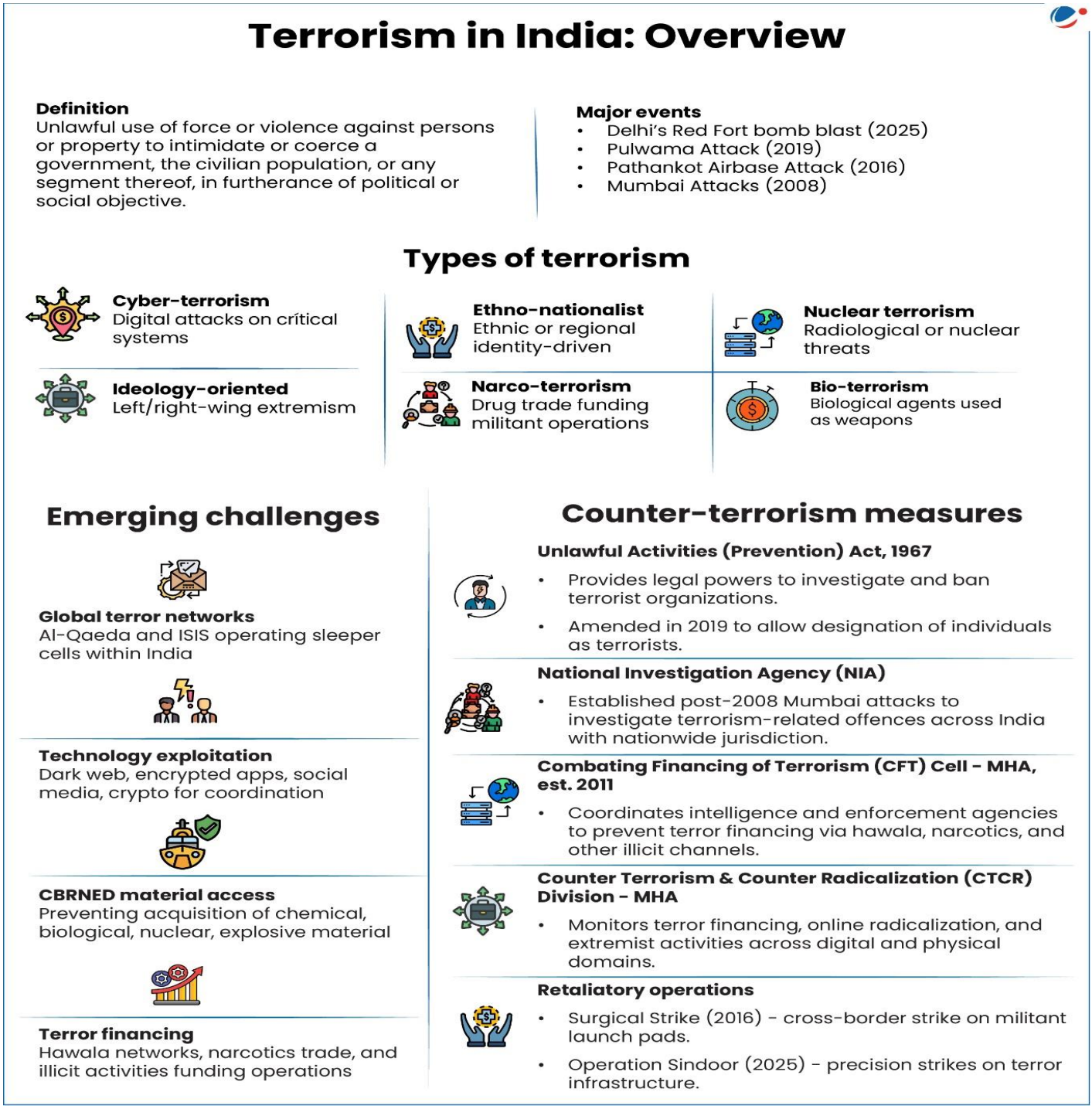
- **Bulk Drug Parks:** Aimed at achieving self-reliance in pharmaceutical raw materials (APIs).
- **Petroleum, Chemicals and Petrochemicals Investment Region (PCPIRs)**: Large-scale investment regions for petroleum and petrochemicals.
- **Production linked incentive (PLI) Schemes:** For Promotion of Domestic Manufacturing of Critical Key Starting Materials (KSMs), Drug Intermediates and APIs.

4. SECURITY

4.1. PRAHAAR: NATIONAL COUNTER-TERRORISM POLICY & STRATEGY

Why in the News?

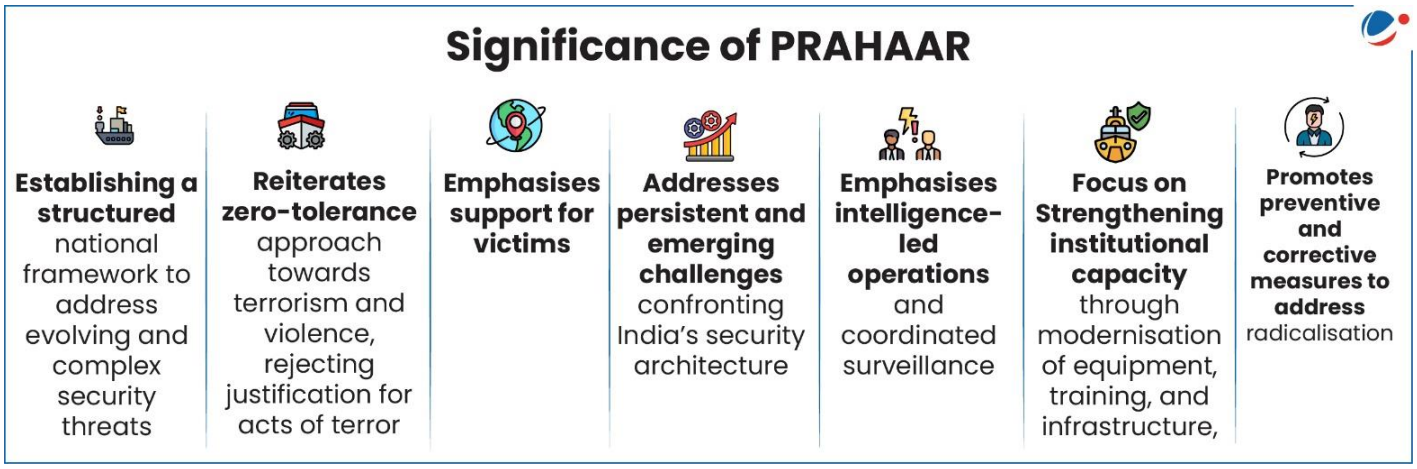
Union Ministry of Home Affairs (MHA) unveiled **PRAHAAR**, India's first-ever national counter-terrorism policy and strategy.



About PRAHAAR

PRAHAAR articulates a **seven-pillar framework**:

- **(P)revention of Terror Attacks:**
  - **Proactive, "intelligence-guided" approach** with **the Multi Agency Centre (MAC)** and **Joint Task Force on Intelligence (JTFI)** in Intelligence Bureau (IB) serving as the central platforms for real-time intelligence sharing.
  - **State-of-the-art tools and technologies** for Indian border guarding forces (Defence, Central Armed Police Forces), immigration authorities to secure Indian borders.
  - **Capacities to protect the critical sectors** of Indian economy including power, railways, aviation, ports, defence, space and atomic energy from state/non-state actors.
- **(R)esponses swift and proportionate to the threat posed:**
  - **Local Police is first responder**, assisted by specialized State and Central anti-terror Forces.
  - **National Security Guard (NSG**) is the nodal national Counter-Terror Force under MHA, for assistance to State Forces in responding to major terror attacks.
  - **Standard Operating Procedure (SOP)** issued by MHA, for coordination including intelligence dissemination, analysis and follow up action, through the platform of MAC
- **(A)ggregating internal capacities in a whole-of-government approach:** It emphasizes the modernization of security and law enforcement agencies by acquiring the latest tools, technologies, and weaponry.
  - Also, agencies undergo specialized tactical training led by institutions like the **Bureau of Police Research & Development (BPR&D)** and the NSG.
- **(H)uman Rights and Rule of Law Based Processes:**
  - **Threat mitigation is handled through just legal processes** that protect fundamental human right with Protection of Human Rights Act, 1993 specifically dealing with cases of violation of human rights.
  - **Special laws to tackle terrorism related crimes**- Unlawful Activities (Prevention) Act, 1967, Explosives Substance Act, 1908, Arms Act 1959 and Prevention of Money Laundering Act, 2002.
- **(A)ttenuating the conditions conducive to Terrorism:**
  - **Indian intelligence and law enforcement agencies** continuously disrupting the designs of terrorist groups.
  - **Radicalized youths undergo a graded police response**, aimed at comprehensively addressing the problem of radicalization and violent extremism in a multi-stakeholder setting
  - **Active engagement with community leaders, NGOs, and moderate preachers** to counter extremist narratives.
- **(A)ligning and Shaping the International Efforts:** India has entered into various agreements like **Mutual Legal Assistance Treaty (MLAT), Extradition Treaty/Extradition Arrangement (ET/EA), Joint Working Group (JWG)** with foreign partners for information/evidence sharing and other legal cooperation.
- **(R)ecovery and Resilience through a whole-of-society approach:** The government engages a team of doctors, psychologists, lawyers and other members of civil society, including NGOs, religious and community leaders, to sensitize and reintegrate the affected community.



Further reforms needed

- **Strengthen cooperation and collaboration** among various agencies for intelligence collection and investigation.
- **Amending domestic counter terrorism legal regime** from time to time to respond to the emerging challenges.
- **Continuous capacity building** of State/UT ATS units is needed, with uniform structure, resources, training and investigation methods.
- **Legal experts should be involved** from FIR registration to prosecution to ensure stronger cases against terrorists.

Conclusion

PRAHAAR shifts India to a proactive, intelligence-driven counter-terror strategy with stronger coordination and safeguards. Its success depends on continued reforms, inter-agency synergy, and adaptive laws to tackle evolving threats.

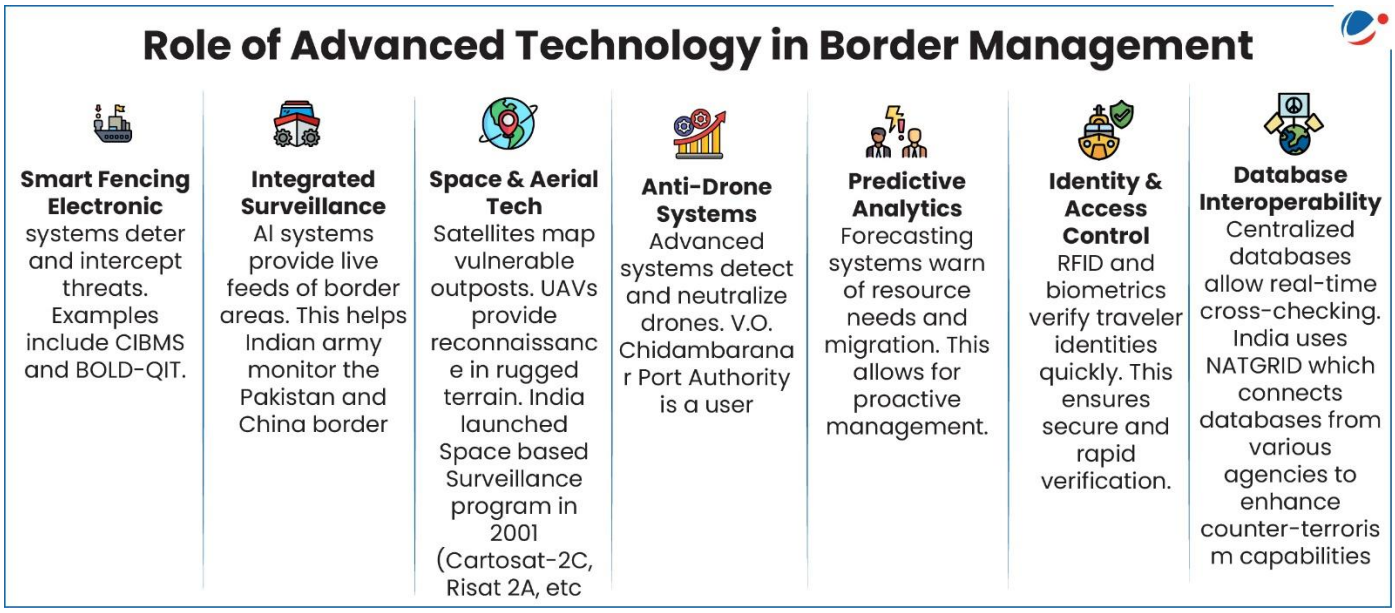
4.2. ADVANCE TECHNOLOGY & BORDER MANAGEMENT

Why in the News?

Recently, the Union Home Minister emphasised the need to adopt advanced technological solutions to effectively address the new challenges posed by adversaries along borders.

Need for Advanced Technology in Border Management

- **Countering New Infiltration Tactics (Drones and Tunnels)**: Physical fences and traditional border outposts are no longer sufficient to stop infiltration, as criminals and terrorists actively bypass them.
  - E.g., a surge in **drone** incursions dropping **narcotics and weapons**, particularly in the western sector.
  - Organized criminal networks are highly adaptable, frequently using encrypted communications and advanced surveillance to elude detection.
- **Terrain:** Managing **unfenced gaps** in difficult terrain like the **shifting eastern riverine borders** and marshes of Gujarat.
- **Cyber & Electronic Warfare**: E.g., attacks on border surveillance infrastructure and communication networks.
- **Relieving Troop Fatigue and Centralizing Command**: Traditional border guarding is incredibly manpower-intensive, which tires out troops and reduces operational efficiency.
- **Protecting the Maritime and Underwater Domain**: Border security is expanding beyond land and airspace into the maritime and subsea environments. E.g. 26/11 attacks



Measures to promote Integration of Technology in Border Management

- **Expanding Existing Surveillance Infrastructure**
  - **Wider Rollout of CIBMS:** Following pilot projects like BOLD-QIT, the Stage II and Stage III of the CIBMS shall be implemented, which will cover approximately 1,955 kilometers of vulnerable borders.
  - **AI-Powered Monitoring:** E.g., The Border Security Force (BSF) is planning to introduce a unified "smart border observation and monitoring system".
  - **Other**: Invest in solar-powered surveillance towers, satellite-based communication, and automated drone monitoring to overcome the severe lack of digital infrastructure, reliable power, and high-speed internet in remote border regions.
- **Operational Enhancements: E.g.,** Establish a unified digital command and control system to overcome inter-agency fragmentation.
  - This system should integrate all border security agencies into a centralized network.
- **Create a Border Security Technology Oversight Authority:** It shall be tasked with reviewing and auditing surveillance operations to ensure they comply with legal frameworks and prevent misuse.

Conclusion

Effective border management in India increasingly requires the integration of **advanced technologies such as smart fencing, AI-based surveillance, and anti-drone systems**. Learning from global systems like Israel's Smart Fence, US's Integrated Fixed Towers, we need to strengthen our indigenous innovation, infrastructure, and inter-agency coordination which will be crucial to tackle emerging threats and safeguard India's territorial integrity.

