

IAS GOOGLE FEBRUARY 2026

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ECONOMIC DEVELOPMENTS

Bank Frauds in India

- RBI's Report on Trend and Progress of Banking in India 2024-25 shows fraud cases fell, but money involved surged in FY25.

Key Findings from the RBI Report

- Nature:** Frauds fell to 23,879 (from 36,052), but value jumped to ₹34,771 crore (from ₹11,261 crore).
- Court-Linked Reclassification:** Spike largely due to 122 cases worth ₹18,336 crore re-reported after complying with SC on borrower hearing/natural justice.
- H1 Trend:** Apr-Sep FY26 cases fell to 5,092 (from 18,386), but the amount rose to ₹21,515 crore.
- Digital Volume:** Card/Internet frauds around 66.8% of cases by number (FY25).
- Loan Fraud:** Advances-related frauds are around 33.1% of the total amount by value.
- Bank-Group Pattern:** Private banks: 59.3% of cases; PSBs: 70.7% of amount involved (FY25).

Reasons for Decline in the Number of Bank Frauds

- Digital Transaction Controls:** AI-based fraud monitoring systems deployed across core banking platforms, velocity checks, and risk-based authentication have reduced small-value fraud attempts.
- Stronger KYC Framework:** Mandatory re-KYC, video-based customer identification and centralised KYC records have reduced impersonation and mule accounts.
- Early Warning Systems:** Automated alerts for unusual account behaviour help freeze suspicious transactions faster; E.g., account-level early warning signal dashboards in scheduled banks.
- Consumer Awareness Drives:** SMS alerts, fraud advisories and helpline integration have improved customer response time; E.g., nationwide cyber awareness campaigns linked to digital payments.

Reasons for High Value Loss in Bank Frauds

- Legacy Loan Frauds:** Large corporate and consortium loan frauds surface after forensic audits, inflating total value despite fewer cases.
- Reclassification Effect:** Earlier under-reported or disputed frauds were re-examined and reported afresh, adding high-ticket amounts in a single year.

- **Advances Concentration:** Credit-related frauds are fewer in number but involve large exposure sizes compared to retail digital frauds.

Way Forward

- **Risk-Based Supervision:** Intensify scrutiny of large-value advances using dynamic risk scoring models; E.g., borrower risk heat-maps for early supervisory intervention.
- **Unified Fraud Intelligence:** Integrate fraud registries across banks and non-banks for real-time red-flag sharing; E.g., interoperable fraud alert platforms similar to payment switch networks.
- **Digital Payment Safeguards:** Introduce cooling-off periods and beneficiary verification for high-risk transactions; E.g., delayed execution for first-time high-value transfers.
- **Board-Level Accountability:** Mandate periodic fraud-risk reviews by bank boards with fixed response timelines; E.g., quarterly fraud governance dashboards.

Thorium Push for India's Nuclear Programme

- NTPC is set to partner US-based **Clean Core Thorium Energy (CCTE)** to advance thorium-based nuclear fuel for India's reactors, marking a new phase in India-US civil nuclear cooperation.

India's Three-Stage Nuclear Programme

- **Stage One:** Uses natural uranium in Pressurised Heavy Water Reactors (PHWRs); India operates 19 PHWRs, forming the backbone of its current nuclear capacity.
- **Stage Two:** Fast Breeder Reactors designed to use plutonium-based fuel to breed more fissile material; progress has been slow, delaying scale-up.
- **Stage Three:** Thorium Phase, which aims to use thorium to produce uranium-233 for sustained power generation, leveraging India's thorium abundance.
- **Current Status:** Nuclear energy accounts for roughly 3% of the country's total electricity generation.
- **Long-term Goal:** Achieve 100 GW of nuclear power capacity by 2047.

Importance of Thorium-Based Nuclear Fuel for India

- **Resource Endowment:** India possesses ~25% of global thorium reserves, while holding only ~1-2% of global uranium, making thorium central to long-term fuel security.

- **Import Dependence:** India imports over 70% of its uranium needs, whereas thorium is domestically available in coastal and riverine sands.
- **Energy Longevity:** Thorium-based fuel cycles can potentially power India's reactors for several centuries.
- **Waste Advantage:** Thorium fuel produces significantly lower volumes of long-lived radioactive waste.
- **Proliferation Safety:** Uranium-233 bred from thorium has higher proliferation resistance, strengthening India's non-proliferation credentials.

Strategic Significance of the Partnership

- **India-US Cooperation:** Only the second US firm in nearly two decades to receive clearance for nuclear tech transfer to India, signalling renewed trust.
- **Private Sector Entry:** Aligns with the SHANTI Act, 2025, which permits private participation in nuclear operations and fuel management.
- **Global Leadership:** Positions India as a front-runner in commercial thorium utilisation, an area where most nuclear powers remain experimental.
- **Technology Leap:** Allows thorium use in existing PHWRs (19 reactors in operation), avoiding multi-billion-dollar costs and decades needed to build an entirely new reactor fleet.

India-US Nuclear Cooperation

- **123 Agreement (2008):** The India-US Civil Nuclear Agreement enabled peaceful nuclear cooperation after India received an NSG waiver, ending decades of nuclear isolation.
- **NSG Waiver:** Allowed India to engage in global nuclear commerce despite being a non-NPT state.

Pro-Active Governance and Timely Implementation (PRAGATI)

- Land acquisition has emerged as the single largest bottleneck in infrastructure development, accounting for 35% of project delays, the Cabinet Secretary said after the **50th PRAGATI** meeting.

Pro-Active Governance and Timely Implementation (PRAGATI):

- PRAGATI is a centralised, ICT-enabled governance platform for grievance redressal, programme implementation, and project monitoring, enabling real-time review of projects of national importance.
- Established in: Launched on 25 March 2015 by the Government of India, under the Prime Minister's leadership.

Aim:

- Ensure timely implementation of infrastructure and development projects.
- Resolve inter-ministerial and Centre-State coordination issues.
- Promote e-transparency, accountability, and outcome-based governance.

Key features

- Three-tier architecture:** Links PMO, Union Secretaries, and State Chief Secretaries on one platform, enabling direct coordination, faster decisions, and clear accountability across governance levels.
- Monthly PM-chaired reviews:** Provides high-level political oversight through regular video-conference meetings, ensuring time-bound resolution of critical project delays.
- Digital-GIS integration:** Uses real-time data, geo-spatial mapping, and live visuals to objectively track project progress and identify ground-level bottlenecks.
- Unified data sourcing:** Integrates CPGRAMS, PMG, and MoSPI databases to create a single monitoring dashboard, reducing silos and improving policy coordination.
- Escalation framework:** Allows unresolved issues to move from ministries to higher institutional and PM-level review, ensuring decisive inter-ministerial action.
- Digital follow-up:** Tracks all directions electronically until closure, ensuring sustained monitoring, accountability, and outcome delivery.

Significance

- Reviewed 3,300+ projects worth ₹85 lakh crore with 7,156 issues resolved so far.
- Accelerated completion of legacy projects pending since the 1990s.
- Strengthens cooperative federalism by bringing Centre, States, and local governments onto one platform.

Government Launches Twin Credit Support Measures For Exporters

- The Government of India launched the **Interest Subvention Scheme** and the Collateral Support Scheme under the **Niryat Protsahan sub-scheme** of the **Export Promotion Mission (EPM)**.
- Policy Aim:** The two components aim to lower borrowing costs and address collateral constraints faced by MSME exporters.

Interest Subvention Scheme

- Interest Support:** It is a central sector scheme that offers a 2.75% interest subsidy on rupee export credit.
- Objective:** Aims to reduce borrowing costs for MSME exporters and enhance the price competitiveness of Indian goods.
- Implementing Bodies:** Jointly Implemented by the **Directorate General of Foreign Trade (DGFT)** and the **Reserve Bank of India**.
- Budget Allocation:** The government earmarked ₹5,181 crore over six years, from FY 2025 to FY 2030.
- Loan Coverage:** This applies to both pre-shipment (during production) and post-shipment (from shipment until payment is received) rupee export credit.
- Product Scope:** The scheme covers about 75% of tariff lines, with significant MSME participation.
- Exclusions List:** Restricted items, waste or scrap, and products covered under overlapping incentive schemes like PLI are excluded.
- Benefit Ceiling:** The maximum annual interest subvention is capped at ₹50 lakh per firm.
- Rate Review:** Subvention rates will remain floating and will be reviewed twice a year, depending on repo rates and global benchmarks.

Collateral Support Scheme

- Credit Guarantee:** The scheme offers government-backed credit guarantees to improve MSME exporters' access to bank finance.
- Objective:** To ease collateral constraints for MSME exporters and expand access to export-linked working capital credit.
- Implementing Body:** The **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)** is implementing it on a pilot basis.
- Coverage Scope:** This applies only to export-linked working capital loans extended by scheduled commercial banks and other eligible lenders.
- Guarantee Extent:** Guarantee coverage varies by enterprise size, up to 85% for micro and small exporters and 65% for medium exporters.

- **Exposure Cap:** The maximum guaranteed outstanding exposure per exporter is limited to ₹10 crore in a financial year.
- **Exclusions List:** Restricted items, waste or scrap, and products covered under overlapping export incentive schemes are excluded.

Export Promotion Mission (EPM)

- The Export Promotion Mission is a flagship **central-sector scheme** of the Ministry of Commerce and Industry to improve export competitiveness.
- Nodal Agency: Directorate General of Foreign Trade (DGFT) serves as the primary implementing and coordinating authority
- **Export Targets:** The mission aims to achieve USD 2 trillion in total exports by 2030 and increase the export-to-GDP ratio to 15%.
- **Scheme Integration:** It consolidates fragmented export schemes, such as the Interest Equalisation Scheme (IES) and the **Market Access Initiative (MAI)**, into a unified framework.
- **Operational Structure:** EPM operates through two coordinated sub-schemes, **NIRYAT PROTSahan and NIRYAT DISHA**.
- **NIRYAT PROTSahan:** Expands exporters' access to affordable trade finance and lowers overall borrowing costs.
- **NIRYAT DISHA:** Provides non-financial support to strengthen exporters' market preparedness and trade competitiveness

Digital Land Governance Initiatives Launched

- The Minister of State for Rural Development and Communications launched the '**Land Stack**' portal and the '**Glossary of Revenue Terms**' (GoRT).
- These initiatives promote modern, transparent, citizen-focused land governance and improve "Ease of Living" for citizens.

Land Stack Portal

- It is an integrated **Geographic Information System (GIS)**-based platform launched under the **Digital India Land Record Modernisation Programme (DILRMP)**.
- The portal provides citizens and government agencies with consolidated land and property data

through a unified digital interface.

- It is modelled on land governance practices followed in Singapore, the United Kingdom, and Finland.
- The portal has been formally launched in the pilot locations of Chandigarh and Tamil Nadu.

Glossary of Revenue Terms (GoRT)

- GoRT provides meanings of various land-related revenue terms in the Vernacular, Hindi, English, and Roman scripts.
- **Objective:** To address linguistic diversity in land administration and ensure nationwide data interoperability without replacing state-specific terminology.
- **Development:** By the Department of Land Resources (DoLR) in collaboration with the **Centre of Excellence in Land Administration and Management (CoE-LAM) at YASHADA, Pune.**

Source - (PIB)

Land Acquisition Major Hurdle in India's Infrastructure Development

- Land acquisition has been identified as the biggest bottleneck in India's infrastructure projects reviewed under **PRAGATI**.
- Land acquisition caused 35% of project delays, while environmental clearances and right-of-way issues together account for 73% of total delays nationwide.
- **PRAGATI:** Pro-Active Governance and Timely Implementation is a three-tier platform launched in 2015 to enable real-time project reviews and monitoring of government schemes.

Land Acquisition in India

- Land acquisition involves the government acquiring private land for public uses like infrastructure, defence, industrial projects, and social infrastructure.
- It is governed by the Right to Fair Compensation and Transparency in **Land Acquisition, Rehabilitation and Resettlement (LARR) Act, 2013**.
- The Act mandates a **Social Impact Assessment (SIA)** to evaluate the impacts on livelihoods, infrastructure, and communities before acquisition.
- **Consent Norms:** Prior consent of 80% families is required for private projects and 70% for PPP projects.
- **Compensation Rule:** Landowners receive four times the market value in rural areas and twice the

market value in urban areas.

- An additional “solatium” equal to 100% of compensation is paid to account for the involuntary nature of the acquisition.

Landscape of Infrastructure Development in India

- **Financial Outlay:** The 2025-26 Union Budget allocated a record ₹11.21 lakh crore (3.1% of GDP) for capital investment, a 10.1% increase from the previous year.
- **Road:** India has the 2nd-largest road network, with national highways spanning 1,46,145 km in 2024.
- **Railway:** Indian Railways has electrified 99.2% of the Broad Gauge network by 2025.
- **Aviation:** India is the 3rd largest domestic aviation market after the United States and China.
- **Shipping:** Under Sagarmala 2.0, cargo handling reached 1,630 MT, improving India's global ranking in international shipments from 44th to 22nd.
- **Urban Infrastructure:** India now has the 3rd-largest operational metro network, spanning 1,013 km across 23 cities (May 2025).
- **Rural Development:** Jal Jeevan Mission (JJM) achieved 80% rural tap water coverage by early 2025.

Banks Can Now Manage Assets in the National Pension System (NPS)

- The PFRDA has approved a framework that allows banks to set up pension funds to manage assets under the National Pension System (NPS).
- **Earlier Role:** Scheduled Commercial Banks were earlier limited to acting as Points of Presence for onboarding and servicing NPS subscribers.
- **Expanded Scope:** Banks can now directly sponsor a Pension Fund Manager entity, subject to meeting prescribed financial criteria.
- **Eligibility Norms:** Bank eligibility will align with RBI norms on net worth, market capitalisation, and overall prudential soundness.

National Pension System (NPS)

- NPS is a voluntary, defined-contribution retirement scheme regulated by the Pension Fund Regulatory and Development Authority (**PFRDA**).
- **Subscriber Choice:** Subscribers can choose a Pension Fund Manager and asset allocation, while

the Permanent Retirement Account Number (PRAN) remains portable across jobs and locations.

- **Investment Pattern:** Professional managers allocate contributions among equities, government securities, corporate bonds, and alternative assets to generate market-linked returns.
- **Eligibility Scope:** Any Indian citizen or Overseas Citizen of India aged 18-70 can open NPS accounts.
- **Retirement Withdrawal:** At the normal retirement age of 60, government employees may withdraw up to 60% of their accumulated corpus tax-free.
- **Annuity Rule:** At least 40% of the corpus must be used to purchase an annuity from PFRDA-empanelled providers to receive a taxable monthly pension.
- For non-government subscribers, recent reforms allow a lump sum withdrawal of up to 80%.

PFRDA

- **Statutory Regulator:** PFRDA is the primary statutory pension regulator under the Ministry of Finance.
- **Legal Status:** It was constituted as an interim body in 2003 and later became statutory through the PFRDA Act, 2013.
- **Core Objective:** PFRDA promotes old-age income security by establishing, developing, and regulating pension funds.
- **Regulatory Role:** It prescribes guidelines for pension fund operations, investment norms, and performance benchmarking standards.
- **Major Schemes:** PFRDA administers National Pension System (NPS), Atal Pension Yojana (APY), Unified Pension Scheme (UPS), and **NPS Vatsalya**.

Board of Trade

- BoT highlighted slowing exports due to the steep US tariffs of 50 %.

Board of Trade

- **About:** It is apex advisory body on policy measures related to the Foreign Trade Policy aimed at strengthening India's trade ecosystem.
- **Chairman:** Minister for Commerce & Industry.
- **Members:** Comprise ministers in charge of trade and commerce in state governments and union territories, export promotion councils, industry associations etc.

- It was reconstituted in 2019 through the merger of the Council for Trade Development and Promotion with the BoT.

India becomes world's largest rice producer

- Union Agriculture Minister said India has become the world's largest rice producer, with output at 150.18 million tonnes, overtaking China at 145.28 million tonnes.

World's largest rice producer - India:

- India has overtaken China to become the **No. 1 rice-producing country globally**, as per the minister's statement (2024–25 output: 150.18 MT).
- India's status: Global ranking
- India - world's largest producer.
- China - second.

State-wise ranking:

- As per **Economic Survey (Statistical Appendix) for 2023-24**, the three largest rice-producing states were:
 1. Telangana - 16.63 MT ($\approx 12.17\%$ share)
 2. Uttar Pradesh - 15.72 MT ($\approx 11.50\%$ share)
 3. West Bengal - 15.12 MT ($\approx 11.06\%$ share)
- (Other consistently major rice producers include Andhra Pradesh, Punjab, Odisha, Bihar, Chhattisgarh, Tamil Nadu, Assam)

Geographical features of rice production in India

- **Climate belt:** Rice thrives in hot, humid conditions—hence concentration in eastern, southern, and north-eastern India.
- **Water geography:** Strong presence in river deltas and floodplains (Ganga-Brahmaputra plains; Krishna-Godavari-Cauvery deltas) where water availability and alluvium support paddy.
- **Irrigation-driven expansion:** In lower rainfall zones, rice is sustained via canals/tube-wells, enabling high yields but raising water-stress concerns.
- **Terrain adaptation:** In hilly regions, rice is grown via terraced cultivation with controlled water flow.

Significance:

- Reinforces India's position as a high-buffer food grain economy (recent official estimates also show record rice output in earlier years).
- Higher production supports exports and stabilises global rice markets, especially for importing countries.

India's Seafood Exports

- Despite steep US tariffs on shrimp, India's seafood exports recorded 16% growth in value and 12% in volume during April–October FY26, driven by rapid diversification.

Indian Seafood Exports to the US

- **Tariff Disadvantage:** Indian shrimp faces an effective duty of ~59.7% in the US, compared to 15–20% for Ecuador, Vietnam, and Thailand, eroding price competitiveness.
- **Market Dependence:** The US accounted for 35% of India's seafood exports (\$2.8 billion) in FY25, making tariff shocks disproportionately damaging.

Drivers of Export Resilience

- **Market Diversification:** Non-US markets offset losses, with seafood exports to China rising to 19% and Vietnam surging 110% in value during April–October FY26.
- **European Push:** The EU approved 102 additional Indian fishery units, strengthening access to a market that already absorbs 15.1% of India's seafood exports (\$1.12 billion in FY25).
- **Product Strength:** Frozen shrimp, especially Vannamei shrimp, continues to anchor exports due to scale, quality consistency, and competitive production costs.
- **Asia-Europe Pivot:** Buyers in Asia and Europe increasingly source from India amid supply rebalancing, helping compensate for a 4% value decline in exports to the US in FY26 (April–October).

Key Concerns Ahead

- **US Demand Cliff:** After January 2026, exporters report an almost empty US order pipeline, which is critical as the US still absorbed ~35% of India's seafood exports (\$2.8 billion) in FY25.
- **Shrimp Overdependence:** Frozen shrimp contributes over 70% of India's marine export

earnings, exposing exporters to tariff shocks like the effective US duty of ~59.7%.

- **Compliance & Cost Pressures:** Non-tariff barriers are rising, as SPS compliance and certification costs can add 8–12% to export costs, disproportionately impacting MSME exporters.

Way Forward

- **Value Addition:** Shift from raw frozen shrimp to processed and ready-to-eat seafood to improve margins and absorb tariff shocks; E.g., expansion of cooked shrimp segments under MPEDA support.
- **Product Basket Expansion:** Promote exports of cuttlefish, squid, and finfish to reduce shrimp concentration; E.g., EU demand where non-shrimp products already contribute ~15% of India's seafood exports.
- **Farmer & Exporter Support:** Strengthen aquaculture insurance, disease surveillance, and cold-chain infrastructure; E.g., PMMSY interventions to stabilise farm incomes and reduce production risks.

Current Status of Marine Fisheries in India

- **Global Standing:** India contributes ~8% of global fish production, ranks 3rd in total fish output, 2nd in aquaculture, and 4th in global seafood exports.
- **Production & Potential:** Marine capture fisheries output remains largely stagnant at ~3.6–3.8 million tonnes annually, against an estimated sustainable potential of ~5.31 million tonnes.
- **Growth & Exports:** The fisheries sector recorded ~10% average annual growth in recent years; marine exports stood at ~USD 7.45 billion in FY25.
- **Geographical Spread & Employment:** India has an 11,098 km coastline and a ~2.37 million sq. km EEZ supporting the livelihoods of ~16 million people.

Live Events Development Cell

- The Ministry of Information and Broadcasting established the **Live Events Development Cell (LEDC)** to formalise and accelerate India's 'concert economy'.
- The LEDC functions as a single-window mechanism to streamline approvals and regulatory processes for large-scale live events.
- The initiative aims to position India among the world's top five live entertainment hubs by 2030.
- India's organised live events market was valued at ₹20,861 crore in 2024, with a 15% annual

growth rate; the industry supports about 10 million jobs.

- The **concert economy** forms a core pillar of the Orange Economy, also known as *the Creative Economy*.
- Orange Economy refers to the group of economic activities that transform ideas into cultural goods and services, with their value primarily determined by intellectual property (IP).

Government Creates Three-Year PPP Project Pipeline

- The Ministry of Finance has created a three-year Public-Private Partnership (PPP) project pipeline (FY26–FY28), in line with the Union Budget 2025-26 announcement.
- It is a roadmap prepared by the **Department of Economic Affairs (DEA)** listing 852 infrastructure projects across the Centre and the States.
- **Objective:** Provide early visibility into potential projects for global and domestic investors, enabling long-term planning and bridging infrastructure financing gaps.
- **Sectoral Focus:** Includes transport, energy, railways, water, and sanitation; state projects also cover social and commercial infrastructure.
- **Integration:** Project planning is integrated with the PM Gati Shakti portal for data-driven execution; states can seek financial assistance from the India Infrastructure Project Development Fund (IIPDF).

Significance of the PPP Project Pipeline

- **Growth Engine:** As public spending nears fiscal limits, the pipeline mobilises private capital to sustain India's goal of a \$5 trillion to \$7 trillion economy.
- **Investor Confidence:** Early visibility into bankable projects reduces perceived risks, enabling long-term allocations by global and domestic investors.
- **Asset Recycling:** Working with the **National Monetisation Pipeline (NMP)**, it channels brownfield proceeds into new greenfield projects identified in this 3-year PPP pipeline.
- **Balanced Risks:** It promotes the adoption of modern PPP models such as HAM and DBFOT, which equitably share construction and revenue risks.
- **Contract Standardisation:** Bulk project planning promotes the adoption of Model Concession Agreements (MCAs), lowering disputes and transaction costs.
- **Global Competitiveness:** It helps reduce logistics costs through over 200 transport projects, thereby enhancing the competitiveness of Indian exports.

- **Multiplier Effect:** According to RBI estimates, every ₹1 invested in infrastructure yields ₹2.5–₹3 in GDP, implying strong medium-term real GDP growth from the pipeline.

Bureau of Indian Standards

- The 79th Foundation Day of the Bureau of Indian Standards (BIS) was celebrated, where Union Minister highlighted BIS's shift from a regulatory to a facilitative approach, aligned with ease of doing business and quality culture.

Bureau of Indian Standards (BIS):

- BIS is India's National Standards Body, responsible for standardisation, certification, hallmarking, and quality assurance of goods and services to protect consumers and enhance global competitiveness.

Established in:

- 1987 (came into force on 1 April 1987)
- Currently governed under the BIS Act, 2016
- **Headquarters: New Delhi**

History:

- 1947: Indian Standards Institution (ISI) established (origin traced to a 1946 memorandum).
- 1952–56: ISI Certification Marks Scheme launched (ISI mark).
- 1987: ISI transformed into BIS with wider powers.
- 2016: BIS Act, 2016 strengthened mandate, consumer participation, and global alignment.

Core functions:

- Standards formulation (over 23,300 Indian Standards across traditional & emerging sectors).
- Product certification (including fast-track licensing).
- Compulsory Registration Scheme & Foreign Manufacturers Certification Scheme.
- Hallmarking of precious metals.
- Laboratory services & recognition; testing infrastructure.
- Consumer awareness & training; sale of Indian Standards; information services.

New initiatives launched:

- **Beta launch of BIS Standardisation Portal:** End-to-end digital lifecycle for standards (proposal

→ publication), with dashboards, role-based access, faster timelines, and transparency.

- **SHINE – Standards Help Inform & Nurture Empowered Women:** Women-centric capacity building via SHGs/NGOs, positioning women as quality ambassadors in communities.
- **BIS-SAKSHAM (Annual Excellence Recognition Scheme):** Institutional recognition of knowledge, skills, and high-impact merit.

Indian Railways becomes the biggest electrified rail system globally

- Indian Railways has become the largest electrified rail network in the world, with about **99.2% of its broad-gauge network electrified** by November 2025.

What it is?

- Indian Railways is India's national transporter, operating one of the world's largest rail networks.
- It has now achieved near-complete electrification of its broad-gauge routes, surpassing other major global railway systems.

- **Initiative under: Mission 100% Railway Electrification**

Launched in:

- The electrification drive began historically in 1925, but Mission-mode acceleration was undertaken post-2014.

Aim:

- Eliminate diesel traction and shift to cleaner electric traction.
- Reduce carbon emissions, fuel import dependence, and operating costs.
- Improve speed, reliability, and efficiency of train operations.

Key features:

- 99.2% electrification of ~70,000 route km broad-gauge network (as of Nov 2025).
- Electrification pace increased from 1.42 km/day (2004–14) to 15+ km/day (2019–25).
- 25 States/UTs fully electrified; only ~0.8% network pending.
- Massive renewable integration: Solar capacity expanded from 3.68 MW (2014) to 898 MW (2025).
- Adoption of modern technologies like Automatic Wiring Trains and mechanised OHE foundations.

Significance:

- Major reduction in greenhouse gas emissions and air pollution.
- Electric traction is ~70% cheaper than diesel, lowering operating costs.
- Reduced dependence on imported fossil fuels; increased use of renewables.

The Directorate General of Mines Safety (DGMS)

- The Directorate General of Mines Safety (DGMS) marked its 125th Foundation Day (2026), reaffirming its role in mine workers' safety and welfare.

Directorate General of Mines Safety (DGMS):

- DGMS is the **statutory regulatory authority** under the **Ministry of Labour & Employment**, Government of India, responsible for occupational safety, health, and welfare of persons employed in coal, metalliferous, and oil mines.
- Established in:** 1902, making it one of India's oldest labour safety institutions.
- Headquarters:** Dhanbad, Jharkhand
- Aim:** To achieve risk- and hazard-free working conditions in mines and ensure the health, safety, and welfare of mine workers, in line with the vision of "First Safety".

Key functions

- Administration of mining safety laws:** Enforces the Mines Act, 1952 and rules/regulations framed thereunder; also administers allied legislation (e.g., Indian Electricity Act as applicable to mines).
- Regulation & inspection:** Conducts inspections, audits, and approvals to ensure uniform safety standards across mining operations.
- Accident prevention & investigation:** Identifies hazards, investigates accidents, and prescribes preventive and corrective measures.
- Occupational health oversight:** Monitors mine workers' health, disease prevention, and workplace exposure risks through medical cadres and standards.
- Capacity building & awareness:** Promotes safety culture, training, best practices, and adoption of modern technologies for safer mining.

Significance

- Worker welfare:** Protects lives and livelihoods in a high-risk sector critical to India's growth.
- Legal mandate:** Central Government responsibility under Entry 55, Union List (Article 246).
- Institutional strength:** Recognised as an S&T Institution (1987) with specialist staff and labs.

Source: PIB

India becomes first country to commercially produce bio-bitumen

- India has become the first country to commercially produce bio-bitumen for road construction, marking a global milestone in green infrastructure.

What is bio-bitumen?

- Bio-bitumen is a bio-based alternative to conventional petroleum bitumen, used as a **binder** in road construction.
- It is produced from agricultural residues (especially rice straw) and can partially replace fossil-fuel-derived bitumen without compromising road performance.

Organisations involved:

- Council of Scientific and Industrial Research (CSIR)
- CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi
- CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun

Key features of bio-bitumen

- Partial fossil replacement:** 20–30% of conventional bitumen can be safely replaced with bio-bitumen.
- Performance assured:** Successfully tested for rutting, cracking, moisture damage, rheology, and durability.
- Environment-friendly:** Reduces emissions from crop residue burning and lowers lifecycle carbon footprint.
- Cost-efficient:** Roads built using bio-bitumen have lower construction cost and longer service life.
- Field validated:** A 100-metre trial stretch laid on the Jorabat–Shillong Expressway (NH-40), Meghalaya, proved real-world feasibility.

Manufacturing process (Bio-bitumen via pyrolysis)

- Collection of farm residue:** Post-harvest rice straw is collected from fields and pelletised to ensure uniform size, easy handling, and efficient thermal processing.
- Pyrolysis:** The biomass pellets are heated at high temperatures in the absence of oxygen, breaking them down into bio-oil, combustible gases, and bio-char without burning.
- Bio-oil extraction:** The bio-oil fraction, which possesses strong adhesive and binding characteristics, is separated and refined for use as a road binder component.
- Blending:** The extracted bio-oil is blended with conventional petroleum bitumen (typically 20–30%), producing bio-bitumen suitable for asphalt applications.
- Quality validation:** The final product undergoes physical, chemical, rheological, and mechanical

tests—including rutting, cracking, and moisture resistance—to ensure it meets national highway performance standards.

Significance

- Supports clean and green highways by reducing fossil fuel dependence and air pollution.
- Converts agricultural waste into high-value infrastructure material, addressing stubble burning.
- Potential to replace ₹25,000–30,000 crore worth of imported bitumen annually.

District-Led Textiles Transformation (DLTT) Initiative

- **DLTT Initiative** Unveiled by Ministry of Textiles to catalyse inclusive and sustainable growth across India's textile landscape.

Key Highlights of the Initiative

- **Aim:** Transform 100 high-potential districts into **Global Export Champions** and elevate 100 Aspirational Districts into self-reliant hubs.
- **Categorisation of Districts:** Into Champion Districts and Aspirational Districts based on analysing three key parameters namely Export Performance, MSME Ecosystem, Workforce Presence.
- **Champion Districts (Scale & Sophistication):** Focus on removing advanced bottlenecks, upgrading to Mega Common Facility Centres (CFCs), integrating Industry 4.0, and facilitating direct Export Market Linkages, etc.
- **Aspirational Districts (Foundation & Formalization):** Build ecosystem from ground up in setting up foundation and formalization of workforce including basic skilling and certification, establishing Raw Material Banks, and promoting micro-enterprises through Self-Help Groups (SHGs) and Cooperatives, etc.
- **Emphasis on East and Northeast Zones:** Tribal belt development, Connectivity improvement, and Geographical Indication (GI) tagging, etc.

Textile Sector in India

- Textile and apparel industry contributes 2.3% to GDP.
- It is the second largest employment generator, after agriculture, employing many women and rural population.
- India is **6th largest exporter of Textiles & Apparel** in the world.

- **Key Initiatives:** Amended Technology Upgradation Funds Scheme; PM Mega Integrated Textile Region and Apparel (**PM MITRA**) Park; National Technical Textiles Mission, etc.

US President gives nod to Bill proposing 500% tariff over Russia oil trade

- The Bill titled '**The Sanctioning Russia Act of 2025**', once enacted, will enable the US administration to impose steep tariffs and secondary sanctions on countries buying **Russian oil, gas, and uranium, etc.**
- The US President retains the power to waive these **tariffs for up to 180 days** if it is deemed in the U.S. national security interest.

Potential Implications for India

- **Trade Halting:** such high tariffs on goods and potentially services could effectively halt India's \$120 billion annual exports to the United States.
- **Sectoral Damage:** Labour-intensive sectors such as textiles, footwear and marine products, already burdened by US tariffs of up to 50%, could face further erosion of competitiveness and export viability.
- **Weakened Bargaining Power:** Can negatively affect future trade pacts negotiations with various entities, including the European Union, the Gulf Cooperation Council etc.
- **Other:** Dent on India-US relations, effect on economic growth, etc.
- **Way Ahead for India**
- **Diversifying Exports:** Diversify goods exports away from the US to reduce vulnerability to unilateral tariff hikes.
- **Export Promotion Mission:** Increase outlay to strengthen India's export ecosystem impacted by tariff escalations.
- **Accelerating Trade Deals such as India-EU FTA negotiations.**
- Simplified regulatory processes and rationalised duties on critical raw materials like cotton, leather, and gem inputs.

National Quality Assurance Standards (NQAS)

- The Government of India has achieved over 50,000 National Quality Assurance Standards (NQAS) certifications for public health facilities.
- The NQAS is a comprehensive framework launched in 2015 by the **Ministry of Health and Family Welfare (MoHFW)** to improve healthcare quality in public health facilities.
- **Nodal Agency:** It is managed by the **National Health Systems Resource Centre (NHSRC)** as a technical support unit under the National Health Mission (NHM).
- **Scope:** It initially covered District Hospitals, later extended to other secondary care, primary care, and Integrated Public Health Laboratories (IPHL) (2024).
- **Focus Areas:** NQAS evaluates facilities across eight 'Areas of Concern' aligned with global benchmarks and International Society for Quality in Health Care (ISQua) accreditation.
- **Key Target:** The government aims to certify at least 50% of public healthcare facilities by March 2026.
- **Significance:** The rapid NQAS scale-up aligns with India's pursuit of **Universal Health Coverage (UHC)**, guided by the National Health Policy 2017.

Payments Regulatory Board (PRB)

- The first meeting of the Payments Regulatory Board (PRB) was held recently under the chairmanship of the Reserve Bank of India (RBI) Governor, Sanjay Malhotra.

Payments Regulatory Board (PRB)

- **Statutory Body:** The Payments Regulatory Board (PRB) is a statutory authority under the RBI, regulating payment and settlement systems in India.
- **Establishment:** It replaced the **Board for Regulation and Supervision of Payment Systems (BPSS)** in 2025, following amendments to the **Payment and Settlement Systems (PSS) Act, 2007**.
- **Meeting Mandate:** The board is legally required to meet at least twice every year.
- **Decision Making:** Decisions are made by a majority vote, with the Chairperson exercising a casting vote in the event of a tie.
- **Institutional Support:** The RBI's Department of Payment and Settlement Systems (DPSS) reports directly to and assists the PRB.

Composition of the Board

- **Equal Representation:** The PRB consists of six members with equal representation from the RBI

and the Central Government.

- **Chairperson Role:** The Governor of the RBI serves as the **ex-officio Chairperson** of the Payments Regulatory Board.
- **Legal Invitee:** The Principal Legal Adviser of RBI attends meetings as a permanent invitee without voting rights.

Key Functions of the Board

- **Licensing Authority:** It grants and revokes licences for payment systems, including UPI, cards, wallets, and RTGS.
- **Standard Setting:** The board prescribes technical, operational, and security standards for digital and non-cash payments.
- **Supervisory Powers:** It inspects payment system providers and issues binding directions to ensure compliance with the PSS Act.

Government Boosts Fertilizer Security

- India has achieved an all-time high fertilizer production of 524.62 lakh tonnes in 2025, meeting nearly 73% of its total fertilizer demand through domestic supply.

Government Boosts Fertilizer Security:

- Fertilizer security refers to ensuring the timely, affordable, and uninterrupted availability of fertilizers such as **Urea, DAP, NPKs and SSP** to Indian farmers by reducing import dependence and strengthening domestic production and supply chains.

Key trends

- **Rising domestic share:** Domestic production met ~73% of total fertilizer requirement in 2025, significantly lowering vulnerability to global supply shocks.
- **Steady output growth:** Fertilizer production rose from 433.29 lakh tonnes (2021) to 524.62 lakh tonnes (2025), showing consistent expansion.
- **Raw material security:** Long-term international supply agreements and diversification of sourcing have stabilised inputs like rock phosphate, ammonia, and potash.

Significance

- **Farm productivity:** Ensures timely nutrient availability, preventing yield losses during peak

sowing seasons.

- **Economic stability:** Reduces import bills and forex outflow, improving balance of payments.
- **Strategic autonomy:** Insulates Indian agriculture from global price volatility and geopolitical disruptions.

SEBI (Stock Brokers) Regulations 2026

- SEBI notified the Stock Brokers Regulations, 2026, shifting brokerage regulation from compliance-heavy controls to an investor-centric framework.
- **Objective:** It replaces the 1992 framework to align brokerage rules with modern digital trading practices.
- The Securities and Exchange Board of India (SEBI) is the statutory regulatory body for the securities and commodity markets in India, under the Ministry of Finance.

Key Provisions of the 2026 Regulations

- **Expanded Scope:** Brokers may undertake activities regulated by RBI, IRDAI, or IBBI through a single entity, subject to SEBI conditions.
- **Record Retention:** Books of accounts and records must be maintained for 8 years instead of five.
- **Digital Records:** They can be maintained electronically to simplify audits and inspections.
- **Board Governance:** Every brokerage firm must appoint one Designated Director residing in India for at least 182 days annually.
- **Whistleblower:** Brokers must have a written whistleblower policy with a confidential reporting system.
- **Entry Experience:** New applicants need at least two years' securities trading or dealing experience.
- **QSB Criteria:** Norms for Qualified Stock Brokers are streamlined to enhance oversight of large-client, high-volume entities.
- **Return Ban:** Brokers are explicitly prohibited from promoting schemes that promise indicative, guaranteed, or fixed investor returns.
- **Primary Oversight:** Stock exchanges are acknowledged as the primary regulators of stockbrokers, with increased reporting responsibilities.
- **Brokerage Caps:** Brokerage fees paid by Mutual Funds are capped at 6 basis points in cash markets and 2 basis points in derivative transactions.

Significance of the Regulations

- **Business Ease:** The regulations reduce the administrative burden by simplifying regulatory compliance.
- **Flexibility:** Stockbrokers are permitted to offer multiple financial services on a single platform.
- **Redundancy:** Outdated provisions like physical share delivery are removed to match current practices.
- **Investor Protection:** It reinforces fiduciary accountability and brokers' duty to protect clients' interests.

Param Shakti Supercomputing facility Launched

- Ministry of Electronics and Information Technology (MeitY) launched 'Param Shakti' at Indian Institute of Technology Madras.
- The project has been funded under the National Supercomputing Mission (NSM)

Param Shakti

- It is an indigenously developed and manufactured **3.1 Petaflop** supercomputing system.
- It is now among the most powerful computational systems available in Indian academic institutions.
- It is built using **Centre for Development of Advanced Computing (C-DAC)'s RUDRA** series of servers and runs on an open-source software stack, including **AlmaLinux**.
- **Significance:** Its performance is expected to support complex research in aerospace engineering, materials science, climate modelling, drug discovery, and advanced manufacturing.

National Supercomputing Mission (NSM)

- **Launched:** 2015
- **Objective:** To connect national academic and R&D (research and development) institutions with a grid of over 70 high-performance computing facilities.
- The supercomputers are networked on the National Supercomputing grid over the National Knowledge Network (NKN).
- NSM is steered jointly by the Department of Science and Technology (DST) and MeitY.
- Implemented by the Centre for Development of Advanced Computing (C-DAC), Pune, and the

Indian Institute of Science (IISc), Bengaluru.

India's Supercomputer

1. **PARAM 8000** is India's first supercomputer.
2. **Param Pravega** is the largest supercomputer
3. **Param Shivay** is first indigenously build supercomputer
4. **AIRAWAT** is a common compute platform for AI research and knowledge assimilation.