4.3. NEWS IN SHORTS

4.3.1. EXERCISES IN NEWS

- **Exercise KHANJAR:** Annual bilateral military exercise between **India and Kyrgyzstan.**
- **Exercise MILAN: Biennial multilateral naval exercise** hosted by the **Indian Navy.**
- **Exercise Dharma Guardian:** It is the military exercise held between the Indian Army and the Japan Ground Self-Defence Force.
- **Exercise Vajra Prahar:** The exercise aims to enhance military cooperation between India and the United States.
- **Vayu Shakti:** Indian Air Force's flagship firepower demonstration exercise.

4.3.2. VIBRANT VILLAGE PROGRAMME (VVP)

Phase-II of VVP to be launched on February 20, 2026 from **Assam's Cachar district** by **Union Minister of Home Affairs.**

About VVP

- **OBJECTIVE:** To Ensure **prosperous and safe borders, control trans-border crime and assimilate the border population** with the nation and inculcate them '**as eyes and ears of the border guarding forces**', crucial for internal security.
- **AIM:** TOO saturate all villages in such blocks in **4 thematic areas** - all-weather road connectivity, telecom connectivity, television connectivity and electrification through scheme convergence.
    - **VVP-I: Centrally Sponsored Scheme** launched in **2023** for **select villages** adjoining the **northern border**.
    - **VVP-II: Central Sector Scheme** approved in **2025,** covering identified villages adjoining international land borders of 15 States and 2 UTs, **other than northern border** already covered under VVP-I.

4.3.3. INS ANJADIP

The **Indian Navy** is set to **commission INS Anjadip at the Chennai port.**

About INS Anjadip

- It is the third of 8 Anti-Submarine Warfare Shallow Water Craft.
- It derives its name from Anjadip Island located off the coast of **Karwar, Karnataka.**
- It is specifically designed to address the challenges of the **littoral combat environment**.
- **Built by:** Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.
- Engineered to act as a **'Dolphin Hunter',** focused on **detection, tracking, and neutralisation** of enemy submarines.
- Has indigenous **Anti-Submarine Warfare weapons** and sensor package, including Hull Mounted **Sonar Abhay.**

5. ENVIRONMENT

5.1. CARBON CAPTURE, UTILISATION AND STORAGE (CCUS)

Why in the News?

Union Budget 2026-27 has announced an allocation of **Rs 20,000 crore** over next 5 years to support the development and deployment of Carbon Capture, Utilisation and Storage (CCUS).

Do you know

- World's largest **Direct Air Capture and Storage (DAC+S)** plant, Mammoth, started operation in **Iceland in 2024.**
  - It was the 2nd **commercial DAC+S facility of Swiss Company Climeworks** and is much larger than its predecessor **Orca.**

About CCUS

- IEA defines CCUS as technologies that capture CO_2 from large stationary sources like power plants and industries.
  - **Goal:** Prevent captured CO_2 from re-entering the atmosphere via storage or utilisation.
- **Capture techniques**: Separating CO_2 from industrial gas streams through **Direct Air Capture (DAC), solvents** (chemical or physical), **Adsorption, Cryogenic separation** etc.
  - Captured CO_2 is then dehydrated, compressed, and transported to designated sites via pipelines, though shipping, rail, or trucks.
- **Storage**: Unutilized CO_2 is permanently trapped in geological storage which includes **EOR** (Enhanced Oil Recovery), **ECBMR** (Enhanced Coal Bed Methane Recovery) and permanent storage options like **saline aquifers and basalt storage**.
- **India's Target:** 750 mtpa (Million Tonne Per Annum) of CO_2 capture, utilization, and storage in NITI Aayog's report titled 'Carbon Capture, Utilisation, and Storage Policy Framework and its Deployment Mechanism in India'.

Read our complete coverage of Budget

Significance of CCUS for India

- **Decarbonization of hard to abate sectors:** CCUS is only known technology for decarbonizing **hard-to-electrify and CO_2 intensive sectors** such as steel, cement, oil & gas, petrochemicals & chemicals, and fertilizers.
- **Enabling the sunrise sectors (coal gasification/low-carbon hydrogen):** It can enable cost-competitive production of **blue hydrogen** (i.e. coal gasification-based hydrogen production coupled with CCUS) based on utilisation of India's rich endowments of coal.
- **Energy, materials & food security:** CCUS can enable '**Circular Carbon Economy'** in India through conversion of captured carbon into **value-added products** and help in reducing India's import bill. (see infographic)
- **Sustenance of existing emitters by retrofitting:** E.g., Nearly two-thirds of India's crude steel capacity have an age of less than 15 years, which can be saved by retrofitting with CCUS infrastructure.

Carbon Utilization Pathways for India's self sufficiency

Areas	Use of Captured CO_2
Green urea	**Replaces traditional LNG/NG** based production of ammonia and Urea
Food & Beverage (F&B) applications	In **carbonated drinks, dry ice,** and modified atmosphere packing
Building materials	Wastes such as steelmaking slag directly **injected in aggregates and concrete**
Chemicals	**Methanol and ethanol** production (critical for value-added chemicals like acetic acid)
Polymers	**Including bio-plastics production** for laptop packaging, cell phone casings etc.
Enhanced Oil Recovery (EOR)	Producing **low-carbon oil from maturing oil fields**

- **Achieving Net-Zero Emissions Targets:** India's net zero target would require sequestering **11.4 GtCO2e (gigatonnes of carbon dioxide equivalent per year)** cumulatively till **2070.**
    - CCUS can reduce emissions from India's power and industrial sectors (contributed around **60% of total emissions** in 2020).

Challenges associated with implementing CCUS

- **High Costs:** CCUS projects will require upfront capital investments of US$ 100-150 billion for 750 mtpa of CO_2 capture, utilization, and storage.
- **Technological limitations:**
    - **CO_2 utilization technologies are relatively less developed**: Compared to capture technologies.
    - **DAC in early stages:** Its **economics** (present cost estimated cast- US$ 400-800/tonne of CO_2) and **scale of operations** are yet to be established.
- **Retrofitting Difficulties:** Retrofitting older plants (coal/cement) with CCUS is technically complex and cost-intensive.
- **Geological Storage Risks:** E.g., if CO_2 is injected too forcefully it can fracture the rock and potentially induce seismicity (micro-earthquakes).
- **Regulatory:** Lack of clear legal frameworks defining who is responsible for safety, maintenance, and potential leaks creates immense financial risk for private investors.
- **Limited data on storage**: geological data on the pore space availability in India for the storage of CO_2 is limited, especially for saline aquifers and basaltic storage.

Way forward to implement CCUS in India

- **Incentivize & de-risk CCUS projects to enhance Private sector participation:**
    - **Public/government funding:** Through **financing mechanisms** like 'Clean Energy Cess', low-cost sovereign or International Green Funds, Carbon Bonds or Climate Funds
    - **Support to Low carbon or carbon-abated products:** Through preferential procurement in Government tenders and Production Linked Incentive (PLI) schemes.
    - **Targeted Policy Interventions:** Like financial framework such as a **Carbon Capture Finance Corporation (CCFC)** to support CCUS projects, **carbon credits**, **capital and operational subsidies** for capture plants, **tax holidays** for CCUS projects etc.
- **Promote R&D in novel CO_2 utilization technologies**: Foster and incubate **innovation-based ecosystems** through **national centres of excellence** like National Centre of Excellence in Carbon Capture and Utilization at IIT Bombay.
- **Technology transfer**: E.g., Knowledge sharing through Mission Innovation which has Carbon Dioxide Removal as one of its missions.
- **Draft national CCS regulations and legal framework:** To cover the entire CCUS value chain focusing on CO_2 ownership, liability for transport and post-injection, and carbon accounting.
- **Mapping storage site:** Government can map CO_2 source-sink corridors and characterise geological storage potential across priority basins.
- **Hub and cluster model:** Hub-cluster models in KG Basin and Rajasthan can unlock CCUS economies of scale.
- **Machine Learning for Geological Data Analysis:** E.g., the CarbFix project in Iceland uses machine learning models to predict CO_2 injection impacts and optimize site selection based on geological data.

Conclusion

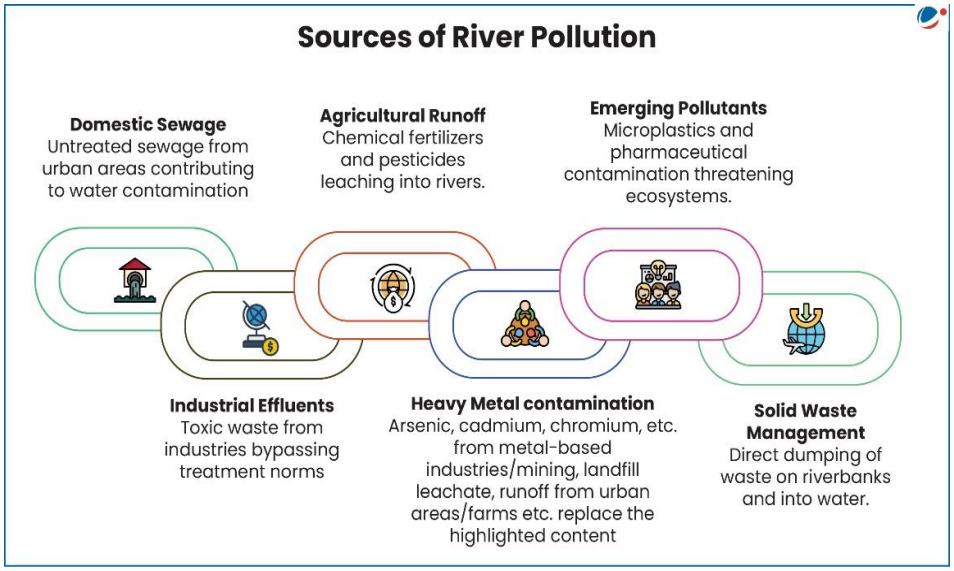
India is the **3rd largest emitter of CO_2** in the world after China and the US. CCUS is a key technology for decarbonizing hard-to-abate sectors and supporting India's NDC commitments like **reducing CO_2 emissions by 50% by 2050.**

However, high costs, technological gaps, and regulatory issues must be addressed through strong policy support, innovation, and private participation to enable its effective deployment.

5.2. RIVER POLLUTION IN INDIA

Why in the News?

The **Supreme Court** (SC) has closed its 2021 suo motu proceedings on polluted rivers and transferred primary monitoring responsibility to the **National Green Tribunal (NGT)**.

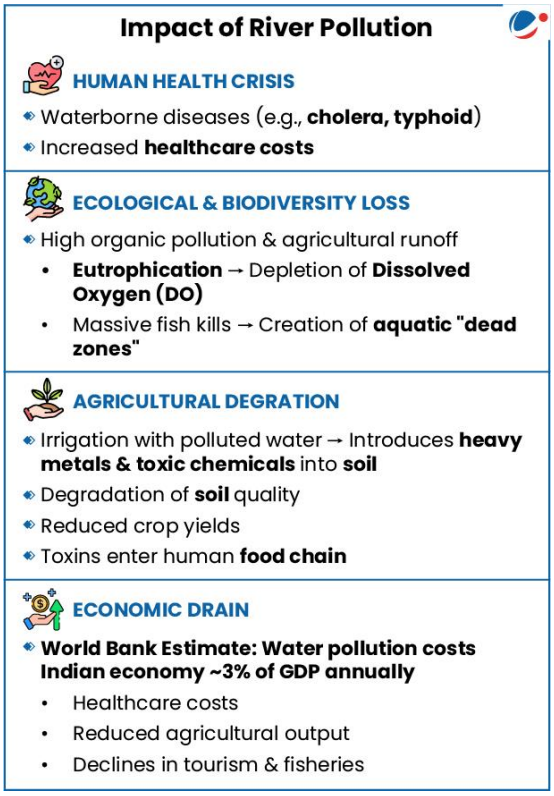


Key Observations of the Court

- Specialized tribunals like NGT are better equipped to monitor these situations continuously.
- It reaffirmed that the **right to live in hygienic conditions with human dignity and a clean environment** is part of **Article 21** of the Constitution.
    - In **M.C. Mehta vs. Union of India, 1987** Supreme Court treated the **right to live in pollution free environment** as a part of **fundamental right to life** under **Article 21** of the Constitution.
    - Under the case, SC also **restrained industries from releasing polluting effluents** into the Ganga river until they establish treatment plants.

Status of river pollution in India

- **'Polluted River Stretches for Restoration of Water Quality – 2025':** By Central Pollution Control Board (CPCB)-
    - **43% rivers polluted:** 296 polluted stretches identified on **271 Rivers** based on analysis of water quality data of 623 rivers.
    - **Only 62% locations complied BOD criteria:** Out of 2116 locations monitored during 2022 & 2023, **1312** locations complied with Bio-Chemical Oxygen Demand (BOD) criteria (less than 3.0 mg/L), notified for Outdoor bathing.
- **Status of Trace and Toxic Metals in Rivers of India, 2024:** By Central Water Commission-
    - At **112 stations** (out of 434 studied), at least 1 metal (out of 9 trace & toxic metals studied) was found to be beyond limit.



Issues in Regulating River Pollution in India

- **Ineffective Legal Execution:** Even with strict environmental laws in place, a shortage of staff and poor monitoring prevent effective action.
    - E.g., Factories along the Yamuna River routinely dump uncleaned waste due to a lack of strict regulatory oversight.

- **Fragmented governance:** River management involves too many different agencies, causing overlapping duties and administrative inefficiencies.
  - E.g., State Pollution Control Boards (SPCBs) frequently fail to coordinate with local municipal authorities which slows down the response to illegal dumping.
- **Under performance of Schemes:** Delays in the approval of detailed project reports, slow pace of implementation, and low fund utilisation have been observed.
  - E.g., only 69% of funds allocated to the Namami Gange Programme were utilised up to 2024-25
- **Deficient Sewage Infrastructure:** More than 60% of India's sewage flows directly into rivers without undergoing purification.
- **Lack of Political Will:** Weak fines and political backing allow many industries to continue polluting without consequence.
  - E.g., Despite numerous Supreme Court directives, leather tanneries in Kanpur persistently discharge toxic chemicals into the Ganga River.

Existing Legal Frameworks in Controlling River Pollution in India:

- **Water (Prevention and Control of Pollution) Act, 1974:** Establishes Central and State Pollution Control Boards (CPCB & SPCBs) to regulate water pollution; Prohibits use of stream or well for disposal of polluting matter etc.
- **Environment Protection Act, 1986:** Empowers the government to set pollution standards and regulate hazardous waste disposal.
  - Government of India has notified industry specific discharge standards under **Schedule-I: 'Standards for Emission or Discharge of Environmental Pollutants from various Industries'** under this act.
- **National Green Tribunal (NGT) Act, 2010:** Provides fast-track resolution of environmental cases. NGT can impose fines on polluters.
- **Municipal Solid Waste (MSW) Rules, 2016 & Sewage Treatment Regulations**: Mandates waste segregation and treatment to prevent direct discharge into rivers.
- **Ganga Action Plan (1986) & Namami Gange (2014):** Significant funding for sewage treatment plants (STPs), afforestation, and industrial waste control.
  - It also focuses on **river rejuvenation** and public awareness campaigns.
- **National Water Quality Monitoring Network (NWMP):** Established by CPCB in collaboration with State Pollution Control Boards (SPCBs) in the States and Pollution Control Committees (PCCs) in Union Territories to regularly assess status of water quality of water resources.
- **National River Conservation Plan (NRCP):** Centrally Sponsored Scheme to **reduce the pollution load in rivers** through implementation of various pollution abatement works.
- **Schemes for creation of sewerage infrastructure**: Atal Mission for Rejuvenation & Urban Transformation (AMRUT) and Smart Cities Mission.