Guidelines for Reporting Entities providing Virtual Digital Asset (VDA) related Services

- The **Financial Intelligence Unit-India (FIU-IND)** issued updated guidelines to regulate service provider (SP) dealing in VDAs.
- It effectively brought VDA SPs within the anti-money laundering, Countering the Financing of Terrorism, Counter-Proliferation Financing (AML/CFT/CPF) regulatory framework, requiring them to comply with due diligence and reporting obligations similar to other reporting entities.
- In 2023, VDA SPs were brought under the ambit of Prevention of Money Laundering Act (PMLA), 2002.

Key highlight of the Guidelines

- **Appointment of Principal Officer (PO):** Every VDA Reporting Entity must appoint a Principal Officer.
- **Cybersecurity & Data Protection:** VDA SP now requires a Cyber Security Audit Certificate issued by Indian Computer Emergency Response Team (CERT-In) empaneled auditor.
- **Unhosted Wallet Transactions:** Reporting entities must collect data on transfers involving unhosted (self-custody) wallets.

What is Virtual Digital Asset (VDA)?

- It is defined under the **Income-tax Act, 1961**.
- Any digitally generated information, code, number, or token (excluding Indian or foreign currency) created using cryptographic or similar means, which:
- Represents digital value,
- Is electronically transferable, storable, or tradable.
- **Non-Fungible Tokens (NFTs)** or similar digital tokens.
- NFT is a unique token that can represent digital collectibles or real-world assets.

- Income from transfer of VDAs is taxable at the rate of 30% (plus surcharge and cess).

Inflation Below Comfort Zone

- India's CPI inflation has fallen below 1% for two consecutive months, far below the RBI's 4% target, raising concerns that disinflation is becoming a macroeconomic stress rather than a relief.

What is Inflation?

- It is the rise in the general level of prices of goods & services in an economy over a period of time.
- Headline Inflation:** Inflation is due to all types of commodities in the economy.
- Core Inflation:** Inflation excluding food and fuel items.

Inflation target in India

- Under the RBI Act, the GoI, in consultation with the RBI, determines the inflation target in terms of the Consumer Price Index (CPI) every five years.
- Current Inflation target is **4% with a band of 2% (2% to 6%)**.
- CPI-Combined is India's official inflation indicator for monetary policy under the **Flexible Inflation Targeting (FIT)** framework mandated by the amended RBI Act, 1934.

Why Very Low Inflation Is a Concern?

- Base Effect Distortion:** Recent sub-1% CPI prints are partly due to a high statistical base from last year, masking underlying price pressures and limiting policy clarity
- Perception Gap:** RBI surveys (Nov 2025) show households perceive inflation at 6.6% currently and 7.6% three months ahead, indicating weak credibility of headline numbers.
- Monetary Policy Dilemma:** With inflation low and growth buoyant, rate cuts seem logical; however, a future inflation rebound due to base effects may force policy reversals, unsettling markets.
- Rural Income Stress:** Negative food inflation reduces farm realisations; crops like soybean and pulses sold below MSP in Oct–Nov, compressing rural incomes despite good output.
- Manufacturing Margin Pressure:** Low WPI and muted core CPI for manufactured goods reflect weak pricing power, squeezing corporate margins even if volumes rise.
- GST Revenue Slowdown:** Lower inflation dampens nominal transaction values; GST collections have slowed, partly due to lower price growth and rate rationalisation.

- **Fiscal Arithmetic Risk:** Nominal GDP growth is barely above Real GDP, unlike the historical 3–4 percentage point gap, complicating deficit targets and FY27 projections.
- **Households:** Urban consumers may benefit temporarily, but income-linked groups face uncertainty.
- **Farmers & MSMEs:** Price deflation without income buffers leads to demand compression & debt stress.
- **Government:** Lower nominal growth weakens tax buoyancy and fiscal space.
- **RBI:** Managing expectations becomes harder when headline inflation diverges from lived experience.

Consumer Price Index (CPI)

- Consumer Price Index (CPI) is a composite indicator that tracks short-term changes in retail prices for a representative household consumption basket.
- **CPI Variants:** The National Statistical Office (NSO) publishes CPI-Rural (CPI-R), CPI-Urban (CPI-U), and CPI-Combined (CPI-C) to measure household retail inflation.
- **Labour Indices:** The Labour Bureau publishes CPI-Industrial Workers (CPI-IW), CPI-Agricultural Labourers (CPI-AL), and CPI-Rural Labourers (CPI-RL) for wage indexation and policy planning.
- **Base Year:** The current base year is 2012, but MoSPI is planning to revise it to 2024 to reflect the latest consumption patterns.
- **Coverage:** Six major consumption groups > **(1) Food & Beverages, (2) Pan-Tobacco-Intoxicants, (3) Clothing & Footwear, (4) Housing, (5) Fuel & Light, and (6) Miscellaneous.**
- **Weight Structure:** Food & Beverages carries the highest weight in CPI-Rural (54.18%) and CPI-Combined (45.86%), while Miscellaneous has the highest weight in CPI-Urban (29.53%).
- **Frequency:** The index is released monthly, with weekly price collection for perishables and monthly collection for non-perishables and services.

India Tightens Crypto KYC to Curb Money Laundering and Terror Financing

- India has introduced stricter KYC and **Anti-Money Laundering (AML)** norms for cryptocurrency users by mandating live selfie verification, geo-tagging and bank account validation.

Crypto KYC :

- It is a mandatory digital identity verification framework for users of cryptocurrency exchanges, requiring them to prove their real identity, physical presence and financial linkage before trading virtual digital assets.

Organisation involved:

- The framework is issued and enforced by the **Financial Intelligence Unit (FIU-India)** under the Union Ministry of Finance, in line with the Prevention of Money Laundering Act (PMLA).

Aim:

- To prevent money laundering, terror financing and proliferation financing through crypto assets.
- To ensure that crypto transactions are traceable, accountable and linked to real individuals.

Key features:

- Live selfie with liveness detection – Confirms the user's physical presence and identity by detecting real-time movements, preventing deepfakes and fake photo uploads.
- Geo-tagging with IP address** – Records the exact location and device network of onboarding to trace suspicious or cross-border activities.
- PAN and secondary ID** – Links crypto accounts to a verified legal identity, enabling tax tracking and law-enforcement verification.
- Penny-drop bank verification** – A Re 1 transfer ensures the bank account is active and belongs to the user, blocking mule or fake accounts.
- OTP verification** – Confirms control over registered mobile and email, adding an extra layer of authentication.
- Periodic KYC updates** – Keeps customer information current and risk-sensitive, especially for high-risk users.
- Ban on mixers, tumblers and privacy tokens – Stops tools that hide transaction trails, enabling better tracking of illicit crypto flows.

Significance:

- Brings crypto exchanges under the formal financial surveillance system.
- Enhances investor protection and platform accountability.
- Aligns India with global FATF standards on crypto regulation.

35 Years After the New Economic Policy

- 2026 marks 35 years of the **New Economic Policy (NEP) 1991**, which was “substantial but incomplete” in delivering mass non-farm job creation.
- India must revise its thinking, as China (similar per-capita GDP in 1991) is now ~5x higher.

Key Features of New Economic Policy (NEP), 1991

- **Core Focus:** Based on Liberalisation–Privatisation–Globalisation (LPG) to reduce State control, expand private participation, attract foreign capital, and modernise the economy.
- **Fiscal Discipline:** Targeted at reducing fiscal deficit to ~3–4% (medium term) through *subsidy rationalisation*, lower non-plan expenditure and wider tax reforms to raise revenue.
- **Monetary Reforms:** Adopted a tighter monetary stance to curb imports and current account stress; used tools like treasury bills and long-term securities, and raised import credit costs.
- **Banking Liberalisation:** Gave banks greater autonomy to set deposit interest rates and maturity terms, moving away from heavy administrative control.
- **Trade Reforms:** Devalued the rupee by ~18% to boost exports, eased import restrictions for exporters, and liberalised capital goods imports without prior approvals.
- **Industrial Policy Reforms:** Abolished industrial licensing for most sectors, reduced public sector exclusivity, and opened key industries to private entry to raise competition.
- **MRTP & SSI Reforms:** Amended **Monopolies and Restrictive Trade Practices Act** to remove expansion approvals for large firms; allowed small enterprises to sell up to 44% equity to larger companies.
- **FDI Reforms:** Raised Foreign Direct Investment (FDI) cap from 40% to 51% in priority industries and created the **Foreign Investment Promotion Board (FIPB)** for faster clearances.

Achievements of the 1991 Reforms

- **Mobility Rise:** Vehicle ownership increased ~45 times, reflecting rising income capability.
- **Formal Savings:** Provident Fund rose ~75 times, signalling expansion of formal wage employment.
- **External Strength:** Foreign exchange reserves jumped ~120 times, improving macro-stability.
- **Capital Markets:** Stock market value expanded ~500 times, enabling deeper investment.
- **Connectivity Boom:** Phone connections rose ~600 times, powering productivity and services growth.

What 1991 Failed to Fix?

- **Farm Dependence:** ~ 45% of India's workforce is still in agriculture, showing unfinished

transformation.

- **Informality Trap:** India has ~6.3 crore enterprises, but only ~8 lakh are **Provident Fund-paying employers**, signalling the very thin formal base.
- **Weak Manufacturing Jobs:** Manufacturing workforce share is only ~11%, similar to the post-industrial phase, indicating premature deindustrialisation.
- **Trust Deficit on Enterprise:** Over-regulation and suspicion toward entrepreneurs kept firms small; India's growth didn't translate into enough stable wage jobs.
- **Job Supply Mismatch:** India adds ~20 million entrants annually but creates only ~2 million jobs per year, widening underemployment pressure.

Revisions in Thinking Needed for Bypassing Failures

- **Wealth Creation:** “**Garibi Hatao**” needs “**Ameeri Banao**”, because only expanding incomes, firms and tax base can sustainably fund welfare and jobs.
- **Policy Experimentation:** “Cross the river by feeling the stones”, shift from policy paralysis to calibrated trials, piloting reforms in select sectors/States and scaling what works fast.
- **Pragmatism Over Ideology:** “**Black/white cat**”, back any State/sector/firm (manufacturing or services, domestic or foreign) that delivers high-wage non-farm job creation, not ideological preferences.
- **Risk Acceptance:** “**When you open the window, some flies will always get in**” Fraud cases should be handled through smarter enforcement, not blanket over-criminalisation that discourages investment.

Reform Agenda for 2026

- **Deregulation:** Cut licensing, inspections and notices to reduce compliance fear; E.g., implement Jan Vishwas Siddhant as a single-source regulatory truth system.
- **Decriminalisation:** Replace jail-based compliance with civil penalties and graded deterrence; E.g., expand Jan Vishwas 2.0/3.0 to rationalise economic offences.
- **Digitisation:** Make government interface paperless and cashless to cut transaction costs; E.g., single-window approvals and faceless compliance like GST portal workflows.
- **Decentralisation:** Devolve funds, functions and functionaries to local levels for job creation ecosystems; E.g., 15th Finance Commission local body grants & SVAMITVA Scheme to strengthen Panchayat revenues.

EU - Mercosur Trade Deal

- The European Union (EU) and Mercosur bloc will soon formally sign their Free Trade Agreement (FTA), concluding negotiations ongoing since 1999.
- **Opposition Bloc:** France, supported by Ireland, Poland, Austria, and Hungary, has historically opposed the deal, citing risks to farmers' incomes and concerns about Amazon deforestation.
- **Mercosur, or the Southern Common Market,** is a South American trade bloc created to promote free trade and economic integration. It includes five full members—**Argentina, Bolivia, Brazil, Paraguay, and Uruguay and six associate members.**

Significance

- **Market Scale:** The agreement creates the world's largest free trade area, involving over 700 million people and key economies.
- **Geopolitical Shift:** The deal supports EU trade diversification, reduces dependence on China, and offsets U.S. tariff pressures.
- **Economic Gains:** It eliminates nearly 90% of export duties; EU cars, machinery, chemicals, and pharmaceuticals gain market access, while Mercosur primarily benefits through agricultural exports.
- **Critical Minerals:** The agreement secures EU access to essential raw materials, like lithium from Argentina, and graphite and rare earths from Brazil, aiding the green energy transition.

India's Bioeconomy and India's first state-funded BSL-4 lab for deadliest pathogens in Gujarat

- India's bioeconomy touched billion in 2024, up from billion in 2014, as announced by Union Minister while inaugurating a **BSL-4 biocontainment facility** in Gujarat.

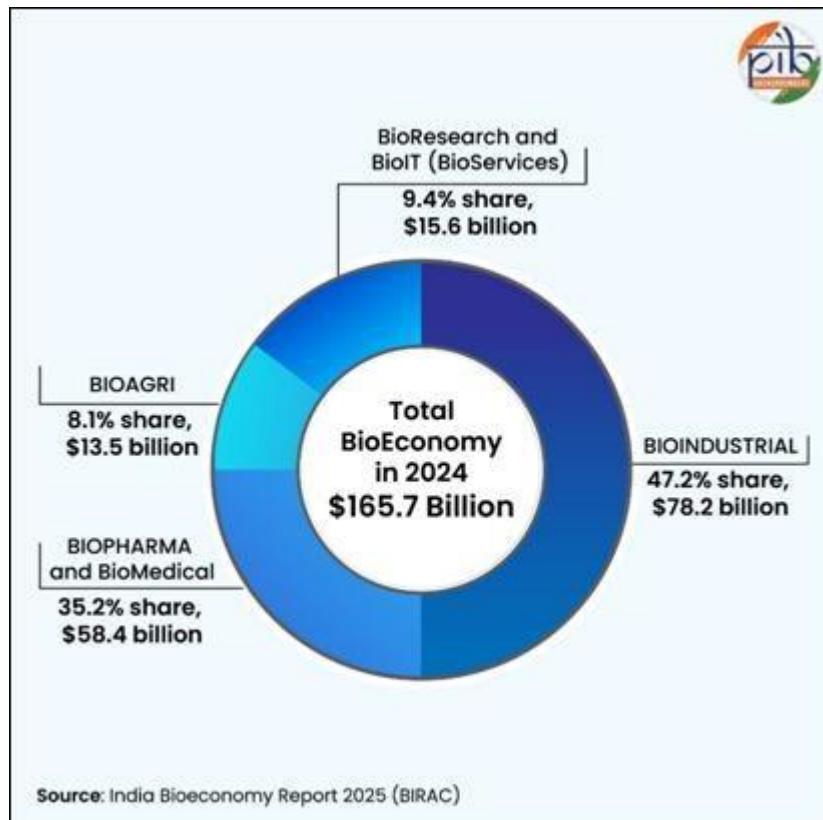
India's Bioeconomy:

- India's bioeconomy refers to the economic value generated from *biotechnology, biopharma, agriculture biotech, bio-industrial products, bio-energy, and health sciences.*

Key facts & data:

- India's bioeconomy has achieved a remarkable 16-fold growth over the last decade, surging from

billion in 2014 to billion by 2026.



- As of 2026, the market is distributed across four critical segments:
- Bio-Industrial (47%):** The largest share, led by the Ethanol Blending Program which achieved its 20% (E20) target in 2025, five years ahead of schedule.
- Bio-Pharma (35%):** India remains the “**Pharmacy of the World**”, supplying 65% of the WHO’s vaccine requirements.
- Bio-Research & IT (9%):** The fastest-growing segment, fuelled by AI-driven drug discovery.
- Bio-Agri (8%):** Centered on climate-resilient crops and bio-fertilizers.
- The number of biotech start-ups has skyrocketed from 50 in 2014 to over 11,000 in 2026.
- In addition to the NIV in Pune, 2026 marks the operationalization of **state-led BSL-4 Bio-Containment facilities** (1st such as in Gujarat).

National Cooperative Sugar Federation

- The National Cooperative Sugar Federation (NCSF) sought urgent government intervention to address falling sugar prices and the financial stress on the industry.

- NCSF is the apex cooperative body representing all cooperative sugar factories and state-level sugar cooperative federations in India.
- Established in 1960, it operates under the **Multi-State Co-operative Societies Act, 2002 (MSCS)**.
- **Governance:** It operates through an elected Board of Directors under the Ministry of Cooperation.
- **Function:** It serves as the primary spokesperson for cooperative mills at government forums, advises on modernising mills and improving sugarcane recovery, and advocates for farmers' interests.

Creator's Corner

- Prasar Bharati launched "Creator's Corner" on DD News to showcase content by digital creators nationwide and strengthen India's creator economy.
- **WAVES (World Audio Visual & Entertainment Summit)** has also become a game-changer for India's creator economy, aiming to empower ~1 crore youth and generate ~₹5,000 crore economic activity.
- **Creator (Orange) Economy** Refers to an ecosystem where content creators, digital platforms, brands and intermediaries interact to generate value and revenue.
- Prasar Bharati, established under Prasar Bharati Act, 1990, is India's autonomous public broadcaster under the Ministry of Information & Broadcasting, comprising Doordarshan and All India Radio.

About Creator's Corner

- **Purpose:** A dedicated DD News platform to feature curated content by independent digital creators.
- **Objective:** Promote digital economy & quality content creation through partnership between Prasar Bharati and creators, giving them national visibility.
- **Coverage Themes:** Includes news/current affairs, culture, travel, cuisine, art/literature, health, education, science-tech, environment, entertainment, etc.
- **Broadcast Schedule:** Telecast 7:00 PM (Mon-Fri) on DD News with repeat at 9:30 AM next day.

About WAVES Summit

- **Purpose:** A govt-led global platform to promote the Media & Entertainment and Creative Economy.

- **Participants:** Over 100 top global companies, including Netflix, Amazon, Meta, Sony, and Google.
- **Key Objectives:** Boost India's M&E sector to achieve a \$50 billion industry by 2029 and support the Orange Economy as a GDP and soft power driver.

Major Launches and Initiatives

- **Indian Institute of Creative Technology:** Skilling youth in media, animation and content creation.
- **WAVES Bazaar:** A global platform for creators to pitch and connect.
- **WAVEX Accelerator:** Helps startups in AVGC-XR (Animation, VFX, Gaming, Comics, Extended Reality).

Global Risks Report 2026 by World Economic Forum

- A Parliamentary Standing Committee on Railways has urged
- The **World Economic Forum** released the **Global Risks Report 2026** with the central theme "**Age of Competition**."
- **Global Warning:** The report warns against "**multipolarity without multilateralism**," where fragmentation and confrontation increasingly replace international cooperation.
- World Economic Forum releases the Global Risks Report annually to assess major threats to global stability over the short term (2 years) and the long term (10 years).

Key Findings of Global Risk Report 2026

- **Short-Term Risks:** Geoeconomic confrontation ranks first over the next two years, followed closely by misinformation and disinformation.
- **Economic Weaponisation:** The report identifies the "weaponisation of economic determinants" as a central driver of current global instability.
- **Long-Term Risks:** Extreme weather events remain the top ten-year risk, with biodiversity loss and ecosystem collapse following.
- **AI Disruptions:** Adverse outcomes of AI are the fastest-rising long-term risk, driven by labour displacement and autonomous warfare.
- **Social Polarisation:** Technological risks are increasingly intensifying political and social polarisation within countries.

India-Specific Findings

- **Cyber Insecurity:** Cyber insecurity is India's most significant national risk, ahead of inequality and weak public services.
- **Water Conflict:** The Indus River Basin is flagged as a potential flashpoint for future water conflicts between India and Pakistan.
- **Digital Success:** India's Unified Payments Interface (UPI) is recognised as a global best practice in digital public infrastructure.

Henley Passport Index

- In the 2026 Henley Passport Index, the Indian passport rose five places to **rank 80th globally**, up from 85th in 2025.
- Indian passport holders can now travel to 55 destinations without a pre-approved visa.
- Singapore remains the world's strongest passport, with access to 192 destinations, followed by Japan and South Korea in second place.
- The Index is published by Henley and Partners, ranking passports by the number of destinations accessible without a visa.
- The index relies on data from the **International Air Transport Association (IATA)**, which maintains the world's largest travel information database.