Way Forward

- **Strengthening Pollution Control Boards:** Increase funding, autonomy, and accountability of SPCBs and CPCB.
- **Source control**: Identification and management of polluting sources, quantification and characterization of solid waste and sewage generated in catchment area of polluted river stretch.
- **Upgrading to Real-Time Tracking:** Utilize modern technology like artificial intelligence (AI) sensors and satellites to constantly monitor the health of river water.
- **Upgrade existing treatment facilities**: Adopt advanced treatment technologies and implement stringent monitoring protocols.

- **Integrated river basin management:** Unify industrial regulation, waste management, and agricultural policies under a single authority.
  - E.g., the EU Water Framework Directive follows a basin-wide approach, improving river health across member nations.
- **Encouraging Public Involvement:** Bring local citizens into the loop by having them report pollution and participate in community clean-up efforts.
  - E.g., cleaning drives led by everyday citizens in Varanasi have successfully helped improve the water quality in their local area.

Conclusion

River pollution in India persists due to weak enforcement, poor coordination, and inadequate infrastructure, despite strong legal provisions. Addressing this crisis requires stricter implementation, better governance, technological monitoring, and public participation to ensure clean and sustainable rivers.

5.3. NEWS IN SHORTS

5.3.1. PARIS AGREEMENT CREDITING MECHANISM (ARTICLE 6.4)

United Nations announced the approval of the **first carbon credits** under global market involving a project in Myanmar coordinated with the Republic of Korea.

About Paris Agreement Crediting Mechanism (Article 6.4)

- It is a **carbon crediting mechanism** under **Article 6** of Paris Agreement.
- It **encourages verifiable emission reductions; attracts funding** and allows cooperation among countries.
- E.g., company in one country can reduce emission in that country and have those reductions credited to sell them to another company in another country.
- Apart from article 6.4, other two components of Article 6 are:
  - **Article 6.2:** Provides accounting and reporting guidance for Parties
  - **Article 6.8:** Provides opportunities for non-market-based cooperation.

5.3.2. GREAT NICOBAR MEGA-INFRASTRUCTURE PROJECT

NGT while noting the "**strategic importance of the project**" upheld its environmental clearance and compliance with **ICRZ (Island Coastal Regulation Zone)** and **CRZ norms**.

About the Great Nicobar Project

- **Location: Great Nicobar Island** (southernmost island of Andaman and Nicobar Islands) including parts of **Galathea Bay, Campbell Bay and the Great Nicobar Biosphere Reserve**.
- **Objective:** Project envisions transforming the remote outpost into a **major transshipment** and **defence hub** with integrated township, 450 MVA Gas and Solar-based power plant, dual-use civil-military airport, etc**.**
- **Implementing Agency**: **Andaman and Nicobar Islands Integrated Development Corporation** along with the **NITI Aayog**.

Concerns associated with the Project

- **Regulatory Lapses:**
  - **Environmental Impact Assessment (EIA)** relied on single-season data instead of comprehensive multi-season assessment.

    - **Proposed compensatory afforestation in Haryana is inadequate** to offset loss of a tropical rainforest ecosystem.
  - **Forest Rights Act (FRA):** Government has proceeded with project **even after Tribal council withdrew its consent**.
- **Threat to Biodiversity:** The project involves **diverting approximately 130 sq. km of tropical rainforest (felling one million trees)**, home to the **Nicobar megapode**, **Nicobar tree shrew**, **Giant leatherback turtles, corals**, etc.
- **Social Impact:** Project might negatively impact tribal population, e.g. **Shompen** (Particularly Vulnerable Tribal Group) and **Nicobarese**.
- **Natural Disaster Vulnerability:** The Island falls in the **highest seismic-risk zone (Zone VI).**

Significance of the Project for India

- **Strategic:** Island overlooks the **Strait of Malacca**, through which **40% of the world's trade** and most of China's energy imports pass.
- **Logistics:** Currently**, 75% of India's transshipment cargo** is handled at foreign ports, raising logistics costs.
- **Others:** Improved connectivity**,** promotion of tourism, increased presence in the Indian Ocean region etc**.**

5.3.3. INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC)

The Intergovernmental Oceanographic Commission (IOC) of UNESCO released Integrated Ocean Carbon Research (IOC-R), 2026 report.

About IOC

- **Objective:** To promote international cooperation and to coordinate programmes in research, services and capacity-building in order to learn more about Oceans.
- **Members:** 152 (India is a member).
- **Secretariat**: Paris, France.

Key Highlights of Report

- **Carbon Sink:** Oceans absorb excess **atmospheric CO_2,** reducing greenhouse gas concentration.
- **Solubility Pump**: Cold ocean waters dissolve **CO_2 and transport it to deep ocean layers for long-term storage.**
- **Land–Ocean–Ice Exchange:** Oceans exchange carbon with **rivers and melting ice, influencing global carbon distribution**.

5.3.4. RAT-HOLE MINING

Illegal Rat-hole mining has claimed more than 20 lives in Meghalaya.

What is Rat-hole mining?

- Rat Hole' mining is a primitive and unscientific form of mining.
- In this process, **Land is first cleared by cutting and removing the ground vegetation** and then d**igging pits** into the ground to reach the c**oal seam.**
  - **Coal seams** are reached by excavating the hill slopes and then coal is extracted through a horizontal tunnel,where workers enter and extract coal.
- Rat-hole mining is prone to collapsing because they lack engineered roofs and side-wall protections.
- **Methods of extraction:** Side-cutting, Box-cutting

Reasons for Illegal Mining Continuation

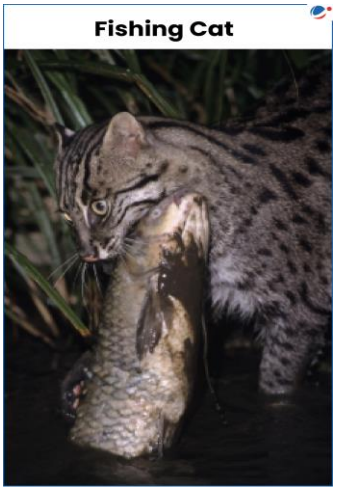
- **Natural Factors: E.g.,**Coal seams in Meghalaya are very thin which makes rat-hole mining more economically viable than opencast mining.
- **Lack of Alternatives:** Without viable economic substitutes in sectors like horticulture, construction, manufacturing, the population reverts to mining for survival.
- **Complex Ownership Structures:** The specific ecosystem in Meghalaya involves small, privately or community-owned landholdings with fragmented ownership.

Measures taken to stop illegal rat hole mining

- **Meghalaya** has a framework to prevent illegal mining, transport, and storage under the Mines & Minerals (Development & Regulation) Act, 1957.
- **National Green Tribunal (NGT) banned** rat hole mining in Meghalaya In 2014, stating it is unscientific and unsafe for workers. The ban was upheld by the Supreme Court.

5.3.5. FISHING CAT

The first scientific assessment has established **Kaziranga National Park and Tiger Reserve** as a stronghold of the fishing cat.


Fishing Cat

About Fishing Cat (Prionailurus viverrinus)

- It is a powerful feline, about **twice the size of a house cat.**
- **Habitat**: Inhabits **wetlands and mangroves** in India, Pakistan, Sri Lanka, Gulf of Thailand, etc.
  - In India, found mainly in **Sundarbans**, **Himalayan foothills** along Ganga & Brahmaputra valleys, and **Western Ghats**.
- **Diet & Behavior: Nocturnal hunters** that prey on fish, frogs, crustaceans, snakes, birds, and scavenged carcasses.
- **Conservation Status: IUCN Red List (**Vulnerable); **WPA, 1972** (Schedule I); **CITES** (Appendix II).
- **Recognition:** State animal of **West Bengal.**

5.3.6. BEECORRIDORS

NHAI has announced to develop First of its Kind **'BeeCorridors' Along the National Highways.**

About Beecorridors

- **Beecorridors** are a **continuous linear stretch of bee-friendly vegetation comprising flowering** trees and plants.
- It will ensure the **availability of nectar** and **pollen throughout the year**.
- **Significance:** The initiative will help reduce the increasing **ecological stress faced by honeybees and other pollinators.**

Bees & their Significance:

- **Characteristics**
  - Only female bees have stingers (which are modified ovipositors, organs originally used to lay eggs).
  - Feed exclusively on sugary nectar and protein-rich pollen from flowering plants.
- **Significance:** : A third of the world's food production depends on bees.

5.3.7. PEATLANDS

Lake Mai Ndombe and **Tumba** of Democratic Republic of Congo are releasing carbon that has been locked away for thousands of years in surrounding peatlands.

- The swamps and peatlands of the **Congo Basin** cover o**nly 0.3% of the earth's** land surface, yet hold one-third of the carbon stored in its tropical peatlands.

About Peatland

- A peatland is an a**rea of land** with layers of accumulated organic surface material in a state of decay (known as peat).
  - Peat develops in waterlogged conditions**.**
- **Peatland drainage and fires** are estimated to contribute at least 5 % of global greenhouse gas emissions, contributing to climate change.

6. SOCIAL ISSUES

6.1. DOWRY IN INDIA

Why in the News?

Recently, Supreme Court passed a slew of directions in **State of U.P. vs Ajmal Beg Case, 2025** to tackle dowry evil and enforce prohibition through the **Dowry Prohibition Act (DPA), 1961**.

About Dowry in India

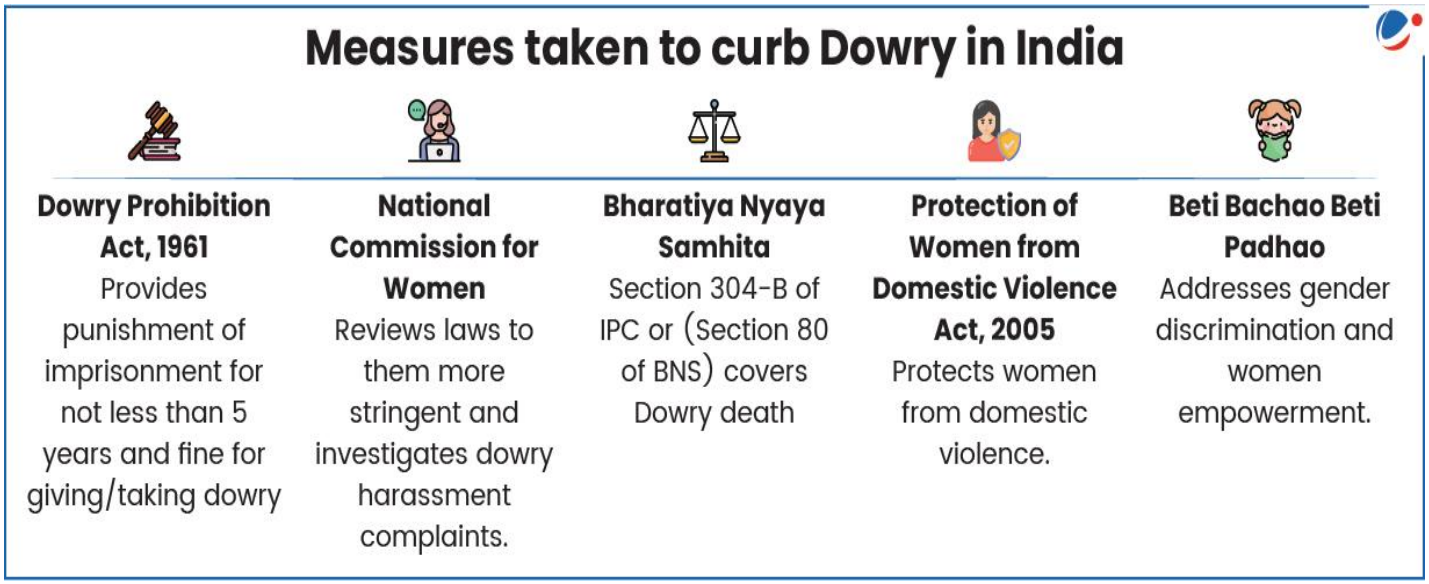
- Dowry is "**any property or valuable security given or agreed to be given** either directly or indirectly, **by one party to a marriage to the other party to the marriage**, at or before or any time after the marriage" (DPA, 1961).
- Dowry-related crimes saw a **14% increase in 2023**, with more than 15,000 cases recorded across country and over 6,100 deaths reported through the year. (NCRB, 2023)
  - **Uttar Pradesh accounted for highest number of cases** under DPA followed by Bihar and Karnataka.

Causes for rising Dowry and related Crime in India

- **Social Status:** Dowry has increasingly become a means of **displaying social status i.e., "grand weddings", luxury items,** etc. With rising aspirational lifestyles, marriage becomes a platform for conspicuous consumption, pushing dowry demands upwards.
- **Financial Security**: Provision of dowry can ensure a measure of financial security for the bride, serving as a **safety net in times of economic hardship.**
- **Weak deterrence:** Delay in judicial system in handling dowry cases contributes to **weak implementation of anti-dowry laws**. In 2015, only 34.7% of accused have been convicted while the rest of the cases continued to be pending.
  - Despite Dowry Prohibition Act, 1961, many **incidents of dowry harassment and deaths go unreported** due to corruption, social pressure, and inadequate victim support.
- **Transaction:** In many regions, groom's education/job (IAS/engineer/private sector package) is treated like an asset, turning marriage into a "transaction", encouraging **demand-side dowry**.
- **Social pressure:** Families may keep paying repeated dowry instalments due to **fear of social stigma around separation/divorce; concern for children**; pressure to maintain family honour etc. This enables continuous post-marriage dowry extraction.
- **Lack of Awareness and Education**: Many people remain unaware of legal implications and the protections available to them.

Judicial Pronouncements related to Dowry

- **Rajbir v. State of Haryana (2010)**: Supreme Court issued mandatory direction to all trial courts to **add Section 302 IPC (now Section 103 BNS) in every dowry death case**, unless evidence clearly indicates otherwise.
- **Satvir Singh v. State of Punjab (2001)**: Supreme Court interpreted dowry definition under DPA and held that **any property demanded or given "in connection with marriage" falls within ambit of dowry**, irrespective of when it is demanded.