10 Years of Startup India

- The National Startup Day on January 16, 2026, will mark the tenth anniversary of the Startup India initiative.

Startup India:

- Startup India is a flagship initiative launched in 2016 to promote an inclusive ecosystem for innovation and entrepreneurship.
- The initiative is managed by the **Department for Promotion of Industry and Internal Trade (DPIIT)** under the Ministry of Commerce and Industry.
- **Action Plan:** It has a **three-pillar framework** that focuses on regulatory simplification, funding support and incentives, and industry-academia partnerships for innovation.
- **Regulatory Ease:** Eligible startups can self-certify compliance with six labour laws and three environmental laws for up to five years.

- **Tax Exemptions:** Eligible startups can claim a three-year income tax holiday within their first ten years under **Section 80-IAC** of the **Income Tax Act**.
- **IPR Support:** Startups receive an 80% rebate on patent filing fees and a 50% rebate on trademark filing, along with fast-tracked examinations.
- **Funding Mechanisms:** Includes the Fund of Funds for Startups (FFS) managed by SIDBI, the Startup India Seed Fund Scheme (SISFS), and a **Credit Guarantee Scheme for Startups (CGSS)**.
- **Key Achievements**
- India has emerged as third-largest startup ecosystem with over two lakh DPIIT-recognised startups.
- Startups have created over 2.1 million direct jobs and millions of indirect opportunities in **the gig economy and supply chains**.
- **Unicorn Growth:** India hosts 125 unicorns with a combined valuation exceeding \$389 billion.
- **Inclusivity:** More than 53% of recognised startups now originate in Tier-2 and Tier-3 cities; about 48% of recognised startups have at least one-woman director.

Jobless Growth Risks

- ILO in its **World Employment and Social Outlook: Trends 2026 report** warned that global unemployment may remain low, but job quality is worsening, especially for youth and women.

Key Findings of the ILO Report

- **Unemployment Flat:** Global unemployment projected at 4.9%, affecting about 186 million people in 2026, staying similar till 2027.
- **Jobs Gap High:** Wider labour underutilisation ("jobs gap") projected at 408 million, showing hidden distress beyond headline unemployment.
- **Working Poor:** Around 284 million workers still live in extreme poverty, earning below \$3/day.
- **Poverty Slowdown:** Worker extreme poverty share fell only 3.1 percentage points (2015–25) to 7.9%, far slower than the 15 percentage points drop in the previous decade.
- **Informality Rising:** Informal employment is projected at 2.1 billion workers by 2026.
- **Informality Shift:** Global informality rate increased by 0.3 percentage points (2015–25), mainly due to higher employment share in Africa and Southern Asia.

Gender Concerns

- **Low Participation:** Women form only two-fifths of global employment, showing structural barriers.
- **Labour Force Gap:** Women are 24.2 percentage points less likely than men to be in the labour force.
- **NEET Burden:** Young women are 14.4 percentage points more likely than young men to be NEET (Not in Employment, Education or Training).

Youth Concerns

- **Youth Unemployment:** Global youth unemployment rose to 12.4% in 2025 from 12.3% in 2024, signalling weak entry-level job creation.
- **Youth NEET Rise:** Youth NEET share rose to 20.0% in 2025, up from 19.9% in 2024.

Emerging Drivers of Risk

- **Trade Uncertainty:** Rising trade uncertainty may cut returns to labour and reduce real wages for both skilled and unskilled workers.
- **Income Loss Zones:** Estimated wage/income losses could be up to 0.45% in South-Eastern Asia and up to 0.3% in Europe and Southern Asia due to trade-policy uncertainty shocks.

ILO Roadmap for Tackling Jobless Growth

- **Decent Work Push:** Align recovery policies with the ILO Decent Work Agenda to expand quality jobs, wages and protections to all sectors.
- **Women Workforce Entry:** Expand childcare, paid leave, and safe work norms to close labour force gaps; E.g., Nordic childcare systems that sustain high female participation.
- **Minimum Income Floor:** Protect the working poor through cash-support frameworks; E.g., the ILO Social Protection Floors Recommendation (2012) used by countries to ensure basic income security.
- **Formalisation Drive:** Expand formal work through ILO Recommendation 204 (Transition from Informal to Formal Economy, 2015) and universalised social protection.

Tokenising India's Credit System

- India's **Digital Public Infrastructure (DPI)** improved financial inclusion, but credit depth remains weak; the next reform push is financial asset tokenisation to digitise rights.

Financial Asset Tokenisation

- Financial Asset Tokenisation is the digital representation of ownership rights and financial claims (such as bonds, fund units, and receivables) on a programmable ledger.
- It makes financial assets transferable, pledgeable and enforceable with embedded rules.

Issue of Credit System in India

- **Low Credit Depth:** Domestic bank credit to the private sector remains around ~50% of GDP, far below countries with deep credit markets highlights a structural mismatch.
- **MSME Shortfall:** Only ~19% of MSME credit demand (FY21) is met through formal channels, leaving an estimated ~₹80 lakh crore credit gap despite priority sector lending and credit guarantee schemes.
- **Friction Bottlenecks:** Credit is constrained by slow settlement cycles, fragmented asset registries and weak enforceability, not by lack of payment rails.
- **Data Without Collateral:** DPI (Aadhaar e-KYC, UPI, Account Aggregator) digitised cash-flow visibility, but it still cannot convert verified cash flows into enforceable collateral, limiting credit depth.
- **Static Asset Processing:** Digital assets remain as static records, not programmable financial claims. Hence, collateralisation & settlement stay slow and dispute-prone.

How Tokenisation Fixes the Credit System?

- **Programmable Claims:** Tokenisation embeds ownership directly into the asset, converting instruments from passive records into programmable financial claims, which improves lender confidence.
- **Faster Settlement:** Settlement and servicing become built-in attributes of the token, reducing back-office delays and reconciliation frictions, improving liquidity and lowering transaction costs.
- **Working Data Rails:** India already has strong DPI foundations, enabling scalable verification. This lowers information asymmetry and improves underwriting quality across lenders.
- **Bridging Missing Layer:** Tokenisation adds the next layer by converting verified financial information into pledgeable, transferable digital assets, enabling continuous asset-based monitoring.
- **Ecosystem Linkages:** When linked with platforms like ONDC enterprise data, tokenised claims can reflect real-time business cashflows, which can improve MSME credit access.

Way Forward

- **B2B Sequencing:** Start with B2B tokenisation (receivables, bonds) before retail scaling to prove reliability.
- **Joint Sandbox:** Launch a SEBI-IFSCA sandbox to test tokenised bonds with controlled exposure; E.g., phased pilots with audited MRV-like compliance.
- **Custody Guardrails:** Mandate licensed custodians & recovery protocols for insolvency and fraud.
- **Tax Differentiation:** Separate taxation of asset-backed tokens from speculative crypto-assets to channel capital productively; E.g., neutral tax for tokenised securities.

Export Preparedness Index (EPI) 2024

- **NITI Aayog released** the 4th edition of the Export Preparedness Index (EPI) 2024.
- It assesses export readiness across States and Union Territories, identifying structural gaps, growth drivers, and policy opportunities to enhance competitiveness.
- EPI 2024 is structured around four pillars—***Export Infrastructure, Business Ecosystem, Policy and Governance, and Export Performance.***
- These pillars are further divided into 13 sub-pillars and 70 indicators for a detailed assessment.
- **New Metrics:** The 2024 edition adds indicators for Macroeconomic Stability, Cost Competitiveness, Human Capital, Financial Access, and the MSME Ecosystem.
- **Categories:** States and UTs are grouped into Large States, Small States, North-Eastern States, and Union Territories; each category is classified as ***Leaders, Challengers, or Aspirers.***
- **District Focus:** Districts have been highlighted as core units of competitiveness, translating national export goals into local strategies.
- **Significance:** EPI provides an evidence-based framework to support India's USD 1 trillion in merchandise exports by 2030 and Viksit Bharat @2047.

Key Highlights

- **Export Scale:** India's FY2023-24 exports hit a record ₹65 lakh crore, with global trade share rising from **1.7% to 1.8%**, driven by IT and business services.
- **Top Performer:** Maharashtra ranked first among Large States, followed by Tamil Nadu and Gujarat.
- **Landlocked State:** Uttar Pradesh emerged as the top performer, ranking fourth nationwide.
- **Small States & UTs:** Uttarakhand ranked first, followed by Jammu and Kashmir and Nagaland.

India ready to share its Digital Public Infrastructure (DPI) with the Commonwealth Nations

- The Commonwealth is a voluntary association of 56 independent and equal countries. It is home to 2.7 billion people, including both advanced economies and developing countries.

What is Digital Public Infrastructure (DPI)?

- India is hosting the Conference of Speakers and Presiding Officers of the Commonwealth (CSPOC) for the 4th time.
- DPI are a set of shared, secure, and interoperable digital systems that are built on open standards and governed by enabling rules (i.e., policies, regulations, institutions).
- DPI typically operates as a **three-layered "stack"**:
- **Identity Layer:** Provides unique identification (e.g., Aadhaar).
- **Payments Layer:** Enables interoperable, low-cost, real-time transactions (e.g., Unified Payments Interface or UPI).
- **Data Layer:** Facilitates secure, consent-based data sharing (e.g., Account Aggregator framework).

Significance of DPI

- **Effective Public Service Delivery:** Government e-Marketplace (GeM) surpasses ₹5 lakh crore Gross Merchandise Value.
- **Payment revolution:** UPI powers 85% of India's digital payments and nearly 50% of global real-time digital payments.
- **Breaking Language Barriers:** BHASHINI (BHASHa INterface for India) supports 35+ Indian languages, 1,600+ AI models, and 22+ languages.
- **E-Governance:** UMANG app offers 2,300 services in 23 languages, with 8.71 crore registrations.
- **Soft Power Diplomacy:** DPI potentially promotes cross-border digital partnership and positions India as a trusted digital partner.

Key Initiatives by India to enhance the reach of Indian DPI at international levels:

- **India Stack Global:** Aims to share the success of Indian DPIs with the global community.
- **Includes key projects:** Aadhaar, UPI, U-WIN, API Setu, DigiLocker, Aarogya Setu, Government eMarketplace, UMANG, DIKSHA, eSanjeevani, eHospital etc.
- **Global DPI Repository (GDPIR):** An initiative of the Indian G20 Presidency designed to be a resource for key lessons and knowledge available from G20 members and guest countries.

- **Other:** India has signed MoUs with countries like Armenia, Sierra Leone, Suriname, etc. for sharing India Stack.

Reforms for India's Developed Economy Target 2047

- India aims to become a \$7-10 trillion economy in the next decade, but the key challenge is financing growth in a stable and durable way.

India's Key Targets for 2047

- **Developed Nation:** India aims to become a developed country by 2047 ("Viksit Bharat @2047").
- **Economy Size:** Target of around US\$ 30 trillion GDP by 2047.
- **Per Capita Income:** NITI Aayog approach paper suggests ~US\$ 18,000 per capita income by 2047.
- **Energy Independence:** The government has a stated goal of energy independence by 2047.

Core Risk Identified for India

- **Savings Erosion:** Net household financial savings fell to a **multi-decade low of ~5.3% of GDP (FY2023)**, weakening domestic long-term capital formation.
- **Debt-Led Growth:** Household debt has risen to over 40%, with borrowing increasingly used for consumption and lifestyle spending, reducing future savings potential.
- **Bank Tenor Mismatch:** Bank deposits are largely short/medium-term, <1-year deposits are ~39.6% (PSBs) and ~39.5% (private banks), while 1-3 years add ~21.7% and ~26.2%.
- **Low Capital Efficiency:** India's ICOR ~4 to 5.5 means high investment is needed to sustain fast growth. With execution delays, returns fall, and more capital gets locked for the same output.
- **ICOR primarily stands for Incremental Capital-Output Ratio, a key economic metric showing how much extra capital (investment) is needed to produce one additional unit of output (GDP), with a lower ICOR indicating more efficient investment and growth.**

Reforms For India's Developed Economy

1. Rebuild Long-Term Domestic Savings

- **Savings Revival:** Expand pension/insurance penetration and nudge long-term household savings; E.g., stronger Atal Pension Yojana coverage with auto-enrolment models.
- **Debt Discipline:** Reduce dependence on leverage-driven consumption as household debt is

already above 40%. E.g. Promote financial literacy and incentivise systematic long-term savings behaviour.

2. Shift Long-Tenor Financing to Markets

- **Bond Deepening:** Expand corporate bond market depth and liquidity beyond AAA issuers and private placements, also improve secondary market trading and widen investor participation.
- **Institutional Flow:** Increase long-term funds from pensions and insurers into infrastructure and manufacturing bonds. E.g. Credit enhancement and risk-sharing tools to support long-term lending.

3. Improve Capital Efficiency

- **Execution Reform:** Reduce time and cost overruns through faster approvals, predictable regulation and clearer contracts to improve investment productivity.
- **Regulatory Certainty:** Ensure stable policy and enforcement so investors can plan long-horizon projects.

4. Leverage Start-ups and Deep Tech

- **Deep-Tech Push:** Create long-horizon capital and mission-linked incentives; E.g., India Semiconductor Mission-style support for deep tech clusters.
- **Patient Capital:** Create long-horizon risk capital and industry-academia linkages for longer gestation innovation by building policy frameworks that match deep-tech timelines and scale-up needs.

Export Concentration in Few States

- **RBI Handbook of Statistics on Indian States** 2024-25 showcases export performance masked by a growing regional imbalance, raising concerns about inclusive growth.

Pattern of Export Concentration

- **Top-Heavy Share:** The top five States, Maharashtra, Gujarat, Tamil Nadu, Karnataka and Uttar Pradesh account for ~70% of India's exports, up from ~65% five years ago.
- **Core-Periphery Divide:** Coastal western and southern States are integrating into global value chains, while large northern and eastern regions remain weakly linked.

- **Rising Concentration:** The **Herfindahl-Hirschman Index (HHI)** of India's export geography has increased, indicating growing spatial concentration rather than dispersion.
- **HHI:** A standard indicator used to measure concentration, where a higher value shows dominance by a region and a lower value indicates a more even distribution.

Structural Reasons Behind Export Concentration

- **Value Over Volume:** Global merchandise trade growth has slowed to 0.5–3%, pushing capital towards high-complexity, high-value clusters rather than low-skill regions.
- **High Global Concentration:** Since the top 10 global exporters control ~55% of world merchandise trade, India's smaller exporting base faces tougher entry barriers and higher competitive pressure.
- **Capital Deepening:** Fixed capital investment rose ~10.6% (ASI 2022–23) while factory employment grew only 7.4%, raising capital per worker to ₹23.6 lakh.
- **Employment Stagnation:** Manufacturing's share in total employment remains stuck at ~11.6–12%.
- **Financial Asymmetry:** High-export States show credit–deposit ratios above 90%, while States like Bihar and eastern Uttar Pradesh remain below 50%, indicating capital flight.
- **Credit-Deposit Ratio:** A measure showing how much of a bank's deposits are lent out as credit, with higher ratios indicating greater local use of savings for investment.

Implications for the Indian Economy

- **Urban Congestion Costs:** Export clustering in coastal metros has raised stress; E.g., industrial land prices in major export corridors have risen 2–3 times in a decade, discouraging decentralisation.
- **Regional Income Divergence:** Export-heavy States report per-capita incomes 2–3 times higher than low-export States, reinforcing long-term regional inequality.
- **External Dependence Risk:** India's exports to the US and EU form ~40% of total exports, so a demand slowdown there can quickly transmit stress to export-linked States and sectors.
- **Policy Measurement Gap:** Using export growth alone as a success metric can mislead, because national aggregates may rise even when many States see limited export dynamism and spillovers.
- **Forex Vulnerability:** Merchandise exports are dominated by a few States, while India still ran a current account deficit of ~1.1% of GDP (FY24), making forex stability sensitive to regional export shocks.

Way Forward

- **Financial Rebalancing:** Improve local credit flow in hinterland States; E.g., targeted lending mandates and regional development finance institutions.
- **Place-Based Policy:** Tailor industrial strategy to State-specific strengths; E.g., agro-processing in eastern India and logistics-linked manufacturing in the north.
- **Employment Focus:** Complement export policy with labour-absorbing sectors; E.g., Vietnam's export strategy combined electronics exports with large-scale textiles, footwear and food-processing clusters.
- **Capability Building:** Invest in skills, logistics and supplier ecosystems in lagging States; E.g., district-level industrial capability hubs rather than isolated parks.

Protest Against Vadhavan Port

- Thousands of people held a major protest march against the construction of the Vadhavan Port project in Maharashtra.
- **Key Concerns:** Livelihood loss of fisherfolk, farmers, and Adivasi communities, and ecological damage to the **Dahanu Eco-Sensitive Zone (ESZ)**.

Dahanu ESZ

- It is a legally protected area in Palghar district, designated by the Ministry of Environment and Forests (MoEF) in 1991.
- The Dahanu–Vadhavan intertidal zone is known as the "**Golden Belt**" for housing rare corals, live conches, and highly productive fish breeding grounds.

About Vadhavan Port

- It is an all-weather, deep-draft, major **greenfield port** under construction in Palghar district, around 150 km north of Mumbai.
- **It is India's first offshore port**, planned on an artificial island created through land reclamation.
- It is being developed by Vadhavan Port Project Limited (VPPL), a joint venture between the Jawaharlal Nehru Port Authority (74%) and the Maharashtra Maritime Board (26%).
- **Operational Model:** The port follows the Landlord Model, where the port authority owns land and core infrastructure, while private players manage terminals and operations.
- **Key Feature:** The port has a natural draft of 20 metres, allowing it to accommodate large container ships without extensive capital dredging.

- **Connectivity:** The port will connect to the **Western Dedicated Freight Corridor (DFC)** and Mumbai-Vadodara Expressway.
- **Strategic Role:** It serves as a vital gateway for the **India-Middle East-Europe Economic Corridor (IMEC)** and the **International North-South Transport Corridor (INSTC)**.

Chips to Start-up (C2S) Programme

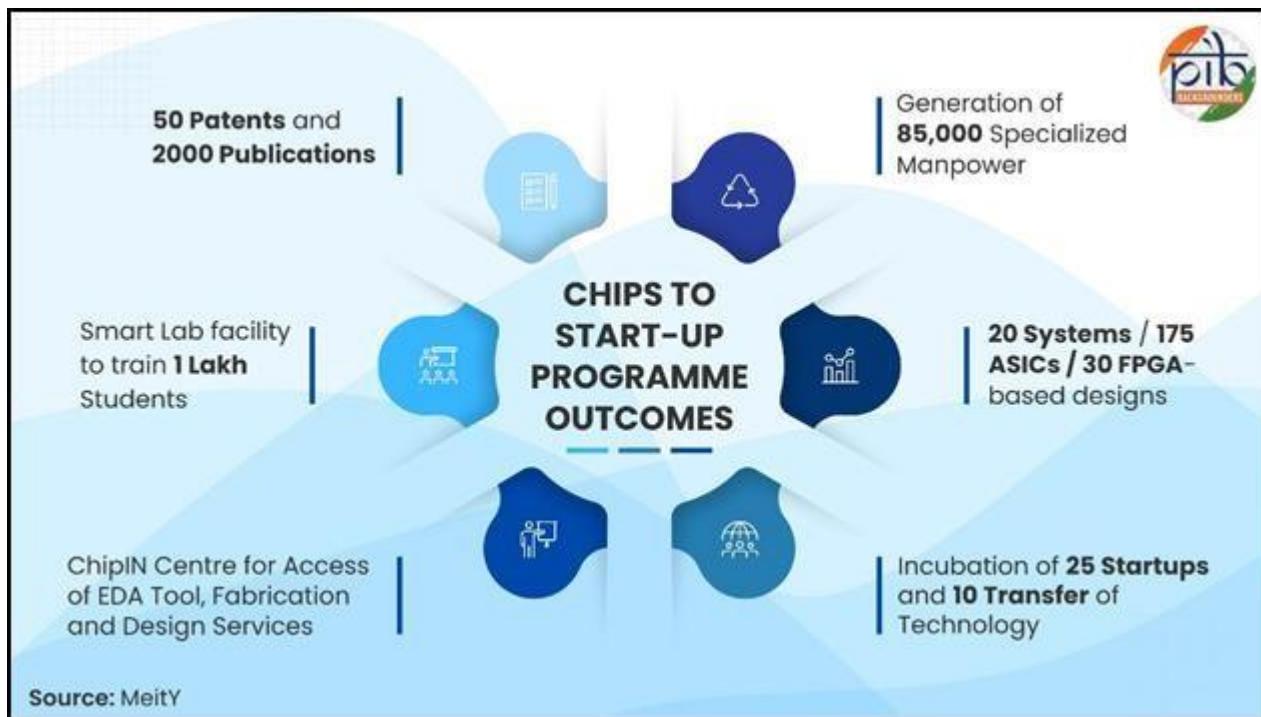
- The Chips to Start-up (C2S) Programme is in news highlighting its tangible outcomes—56 student-designed chips fabricated, 75+ patents filed, and large-scale chip design training—showcasing India's growing indigenous semiconductor design capability.