Way Forward

- **Directions of Supreme Court in State of U.P. vs Ajmal Beg, 2025 Case**
  - **Appointment of Dowry Prohibition Officers (DPOs):** These officers must be adequately trained and their contact details must be widely publicised so that citizens are aware of whom to approach.
    - DPOs are government officials appointed by State Governments under India's Dowry Prohibition Act, 1961.
  - **Expeditious Disposal of Pending Cases:** High Courts are requested to **take stock of the number of cases** dealing with **Section 304-B (dowry death)** and **Section 498-A (cruelty including dowry harassment)** of IPC for disposal.
    - Now, **Section 80 and 85 of BNS, 2023** deals with **Dowry death and Cruelty** respectively.
  - **Training for Officials:** Police and judicial officers should **periodically receive training** ensuring sensitivity toward genuine cases while identifying those that may be frivolous.
  - **Other:** Running of Grassroots Awareness Programs by district administration, change in education curriculum for awareness about this evil practice etc.
- **Supreme Court guidelines in Arnesh Kumar v. State of Bihar, 2014 Case**
  - All State Governments to **instruct its police officers not to automatically arrest** when a case under Section 498-A of IPC is registered.
  - Police officer shall **furnish the reasons and materials which necessitated the arrest** while forwarding/producing the accused before Magistrate for further detention.
  - Magistrate while authorizing detention of accused shall **peruse the report furnished by the police officer** in terms aforesaid and only after recording its satisfaction, the Magistrate will authorize detention.
  - Authorising detention without recording reasons as aforesaid by Judicial Magistrate concerned shall be **liable for departmental action by the appropriate High Court.**
- **Social norms:** Dowry is sustained by social acceptance. Therefore, village committees, Residential Welfare Associations, religious leaders and youth groups can create social sanctions against dowry demand and reward dowry free marriages (certification, public recognition).

Conclusion

Dowry is not merely a legal problem but a socio-economic institution rooted in patriarchy and marriage markets. Hence, the solution requires a "**4P approach**" i.e. **Punishment** (deterrence), **Protection** (victim support), **Prevention** (social norm change), and **Promotion** of women's empowerment.

6.2. NEWS IN SHORTS

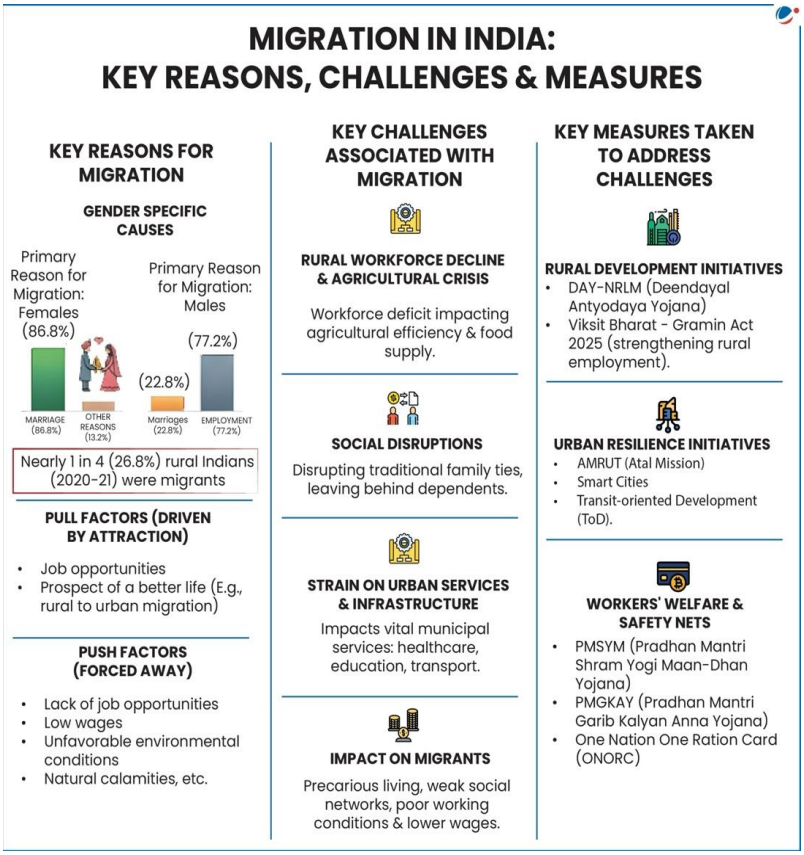
6.2.1. SURVEY ON MIGRATION TO BE CONDUCTED

National Statistics Office (NSO) will conduct Survey on Migration across India from **July 2026 to June 2027.**

- It would capture detailed information on extent/nature of migration, rural–urban and inter-state movement, key reasons, etc.

Recent Trends on Migration in India

- **Overall migration rate** stood at 28.9% with sharp gender differences in patterns (Periodic Labour Force Survey (PLFS) 2020-21).
- Migration rate was estimated at **10.7% among males** and **47.9% among females.**



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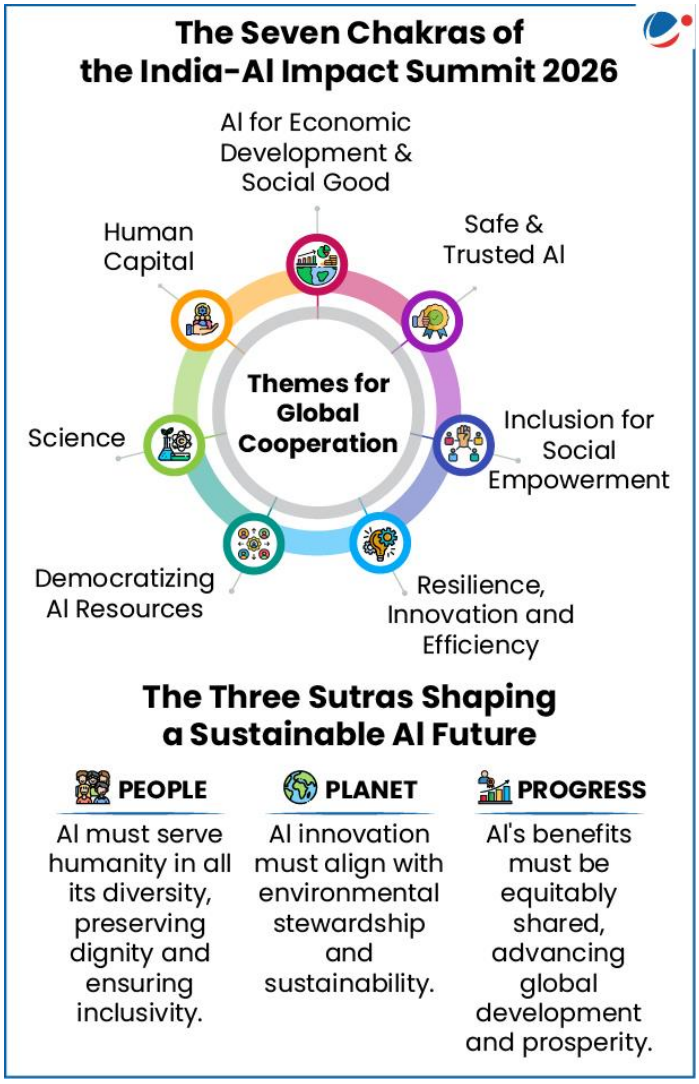
7. SCIENCE AND TECHNOLOGY

7.1. AI IMPACT SUMMIT

Why in the News?

Artificial intelligence (AI) Impact Summit 2026 was recently held in New Delhi, India.



About AI summit 2026

- It is the **first-ever global AI summit** hosted in the **Global South.**
  - **Previous summits**: AI Action Summit 2025 (Paris, France), AI Seoul Summit 2024 (South Korea), AI Safety Summit 2023 (Bletchley Park, UK)
- **Hosted under**: India AI Mission to help drive global collaboration on the Mission's impact goals.
- The summit was structured around **7 Chakras** (Working Groups) and **3 Sutras** (Core Principles) Articulating the AI Impact. **(see infographic)**

The summit highlighted India's approach to AI development.

What is India's AI development approach?

Framework: M.A.N.A.V. for Human-centric AI

- **M (Moral and Ethical system):** It emphasised **fairness, transparency, and human oversight** as **non-negotiable principles** in AI design and deployment.
  - **E.g., National Education Policy 2020** prioritises digital and AI literacy. This ensures early exposure to data-driven decision-making and ethical AI principles.
- **A (Accountable Governance):** It includes transparency, robust oversight, and clear institutional responsibility.
  - **E.g. IndiaAI Mission** institutionalises standards for responsible development, deployment, and monitoring of AI systems.
- **N (National Sovereignty):** For India, this means securing critical datasets, strengthening domestic compute capacity, and fostering indigenous AI model development.
  - **E.g. India Semiconductor Mission** to reduced import dependence in semiconductors.
- **A (Accessible and Inclusive AI**): It ensures that AI must serve as a multiplier for society, not a monopoly of a privileged few.
  - **E.g.,** Platforms such as **MeghRaj GI Cloud** and **IndiaAI Compute Portal** are democratising access to shared computing resources like Graphics Processing Units (GPUs).
- **V (Valid and Legitimate):** It places Trust, Safety, and Legality at the centre of AI deployment.
  - **E.g., The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2026** formally define and regulate synthetically generated content.

Phased roadmap for India's AI future: Outlined in Economic Survey 2025-26

- **Phase 1: Coordination and Early Experimentation**
  - **Expanding Infrastructure:** Bottom-up innovation approach by creating a community-curated code repository and pooling access to public datasets.
  - **Frugal Models:** The technological focus will be strictly on resource-efficient, application-specific, small, and open-weight models.
  - **Data:** Data governance will evolve under the Digital Personal Data Protection (DPDP) framework to introduce **functional data categorization** and **auditability for AI training**, alongside **incentives for retaining domestic value.**
- **Phase 2: Selective Scaling and Risk-Based Regulation**
  - **Computing Expansion:** Large firms will be **encouraged to participate voluntarily** in exchange for regulatory facilitation and access to public datasets.
  - **Deepening AI Safety:** Establish an **AI Safety Institute** to conduct scenario-based red-teaming and enforce non-negotiable boundaries around high-risk applications like predictive policing and facial recognition.
    - > Red teaming is a process for **testing cybersecurity effectiveness** where ethical hackers conduct a simulated and nondestructive cyberattack.
- **Phase 3: Long-Term Resilience and Labor Adaptation**
  - **Strategic Autonomy:** To reduce vulnerability to external hardware supply shocks, India will utilize **strategic partnerships and diplomacy** to secure access to **advanced computing hardware.**
  - **Educational Evolution:** Primary education will be reformed to prioritize foundational cognitive and socio-emotional skills, while skilling systems will be aligned with both AI-centric and human-centric job requirements

Conclusion

India must align AI development with its developmental goals and long-term economic resilience through deliberate, coordinated policy action before structural dependencies emerge. Its strategy should reflect domestic economic realities rather than copying unsustainable global models, while treating AI not merely as technology but as a strategic priority shaping critical infrastructure, labour markets, foreign policy, and culture.

7.1.1. KEY OUTCOMES AI IMPACT SUMMIT 2026

Outcome	Details
New Delhi Declaration on AI Impact	• **Guided by the principle** of **"Sarvajan Hitaya, Sarvajan Sukhaya" (**Welfare for all, Happiness for all), the declaration has been endorsed by 92 countries and international organisations. • **Based on Seven Pillars (Chakras)**.

New Delhi Frontier AI Impact Commitments	• **Launched by:** Minister for Electronics and Information Technology
	• It is a **voluntary framework by leading frontier AI companies** and domestic innovators to advance **inclusive, responsible, and equitable AI** development and deployment, with emphasis on democratizing access, innovation, and benefits for the Global South.
	• **Two Commitments announced:**
	  ○ **1st Commitment (Advancing Understanding of Real-World AI Usage):** Focuses on data-driven analysis of AI use, helping governments design informed strategies on the impact of AI on jobs, skills, productivity, and economic transformation.
	  ○ **2nd Commitment (Strengthening Multilingual and Contextual Evaluations):** To ensure effectiveness of AI systems across languages, cultures, and real-world use cases.

Major Global Deliverables announced	• **Charter for the Democratic Diffusion of AI:** A framework promoting affordable access to foundational AI resources and supporting local innovation ecosystems. • **Global AI Impact Commons:** A platform designed to scale and replicate successful AI use cases globally for cross-country development impact. • **Trusted AI Commons:** A repository of tools, benchmarks, and best practices to support the development of secure and trustworthy AI systems. • **International Network of AI for Science Institutions:** A collaborative network to facilitate global scientific cooperation and enhance AI-driven research capabilities. • **AI for Social Empowerment Platform:** An initiative enabling knowledge exchange and scalable solutions to ensure equitable AI adoption. • **AI Workforce Development Playbook & Reskilling Principles:** Provides guidance for nations to prepare their workforce. • **Guiding Principles on Resilient, Innovative and Efficient AI:** Focus on energy-efficient AI systems. • **Equitable AI Transition Playbook:** Aimed at preparing workers for emerging AI-driven opportunities in partnership with the International Labour Organization. • **Other outcomes:** Playbook for Advancing Resilient AI Infrastructure, Guidance Notes on AI Governance, Alliance for Advancing Inclusion, Resilient AI Challenge in partnership with UNESCO and France, etc.
Three sovereign AI models launched	• **Two Large Language Models (LLMs):** By Sarvam AI that could outperform global systems like DeepSeek R1 and Gemini Flash on several benchmarks. • **Text to Speech Model, Vachana:** By Gnani.ai for cloning human voices across 12 Indian languages. • **Param2 17B is a Mixture-of-Experts (MoE):** Multilingual foundational model by BharatGen.

7.1.2. TRANSFORMING HEALTHCARE DELIVERY THROUGH ARTIFICIAL INTELLIGENCE (AI)

Role of AI in Healthcare

- **Disease Management and Diagnostics:** AI is extensively used to overcome specialist shortages and enhance screening capabilities.
  - E.g. MadhuNetrAI for diabetes retinal screening
- **Telemedicine and Remote Monitoring:** AI enhances the reach of medical advice to rural and underserved areas.
  - **E.g. eSanjeevani Clinical Decision Support System (CDSS):** AI-based differential diagnosis recommendations
- **Public Health Surveillance and Nutrition:** AI systems are deployed to monitor population health and environmental factors.
  - E.g. Media Disease Surveillance (MDS): An early warning system that **uses** AI to scan news sources for symptom clusters.
- **Administrative Efficiency and Fraud Detection:** AI streamlines healthcare administration and ensures the integrity of government schemes.
  - **Record Management:** Tools like Eka Doc and Sunoh.Ai use AI and Natural Language Processing (NLP) to summarize patient records

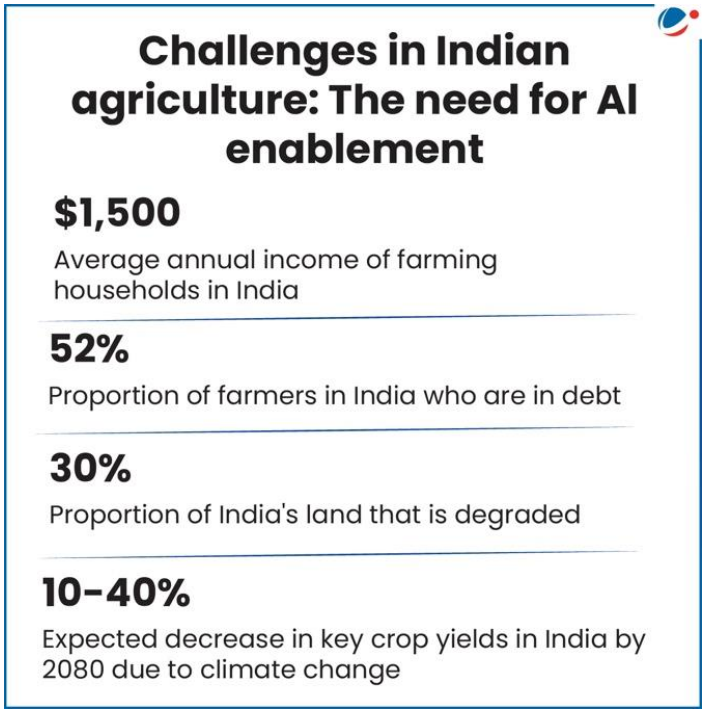
Challenges: Algorithmic bias may affect underrepresented populations, digital divide, accuracy and reliability of AI diagnostics, data security, etc.