Chips to Start-up (C2S) Programme:

- The Chips to Start-up (C2S) Programme is a national capacity-building and innovation initiative to develop industry-ready chip design talent and strengthen India's **indigenous semiconductor design** ecosystem through hands-on training, R&D, and fabrication exposure.
- **Launched in: 2022**
- **Implemented by:** the Ministry of Electronics and Information Technology (MeitY)
- **Aim:** To create a robust pipeline of skilled chip designers, enable hands-on chip fabrication, foster start-ups and IP creation, and support technological self-reliance in semiconductors.

Key features

- **Outlay: ₹250 crore (5 years)**
- **Human resource targets:** 200 PhDs, 7,000 M.Tech (VLSI), 8,800 M.Tech (related streams with VLSI), 69,000 B.Tech students.
- **Infrastructure access:** Shared EDA tools, HPC, FPGA boards, and SMART labs.
- **Hands-on fabrication:** Shared wafer runs via Semi-Conductor Laboratory (SCL), Mohali.
- **Chip design enablement:** National ChipIN Centre operated by Centre for Development of Advanced Computing (C-DAC), Bengaluru.
- **Innovation outcomes:** Start-up incubation, patents, IP cores, ASICs and SoCs.
- **Industry collaboration:** Training with global EDA and semiconductor firms.



Significance

- Builds strategic talent to address the global semiconductor skill gap.
- Democratises chip design by giving students nationwide access to advanced tools and fabrication.
- Strengthens self-reliance (Atmanirbhar Bharat) in a critical, security-sensitive sector.

Tax Residency Certificate (TRC)

- The Supreme Court ruled that possession of a Tax Residency Certificate alone does not preclude scrutiny where tax avoidance allegations exist.
- About TRC:** A Tax Residency Certificate (TRC) is an official document issued by a tax authority certifying residence for a specific financial year.
- Purpose:** Its primary purpose is to prevent double taxation of income earned in multiple countries.
- Treaty Benefit:** A TRC allows taxpayers to claim benefits under applicable Double Taxation Avoidance Agreements (DTAAs) between countries.
- Indian Criteria:** In India, tax residency generally requires meeting the criteria under Section 6 of the Income Tax Act, 1961, including a 182-day stay in a financial year.
- DTAAs are bilateral or multilateral treaties that prevent the same income from being taxed by both the source country (where the income originates) and the resident country (where the taxpayer

resides).

NITI Aayog Initiative on MSME Scheme Convergence

- NITI Aayog released a roadmap on converging MSME schemes to reduce duplication, improve outreach, and strengthen delivery of credit, innovation and infrastructure support.

Convergence Framework by NITI Aayog

- **Information Convergence:** Integrate government-generated MSME data across Centre–States to improve governance, targeting and monitoring.
- **Process Convergence:** Align scheme design and implementation to merge overlaps, unify common components and reduce redundancies.

Why Convergence is Needed?

- **Scheme Fragmentation:** The Ministry of MSME runs 18 schemes across credit, skill, marketing, innovation and infrastructure, but overlaps across ministries create duplicated benefits.
- **Low Awareness Reach:** Even with large public spending, multiple schemes with different entry points reduce discoverability, so eligible MSMEs fail to access support.
- **High Compliance Load:** Separate documentation, verification and reporting for similar benefits raises transaction costs for small firms and creates time-loss.
- **Data Silos:** Without shared beneficiary databases, scheme monitoring becomes fragmented and outcome tracking weak, causing leakages and mis-targeting in delivery

Key Recommendations by Niti Aayog

Centralised MSME Portal

- **Unified Platform:** Build an AI-enabled portal integrating schemes in one digital window.
- **Smart Support:** Use AI chatbots, dashboards and mobile access to give real-time guidance.

Cluster Scheme Integration

- **SFURTI Merger:** Integrate Scheme of Fund for Regeneration of Traditional Industries (SFURTI) with Micro and Small Enterprises –Cluster Development Programme (MSE-CDP) for scale efficiency.
- **Traditional Sub-Scheme:** Create a dedicated traditional industries sub-window with earmarked support.

Skill Programme Rationalisation

- **Three-Tier Model:** Restructure skills into (i) entrepreneurship/business skills, (ii) MSME technical skills and (iii) rural/women artisan training.
- **Overlap Removal:** Merge similar training schemes while retaining targeted elements for inclusion.

Marketing Assistance Wing

- **Domestic Component:** Support MSMEs through exhibitions and structured market linkage platforms.
- **Global Component:** Enable export access through curated international buyer connections.

Innovation Scheme Integration

- **ASPIRE Linkage:** Integrate A Scheme for Promoting Innovation, Rural Industry & Entrepreneurship (ASPIRE) into MSME Innovative as a special agro-rural category.
- **Budget Ring-Fencing:** Continue existing ASPIRE funds while earmarking future innovation budgets.

Safeguards Suggested

- **Targeted Schemes Protected:** Preserve dedicated programmes like National SC/ST Hub and Promotion of MSMEs in North Eastern Region (NER).
- **Flagships Standalone:** Keep large scale schemes like Prime Minister's Employment Generation Programme (PMEGP) and PM Vishwakarma independent due to size and strategic role.

Status of MSME in India

- **Macro Importance:** MSMEs contribute about ~30% of India's Gross Value Added (GVA).
- **Export Backbone:** MSME-specified products account for ~45.7% of India's exports (FY 2023-24).
- **Employment Engine:** MSMEs employ ~11 crore+, making them India's largest non-farm job creator.
- **Enterprise Base:** India has ~6.3 crore MSMEs, indicating a massive base of small production.

Export Promotion Mission (EPM)

- The Reserve Bank of India (RBI) has issued operational guidelines for extending interest subvention on export credit **under Niryat Protsahan**, bringing exporters under the Export Promotion Mission (EPM).

Export Promotion Mission (EPM):

- The Export Promotion Mission (EPM) is a mission-mode, unified national framework to strengthen India's export competitiveness by integrating financial support, market access, compliance readiness, and digital governance for exporters.
- **Established in: Union Budget 2025-26**
- **Mission period: FY 2025-26 to FY 2030-31**
- Implemented by: **Directorate General of Foreign Trade (DGFT)** as the nodal implementing agency

Aim:

- To boost India's export competitiveness, especially for MSMEs, first-time exporters, labour-intensive sectors, and non-traditional districts, by ensuring affordable trade finance and global market readiness.

Key features:

- **Unified mission architecture:** Merges multiple fragmented export-support schemes into a single, outcome-linked and digitally driven framework.

Two integrated sub-schemes:

- **Niryat Protsahan (Financial enablers):** Interest subvention on pre/post-shipment credit, export factoring, deep-tier financing, collateral support, e-commerce exporter credit cards.
- **Niryat Disha (Non-financial enablers):** Quality certification, branding, trade fairs, logistics & warehousing support, inland transport reimbursement, cluster and district capacity building.
- **Interest subvention under Niryat Protsahan:** RBI-guided interest support on export credit, strictly for eligible exporters, routed through banks and financial institutions.
- **Credit guarantee support:** ₹20,000 crore Credit Guarantee Scheme for Exporters (CGSE) via NCGTC, providing 100% government-backed collateral-free credit.
- **Digital implementation:** End-to-end DGFT digital platform aligned with customs and trade systems for transparent, paperless processing.
- **RBI regulatory support:** Extended export credit tenure, moratoriums, asset-classification forbearance, FEMA relaxations on export realisation.
- **Sectoral & regional focus:** Priority to textiles, leather, gems & jewellery, engineering goods, marine products, and interior/low-export districts.

ECOFIX Pothole Repair Technology

- **Source (PIB):** Technology Development Board (TDB) signed a commercialisation agreement with a private partner for ECOFIX pothole repair technology.
- **About:** ECOFIX is a ready-to-use, all-weather pothole repair mix for rapid urban road maintenance.
- **Composition:** It uses processed steel slag with a specialised polymeric binder to enhance bonding.
- **Advantage:** Developed by the CSIR-Central Road Research Institute, the mix is cheaper and more durable than conventional bituminous patchwork solutions.
- **Application:** Unlike bituminous mixes, ECOFIX can be applied directly into waterlogged potholes without dewatering or a tack coat.
- **Fast Work:** Repaired road sections can be opened to traffic within about 20 minutes.
- **Emission Reduction:** As a cold-mix technology, ECOFIX reduces greenhouse gas emissions compared with hot-mix methods.

About Steel Slag

- Steel slag is a **non-metallic** byproduct formed during steelmaking when impurities are separated using **limestone and dolomite fluxes**.
- **Composition:** It primarily contains calcium, silicon, magnesium, and iron oxides.
- **Material Strength:** Slag aggregates are harder and more durable than natural stones like limestone.
- **Higher Density:** Steel slag is generally denser (3.2-3.6 g/cc) than natural aggregates.
- **Usage:** Steel slag can be used as –
 - Reduce cement's overall carbon footprint as a supplementary cementitious material
 - Treat acidic mine drainage and prevent heavy metal leaching
 - Neutralises acidic soils and supplies micronutrients such as silicon.
 - Fully replace natural aggregates, reducing road thickness and costs.

Union Minister highlights India's comprehensive approach to AI on sidelines of WEF 2026

- The minister explained that the AI ecosystem consists of 5 layers: the application layer, the models layer, the semiconductor or chip layer, infrastructure such as data centers, and the energy layer.

India's approach to 5 layer AI ecosystem:

- **Application and usage layer:** This layer offers the highest Return on Investment (RoI). India is aiming to lead in applying AI to enterprise workflows and public services. E.g. Kisan e-Mitra is an AI-powered chatbot that helps farmers, Bhashini provides AI-based translation in 20+ Indian languages for accessing digital services.
- **Model Layer:** Instead of building only massive models, India is developing around 12 focused AI models, which can run on small GPU clusters and deliver AI services at low cost to a very large population. Nearly 95 %of AI workloads today are handled by small models, and that a 50-billion parameter model is sufficient for most enterprise requirements.
- **Semiconductor:** India is focusing on indigenous custom silicon development to reduce dependency. India is focusing on mastering manufacturing in the 28nm to 90nm range, covering applications such as electric vehicles, automobiles, railways etc.
- **AI Infrastructure:** Approx. USD 70 billion of AI infrastructure investment is already confirmed and being rolled out.
- **Energy Readiness:** India is integrating green energy to sustainably power the country's growing data centre footprint. E.g., India has opened nuclear energy to private sector participation through the SHANTI Act (2025), which will support the full AI stack.

Atal Pension Yojana

- The Union Cabinet chaired by Prime Minister of India has approved the continuation of Atal Pension Yojana (APY) **up to 2030-31**, along with extended funding for outreach, development, and gap funding.

Atal Pension Yojana (APY):

- Atal Pension Yojana is a voluntary, government-backed pension scheme that provides a guaranteed monthly pension to citizens, especially workers in the unorganised sector, after the age of 60.

- **Launched in: 9 May 2015**

Implementing authority:

- Administered by Pension Fund Regulatory and Development Authority (PFRDA).
- Implemented through banks and post offices.

Aim:

- To ensure old-age income security for poor, underprivileged, and unorganised sector workers.

- To promote financial inclusion and long-term retirement savings.

Key features:

- Guaranteed pension of ₹1,000 / ₹2,000 / ₹3,000 / ₹4,000 / ₹5,000 per month after 60 years
- **Eligibility:** Indian citizens aged 18–40 years with a savings bank/post office account
- Contribution-based, auto-debited monthly/quarterly/half-yearly till age 60
- **Spouse pension & nominee benefit:** Same pension to spouse after subscriber's death; corpus returned to nominee thereafter.
- Income-tax payers not eligible for new enrolment after 1 October 2022
- Funds invested as per PFRDA guidelines through approved pension funds

Significance:

- Provides social security and dignity in old age to crores of unorganised workers.
- Deepens financial inclusion and supports India's transition towards a pensioned society.

Small Industries Development Bank of India

- The Union Cabinet chaired by Prime Minister of India approved an equity infusion of ₹5,000 crore into Small Industries Development Bank of India (SIDBI).

Small Industries Development Bank of India (SIDBI):

- SIDBI is the principal financial institution for promotion, financing, and development of the MSME sector in India, and for coordinating institutions engaged in MSME financing.
- **Established in:** April 1990, through an Act of Parliament.
- **Headquarters:** Lucknow, Uttar Pradesh

History:

- Established in **1990 as a wholly owned subsidiary of IDBI Bank.**
- Delinked from IDBI in March 2000.
- One of the five **All India Financial Institutions (AIFIs)** regulated and supervised by RBI (others include NABARD, Exim Bank, NHB, NaBFID).

Key functions:

- Refinance support to banks, SFBs and NBFCs: Supplies bulk, low-cost funds to lending institutions so they can scale up MSME lending without balance-sheet stress.

- **Direct lending to MSMEs:** Provides loans straight to MSMEs for fixed capital and working capital where bank credit is inadequate or unavailable.
- **Collateral-free and digital credit products:** Enables MSME loans without physical collateral using digital data, reducing entry barriers for small firms.
- **Venture debt and startup financing:** Offers non-equity funding to startups and growth-stage MSMEs to support innovation and expansion.
- **Developmental initiatives (Udyami Mitra, handholding):** Acts as a facilitation platform linking MSMEs with banks, credit products, and advisory support.
- **Support to microfinance institutions:** Channels funds and institutional support to MFIs to extend credit to micro-enterprises at the grassroots level.

Significance:

- Acts as the backbone of MSME credit architecture in India.
- Enhances employment generation, financial inclusion, and formalisation.

One Station One Product (OSOP) Scheme

- **Source (PIB):** One Station One Product (OSOP) scheme is an initiative of the Ministry of Railways launched in 2022.
- **Objective:** To provide market access to local communities and revive traditional crafts losing prominence due to industrial standardisation.
- **Implementation:** Each railway station has a dedicated outlet for a unique regional product, with stalls uniformly designed by the National Institute of Design, Ahmedabad.
- **Target Groups:** Artisans, weavers, craftsmen, and Self-Help Groups from marginalised communities.
- **Significance:** The scheme supports the government's "Vocal for Local" vision by fostering livelihoods and regional identity.

Supreme Court Rules that GAAR Can Override Tax Treaties

- The Supreme Court of India held that capital gains arising from Tiger Global's 2018 Flipkart stake sale to Walmart are taxable in India.

- **Treaty Claim:** US-based Tiger Global claimed an exemption under the **India-Mauritius DTAA** by routing investments through Mauritius-based entities.
- **Lack Substance:** The Court held that the Mauritius entities were conduit structures lacking genuine commercial substance; real decision-making was exercised from the United States.

Legal Implications of the Supreme Court Ruling

- **Substance Over Form:** The company's economic reality takes precedence over its legal structure to detect and penalise tax evasion.
- **TRC Role:** A **Tax Residency Certificate (TRC)** is required to claim treaty benefits; however, it alone does not establish eligibility for tax exemption.
- **GAAR Override:** **General Anti-Avoidance Rules (GAAR)** prevail over tax treaties (DTAAs) when an arrangement is primarily designed to avoid tax.
- **Business Substance:** Foreign investors must demonstrate active business operations and decision-making authority in the treaty country to claim tax benefits.
- **Grandfathering Scope:** Investments made before April 2017 (the effective date for GAAR) can be scrutinised if the structure is a sham or a colourable device.
- **Indirect Transfers:** Taxation now applies to the sale of offshore shares if their value is derived mainly from Indian assets.

Positive Consequences of the Ruling

- **Revenue Augmentation:** Taxing high-value offshore transactions increases government revenue from cross-border investments.
- **Global Alignment:** India's tax framework now aligns with OECD standards to curb Base Erosion and Profit Shifting.
- **Market Integrity:** Deterring treaty shopping and round-tripping encourages cleaner, more transparent capital inflows into India.
- **Level Playing Field:** Eliminating treaty-based tax advantages creates fair competition between foreign investors and domestic businesses.

Negative Consequences of the Ruling

- **Investor Uncertainty:** Fear of retrospective scrutiny may temporarily weaken global investor confidence in India.
- **Compliance Burden:** Foreign funds will face higher costs to set up offices and hire staff to demonstrate genuine commercial substance.

- **Startup Impact:** Taxing exit profits may deepen the ongoing funding slowdown for Indian startups.
- **Litigation Risk:** Subjective assessments of commercial substance increase the risk of official discretion and disputes.

About General Anti-Avoidance Rule (GAAR)

- GAAR is a set of anti-abuse provisions under **Chapter X-A of the Income Tax Act**, designed to curb aggressive tax planning.
- **Objective:** It allows authorities to deny tax benefits if a transaction is legally valid yet lacks commercial substance.
- **Recommendation:** The Parthasarathi Shome Committee played a key role in shaping GAAR's final structure.
- **Applicability Threshold:** GAAR applies only when the tax benefit of an arrangement exceeds ₹3 crore in a financial year.
- **Treaty Override:** GAAR provisions can override tax treaties (DTAAs) when an arrangement is found to be abusive.
- **Trigger Condition:** It is invoked when an arrangement is declared an **Impermissible Avoidance Arrangement (IAA)**; a deal must pass a two-step test to be an IAA:
 - **Main Purpose Test:** The primary objective of the deal is to secure a tax benefit.
 - **Tainted Element Test:** It must have one of these flaws:
 1. It creates rights/obligations not found in normal trade (at arm's length).
 2. It results in the misuse or abuse of tax laws.
 3. It lacks commercial substance (e.g., a shell company).
 4. It is not bona fide (not genuine).

Himachal Pradesh Demands 100% Import Duties on Foreign Apples

- Himachal Pradesh Chief Minister requested a 100% import duty on foreign apples to protect local growers.
- **Seasonal Ban:** The state sought a complete ban on apple imports during the peak domestic harvest season from **July to November**.
- **Policy Trigger:** The demand follows the recent tariff cut on New Zealand apples from 50% to 25% under a **Free Trade Agreement (FTA)**.

- **Price Impact:** Cheaper off-season imports are driving down prices for domestic inventory.

Apple Production in India

- **Global Rank:** India is the world's fifth-largest apple producer, after China, the European Union (treated as a single bloc), the United States, and Turkey.
- **Production Volume:** Apple output rose by 6% in 2024-25, reaching 2.5 million metric tonnes.
- **Regional Share:** Jammu and Kashmir accounts for 70% of the output, followed by Himachal Pradesh at 20% and Uttarakhand at 10%.
- **Productivity Gap:** Indian apple yields average 6-8 tonnes per hectare, well below the global average of 40-60 tonnes.
- **Import Dependence:** India imports around 0.6 million metric tonnes annually.
- **Source Countries:** Turkey and Iran supply lower-cost apples, whereas New Zealand and Chile supply counter-seasonal varieties.
- **Cultivation Shift:** Farmers are shifting from traditional varieties like **Royal Delicious** to high-density **Gala and Fuji plantations**.
- **Key Challenges:** Rising temperatures, erratic snowfall, inadequate cold-chain infrastructure, etc.

Department of Posts Revamps ATM Infrastructure

- The Department of Posts announced a revamp of its ATM infrastructure, with over 800 ATMs now installed nationwide.
- The initiative aims to improve access to basic banking services in rural and underserved areas.

ATMs in India

- **Regulatory Authority:** Reserve Bank of India (RBI) regulates ATM policy, **while National Payments Corporation of India (NPCI)** enables nationwide ATM interoperability.

Major Types:

- **White Label ATMs:** WLAs are owned and operated by non-bank entities and are licensed under the Payment and Settlement Systems Act, 2007, to expand rural banking access.
- **Brown Label ATMs:** Under this model, third parties own the hardware and site, while sponsor banks handle branding and cash management.
- **Micro-ATMs:** These handheld PoS devices are used by Business Correspondents to provide basic

banking services through the Aadhaar-enabled Payment System in remote areas.

- **Cash Recycler Machines:** These advanced ATMs reuse notes to accept deposits and dispense cash, lowering manual replenishment costs.
- **ATM Landscape:** Public sector banks operate the largest ATM network; bank-owned ATMs have declined while white-label ATMs expanded.

RBI Recommends Connecting CBDCs of BRICS Nations

- The Reserve Bank of India suggested connecting the **Central Bank Digital Currencies (CBDCs)** of BRICS nations to facilitate direct cross-border transactions.
- **Direct Payments:** The linkage would allow users to pay foreign merchants directly without first converting funds into US dollars.
- **Faster Payments:** The proposal aims to make trade and tourism payments faster and cheaper by removing intermediary correspondent banks.
- **Trapped Funds:** Countries can use bilateral currency swaps to net-off trade imbalances and prevent the accumulation of idle “trapped” funds.
- **Possible Roadblocks:** The proposal faces risks from
 - Punitive US economic measures for bypassing the dollar
 - Potential Chinese Yuan dominance due to advanced infrastructure
 - Difficulty in agreeing on common cybersecurity standards
 - India has consistently opposed a single BRICS currency because it would dilute India's independent control of monetary policy.

‘Kill Switch’ and ‘Cyber Insurance’ Solutions for Digital Arrests

- The Ministry of Home Affairs is considering ‘kill switches’ and ‘cyber insurance’ to counter rapidly rising “digital arrest” scams.

Kill Switch

- **About:** Kill switch is a single-point emergency button embedded in banking or UPI applications for instant user protection.
- **Mechanism:** Once activated, it immediately freezes all outgoing transactions from linked bank accounts, credit cards, and digital wallets.

- **Objective:** It halts real-time fund transfers when victims are under psychological stress.

Cyber Insurance

- **About:** Cyber insurance, also called **Cyber Sachet**, serves as a post-incident recovery tool after a successful digital fraud.
- **Coverage Gap:** Traditional insurance policies often exclude losses arising from victims being manipulated into authorising fraudulent transfers.
- **Risk Pooling:** RBI has proposed a fraud insurance pool, similar to terrorism pools, to distribute risk throughout the banking system.
- **Regulatory Shift:** RBI now treats digital fraud as a systemic balance-sheet risk rather than a narrow compliance failure.

Goldilocks Farm Relief

- The year 2025–26 witnessed a bumper crop due to moderate temperatures & surplus monsoon rainfall, which together helped keep food inflation low.
- Annual consumer food inflation averaged -0.2% in 2025, and fell further to -2.7% during Jul–Dec 2025, indicating supply-led price correction.

Goldilocks Combination

- **Surplus & Rainfall:** India saw above-normal monsoon rainfall (May–Oct 2025) plus moderate temperatures, creating near-ideal crop conditions and stabilising prices.
- **Temperature Advantage:** India's 2025 annual mean temperature anomaly was +0.28°C (1991–2020 baseline), far lower than +0.65°C (2024), reducing heat-stress losses.

Drivers of Reduced Food Inflation in 2025

Supply-Side Farm Conditions

- **Reservoir Buffer:** Before peak rabi sowing (end-Oct), water in 161 major reservoirs reached 90.8% of full storage, improving irrigation certainty and winter cropping outcomes.
- **Wheat Record Sowing:** Wheat area rose to 334.17 lakh ha this season, up from 328.04 lakh ha in the same period last year, boosting harvest expectations.
- **Rabi Crop Expansion:** Mustard increased from 86.57 to 89.36 lakh ha, rabi maize from 23.49 to 25.24 lakh ha, and masoor from 17.66 to 18.12 lakh ha.
- **Heat Risk Benchmark:** March heat spikes historically damage yields (e.g., 2002 mean anomaly

+1.61°C all-India, +3.22°C in NW wheat belt), but current winter conditions reduce this risk.

Price Cooling in the Food Basket

- **Potato Price Collapse:** Potato wholesale prices in UP mandis fell to ₹600–700/quintal, compared to ₹1,200–1,300/quintal a year ago, reflecting large arrivals.
- **Broad Deflation:** CPI retail inflation in vegetables was -18.5% (Dec) and pulses -15.1%, showing broad food basket softening not limited to one crop.

Policy & External Cushion

- **Govt Stocks High:** Rice & wheat stock in government godowns stood at 95.4 million tonnes (Jan 1), nearly 4.5 times the required level, improving price-stabilisation ability.
- **Global Supply Strong:** 2025–26 projections show record output in major staples like wheat, rice, maize, soyabean and palm oil, reducing imported inflation risk.

Status of Agriculture in India

- **GDP Base:** Agriculture contributes about ~18% of India's GVA, despite a rising services share.
- **Employment Anchor:** It supports ~45% of the workforce, making it the largest livelihood sector.
- **Export Contributor:** Agricultural and allied exports are around ~10–12% of India's total exports.
- **Farm Base:** India has ~14.6 crore operational holdings, reflecting a fragmented smallholder structure.
- **Feminisation Trend:** Women form ~63–64% of workers in agriculture (PLFS).

One Crore e-Passports Issued

- Nearly one crore e-Passports have been issued since the nationwide launch in 2024.
- **Automatic Adoption:** All new passport applications and renewals now automatically receive upgraded e-Passports.
- **Transition Target:** India aims to complete the national transition to e-Passports by June 2035.

About e-Passport

- **Document Nature:** An e-Passport is a conventional paper passport embedded with an electronic **Radio Frequency Identification (RFID)** chip.
- **Global Standards:** The document complies with the International Civil Aviation Organisation

(ICAO) Document 9303 standard for machine-readable travel documents.

- **Implementing Agency:** The Ministry of External Affairs implements e-Passports under the Passport Seva Programme Version 2.0.

Key Features of e-Passport

- **Data Storage:** Embedded 64-kilobyte RFID chip stores demographic details, a digital photograph, and biometric identifiers like fingerprints and iris data.
- **Chip Design:** The passive RFID chip communicates only with authorised readers via contactless smart card technology.
- **Tracking Safeguard:** The read-only chip only activates when close to readers, preventing location tracking or remote misuse.
- **Security Architecture:** Public Key Infrastructure (PKI) and digital signatures protect chip data against forgery and unauthorised modification.
- **Access Control:** Supplemental Access Control (SAC) prevents unauthorised skimming by requiring a physical passport scan before data release.

Key Advantages of e-Passport

- **Border Clearance:** Automated e-gates enable faster, contactless immigration clearance.
- **Forgery Resistance:** The encrypted chip makes the passport highly resistant to physical tampering.
- **Identity Accuracy:** Biometric attributes prevent impersonation through 1:1 identity verification.

Trucks-on-Trains

- Indian Railways, through its **Dedicated Freight Corridor (DFC)** network, is scaling up the Trucks-on-Trains (ToT) service to shift long-haul freight from roads to electrified rail.

Trucks-on-Trains:

- Trucks-on-Trains (ToT) is a multimodal freight service under the DFC that allows loaded trucks to be carried on specially designed flat wagons for the long-haul rail leg, while trucks handle only the first- and last-mile by road.

Aim:

- Enable a strategic modal shift from road to rail for long-distance freight.

- Reduce logistics costs, fuel consumption, and emissions.
- Decongest highways and improve supply-chain reliability.
- Integrate road agility with rail efficiency under a national multimodal logistics vision.

Key features:

- **Multimodal integration:** Combines road flexibility with high-speed, electrified freight rail.
- **Dedicated Freight Corridor backbone:** Operates on high-capacity, fully electrified DFC routes.
- **Time efficiency:** Cuts transit time from ~30 hours by road to ~12 hours via ToT.
- **Competitive pricing:** Transparent weight-based tariffs; GST exemption for milk tankers, aiding perishables.
- **Environmental benefits:** Significant reductions in CO₂, NO_x, particulate matter, diesel use, and road dust.
- **Operational resilience:** Less affected by fog, rain, and extreme weather than highways.
- **Scalability:** New Flat Multipurpose (FMP) wagons and expansion to more Origin–Destination terminals.

Capital Infusion in SIDBI to Expand MSME Credit Coverage

- Union Cabinet approved equity infusion into Small Industries Development Bank of India (SIDBI) to enhance MSME credit and expand financial assistance coverage.

Decision Roadmap for Credit Infusion

- **Equity Infusion Plan:** Department of Financial Services (DFS) to infuse ₹5,000 crore in three tranches.
- **Tranche Structure:** ₹3,000 crore in 2025–26, ₹1,000 crore each in 2026–27 and 2027–28.
- **Credit Expansion Goal:** MSMEs supported to rise from 76.26 lakh (FY25 end) to 102 lakh by FY28 end.

Expected Impact

- **Employment Push:** With an average of 4.37 jobs per MSME, ~25.74 lakh new MSME beneficiaries could create ~1.12 crore jobs by 2027–28.
- **Cheaper Credit Flow:** Higher capital improves SIDBI's ability to raise funds at fair rates, enabling competitive-cost MSME lending.

Need For Capital Infusion in MSME

- **Rising Beneficiary Demand:** MSMEs supported are expected to rise from 76.26 lakh (FY25 end)

to 102 lakh by FY28, requiring higher lending capacity.

- **Massive Enterprise Base:** India has ~6.9 crore registered MSMEs (Sept 2025), so scaling institutional credit needs stronger development finance buffers.
- **Prudential Capital Need:** Higher MSME lending increases risk-weighted assets, so equity is needed to maintain a strong Capital to Risk-Weighted Assets Ratio (CRAR).

Challenges in MSME Credit Ecosystem

- **Large Credit Gap:** MSME credit gap is ~₹20–25 lakh crore, forcing many firms into informal borrowing.
- **Payment Delays:** Delayed payments lock working capital; MSMEs often face receivables cycles running into 60–90 days, worsening liquidity stress.
- **Low Credit Penetration:** Formal credit access remains uneven; MSMEs contribute ~30% of India's GDP/GVA but receive only ~16–18% of total bank credit, showing a persistent credit-access gap.

Way Forward

- **Credit Guarantees:** Expand risk-sharing cover to unlock collateral-free MSME loans; E.g., strengthen CGTMSE coverage limits and reduce guarantee fees for micro units.
- **Prompt Payments:** Enforce faster MSME receivables and expand invoice discounting to free working capital; E.g., scale up **TReDS** across PSUs, CPSEs and large private buyers.
- **Cluster Financing:** Create sector-based credit windows for MSME clusters to reduce transaction costs.
- **Last-Mile Channels:** Deepen NBFC-fintech partnerships for micro and informal units with limited banking reach; E.g., SIDBI refinancing lines for NBFC-fintech co-lending models.

Small Industries Development Bank of India (SIDBI)

- SIDBI was established in **1990** by an Act of Parliament as the Principal Financial Institution for the Promotion, Financing and Development of the MSME sector or similar activities.
- It is under the jurisdiction of the **Ministry of Finance**.
- It was incorporated as a **wholly-owned subsidiary of IDBI Bank**, and later delinked from IDBI w.e.f. March 27, 2000, became an independent development finance institution.

Pollution as the Largest Economic Drag

- At the **World Economic Forum (Davos)**, experts warned that economic damage from pollution far exceeds losses from trade tariffs, reframing pollution as an economic crisis.

Economic Cost of Pollution

- Global Welfare Loss:** Air pollution causes ~\$5.7 trillion annual welfare loss, ~4.8% of global GDP, through productivity loss, health spending and premature mortality (World Bank).
- Mortality Burden:** Pollution linked to ~1.7 million deaths annually in India, ~18% of total deaths, directly shrinking labour supply and effective workforce participation.
- GDP Drag:** Economic cost of pollution estimated at ~\$150 billion annually, ~1.7% of India's GDP, reflecting persistent long-term growth erosion (World Bank).

Channels of Economic Damage by Pollution

- Productivity Loss:** Chronic pollution exposure lowers labour efficiency and increases absenteeism.
- Healthcare Drain:** Rising pollution-related diseases inflate public and household health expenditure.
- Human Capital Erosion:** Early-life PM_{2.5} exposure reduces cognitive outcomes and lifetime earnings; E.g., childhood exposure linked to lower schooling outcomes (Lancet studies).
- Crop Yield Loss:** Ground-level ozone and PM_{2.5} diminish agricultural productivity; e.g., India loses millions of tonnes of crops annually due to air pollution (ICAR/World Bank).

Why Pollution Causes More Damage Than Tariffs?

- Structural Drag:** Pollution imposes continuous economy-wide costs, unlike episodic tariff shocks; E.g., annual GDP loss of ~1-2% in India persists year after year.
- Invisible Externalities:** Health damage and mortality are underpriced in markets; E.g., welfare loss equals ~4.8% of global GDP annually (World Bank).
- Investment Deterrence:** Poor air quality lowers city liveability and talent attraction; E.g., polluted metros rank lower on global competitiveness indices.
- Urban Exposure Evidence:** Delhi met national air quality standards on only 156 of 365 days in 2025, indicating sustained economic stress on urban labour markets (CPCB data).

Way Forward

- **Clean Regulation:** Tighten emission standards with strict enforcement across sectors; E.g., real-time monitoring under the National Clean Air Programme (NCAP).
- **Urban Transport:** Strengthen mass transit and electric mobility adoption; E.g., **metro-bus integration** and faster EV penetration in cities.
- **Airshed Governance:** Implement regional pollution control beyond city limits; E.g., coordinated Airshed Management Models used in China.
- **Health Accounting:** Internalise pollution costs into economic planning frameworks; E.g., use health-adjusted growth metrics in cost-benefit analyses.

PLI Scheme for White Goods (Air Conditioners & LED Lights)

- The Government of India has selected five companies in the fourth round of the Production-Linked Incentive (PLI) Scheme for White Goods, involving a committed investment of ₹863 crore.

PLI Scheme for White Goods :

- **What is the PLI Scheme for White Goods?**
- The Production-Linked Incentive (PLI) Scheme for White Goods is a **central sector scheme** that provides performance-linked financial incentives to companies manufacturing key components of Air Conditioners (ACs) and LED lights in India, based on incremental sales.
- **Launched in: FY 2021-22**, with implementation till **FY 2028-29**.
- **Nodal organisation**
- **Implementing Ministry:** Ministry of Commerce and Industry
- **Monitoring authority:** Empowered Group of Secretaries (EGoS), chaired by the Cabinet Secretary

Target segments (PLI Scheme for White Goods)

Air Conditioners:

- **High-value intermediates:** Capital- and technology-intensive core inputs like compressors, copper tubes, aluminium foils that drive value addition and reduce import dependence.
- **Low-value intermediates:** Supporting electronic and mechanical parts such as PCB assemblies, BLDC motors, service valves and cross-flow fans essential for AC functionality.
- **Sub-assemblies (IDUs & ODUs):** Integrated components for Indoor and Outdoor Units, enabling

deeper domestic supply-chain integration.

LED Lights:

- **Core components:** Critical electronic elements like LED chip packaging, ICs, resistors and fuses that determine efficiency, lifespan and performance.
- **Other components:** Enabling parts such as LED drivers, engines, modules, mechanicals and wire-wound inductors, supporting end-product manufacturing.

Key features:

- **Financial incentive:** 4%–6% incentive on incremental domestic sales encourages scale-based manufacturing growth.
- **Base year (FY 2019–20):** Serves as the benchmark to measure incremental investment and sales performance.
- **Incentive period:** 5 years + 1-year gestation allows time for capacity creation before reward linkage.
- **Eligibility:** Limited to greenfield or brownfield manufacturing investments to ensure real asset creation.
- **Mandatory thresholds:** Firms must meet both investment and sales targets to qualify, ensuring accountability.
- **Priority criteria:** Core component manufacturing and large investments are favoured to deepen value chains.
- **Fund-limited design:** Incentives are capped at Cabinet-approved outlay, ensuring fiscal discipline.

Coverage and scale:

- **Total outlay:** ₹6,238 crore, reflecting focused but strategic industrial support.
- **Beneficiaries:** 85 companies selected across four rounds, indicating strong industry response.
- **Expected investment:** Around ₹11,198 crore, signalling crowd-in of private capital.
- **Expected production:** Nearly ₹1.9 lakh crore, enhancing domestic manufacturing output.
- **Employment impact:** Significant direct and indirect job creation across electronics and appliance value chains.

Report on Circular Economy of E-Waste and Lithium-ion Batteries

- The report has been released by **NITI Aayog** in collaboration with The Energy and Resources

Institute (TERI).

- **Circular economy** is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products.

Challenges in Circularity of E-Waste

- **Informal and inefficient collection:** Approximately 78% of India's total E-waste is processed by the informal sector, achieving material recovery rates of only 10-20% compared to 95-97% in formal facilities.
- **Weak monitoring & enforcement:** Manipulation of **Extended Producer Responsibility (EPR)** system. E.g. spurious EPR certificates.
- **Limited EPR coverage:** Only a few metals dominate, Iron (52%), Copper (18%) etc.; critical minerals (such as Lithium and Cobalt) remain neglected.
- **Low technical capacity:** Lack of skills and technologies for efficient, safe, and scalable recycling.

Recommendations:

- **Strengthen Waste Management Rules:** Monitoring of recyclers through an expanded of EPR coverage to include high-value metals.
- **Provide Incentives:** Additional incentives proposed for manufacturers of Advanced Chemistry Cells under the Production Linked Incentive (PLI).
- Integrate Battery recycling into the Indian Carbon Market, allowing recyclers to monetize Green House Gas (GHG) emission reductions.
- **Informal Sector Integration:** Use the single-window system; establish a separate vertical in **National Critical Mineral Mission (NCMM)** only on recycling.
- **Other:** Consumer awareness; skilling and re-skilling of workforce, etc.

Status of E-Waste in India

- **E-waste generation:** Increased to ~6.19 MMT in 2024 and is projected to reach 14 MMT (2030), making India the 3rd largest globally (7% of global volumes).
- **Recycling rate:** At 10% is much lower than global average (~22%), EU (55%) and USA (56%).

India's Initiatives

- **E-waste Management Rules (EWMR), 2022:** Establishes Extended Producer Responsibility (EPR) mandates, requiring producers to fulfill recycling targets through the purchase of EPR certificates.

- **Battery Waste Management Rules (BWMR), 2022:** Mandates collection, recycling, and refurbishment targets, prohibiting landfill disposal and incineration.

Global Best Practices

- **South Korea:** strict penalties for non-compliance that can reach up to 130% of the recycling cost.

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WEF announced five new 'Fourth Industrial Revolution (IR 4.0) Centres' globally

- One of the Centre will be built in Andhra Pradesh, India as well.
- It will be 3rd such centre in India after Mumbai and Telangana.

What is the Fourth Industrial Revolution?