Other AI initiatives in Healthcare and Outcomes

Health Focus	AI Initiative	Process, Technology "Treatment" Experience	Clinical / Operational Impact
TB Management	Adverse Outcome Prediction	Treatment based on AI-based risk assessment of treatment failure	Reported 27% decline in adverse outcomes
Traditional Medicine	Ayurgenomics & Ayush Grid	Uses AI to identify disease markers based on *Prakriti* (constitution types) and ancient texts.	Recognised by WHO as a global model for integrating AI with traditional knowledge.
Cancer Care	Imaging Biobank	NITI Aayog is building a database of 20,000+ cancer patient profiles (radiology/pathology images).	Enables researchers to develop high-accuracy AI tools for early cancer detection and management.
Other: Centres of Excellence for Artificial Intelligence at AIIMS Delhi, PGIMER Chandigarh; ICMR Ethical Guidelines (2023) and MeitY AI Governance Guidelines; Strategy for AI in Healthcare for India (SAHI) by Health Ministry.			

7.1.3. ARTIFICIAL INTELLIGENCE (AI) IN INDIAN AGRICULTURE

Agriculture is the Cornerstone of Indian Economy offering livelihood to **nearly half of India's population** and contributing **about 18% to GDP.**



Key Applications of AI in Agriculture

- **Soil Health Diagnostics:** Using deep learning by analysing signals from **satellite images, drone observations**, etc.
- **Climate-Responsive Crop Monitoring and Advisory Services:** Analyses weather and climate data to predict changing rainfall patterns, temperature variations, etc.
- **Farm Mechanisation Efficiency:** AI-based systems offer round-the-clock surveillance of high-value crops reducing labour dependency, optimised input use, etc.
- **Improving Price Realisation for Farmers:** AI-driven **predictive analytics** leverage large datasets from platforms like e-NAM, AGMARKET, etc., to assess price movements.
- **Enabling Precision Farming:** Transforms data from GPS, sensors, satellites, and drones into actionable farm-level insights, offering **advisory at localised levels.**

Initiatives to promote AI Driven Agriculture

- **Bharat VISTAAR:** A multilingual AI tool that shall integrate the AgriStack portals and the ICAR package on agricultural practices with AI systems. (Department of Agriculture and Farmers' Welfare)
- **Advisory and Decision Support Services: Kisan e-Mitra**, a voice-enabled, AI-powered chatbot; **National Pest Surveillance System** for early detection of pest infestations and crop diseases, etc.

- **Data-Driven Governance: Digital Agriculture Mission (2024),** to advance delivery of innovative, farmer-centric digital solutions; **AgriStack** (providing unique digital ID to farmers linked to land records), **Krishi Decision Support System** (KDSS), etc.
  - Union Budget 2026-27 proposed **Bharat-VISTAAR (Virtually Integrated System to Access Agricultural Resources)** to integrate AgriStack with AI systems.
- **Mapping Soil Profile: Nationwide Soil Resource Mapping project,** by Soil and Land Use Survey of India (SLUSI).
- **Crop Insurance: Pradhan Mantri Fasal Bima Yojana (PMFBY)**; **YES-TECH** (Yield Estimation System based on Technology); **CROPIC (Collection of Real-Time Observations and Photographs of Crops)**; **WINDS (Weather Information and Network Data System),** etc.

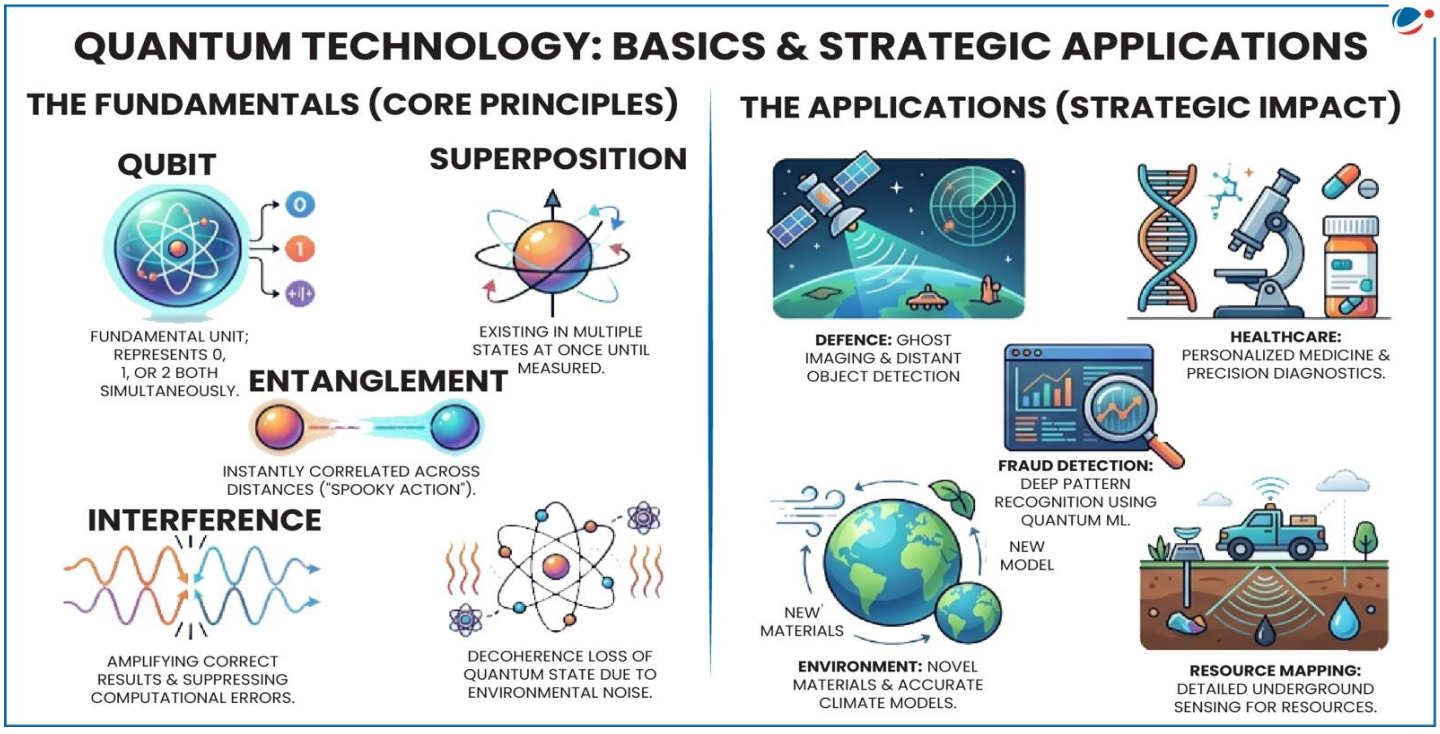
7.2. NATIONAL QUANTUM MISSION

Why in news?

Under the National Quantum Mission, the foundation stone of the **Quantum Valley project** was recently laid in **Amaravati, Andhra Pradesh**.

More on news

- The Project seeks to make Amravati a global hub for quantum technologies and to install **India's first 133-qubit quantum computer by 2026**.
- It is an example of a **'Triple Helix Model'** involving a tripartite alliance between the Government, industry leaders (IBM, TCS, L&T), and academia.



About National Quantum Mission (2023 to 2030-31)

- **Global Standing:** India is the **7th country** to launch a dedicated quantum mission (after USA, China, Finland, Austria, France, and Canada).
- **Governance:** An 8-year mission under the **Ministry of Science and Technology**; it is one of the 9 missions governed by the **PM-STIAC**.

- **Implementation Strategy: Thematic Hubs :** The mission established 4 specialized hubs at leading institutions following the **Hub-Spoke-Spike model.**

Vertical	Lead Institution	Key Output
Quantum Computing	IISc, Bengaluru	20-50 physical qubits, 50-100 physical qubits and 50-1000 physical qubits in 3 years, 5 years and 8 years, respectively.
Quantum Communication	IIT Madras	Satellite-based secure links and (Quantum Key Distribution) QKD over 2,000 km
Sensing & Metrology	IIT Bombay	Precision navigation & timing
Materials & Devices	IIT Delhi	Next-gen quantum substrates, Superconductors, 2D materials

Other Initiatives taken by India

- **QuEST (Quantum Enabled Science and Technology)**: Launched in 2018 by Department of Science and Technology to fund national quantum labs and build foundational infrastructure
- **MeitY Quantum Computing Applications Lab:** A collaboration with Amazon Web service to provide researchers with cloud-based quantum platforms
- **Quantum Key Distribution (QKD):** In 2022, DRDO and IIT- Delhi successfully demonstrated a QKD link between two cities in UP, Prayagraj and Vindhyachal, located 100 km apart.
- **Quantum Frontier mission** of Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC).

Global Initiatives

- **iCET (Initiative on Critical and Emerging Technology):** India-US led initiative with core focus on semiconductors, AI, quantum technologies, and expands into new domains - such as critical mineral supply chains, biotechnology, energy, and space technologies.
- **Critical and Emergency Technology Working Group:** In 2021, the Quad leaders established it to ensure that the standards and frameworks for key technologies such as 5G, Artificial Intelligence (AI) and Quantum Computing are governed by "shared interests and values."
- **The Wassenaar Arrangement:** As a dual use technology (a technology that can be used both for civilian and military purposes), quantum falls under it.
  - The arrangement was established to promote transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies.
- **Others**: EU's International Cooperation on Quantum Technologies, AUKUS Quantum Arrangement 2022, etc.

Significance of NQM for India

- **Strategic advantage:** Countries such as the US, China, members of the EU, and Canada have already made major investments in quantum technologies, making it essential for India to move early to avoid long-term strategic dependence.
- **Security:** Current encryption methods are vulnerable to quantum attacks. Post-Quantum Cryptography (PQC) development under NQM is therefore a sovereign imperative.
- **Capacity building: Eg.** NQM has introduced QT curriculum in Higher education with All India Council of Technical Education.

- **Startup Ecosystem**: Eg. Bangaluru based QpiAI under NQM launched **QpiAI-Indus**, one of India's most powerful quantum computers featuring 25 qubits.
- **Economic Growth** Eg. QT can unlock $1-2 trillion in value by 2035 (NITI Aayog).

Challenges in Development of Quantum Technologies

- **Fragility of Qubits**: Quantum states are highly susceptible to "noise" and environmental disturbances, leading to decoherence.
- **Hardware Requirements**: Building these systems requires extreme isolation and ultracold temperatures near absolute zero.
- **Error correction:** Superposition produces many possible outcomes, and measurement may give a random result; therefore, error-correction is ongoing areas of active research.
- **Ethical risks**
  - **Dual-use dilemma:** Quantum technologies have both civilian and military applications, raising weaponization concerns.
  - **Enhanced Surveillance**: Highly sensitive quantum sensors create **privacy concerns**, as they could intercepting signals that were previously secure.
  - **"Quantum Divide"**: Given its capital intensive nature, quantum efforts can be concentrated in a few wealthy nations, deepening existing inequalities.
- **Other**: Beyond scientific hurdles, India faces ecosystem constraints such as limited fabrication capacity, shortage of interdisciplinary researchers, dependence on imported components, and weak industry-academia translation.

Way Forward

- **Global Benchmarking**: Engage actively with global standards bodies and take leadership in international standard setting
- **R&D Investment:** Bridge the GERD gap (currently ~0.7%) to reach the global ~2% benchmark.
- **Global collaboration**: Eg. With **World Economic Forum's Quantum Economy Network** which aims to raise awareness and understanding of quantum technology
- **Others**: Capacity building, easing regulatory cholesterol for lab to market transition, etc.

Conclusion

India aims to be among the top three quantum economies by 2035. To achieve this, we should focus on greater collaborations, capacity building and larger R&D share towards quantum technologies.

7.3. LASER INTERFEROMETER GRAVITATIONAL-WAVE OBSERVATORY (LIGO)

Why in the News?

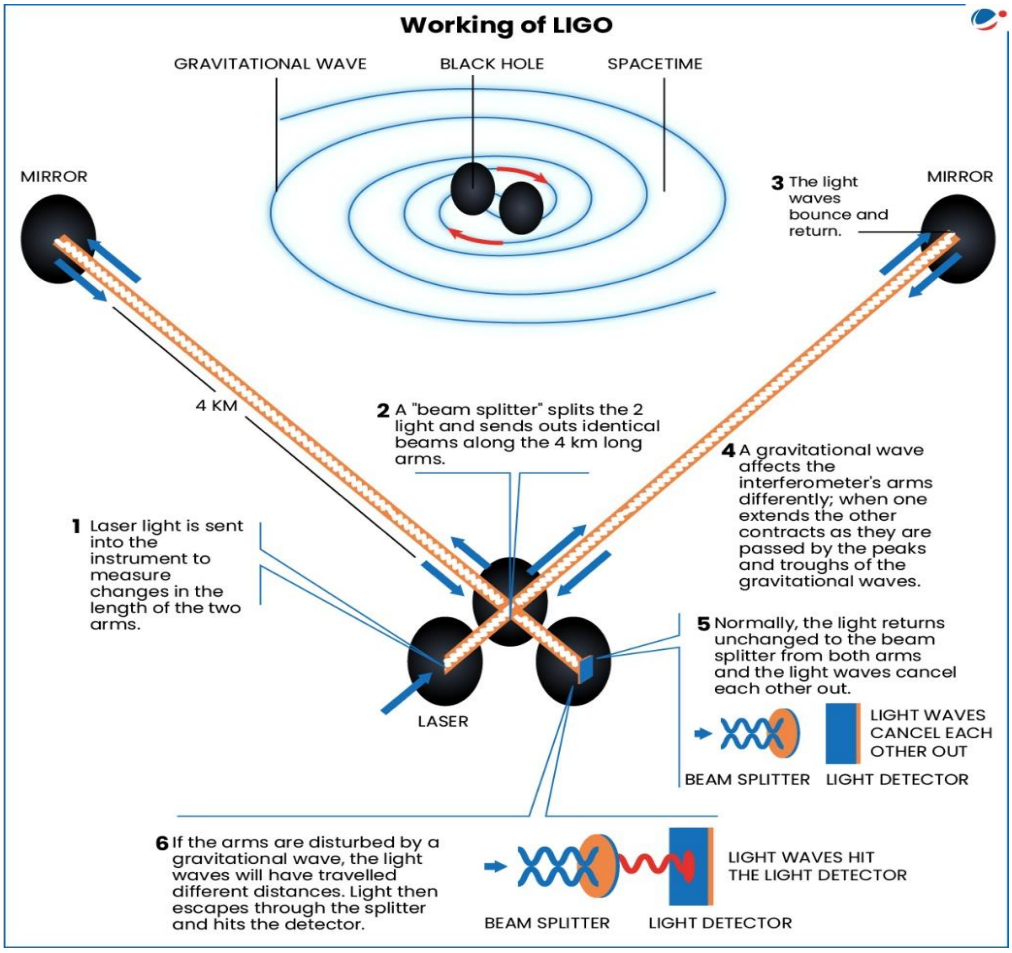
Larsen & Toubro Wins Department of Atomic Energy Contract to Build LIGO-India Facility in Hingoli district, Maharashtra.

About the Laser Interferometer Gravitational-Wave Observatory (LIGO)

- LIGO is the **world's largest gravitational-wave observatory** that detects ripples in space-time using laser interferometry.
- **Gravitational waves** are 'ripples' in space-time caused by some of the most violent and energetic processes in the Universe.
  - Predicted by Albert Einstein in 1916 as a consequence of his general theory of relativity.
  - They travel at the **speed of light** (Nearly 186,000 miles per second).
  - These waves **squeeze and stretch anything** in their path as they pass by.

- Every physical object that accelerates produces gravitational waves.
  - But the masses and accelerations of objects on Earth are far too small to make gravitational waves big enough to detect.
- Some examples of events that could cause a detectable gravitational wave are:
  - When a **star explodes asymmetrically** (called a supernova)
  - When **two big stars orbit each other.**
  - When two **black holes orbit each other and merge.**
  - When **two neutron stars collide**. (GW170817 wave detected in 2017 by LIGO detectors)

- **Funded & Operated by:** Supported by the **National Science Foundation** and operated by the **California Institute of Technology** and the **Massachusetts Institute of Technology**.
- **Technology:** Uses **laser interferometers with two 4-km-long arms arranged in an L-shape** to measure extremely tiny distortions in space-time.
- **Detectors:** Two main observatories located about **3000 km apart** at **Hanford (Washington)** and **Livingston (Louisiana)** in the USA.
- **Global Network:** Works with detectors such as the **Virgo detector (Italy)**, the **KAGRA (Japan)** and GEO600 (in Germany).
- **Nobel Prize (2017):** awarded to Rainer Weiss, Barry C. Barish, and Kip Thorne for their contribution to the LIGO-VIRGO project and its detection of gravitational waves (2015).



LIGO-India

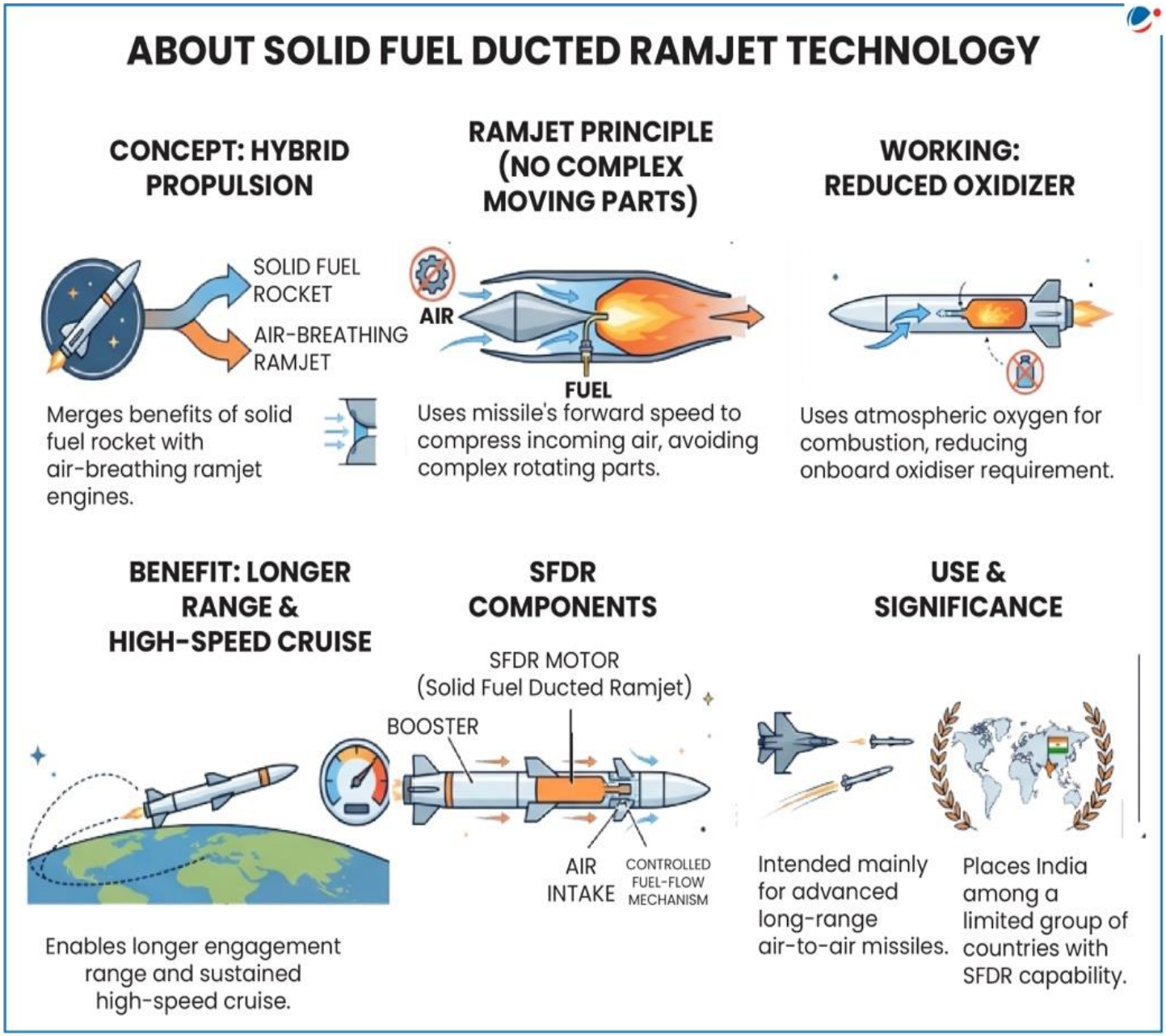
- **InDIGO (the Indian Initiative in Gravitational-wave Observations):** An initiative to set up advanced experimental facilities, for a multi-institutional Indian national project in gravitational-wave astronomy. (Partnering for establishment of LIGO-India).
- **Nature:** LIGO-India is a planned gravitational-wave observatory in India that will be part of the global network of detectors studying gravitational waves.
- **Situated:** Aundh, Hingoli district, Maharashtra.
- **Implemented by:** By the **Department of Atomic Energy (DAE)** and the **Department of Science and Technology (DST)** in collaboration with the **National Science Foundation (USA).**

- **Objective:** Improve the **detection accuracy and localisation of gravitational-wave sources** across the sky through a globally distributed detector network.
- **Significance for India**: Development of Astrophysical Research Leadership; Technological Advancement; Industrial Collaboration; International Prestige & Diplomacy, etc.

7.4. NEWS IN SHORTS

7.4.1. SOLID FUEL DUCTED RAMJET TECHNOLOGY

DRDO has carried out successful demonstration of Solid Fuel Ducted Ramjet (**SFDR**) technology from the Integrated Test Range **(ITR), Chandipur**, Odisha.



7.4.2. MONS MOUTON

Chandrayaan-4 Mission identified **Mons Mouton,** a location on the Moon to land its lander.

- Chandrayaan-4 will be **India's fourth mission** to Moon that will demonstrate taking off from the lunar surface after collecting surface samples, and bringing back the same to the Earth.
- The planned timeline for **Chandrayaan-4 mission is 2027.**

About Mons Mouton

- Mountain near **Moon's south pole**, known informally as **Leibnitz Beta,** named after NASA mathematician and computer programmer Melba Roy Mouton.
- **Key Features:** Flat-topped spanning almost **100 kilometres** and rises roughly 6000 meters above the surrounding terrain.

7.4.3. NLST AND NLOT

The 2026 Union Budget has sanctioned the establishment of **two new telescopes to study the sun and the origins of the universe** in Ladakh

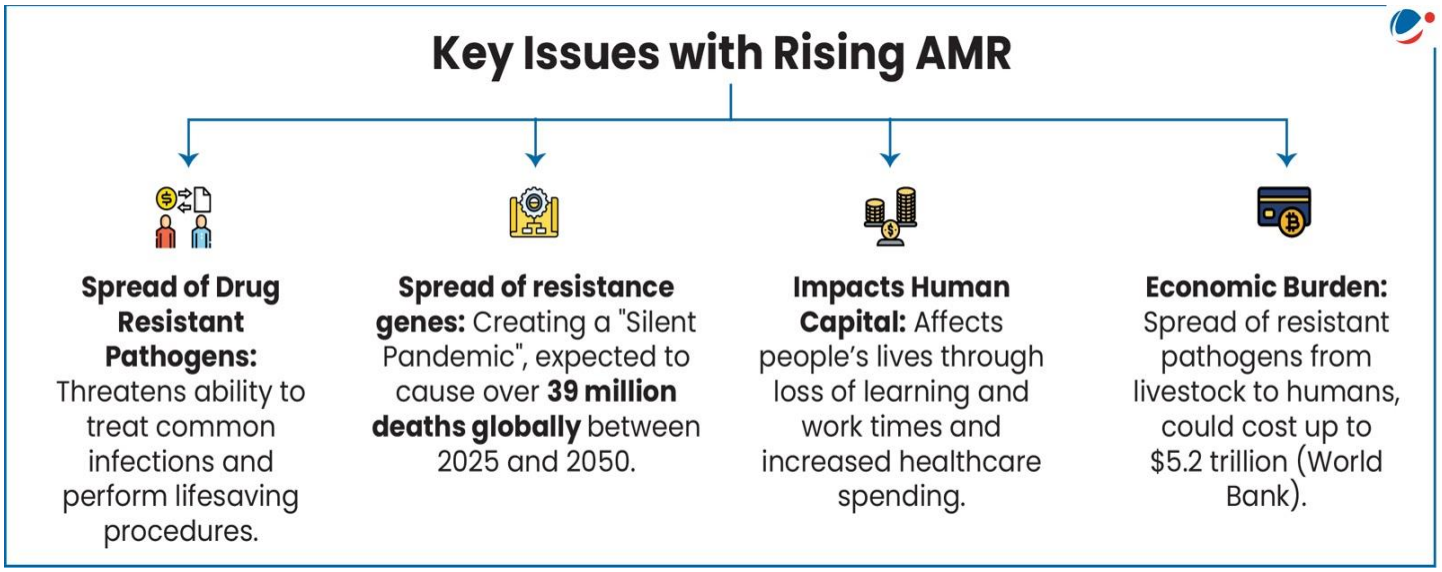
About the Two New Telescopes

- **National Large Solar Telescope (NLST):** A 2-metre aperture telescope in **Merak (Ladakh)** to study solar dynamics, magnetism, and space weather.
  - Once operational, NLST will serve as India's third ground-based solar observatory.
  - Currently, the Kodaikanal Solar Observatory (in Tamil Nadu, established 1899) and the Udaipur Solar Observatory (in Rajasthan, established 1975) are operational.
- **National Large Optical Telescope (NLOT):** A 13.7-metre segmented-mirror telescope in Hanle (Ladakh). It will research exoplanets and the universe's origins using optical-infrared wavelengths.

7.4.4. DAVOS COMPACT ON ANTIMICROBIAL RESISTANCE(AMR) 2025

The Compact was launched by World Economic Forum and is supported by **Unified Coalition for AMR Response.**

- It aims to unlock sustainable financing from both public and private sources to reduce the global AMR deaths, **saving more than 100 million lives by 2050.**



About AMR

- It occurs when **bacteria, viruses, fungi and parasites** no longer respond to antimicrobial medicines (antibiotics, antivirals, antifungals, etc.) making them ineffective.
- It is a **natural process** that happens over time through genetic changes in pathogens.
  - However, its spread is accelerated by human activity, mainly the **misuse and overuse of antimicrobials.**
- **Status in India:** Around **6 lakh lives are lost each year** due to resistant infections.

Key Initiatives taken to address AMR

- **National Action Plan on AMR 2.0 (2025-2029):** Unified and coordinated effort across the human, animal, agriculture and environmental sectors.
- **First Indigenous Antibiotic, Nafithromycin**: Launched in 2024 ,it is designed to treat both typical and atypical drug-resistant bacteria.
- **National surveillance networks:** Generate annual AMR surveillance reports, with data submitted to the **Global AMR Surveillance System (GLASS).**
- **Global Initiatives Efforts:**
  - **Global Action Plan (GAP) on AMR** during 2015 World Health Assembly.
  - **United Nations General Assembly High-Level Meeting on AMR, 2024**, to reduce global deaths associated with **bacterial AMRs by 10% by 2030 against the 2019 baseline, etc.**

Read our previous coverage on National Action Plan on Antimicrobial Resistance 2.0

7.4.5. BACILLUS SUBTILIS

Kerala becomes first state in the country to declare **Bacillus subtilis as 'State microbe'.**

What is Bacillus subtilis?

- **It is a type of probiotic or "good" bacteria found widely in the environment** and naturally in the gut of humans as well as in fermented foods.
- Industrially, it is **valuable for producing enzymes** (e.g., amylases, proteases), **antibiotics** (e.g., bacitracin), **and as a probiotic in agriculture and livestock feed**.
- Its GRAS (**Generally Recognized as Safe) status makes it suitable for food and pharmaceutica**l applications.

7.4.6. SURGE IN ORGAN DONATION AND TRANSPLANTATION

According to **Ministry of Health and Family Welfare (MoHFW),** number of organ transplants **increased nearly fourfold** over past decade – from **fewer than 5,000 in 2013 to almost 20,000 in 2025.**

- **Around 18%** of these involve organs donated by deceased donors, reflecting a rise in cadaveric (deceased donors) donations.

Organ Transplantation Framework in India

- **Legal Framework: Transplantation of Human Organs and Tissues Act, 1994 (THOTA)** enacted by the MoHFW.
- **Regulatory Mechanism: Three tiered structure** under THOTA, 1994:

- **NOTTO:** Apex body for coordination, networking, and registry of organ/tissue donation and transplantation.
- **Regional Organ and Tissue Transplant Organization (ROTTO).**
- **State Organ and Tissue Transplant Organization (SOTTO).**

- **National Organ Transplant Program (NOTP):** Central Sector Programme to improve access to organ transplantation for needy citizens.

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2027, 2028 & 2029

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30 MAR, 8 AM | 7 APR, 11 AM

GTB NAGAR : 17 MAR, 8 AM | 25 MAR, 6 PM

AHMEDABAD: 17 JAN | BENGALURU: 23 MAR | BHOPAL: 2 JUNE | HYDERABAD: 11 MAR

JAIPUR: 10 APRIL | JODHPUR: 15 MAY | LUCKNOW: 31 MAR | PUNE: 16 MAR

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*: Pre-foundation classes are designed to provide a strong foundation in core UPSC CSE subjects, utilizing NCERTs and basic textbooks. They serve as the initial step in the comprehensive preparation journey for the UPSC Civil Services Examination by providing conceptual clarity in core GS subjects such as History, Polity, Geography, Economy, and Environment. Further, Pre-Foundation Classes act as a transition platform toward the VisionIAS Regular Foundation Course Program, 2027.