- The term was coined by **Klaus Schwab**, founder of the World Economic Forum (WEF) in 2016.
- IR 4.0 describes the current era in which digital, physical and biological technologies converge such as AI, robotics, the Internet of Things (IoT), quantum computing, etc.
- Unlike earlier revolutions, IR 4.0 is blurring boundaries between physical, digital and biological systems.

Significance of Fourth Industrial Revolution

- **Economic growth:** Enhances productivity and improves supply chain resilience through automation, data analytics and smart manufacturing.
- **Inclusive development potential:** Offers developing countries like India an opportunity to leapfrog legacy technologies and expand digital access.
- **Environmental sustainability:** Supports low-carbon and resource-efficient growth through smart grids, precision agriculture and circular economy practices. For example, "Lighthouse" factories have demonstrated significant reductions in CO2 emissions and water usage through predictive analytics and IoT.
- **Human capital centrality:** Shifts the focus from physical labour to skills, innovation, and lifelong learning.

Challenges and Risks

- **The Technology Gap:** There is a risk of widening inequality between developed and developing nations. E.g. Ten "frontrunner" economies account for 91% of global patent applications in advanced digital production technologies.
- **Workforce Disruption:** The demand for manual skills in repeatable tasks is expected to decline by nearly 30%, while demand for technological skills (e.g., coding) will rise by over 50%.
- **Security and Cyber Resilience:** As industrial sites become more connected, they become vulnerable to cyberattacks, espionage, and disruption of critical infrastructure.
- **Environmental Effects:** The increased use of sensors, data centers, and connected devices consumes energy and scarce resources.

NITI Aayog Sector-wise Green Transition Roadmaps

- NITI Aayog released three landmark reports outlining decarbonisation roadmaps for India's cement, aluminium, and MSME sectors.

Green Transition in the Cement Sector

- **Global Status:** India is the world's second-largest cement producer after China, contributing about 13% of global output.
- **Emission Impact:** In 2023, cement output was 391 million tonnes, accounting for ~7% of India's total GHG emissions.
- **Future Growth:** Cement production is projected to rise sevenfold to 2,100 million tonnes by 2070 to support infrastructure expansion.
- **Decarbonisation Goal:** The roadmap aims to reduce carbon intensity from the current 0.63 tCO₂ to 0.09-0.13 tCO₂ per tonne by 2070.

Recommendations for the Cement Sector

- **Clinker Reduction:** Reduce the **limestone-to-cement ratio** using fly ash and slag to lower emissions.
- **Fuel Switching:** Replace coal in cement kilns with **Refuse-Derived Fuel (RDF)** from municipal waste.
- **Carbon Capture:** Deploy Carbon Capture, Utilisation, & Storage (CCUS) to manage residual emissions.
- **Standard Reform:** Shift from input-based norms to performance-based standards to encourage low-carbon cement blends.

Green Transition in the Aluminium Sector

- **Production Rank:** India is the **second-largest producer of primary aluminium**, contributing 6% of global output; 40-50% of India's primary aluminium output is exported.
- **Emission Burden:** Aluminium production reached 4 million tonnes in 2023, accounting for about 2.8% of national emissions.
- **High Intensity:** The current emission intensity is 20-21 tCO₂ per tonne, well above the global average of 15 tCO₂.

Recommendations for the Aluminium Sector

- **Short-term:** Shift to Renewable Energy Round-the-Clock (RE-RTC) to decarbonise the smelting process.
- **Medium-term:** Adopt **small modular reactors** or **captive nuclear plants** for a stable zero-carbon baseload.
- **Long-Term:** Integrate CCUS with existing coal-based power plants to manage deep decarbonization.
- **Recycling Expansion:** Promote secondary aluminium production through scrap recycling.

Green Transition in the MSME Sector

- **Sector Size:** India has nearly 69 million MSMEs, which contribute 30% of GDP & 45.7% of total exports.
- **Emission Share:** MSMEs emitted 135 million tonnes of carbon in 2022, accounting for about 3-4% of national emissions.

Recommendations for the MSME Sector

- **Central Coordination:** Establish a National Project Management Agency (NPMA) to coordinate the MSME green transition across industrial clusters.
- **Cleaner Fuels:** Replace coal and furnace oil with cleaner fuels such as natural gas or biomass.
- **Green Power:** Enable MSMEs to procure renewable electricity through the Green Open Access Rules.
- **Green Finance:** Allocate dedicated credit-guarantee funds to help MSMEs manage high upfront costs for green technologies.

Advanced Chemistry Cell (ACC) – Production Linked Incentive (PLI) Scheme

- India's Advanced Chemistry Cell-Production Linked Incentive (ACC-PLI) scheme has fallen behind schedule, with only **1.4 GWh battery capacity** commissioned against a target of **50 GWh by 2026**, as per a recent analytical report.

What is the ACC-PLI scheme?

- The ACC-PLI scheme is a **central sector incentive** programme to promote domestic manufacturing of advanced battery cells (such as lithium-ion cells) used in electric vehicles (EVs) and grid-scale energy storage, reducing India's dependence on imports.
- **Announced in: October 2021**
- **Implementing Ministry:** Ministry of Heavy Industries
- **Aim and objectives:**
 1. Create 50 GWh of domestic ACC manufacturing capacity.
 2. Build a local battery supply chain (cells, components, materials).
 3. Reduce strategic dependence on imported batteries (especially from China).

Key features of ACC-PLI Scheme

- **Total outlay (₹18,100 crore):** Government financial commitment to scale up domestic advanced battery manufacturing.
- **Performance-linked incentive:** Subsidy linked to actual battery cells sold, ensuring output-based support.
- **Incentive cap (~₹2,000/kWh):** Sets an upper limit on per-unit support to control fiscal cost.
- **Minimum investment (₹1,100 crore):** Ensures only serious, large-scale manufacturers
- **Domestic value addition mandate:** Compels creation of a local battery supply chain.
 1. 25% in 2 years: Early localisation push.
 2. 60% in 5 years: Deep manufacturing ecosystem over time.
- **Target technology:** Focuses on Advanced Chemistry Cells (like lithium-ion) critical for EVs and energy storage, excluding conventional lead-acid batteries.

Selected beneficiaries:

- Ola Electric, Reliance New Energy, Rajesh Exports chosen via competitive bidding.
- Hyundai Global exited, reducing effective allocated capacity.

RBI Report on State Budgets and Fiscal Performances

- The Reserve Bank of India released its annual report, “**State Finances**”, for the fiscal year 2025-26 to assess states’ fiscal health and budgetary priorities.

Fiscal Performance of States

- Fiscal Deficit:** The consolidated Gross Fiscal Deficit of states is budgeted at 3.3% of GDP for FY25, up from 3% over the previous three fiscals.
- Capital Spending:** State capital expenditure is projected at 3.2% of GDP, with a focus on long-term public asset creation.
- Central Support:** Growth in state capital expenditure is supported by 50-year interest-free loans under the **SASCI scheme**.
- Debt Levels:** Total outstanding state liabilities stand at 29.2% of GDP, exceeding the fiscal prudence target of 20% recommended by the **FRBM Review Committee (2017)**
- Tax Structure:** State Goods and Services Tax (SGST) has emerged as the primary tax source; its growth has slowed, and its share in SGDP remains below pre-GST levels.
- Non-tax revenue sources have declined steadily over the past decade.

Demographic Transition

- Young States:** States with youthful populations like Bihar and Uttar Pradesh must increase education and skills spending to utilise their working-age populations.
- Ageing States:** States like Kerala and Tamil Nadu are facing rising fiscal pressure from pension and geriatric healthcare demands.
- Transition States:** Demographically transitioning states like West Bengal and Maharashtra need to adjust their fiscal strategies for long-term revenue sustainability.

Major Concerns

- Expenditure Rigidity:** High committed expenditure on salaries, pensions and interest payments restricts fiscal space for development projects.
- Subsidy Quality:** Expansion of non-merit subsidies and freebies risks crowding out productive investments in the social sector.
- Discom Stress:** Persistent financial losses of power distribution companies create large contingent liabilities for state finances.
- Transparency Gaps:** Inconsistent disclosure of off-budget borrowings obscures the true extent of state indebtedness and fiscal risks.

Policy Recommendations

- **Fiscal Path:** States should adopt a time-bound fiscal consolidation roadmap to reduce debt-to-GDP ratios to sustainable levels.
- **Revenue Base:** Strengthening non-tax revenue sources is essential to reduce dependence on central transfers and borrowings.
- **Climate Budgeting:** States should integrate climate-sensitive budgeting to mitigate fiscal shocks caused by frequent disasters.
- **Digital Systems:** Stronger digital public financial management systems can improve the efficiency of tax collection and subsidy targeting.

Narayan Ramachandran Committee

- The PFRDA has constituted the Committee for **Strategic Asset Allocation and Risk Governance (SAARG)** to comprehensively review and modernise **National Pension System (NPS)** investment guidelines.
- The SAARG committee, chaired by **Narayan Ramachandran**, will submit its recommendations within 9 months.

Narayan Ramachandran Committee : What it is?

- A high-level expert committee titled Strategic Asset Allocation and Risk Governance (SAARG) to review and reform NPS investment guidelines across Government and Non-Government sectors.
- **Constituted by:** PFRDA, the statutory regulator for pension funds in India.

Aim:

- To strengthen NPS investment architecture by aligning it with global pension best practices, the evolving Indian capital market, and long-term subscriber needs.

Key functions / mandate:

- **Foundational review & global benchmarking:** Assess adequacy of current NPS guidelines and benchmark them with leading global pension systems.
- **Asset class review & expansion:** Review existing asset classes and recommend new asset classes to improve diversification and resilience.
- **Strategic asset allocation:** Propose optimal allocation across equity, debt, money market and alternatives with prudential limits.

- **Performance & accountability:** Reform benchmarking and evaluation methods for Pension Funds under NPS.
- **Risk management & ALM:** Recommend comprehensive market, credit, liquidity and operational risk frameworks aligned with pension liabilities.
- **Governance & intermediaries:** Review custodial architecture and end-to-end investment process across NPS intermediaries.
- **Sustainability integration:** Embed climate transition risks and net-zero pathways into NPS investment decisions.

Source: PIB

Urban Co-operative Banks

- The Reserve Bank of India (RBI) has proposed reopening the licensing window for Urban Co-operative Banks (UCBs) after a gap of more than 20 years, seeking stakeholder feedback.

Urban Co-operative Banks (UCBs):

- Urban Co-operative Banks (UCBs) are member-owned, community-based banks operating mainly in urban and semi-urban areas, providing banking and credit services to small borrowers, traders, salaried employees and MSMEs.
- They function on co-operative principles such as mutual help, democratic control ("one member, one vote"), and local participation.

Launched / Origin:

- The urban co-operative credit movement in India began in the late 19th century, inspired by co-operative experiments in Britain and Germany.
- The first urban co-operative credit society was registered **in Kanchipuram (1904) under the Co-operative Credit Societies Act, 1904.**

Historical evolution:

- Expanded rapidly in the early 20th century to serve middle- and lower-income urban groups excluded by joint-stock banks.
- Brought partly under RBI regulation in 1966 through the **Banking Regulation Act, 1949**, leading to dual control (RBI + State Governments).
- Rapid licensing in the 1990s led to governance failures, prompting the RBI to stop new UCB

licences in 2004.

- Reforms such as the **Banking Regulation (Amendment) Act, 2020** and creation of NUCFDC (2024) strengthened supervision, governance and technology adoption.

Key functions:

- Deposit mobilisation from local communities.
- Credit delivery to small businesses, traders, professionals and households.
- Support to financial inclusion through affordable interest rates and local familiarity.
- Financing of MSMEs and urban informal sector activities.

Significance:

- Act as a bridge between informal finance and formal banking, especially for small borrowers.
- Offer lower interest rates compared to microfinance institutions.
- Bring local trust, proximity and financial literacy into urban banking.
- Renewed licensing could expand RBI-regulated coverage, improving depositor protection—if entry norms are balanced.

India Recorded 19.6% Tax-to-GDP Ratio in FY2024

- A recent report from Bank of Baroda estimated India's **overall tax-to-GDP ratio**, including both central and state taxes, at 19.6%.
- **Central Taxes:** At the central government level, gross tax revenue was recorded at 11.2% of GDP in FY24 and is projected to increase to 11.7% in FY25.
- **Direct Taxes:** The direct tax-to-GDP ratio hit a **15-year high of 6.64% in FY24** and is expected to rise to 6.7% in FY25.
- **Tax Buoyancy:** Long-term tax buoyancy stands at 1.1, indicating that tax revenues are growing slightly faster than nominal GDP.
- **Global Comparison:** India's 19.6% ratio exceeds emerging economies like Malaysia and Indonesia but remains below the OECD average (34%) and advanced economies.

About Tax-to-GDP Ratio

- The tax-to-GDP ratio measures a country's total tax revenue as a share of the size of its economy.
- **Method:** It is calculated by dividing the country's total annual tax revenue by its nominal GDP for

the same fiscal year.

- **Fiscal Capacity:** The ratio is the key indicator of "Fiscal Capacity", showing how effectively the state can mobilise domestic resources to finance expenditure.
- **Economic Signal:** A higher Tax-to-GDP ratio indicates a formal economy with a broad tax base, whereas a lower ratio suggests a large informal sector or tax evasion.
- **Global Benchmark:** The World Bank recommends a 15% tax-to-GDP ratio as a tipping point for sustainable growth and poverty reduction.

Positive Implications of High Tax-to-GDP Ratio

- **Fiscal Stability:** A higher tax-to-GDP ratio supports fiscal consolidation by reducing dependence on market borrowing.
- **Public Investment:** Higher revenues allow greater capital spending on infrastructure, welfare schemes, and social security.
- **Redistribution Effect:** Growth driven by direct taxes helps reduce income inequality through progressive redistribution of wealth.

Potential Risks of High Tax-to-GDP Ratio

- **Consumption Impact:** Excessive taxation reduces household disposable income, thereby weakening private consumption demand.
- **Inflation:** High indirect taxes, like GST or excise duties, raise prices and amplify inflationary pressures.
- **Investment Climate:** Punitive tax regimes may discourage investment and encourage capital flight to low-tax jurisdictions.

Tax Buoyancy

- Tax buoyancy measures the responsiveness of tax revenue growth to changes in nominal GDP.
- **Calculation:** It is calculated by dividing the **percentage change in tax revenue** by the **percentage change in nominal GDP**.
- **High Buoyancy:** A value above 1 indicates revenues growing faster than the economy, driven by efficiency or base expansion.
- **Low Buoyancy:** A value below 1 indicates tax collections are lagging behind economic growth due to tax evasion, exemptions, or a large informal sector.
- **Long-term:** A consistently high tax buoyancy above 1 automatically increases the tax-to-GDP ratio.

India and EU Concluded Negotiations on Free Trade Agreement (FTA)

- India and the European Union (EU) announced the conclusion of negotiations on a landmark Free Trade Agreement (FTA).
- **Deal Scale:** Dubbed the “mother of all trade deals,” it creates a free-trade zone spanning a combined market of 2 billion people, representing about 25% of global GDP.
- **Timeline:** The agreement is expected to apply provisionally by Q4 2026 and fully enter force by early 2027 after ratification.
- **Review Clause:** A joint committee will review the agreement every two years to resolve implementation issues and update its provisions.

Key Provisions of India-EU Free Trade Agreement

1. Trade in Goods

- **EU Commitments:** The European Union will eliminate tariffs on 99.5% of India's exports by value, granting immediate zero-duty access to 90.7% of India's export value.
- **India Concessions:** India grants tariff concessions covering 97.5% of EU import value, with duty elimination or reduction across 92.1% of tariff lines.
- **Tariff Schedule:** While customs duties on 49.6% of European tariff lines are eliminated immediately, India adopts phased cuts over 5, 7, and 10 years for the remaining 39.5% of lines.
- **Labour Sectors:** Labour-intensive sectors like textiles, apparel, leather, footwear, gems and jewellery, and marine products will receive immediate duty-free access.
- **Sensitive Exclusion:** Sensitive sectors, including dairy, cereals, poultry, and sugar, are excluded from the agreement to protect domestic producers.
- **Auto Imports:** Import duties on European automobiles will be progressively reduced to 10%, with a fixed annual quota of 250,000 units.

2. Trade in Services

- **Market Access:** India gains access to 144 EU service subsectors, including IT, professional services, and education, while the European Union gains access to 102 Indian subsectors.
- **Professional Movement:** The EU provides binding commitments to ease visa requirements for

Indian IT professionals, nurses, and consultants.

- **Commercial Presence:** European companies gain privileged access to India's financial, legal, and maritime services markets.
- **Family Rights:** Spouses and dependents of intra-corporate transferees are granted both entry and work rights.
- **AYUSH Provision:** For the first time, AYUSH practitioners may work under home titles in EU states where these practices remain unregulated.
- **Source Code:** The pact prohibits the mandatory transfer of source code as a condition for market access, thereby safeguarding the intellectual property of Indian IT firms.

3. Regulatory Framework

- **Rules Origin:** The agreement adopts Product-Specific Rules (PSRs) with self-certified 'Statements of Origin' to determine origin and reduce the compliance burden.
- **SPS Alignment:** An Equivalence Agreement on Sanitary and Phytosanitary measures aims to harmonise standards and reduce the rejection rate for Indian agricultural exports.
- **CBAM Dialogue:** A formal Technical Dialogue is created to align carbon reporting standards under the CBAM to protect Indian exporters from unfair taxation.
- **Rebalancing Mechanism:** India retains the right to impose retaliatory tariffs if EU non-tariff barriers (like CBAM) nullify trade benefits.

Significance of India-EU Free Trade Agreement

- **Strategic Autonomy:** Deep economic integration with the EU may strengthen India's strategic autonomy by diversifying dependencies beyond the US-China binary.
- **Technology Spillovers:** Cheaper imports of European high-tech machinery and precision equipment will likely accelerate modernisation and automation of Indian industries.
- **Export Parity:** Duty-free access will level the playing field for Indian exporters vis-à-vis Bangladesh and Vietnam, which enjoy prior preferential access.
- **Standards Upgrade:** Alignment with stringent European standards may incentivise modernisation of India's domestic quality control and production ecosystems.

Concerns with the India-EU Free Trade Agreement

- **Phytosanitary Barriers:** Strict European phytosanitary standards may continue to restrict Indian agricultural exports despite the equivalence agreement.
- **CBAM Impact:** The Carbon Border Adjustment Mechanism (CBAM) can erode tariff advantages for

Indian steel and aluminium exporters by imposing additional compliance costs.

- **MSME Competition:** Increased imports of European machinery and chemicals may pose competitive challenges for domestic MSMEs that lack economies of scale.
- **Data Status:** The absence of the EU "Data Secure" status for India will limit cross-border flows of sensitive personal data required for advanced IT services.
- **Rules Origin:** Complex 'Rules of Origin' requirements have historically lowered FTA utilisation rates among Indian exporters.

India-EU Comprehensive Strategic Agenda 'Towards 2030'

- India and the European Union adopted "**Towards 2030: India-EU Joint Comprehensive Strategic Agenda**" to elevate bilateral strategic cooperation.
- The 16th India-EU Summit was held in New Delhi and co-chaired by PM Narendra Modi, European Commission President Ursula von der Leyen, and European Council President Antonio Costa.

About 'Towards 2030'

- **Agenda Adoption:** 'Towards 2030' is the India-EU Joint Comprehensive Strategic Agenda, adopted at the 16th India-EU Summit in New Delhi.
- **Framework Shift:** The agenda replaces the earlier 'Roadmap to 2025', marking a shift from high-level dialogue to time-bound, actionable outcomes.
- **Partnership Status:** It formally elevates the partnership by recognising India and the EU as 'trusted, predictable and like-minded' partners.
- **Structural Design:** The document is organised around five pillars to deepen strategic autonomy and economic integration.