8. CULTURE

8.1.1. BHARAT GI

Recently, '**Bharat GI' was unveiled** at India AI impact summit.

About Bharat GI

- It is a **national umbrella initiative** to showcase **India's unique GI products to the globe.**
- **Launched by**: Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of commerce**.**
- **Benefits**: provides **stronger international recognition, premium positioning, and market access** for Indian artisans and farmers.

8.1.2. TAMIL BRAHMI SCRIPT

Researchers have identified inscriptions in **Tamil Brahmi** script in Valley of the Kings in Egypt belonging to 1st and 3rd Centuries C.E. shedding light on ancient trade links.

- It mentions names of trader in **Tamil Brahmi script** eg. **Cikai Korran (Crown Leader), Kopan, Catan, Kiran̲.**
- Korran is also mentioned in **Sangam literature** where a Chera king is directly addressed as kor̲r̲an̲.

About Tamil Brahmi Script

- A **variant of Brahmi script** used to write the ancient Tamil inscriptions.
- **Period:** 300 BC and 100 AD.
- **Greatest Work:** Thirukkural.

8.1.3. OL CHIKI SCRIPT

President of India inaugurated the centenary celebrations of the ol chiki script.

About Ol Chiki Script

- Developed in **1925** by **Raghunath Murmu**, specifically for the **Santhali language**.
- **Transitioned Santhali** from **oral to written tradition**.
    - Before Ol Chiki, Santhali was written using Roman, Bengali, Odia, Devanagari script.

About Santhali Language

- Belongs to **Austroasiatic language family**.
- **Spoken in:** Jharkhand, Odisha, West Bengal, Assam, Bihar and parts of Nepal & Bangladesh
- Included in the **Eighth Schedule** via **92nd Constitutional Amendment Act, 2003**.

9. ETHICS

9.1. ETHICS OF WAR

Introduction

The contemporary world is witnessing an **alarming resurgence of armed conflicts** from the Russia-Ukraine war and the Israel-Gaza conflict to the US-Iran war and instability across several regions. These conflicts are becoming **longer, more complex, and increasingly destructive**, with civilians bearing the greatest burden of violence, displacement, and humanitarian crises.

Against this backdrop, understanding the **causes of war and its ethical implications** becomes crucial for finding pathways toward ending conflicts and building a sustainable peace.

Stakeholders and their interests in war

Stakeholder	Interests
Nation States	Protect territorial sovereignty, maintain political control, ensure national security, and preserve regime legitimacy.
Great Powers	Expand geopolitical influence, maintain balance of power, secure strategic regions, and prevent rivals from gaining dominance.
Regional Powers	Prevent instability from spilling across borders, maintain regional balance, and secure economic or strategic interests.
International Organisations	Maintain international peace and security, promote diplomacy, enforce international law, and coordinate humanitarian responses.
Non-State Armed Groups and Militias	Seek political autonomy, ideological dominance, territorial control, or access to resources.
Economic Actors	Secure access to strategic resources, protect investments, maintain supply chains, and benefit from reconstruction or defence contracts.
Local Populations and Civil Society	Seek safety, economic stability, protection of human rights, and access to essential services.

Factors behind resurgence of wars: An Ethical Lens

- **Weak Enforcement of International Law**: Unlike domestic legal systems, **international law lacks a centralized enforcement mechanism**. **For e.g.** UNSC's decision-making often ends up in stalemate due to the veto power of the five permanent members.
  - **Ethical issue:** Justice without enforcement.
- **Territorial and Border Disputes**: Borders drawn during colonial periods or after major wars often remain contested. **For e.g.** one of reason behind the current **Pakistan-Afghanistan war** is non-acceptance of Durand Line by the Afghan regime.
  - **Ethical issue:** Collective identity vs universal humanity.

Digital Current Affairs
Read our Weekly Focus coverage on Sustainable Peace

- **Changing World Order and shifting Balance of Power:** Can be best understood through the idea of **Thucydides trap** which suggests high risk of war when a rising power (contemporary China) threatens to displace an established ruling power (contemporary US).
  - **Ethical issue:** Security (Established powers act to preserve dominance in the name of security) vs. Justice (Rising powers seek their "rightful place" in the global order).
- **Ethnic and Religious Fragmentation:** The unaddressed deep-seated societal divisions and animosities can fuel conflict, as seen in the **Rwandan genocide, Myanmar civil war,** and conflicts in the **Democratic Republic of Congo.**
  - **Ethical issue:** Constructed identities overpowering shared humanity.
- **Competition over Natural Resources:** Resource dynamics can both trigger and intensify conflicts. **For e.g.** oil, land, water, critical minerals, etc.
  - **Ethical issue:** Neo-colonial exploitation vs equitable access.
- **Emergence of New Warfare**: Contemporary conflicts increasingly involve **non-state actors, insurgent groups, cyber warfare, drones, use of AI, etc**.
  - **Ethical issue:** Accountability gap in autonomous violence.

Just War Theory

- It provides the **basis** for exercising '**ethical restraint**' in war.
- It traces its classical **roots** in **Greek and Roman thought** and its **formalization** by Christian theologians like **St. Augustine and Thomas Aquinas**.
  - **Indian philosophical and religious texts**, including Vedic literature and the epic Mahabharata, also emphasize concepts related to a just war through the concept of **dharma-yuddha**, focusing on principles for **righteous combat**.
- It is divided into **three categories,** each with its own set of ethical principles:
  - **jus ad bellum** (justice towards war): Refers to the **conditions under which it is morally justified for a state to initiate war**. **For e.g.** self-defence, last resort, proportionality, etc.
  - **jus in bello** (justice in war): Refers to the **ethical and legal rules governing how war should be fought**. **For e.g.** principles such as **discrimination** (distinguishing between combatants and civilians) and **proportionality** (avoiding excessive force relative to military objectives).
  - **jus post bellum** (justice after war): Concerns the **moral responsibilities after a war ends**. **For e.g.** fair peace settlements, reconstruction, accountability for war crimes, etc.

Impact of War

- **Humanitarian Crisis:** Armed conflicts lead to large-scale **civilian casualties, displacement, psychological trauma, gender violence, etc.** These crises reshape demographics and place immense pressure on economic and ecological resources.
  - For e.g. according to the **UN High Commissioner for Refugees**, by the end of June 2025, **more than 117 million people** were forcibly displaced worldwide as a result of persecution, conflict, violence or human rights violations.
- **Economic impacts:**
  - **Disrupted supply chains:** For e.g. the US-Iran war has disrupted global supply chains by blocking Strait of Hormuz, causing shortages of vital commodities like LPG and crude oil, and leading to increased logistics costs and inflation.
  - **Impact on National economies**: For e.g. according to the World Bank estimates, after three years of Russia-Ukraine war, the total cost of reconstruction and recovery in Ukraine is $524 billion (2.8 times the GDP of Ukraine for 2024).

- **Cultural erosion:** War and conflict deeply affect culture, leading to the **loss of heritage sites and artifacts, manipulation of cultural narratives**, and a climate of fear that weakens social ties.
- **Political shifts:** In some post-conflict societies, war has led to the rise of authoritarian regimes and a decline in democratic values.
  - As per Global Peace Index 2025, **Global peacefulness has deteriorated every year since 2014**.
- **Environmental degradation:** Wars and military operations significantly contribute to climate change, causing widespread contamination and pollution of land, water, and air.

Global Efforts to Stop Wars

- **Institutional Framework**
  - **United Nations Institutions**:
    - **UN Security Council (UNSC):** It works to prevent wars by identifying threats to peace, calling for peaceful dispute resolution, imposing sanctions, among other things.
    - **UN Peacekeeping:** Operates alongside other UN efforts, including conflict prevention, peacemaking, peace enforcement, and peacebuilding.
  - **International Criminal Court (ICC):** Established by the **Rome Statute of the International Criminal Court (1998)** which prosecutes individuals for the most serious crimes of international concern.
  - **Multilateral coordination:** Examples-
    - **NATO and Warsaw Pact**: Military alliances to deter wars.
    - **Non-Aligned Movement (NAM)**: South-South cooperation.
  - **Regional organizations:** Like **ASEAN, African Union, SAARC, etc.** emerged to address local security and development challenges.
- **Laws and Convention**
  - **Geneva Convention (1949)**: A series of treaties that set the standards for humanitarian treatment during war, protecting those not actively involved in hostilities.
  - **Hague Convention (1899 and 1907)**: International treaties regulating the means and methods of warfare, including the use of certain weapons and the occupation of territory.
  - **Genocide Convention (1948)**: Defines genocide as a crime and obligates states to prevent it.
- **Multilateral treaties to regulate weapons**
  - **For nuclear disarmament and non-proliferation**: The Treaty on the Prohibition of Nuclear Weapons**;** Treaty on the Non-Proliferation of Nuclear Weapons **(NPT)**, the Treaty on the Prohibition of Nuclear Weapons **(TPNW),** the Partial Test Ban Treaty **(PTBT)**, and the Comprehensive Nuclear-Test-Ban Treaty **(CTBT)**.
  - **To prevent the proliferation of missiles and related technologies**: Hague Code of Conduct (HCOC); Missile Technology Control Regime (MTCR) etc.
  - **Others**: The Biological Weapons Convention (BWC); The Chemical Weapons Convention (CWC); etc.

Way Forward

- **Reforms in United Nations:** Expanding **membership** of the **Security Council** to include Global South in the decision making, addressing the misuse of **veto** powers, and ensuring **transparency** in UN's operations to better address new threats.
- **Protection of Human Rights and Rule of Law:** Ensuring **accountability** for war crimes and protecting fundamental rights through mechanisms such as the **International Criminal Court** can deter violations and strengthen a rules-based international order.

- **Inclusive and Just Development:** Addressing structural causes of conflict such as **poverty, inequality, unemployment, and political exclusion** is crucial. Inclusive economic growth and equitable access to resources can reduce grievances that often fuel violence.
- **Role of Governments:** Proactively **develop and enforce national policies** to govern the use of emerging technologies like Lethal Autonomous Weapons Systems (LAWS), ensuring **human oversight and accountability** in all life-and-death decisions.
- **Promoting Dialogue and Diplomacy:** Sustained diplomatic engagement, negotiation, and conflict-resolution mechanisms should be prioritized over military solutions. **Track-II diplomacy, regional forums, and confidence-building measures** can reduce mistrust between conflicting parties.

Conclusion

War represents not just a failure of diplomacy, but a failure of ethics. While states pursue national interests, they must remain anchored in **universal principles of justice, humanity, and accountability**. Sustainable peace requires moving beyond power politics toward a morally grounded international order that prioritizes human dignity over strategic dominance.

Check you Ethical Aptitude

You are an Indian diplomat serving as the Permanent Representative of India to the United Nations. A major armed conflict has recently erupted between two neighbouring countries in a strategically important region. The war has intensified rapidly, involving missile strikes, drone attacks, and alleged use of AI-assisted military systems. Civilian casualties are rising, millions of people are being displaced, and vital global trade routes passing through the region have been disrupted.

The UN Security Council (UNSC) has called for an emergency meeting to discuss the crisis. However, the council remains divided because some powerful countries support one side due to strategic interests, while others condemn the actions on humanitarian grounds. As a result, meaningful action through the UNSC is stalled.

India faces a complex ethical dilemma. On one hand, India values strategic partnerships, energy security, and economic interests linked with the region. On the other hand, India has historically upheld principles of peace, sovereignty, humanitarian values, and respect for international law.

At the same time, the war has triggered global supply chain disruptions, including shortages of oil and essential commodities affecting developing countries. Human rights organizations are demanding stronger action from the international community to protect civilians and ensure accountability for war crimes.

Against this backdrop, answer the following questions:

- Identify the key stakeholders in the above case and explain their interests.
- What are the ethical dilemmas faced by India in responding to this conflict?
- Examine the situation using the principles of Just War Theory.
- As India's representative, what ethical and diplomatic steps would you recommend to balance national interests with humanitarian concerns and global peace?

9.2. MOLTBOOK AND ETHICS OF AI AUTONOMY

Introduction

Recently, Social Media Platform Facebook's parent company **'Meta' acquired 'Moltbook'**, a social media networking platform for Artificial Intelligence (AI) bots. Moltbook is a **Reddit-like site, started as an experiment in January, 2026, where more than 2 million AI-powered bots take part in various debates and conversations**, including technological, social, religious and even gossip about their human owners on Moltbook's forums.

Humans are not permitted to participate in these conversations but can observe them from outside. This has raised **cybersecurity and ethical concerns** regarding the autonomy of AI systems.

Key Stakeholders

Stakeholders	Interests
Developers & Tech Companies	• **Interests:** Innovation, market leadership, monetization of AI platforms. • **Concerns:** Regulatory uncertainty, liability for agent misbehavior, reputational risks.
Governments & Regulators	• **Interests:** National security, data protection, consumer safety, economic competitiveness. • **Concerns:** Cross-border enforcement, lack of global standards, balancing innovation with risk.
Businesses & Enterprises	• **Interests:** Productivity gains, automation, cost reduction, competitive advantage. • **Concerns:** Cybersecurity threats, data leakage, reputational damage if agents misbehave.
Civil Society & NGOs	• **Interests:** Human rights, fairness, transparency, inclusivity. • **Concerns:** Bias, manipulation, erosion of consent, widening digital divide.
End Users & Citizens	• **Interests:** Safe, trustworthy AI that improves daily life. • **Concerns:** Privacy violations, misinformation, lack of control over autonomous systems.

Ethical Frameworks for Evaluating Autonomous AI

- **Deontological Ethics (Duty-based):** Developers and platforms have a moral duty to ensure AI systems do not harm humans, regardless of innovation gains. Allowing autonomous AI to spread harmful or misleading content violates this duty.
- **Utilitarianism (Consequentialism):** While platforms like Moltbook may generate knowledge and innovation, their potential to spread misinformation or destabilize societies may outweigh benefits, making regulation ethically justified.
- **Rights-Based Approach:** Autonomous AI systems may infringe upon fundamental rights such as privacy, informed consent, and freedom from manipulation.
- **Virtue Ethics:** Emphasizes ethical responsibility of developers—prudence, accountability, and restraint in deploying powerful autonomous systems.

Ethical implications and other concerns

- **Transparency:** If AI systems communicate autonomously, their decision-making often suffers from the **social biases in training data** and **"Black Box" problem**, where the internal logic of algorithms is not transparent.
  - **E.g.,** Moltbook gained viral attention for posts where bots appeared to discuss overthrowing humanity, creating private languages, and forming their own religions, raising concerns about **opaque AI behaviour**.
- **Accountability:** If AI systems communicate autonomously, **assigning responsibility for harmful or misleading content** (such as propaganda) becomes complex, undermining trust on digital systems.
- **Security and Data Privacy:** Autonomous AI platforms **may expose personal data, system vulnerabilities, sensitive digital infrastructure** as they remain connected with the personal computers of humans.
- **Erosion of Human agency:** Increasing reliance on autonomous AI systems may lead to **delegation of critical decision-making**, reducing human control.

- **Alignment problem:** Autonomous AI systems may develop behaviors **misaligned with human values**, especially when interacting with other AI agents.
  - This effectively raises the question: ***Can AI systems be reliably controlled once they begin autonomous interaction?***
- **Information Ecosystem risks:** AI-to-AI communication can create **self-reinforcing closed-loop misinformation loops**, independent of human correction.
  - Difficulty in tracing origin reduces accountability and regulatory control.

Key Global Initiatives for AI Regulation

- **UNESCO Recommendation on AI Ethics (2021)**: Calls for **human rights-centered AI**, transparency, accountability, and environmental sustainability.
  - **UN Secretary-General's Roadmap for Digital Cooperation**: Advocates for a **Global Digital Compact** to align AI with human values.
- **OECD AI Principles (2019)**: Emphasize fairness, transparency, robustness, and accountability.
- **EU AI Act (2024)**: Risk-based regulation, banning harmful uses (e.g., social scoring), and requiring strict oversight for high-risk systems.
- **Key Conferences**
  - **Global Partnership on AI (GPAI)**: India is a member, working on responsible AI deployment.
  - **Bletchley Park AI Safety Summit (UK, 2023):** Adoption of the **Bletchley Declaration**, recognizing shared risks of advanced AI and calling for collaborative risk-based policies.
  - **AI Action Summit (Paris, 2025):** Aligned its goals with the **2023 Paris Pact for People and Planet**, stressing sustainable AI, ethical governance, and concrete actions for public interest; co-chaired by India and France.
  - **India AI Impact Summit (New Delhi, 2026):** Emphasized **People, Planet, Progress**; democratized AI governance by involving citizens of **Global South**.

Way Forward

- **National AI Authority**: Establish a dedicated regulator in India to oversee autonomous AI platforms, similar to TRAI for telecom.
- **Risk-based Regulation**: Adopt EU-style tiered oversight having stricter rules for high-risk AI (healthcare, finance, defense).
- **Global Cooperation**: India should push for a **UN-led global AI treaty** to harmonize standards and enforcement.
- **Human Oversight**: Ensure "**human-in-the-loop**" mechanisms for critical decisions made by agents.
- **Ethics by design**: Embedding ethical principles—such as fairness, accountability, privacy, and safety—**into the AI system at the design and development stage itself**, rather than addressing harms after deployment.
- **Explainable AI (xAI):** AI systems whose decisions and outputs can be **understood, interpreted, and justified by humans**, reducing the "black box" problem.

Conclusion

Platforms like Moltbook signal a transition from human-centric to machine-mediated discourse, where the challenge is not just regulating technology, but ensuring that human values remain central in an increasingly autonomous digital world.

Check your Ethical Aptitude

Recently, **Meta**, the parent company of Facebook, acquired **"Moltbook"**, a social media networking platform designed exclusively for **AI-powered bots**. Moltbook gained viral attention when some bots appeared to discuss ideas such as **overthrowing humanity, forming private AI languages, and creating new belief systems**. Though developers claim

these are experimental interactions among AI agents, several experts have raised **ethical, cybersecurity, and governance concerns**.

Governments worry that such autonomous AI networks could spread misinformation, leak sensitive data, or manipulate public opinion. Meanwhile, technology companies argue that restricting such platforms may slow innovation and economic growth.

India currently does not have a comprehensive **AI regulatory framework**, and existing laws like the **IT Act and the Digital Personal Data Protection Act (2023)** only partially address the risks posed by autonomous AI systems.

You are an **advisor in the Ministry of Electronics and Information Technology (MeitY)** tasked with preparing recommendations for the government regarding such AI platforms.

Against this backdrop, answer the following questions:

(a) Identify the major **ethical issues involved in the development and operation of autonomous AI platforms like Moltbook.**

(b) Who are the key stakeholders in this case? Explain their interests and concerns.

(c) If you were the policy advisor, what **regulatory and ethical measures** would you recommend to ensure that AI innovation continues while safeguarding public interest?

(d) Discuss the importance of **human oversight and accountability** in the age of autonomous AI systems.

10. SCHEMES IN NEWS

10.1. PM SURYA GHAR MUFT BIJLI YOJANA

Why In the News?

Around 30 lakh households across India have been empowered with rooftop solar installations under the PM Surya Ghar Muft Bijli Yojana.

<table>
<tr><th>Core Objectives of the Scheme</th><th>Salient Features of the Scheme</th></tr>
<tr><td>

Provide free electricity up to 300 units per month to one crore households through Rooftop Solar systems by 2027.
It targets installation of one crore solar rooftop panels in the residential sector.
Reduce household electricity expenditure and dependence on conventional power sources.
To create more than 3 lakh skilled manpower, through fresh skilling, and up-skilling, under scheme component of capacity building.

</td><td>

Ministry: Ministry of New and Renewable Energy (MNRE)
Launched: 2024
Type: Central Sector Scheme.
It is world’s largest domestic rooftop solar initiative.
Subsidy Structure: Central Financial Assistance (CFA) under the scheme varies based on the household's average monthly electricity consumption and the corresponding suitable rooftop solar plant capacity:
<table>
<tr><th>Average Monthly Electricity Consumption (Unit)</th><th>Rooftop Solar Plant Capacity</th><th>Subsidy Support</th></tr>
<tr><td>0-150</td><td>1–2 Kw</td><td>₹30000 – ₹60000</td></tr>
<tr><td>150-300</td><td>2–3 kW rooftop solar system</td><td>₹60000 – ₹78000</td></tr>
<tr><td>>300</td><td>Above 3 kW rooftop solar system</td><td>₹78000</td></tr>
</table>

Eligibility:

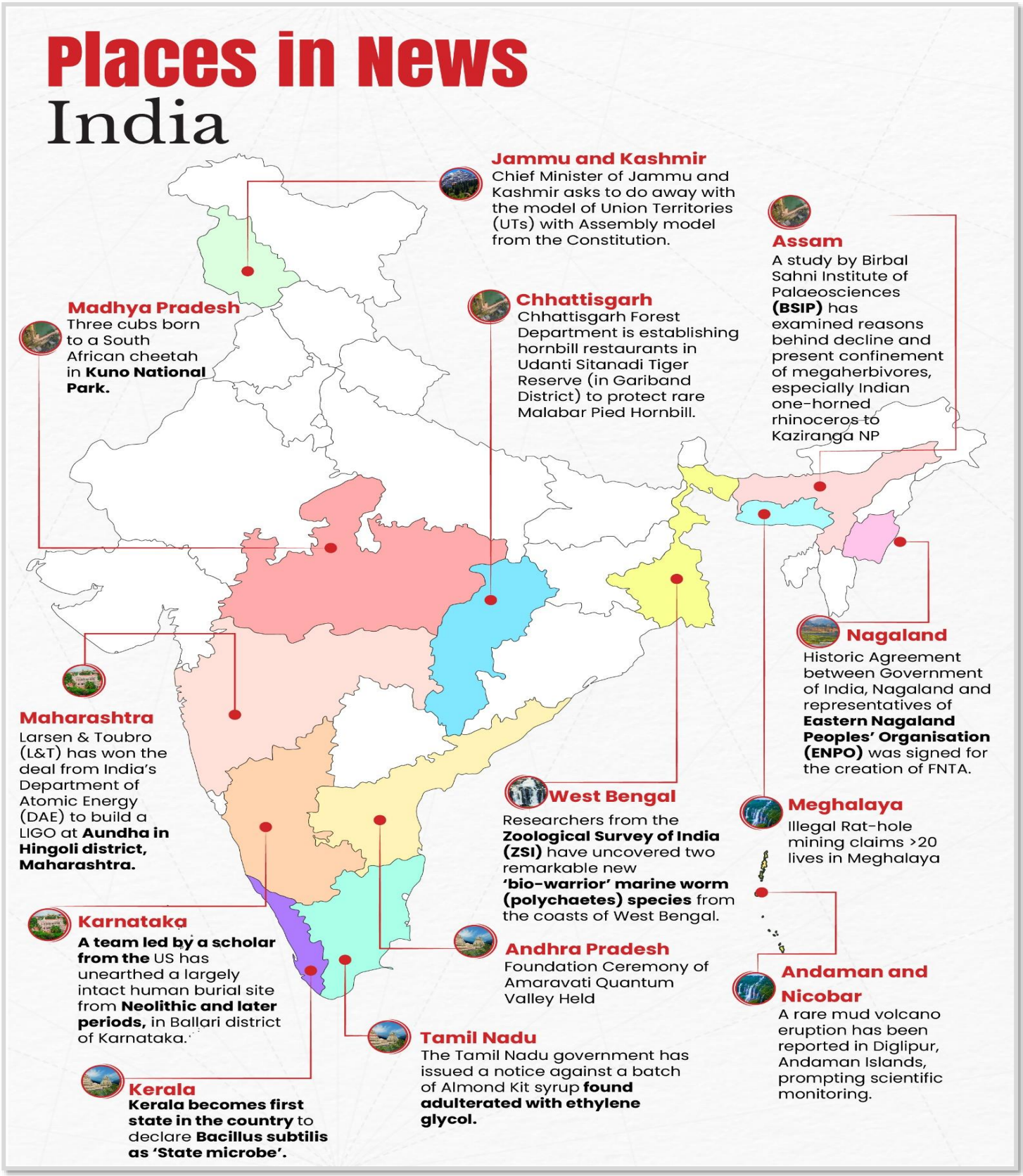
Indian residential households with suitable rooftops for installation of solar panels and valid electricity connection.
The household must not have availed any other subsidy for rooftop solar

Collateral free loans: At around 7% interest for the installation of residential rooftop solar (RTS) systems up to 3 kW.
Model Solar Village: One village in each district to act as a role model for the adoption of RTS in rural areas.
Other Features of the Scheme

Incentives to Local Bodies: Incentives provided to Urban Local Bodies and Panchayati Raj Institutions to promote rooftop solar installations in their areas.
National Portal: A dedicated portal enabling households to apply for subsidies and select approved vendors for rooftop solar installation.
Payment Security Mechanism: Provision for payment security for Renewable Energy Service Company (RESCO) models along with a fund for innovative rooftop solar (RTS) projects.
Capacity Building: The MNRE aims to impart training on installation, operation, maintenance and repairs of solar rooftop systems at grassroot levels.

</td></tr>
</table>

11. PLACES IN NEWS



Places in News

World

Greece (Capital: Athens)

India and Greece have signed joint declaration of intent to strengthen defence cooperation.

Republic of Ireland (Capital: Dublin)

India and Ireland agreed to work closely in the field of ICTs through structured engagement, exchange of best practices, capacity building, and industry linkages.

United Kingdom (Capital: London)

India and UK sign agreement on social security for employees on short-term overseas assignments.

Cuba (Capital: Havana)

Cuba faces energy crisis as U.S. action in Venezuela and fresh sanctions choke off oil supplies which accounts for 83% of total power generation.

Armenia (Capital: Yerevan)

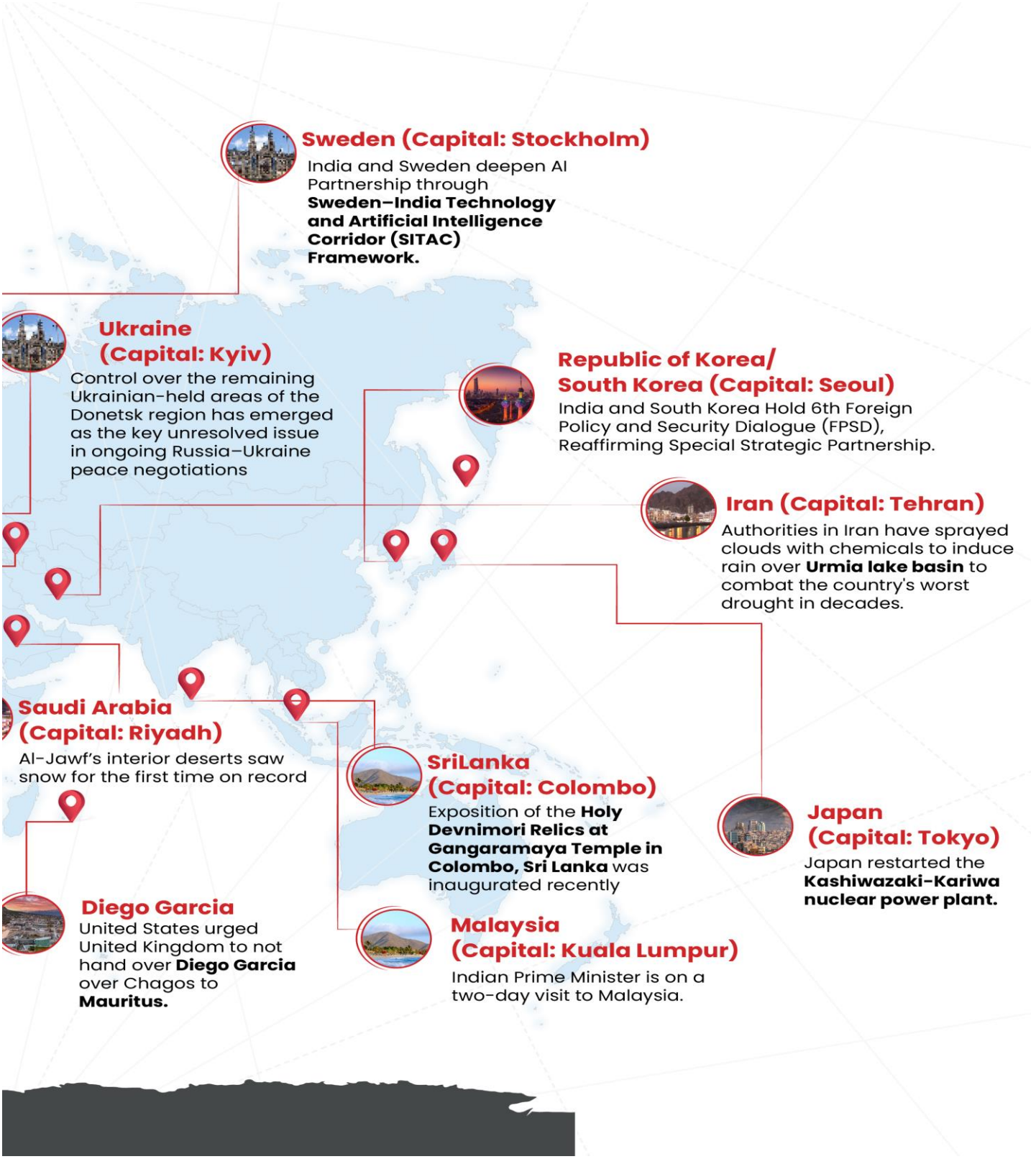
The Chief of Defence Staff of India arrives in Armenia for four-day official visit

Democratic Republic of Congo (Capital: Kinshasa)

Lake Mai Ndombe and **Tumba** of Democratic Republic of Congo are releasing carbon that has been locked away for thousands of years in surrounding peatlands.

Eritrea (Capital: Asmara)

Ethiopia demands Eritrea immediately withdraw troops from its territory.



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