Pillar 1: Prosperity and Sustainability

- **Trade Timeline:** The agenda prioritises the timely implementation of the concluded India-EU Free Trade Agreement (FTA) to eliminate tariff barriers.
- **Investment Protection:** A separate Investment Protection Agreement is prioritised to increase inflows of European foreign direct investment.
- **Carbon Markets:** India's Carbon Credit Trading Scheme (CCTS) will be linked to the EU's system to align with CBAM norms.
- **Green Hydrogen:** The India-EU Green Hydrogen Task Force will harmonise certification

standards for exporting green ammonia to Europe.

Pillar 2: Technology and Innovation

- **Policy Coordination:** The Trade and Technology Council (TTC) will coordinate policies on semiconductor manufacturing and AI safety.
- **Digital Standards:** India aims to align its Digital Public Infrastructure (DPI) with European digital standards to facilitate cross-border interoperability.
- **Research Access:** Exploratory talks have been launched for India's associate membership of 'Horizon Europe', the EU's flagship research funding programme.
- **Industrial Clusters:** The Blue Valleys initiative will create clean-energy industrial clusters that link European investors with Indian manufacturers.

Pillar 3: Security and Defence

- **Defence Framework:** The agenda operationalises the India-EU Security and Defence Partnership to expand military-to-military cooperation.
- **Indo-Pacific Order:** Both sides commit to a rules-based international order that ensures freedom of navigation in the Indo-Pacific.
- **New Domains:** Dedicated dialogues are established for non-conventional threats, including cybersecurity, space defence, and maritime security cooperation.

Pillar 4: Connectivity and Global Issues

- **Economic Corridor:** Leaders reaffirm their commitment to the India-Middle East-Europe Economic Corridor (IMEC) to counter Chinese connectivity initiatives.
- **Global Gateway:** India's regional connectivity projects will align with the EU's Global Gateway strategy for sustainable infrastructure financing.
- **Third Countries:** Both sides agreed on joint infrastructure projects in third countries, especially in Africa, to offer sustainable development alternatives.

Pillar 5: People-to-People Enablers

- **Mobility Framework:** The MoU on the Comprehensive Framework on Co-operation on Mobility was signed to ease visa norms for Indian students and skilled professionals.
- **Visa Digitalisation:** The EU committed to simplifying travel for Indians through the upcoming digitalisation of Schengen visa procedures.
- **Institutional Dialogue:** Regular Parliamentary Exchanges and a Human Rights Dialogue are

formalised to sustain long-term mutual trust.

Banks Concerns Over ECL Norms

- Banks have sought further consultations with the RBI on the proposed Expected Credit Loss (ECL) framework, particularly its application to crop loans from April 2027.

About ECL Norms

- **Forward Loss Recognition:** The Expected Credit Loss (ECL) framework requires banks to estimate potential loan losses in advance, rather than waiting for defaults to occur.
- **Risk-Based Estimation:** Banks forecast expected cash shortfalls using Probability of Default (PD), Loss Given Default (LGD) and Exposure at Default (EAD) to measure credit risk.
- **Cash Flow Gap Concept:** Credit loss is calculated as the difference between contractual cash flows due and the cash flows expected to be received over time.
- **Three-Stage Approach:** Financial assets move through Stage 1 (performing), Stage 2 (significant risk increase) and Stage 3 (credit impaired) based on credit quality.
- **Regulatory Scope:** Applies to Scheduled Commercial Banks and All India Financial Institutions, excluding Small Finance Banks, Payment Banks and Regional Rural Banks.
- **Implementation Timeline:** ECL norms will become effective from April 1, 2027, with a transition glide path till March 31, 2031, to smooth provisioning impact.

Proposed ECL Norms

- **Stage 2 Classification:** Loan accounts overdue between 30–90 days will be treated as having a significant increase in credit risk, triggering higher provisioning.
- **Higher Provisioning Floor:** Stage 2 assets will attract lifetime ECL provisioning with a minimum regulatory floor of 5%, far above current norms.
- **Crop Loan NPA Trigger:** Crop loans will be classified as Stage 3 if overdue for two crop seasons for short-duration crops or one season for long-duration crops.

Why are banks raising concerns?

- **Seasonal Repayments:** Agricultural loans follow crop harvesting cycles rather than fixed monthly instalments, causing technical overdue classification.
- **Routine Rollovers:** Frequent forward and backward rollovers during crop seasons artificially

inflate overdue days without actual default risk.

- **Capital Impact:** Higher lifetime loss recognition is expected to erode banks' capital buffers, particularly for lenders with high agricultural loan exposure
- **Steep Provision Jump:** Current Special Mention Account (SMA) provisioning of 0.4% will rise sharply to a minimum 5% under Stage 2 ECL, creating a sudden financial burden.
- The SMA category refers to loan assets showing early signs of stress before turning non-performing.

Way Forward

- **Crop-Sensitive Norms:** Design ECL triggers aligned with seasonal repayment realities in agriculture; E.g., crop-cycle-linked KCC loan classification model.
- **Gradual Transition:** Use an extended phase-in period to absorb provisioning impact smoothly; E.g., RBI's Basel III capital buffer transition approach.
- **Data Strengthening:** Improve agri-loan performance analytics to assess true credit risk; E.g., digital farm credit monitoring under PMFBY-linked databases.
- **Risk Differentiation:** Apply lower ECL floors for cyclical agricultural stress rather than structural risk.

Coking Coal Notified as Critical & Strategic Mineral

- The Government of India has notified coking coal as a Critical and Strategic Mineral under the Mines and Minerals (Development and Regulation) Act, 1957 (**MMDR Act**).
- The decision aims to strengthen the domestic steel sector and support the Aatmanirbhar Bharat and Viksit Bharat 2047 visions.
- MMDR Act, 1957, is India's primary law governing mines and minerals. It categorises minerals into Major Minerals (regulated by the Central Government) and Minor Minerals, like sand and gravel (regulated by State Governments).

About Coking Coal

- Coking coal is a **high-grade bituminous coal** that, when heated in the absence of air, converts into hard, **porous coke**.
- It has higher carbon, lower moisture, and lower sulphur and phosphorus than non-coking coal.
- Its plasticity and **swelling ability (caking index)** distinguish it from thermal coal, which only

burns.

- **Indian Reserves:** Over 90% of reserves are located in Jharkhand's Jharia coalfield, with minor deposits in West Bengal and Madhya Pradesh.
- **Import Dependence:** India is the **world's largest importer of coking coal**, importing about 85% of its requirement mainly from **Australia, Russia, and the USA**.
- **Mission Coking Coal 2030:** The Ministry of Coal launched it in 2021 to increase domestic coking coal production to 140 MT by 2030.

About Critical Minerals

- Critical minerals are metallic or non-metallic elements essential to economic development and national security, yet highly vulnerable to supply chain disruptions.
- In 2023, the Ministry of Mines identified 30 critical minerals, including lithium, cobalt, nickel, graphite, copper, and rare earth elements (REEs).
- **Legal Framework:** The amended MMDR Act gives the Central government sole authority to auction mining leases for 'Critical and Strategic' minerals (25).
- "Critical Minerals" are minerals of high economic value and supply risk; "Critical and Strategic Minerals" are a legal category under the MMDR Act, important for national security.
- **Strategic Importance:** These minerals are indispensable for "Sunrise Sectors" such as semiconductors, EVs, renewable energy, and defence technologies.
- **NCMM 2025:** The National Critical Mineral Mission aims to secure supply chains through domestic production, recycling, and overseas acquisition.

MoSPI to Introduce New Consumer Price Index (CPI) Series

- The Ministry of Statistics and Programme Implementation (MoSPI) is revising the Consumer Price Index (CPI) series to reflect evolving consumption patterns in India.

Key Changes Introduced in New CPI Series

- **Base Year:** The CPI base year is changing from 2012 to 2024 to reflect current consumption patterns.
- **Food Weight:** Food and beverages' weightage will decline from 45.86% to about 36.75%.
- **PDS Exclusion:** Free food grains received through schemes like PMGKAY are assigned zero weight in the CPI basket.

- **Item Count:** The number of weighted items in the CPI basket will increase from 299 to 358.
- **Basket Update:** Smartphones, OTT subscriptions, and international airfare are added, while obsolete items like VCRs and audio cassettes are removed.
- **Online Markets:** For the first time, twelve “Online Markets” have been set up in major cities to monitor prices directly from e-commerce platforms.
- **Housing Weight:** Weight for housing, water, electricity, and gas will increase from 16.91% to 17.66%.
- **Transport Weight:** Transport and communication weight rises sharply from 8.59% to 12.41%.
- **Price Sources:** The new series covers rural housing rents for the first time and excludes employer-provided housing to prevent data distortion.
- **Rural Share:** The weightage of the rural sector in the combined index has been increased from the 53.52% to 55.4%.
- **COICOP Compliance:** The CPI structure is moving from 6 to 12 distinct Divisions, fully aligning with the UN COICOP 2018 framework.
- **COICOP:** UN Classification of Individual Consumption According to Purpose is the global standard for classifying household spending on goods and services.

Significance of New CPI Series

- **Lower Volatility:** Reduced food weight makes headline inflation less sensitive to monsoon fluctuations and vegetable price shocks.
- **Updated Basket:** A broader basket of items reflects rising digital and service-based consumption in Indian households.
- **Living Costs:** Including rural rent and excluding employer housing improves the accuracy of housing inflation measurement.
- **Global Alignment:** Adopting international classification standards improves the global comparability of India's inflation data.
- **Engel's Law:** Lower food share and higher non-food spending reflect rising incomes and changing consumption behaviour.

Consumer Price Index (CPI)

- The CPI is a composite indicator that measures short-term changes in retail prices paid by households for a representative consumption basket.
- **CPI Variants:** The National Statistical Office (NSO) publishes CPI-Rural (CPI-R), CPI-Urban (CPI-U), and CPI-Combined (CPI-C) to measure household retail inflation.

- **Labour Indices:** The Labour Bureau publishes CPI-Industrial Workers (CPI-IW), CPI-Agricultural Labourers (CPI-AL), and CPI-Rural Labourers (CPI-RL) for wage indexation and policy planning.
- **Calculation Method:** CPI uses the **Modified Laspeyres formula**, comparing current prices with base-year prices using fixed expenditure weights.
- **Data Collection:** The index is released monthly; prices of perishable items are collected weekly, while those of non-perishables and services are collected monthly.
- **Policy Anchor:** CPI-Combined is India's official inflation indicator under the RBI Act, 1934, mandated Flexible Inflation Targeting (FIT) framework.

Digital Food Currency

- The Government of India is set to launch a pilot program for **Central Bank Digital Currency (CBDC)**, also termed **Digital Food Currency**, in February 2026.
- This initiative targets beneficiaries in Chandigarh, Puducherry, and three districts of Gujarat (Anand, Sabarmati, and Dahod) to streamline the world's largest free food security program.

Digital Food Currency : What is it?

- Digital food coupons are a programmed form of **e-Rupee (CBDC)**. Instead of physical grains or cash transfers, beneficiaries receive digital tokens specifically locked for use at authorized ration shops.
- It serves as a **Proof of Concept (POC)** for a larger nationwide rollout of digital currency in social welfare.

Developed By:

- **Regulatory Body: Reserve Bank of India (RBI).**
- **Implementing Authority:** Ministry of Consumer Affairs, Food and Public Distribution, in coordination with the National Payments Corporation of India (NPCI) and State Governments.

Aim:

- Ensuring that the subsidy is used strictly for foodgrains, preventing the diversion of funds.
- Real-time tracking of every gram of foodgrain distributed.
- Eliminating the need for repeated biometric authentication at Fair Price Shops, which often fails due to connectivity or physical wear and tear.

- Moving rural beneficiaries toward a digital-first economy through the RBI digital wallet.

How it Works?

- Direct Credit:** Monthly digital food coupons are credited directly to the RBI-enabled digital wallet on the beneficiary's mobile phone.
- Redemption:** The beneficiary visits a Fair Price Shop and scans the shop owner's QR code.
- Authentication:** The digital tokens are transferred, and the beneficiary receives their entitled free foodgrains.
- Validity:** The coupons have a set timeframe (e.g., 30 days) to prevent the accumulation of unspent subsidies.

Key Features:

- Geographic Focus:** The pilot covers diverse regions—Chandigarh and Puducherry (urban UTs with no ration shops) and Gujarat (districts with active PDS).
- Feature Phone Support:** Options are being explored for non-smartphone users to use the currency via SMS-based vouchers or offline digital solutions.
- No Biometric Hassle:** Reduces reliance on e-POS biometric machines, making the process faster for senior citizens and manual laborers.
- FCI Integration:** The grains distributed are supplied directly by the Food Corporation of India (FCI).

Significance

- Replaces the expensive physical movement of cash (DBT) or grains with a more efficient digital ledger.
- India is among the first major economies to test Programmable CBDC for large-scale social welfare, positioning it as a global leader in FinTech governance.
- Unlike cash DBT, where money can be spent on non-essentials, Digital Food Currency guarantees the Right to Food.

India Aims to Conclude Social Security Agreements (SSAs) with the Remaining 13 EU Countries

- India has concluded Social Security Agreements (SSAs) with 14 EU countries and aims to finalise

the remaining 13 within five years.

- **Total Reach:** India has signed and operationalised SSAs with 20 countries; key non-EU SSA partners include Japan, South Korea, Switzerland, Canada, Norway, Australia, and the UK.

Social Security Agreements (SSA)

- **Agreement Nature:** A Social Security Agreement (SSA) is a bilateral treaty that safeguards the social security rights of cross-border workers.
- **Legal Control:** SSAs fall under the sovereign national jurisdiction of countries, not under the competence of trade blocs.
- **Nodal Agency:** Employees' Provident Fund Organisation (EPFO), under the Ministry of Labour and Employment, implements Social Security Agreements.
- **Coverage Certificate:** EPFO issues Certificates of Coverage (CoC) that temporarily exempt Indian workers from the host country's social security contributions.

Core Principles of Social Security Agreement (SSA)

- **Detachment Rule:** Short-term workers are exempt from dual social security contributions, typically for assignments of up to five years.
- **Totalisation Rule:** Workers can combine years of service in both countries to meet minimum pension eligibility requirements.
- **Exportability Rule:** Pension benefits remain payable without reduction after relocation to the home country or a third country.
- **Equal Treatment:** Foreign workers enjoy the same social security rights and obligations as host-country nationals.

India's Space Economy

- India's space economy has become one of the fastest-growing segments, driven by a shift from government dominance to commercial participation.
- **Key Target:** India aims to expand the economy to \$44 billion, with an 8% global market share, by 2033.

Current Landscape

- India's space economy is valued at around **\$8.4 billion**, accounting for nearly 2% of the global

market.

- The sector added around **₹20,000 crore to GDP** over the last decade and supports about 96,000 jobs.
- India has 399 space-tech startups across launch systems, satellites, propulsion, and space electronics.
- Productivity remains high, with every \$1 invested generating a \$2.54 multiplier effect on national GDP.
- India has launched 434 foreign satellites, positioning itself as a reliable low-cost global launch hub.

Key Growth Drivers

- **Cost Advantage:** India's low-cost, high-reliability model strengthens its competitive edge, as illustrated by the modest mission cost of Chandrayaan-3.
- **Satellite Services:** Demand for High-Throughput Satellites (HTS) for broadband, tele-education, tele-medicine, and **GPS-based GAGAN navigation** drives sectoral growth.
- **PPP Transition:** ISRO adopted the Public-Private Partnership model, with IN-SPACe enabling the transfer of technologies such as SSLV to private consortia.
- **Demand Expansion:** Rising demand for satellite internet and real-time Earth Observation boosts domestic manufacturing of SmallSat constellations.
- **Downstream Services:** The sector's shift in focus from launch-centric activities to data monetisation is expected to generate 70% of future revenues.

Key Government Initiatives and Policies

- **Indian Space Policy 2023:** Permits non-governmental entities to undertake end-to-end space activities, including rockets, satellites, and launch pads.
- **Manufacturing Ecosystem:** Dedicated hubs such as Kerala Space Park provide plug-and-play infrastructure for producing space-grade components.
- **Liberalised FDI:** Updated norms allow 100% FDI in satellite component manufacturing and up to 74% in satellite operations under the automatic route.
- **Capital Support:** A ₹1,000 crore venture fund provides risk capital to deep-tech startups, with financing for growth and later-stage development.

NPS Swasthya Pension Scheme

- The **Pension Fund Regulatory and Development Authority (PFRDA)** has launched the NPS Swasthya Pension Scheme as a pilot project under its Regulatory Sandbox Framework to integrate healthcare expense coverage with pension savings.

What is the NPS Swasthya Pension Scheme?

- The NPS Swasthya Pension Scheme is a sector-specific scheme under the National Pension System (NPS) designed to provide financial support for medical expenses—both outpatient (OPD) and inpatient (IPD)—using pension-linked savings.
- It is being introduced as a Proof of Concept (PoC) on a limited scale under PFRDA's Regulatory Sandbox, allowing controlled experimentation before any full-scale rollout.
- Nodal Authority:** The Pension Fund Regulatory and Development Authority (PFRDA).

Aim of the scheme:

- Integrate healthcare financing with long-term retirement planning
- Reduce out-of-pocket expenditure (OOPE) on medical care
- Test the operational, technological, and regulatory feasibility of health-linked pension products
- Enhance subscriber-centric innovation within the NPS ecosystem

Key features of the NPS Swasthya Pension Scheme:

- Voluntary & contributory:** Open to all Indian citizens on a voluntary basis, with flexible contribution amounts.
- Multiple Scheme Framework (MSF):** Contributions are invested as per MSF guidelines, ensuring regulated asset allocation.
- Medical expense withdrawals:**
 - Partial withdrawals allowed for OPD and IPD expenses
 - Up to 25% of subscriber's own contributions can be withdrawn
 - No cap on the number of withdrawals
 - First withdrawal allowed after a minimum corpus of ₹50,000

Critical illness protection:

- If a single inpatient treatment exceeds 70% of total corpus,
- Subscriber can exit prematurely with 100% lump-sum withdrawal exclusively for medical treatment
- Transfer from Common Scheme Account: Subscribers above 40 years (excluding government

sector) can transfer up to 30% of their contributions into the Swasthya Scheme.

Claim settlement mechanism:

- Medical claims are paid directly to HBA/TPA or hospitals
- Any surplus after settlement is credited back to the subscriber's NPS account.

Strong governance safeguards:

- Mandatory disclosures on benefits, fees, claims, exits
- Robust grievance redressal mechanism
- Explicit digital consent as per the Digital Personal Data Protection Act, 2023

Significance of the scheme

- **Health-Pension convergence:** First structured attempt to link retirement savings with healthcare financing in India.
- **Reduced medical impoverishment:** Helps households manage health shocks without liquidating assets.

CONSTITUTION, POLITY AND GOVERNANCE

Judicial Contours of Matrimonial Cruelty

- The Supreme Court ruled that financial dominance by a husband does not automatically amount to cruelty, unless it results in clear mental or physical harm.

Matrimonial Laws in India

- **IPC Section 498A:** Criminalises cruelty by husband or relatives causing grave injury or harassment linked to unlawful demands; now mirrored by **BNS Section 85 (2023)** with similar safeguards.
- **Dowry Prohibition Act, 1961:** Penalises giving, taking or demanding dowry, requiring proof of demand and a direct nexus with harassment or coercion.
- **Protection of Women from Domestic Violence Act, 2005:** Provides civil remedies against physical, emotional and economic abuse, including protection orders and maintenance.

Key Judgements of the Court

- **Financial Control Test:** Monetary dominance or budgeting control, without demonstrable harm,

does not meet the threshold of criminal cruelty.

- **Specific Allegations Rule:** Courts require clear, precise and repeated acts to be specifically attributed to each accused to initiate prosecution.
- **Misuse of Safeguard:** Criminal law cannot be permitted to act as a weapon for vendetta or to settle personal scores in matrimonial disputes.

Court's Reasoning for the Judgement

- **Ordinary Discord:** Many allegations reflected routine marital disagreements and insensitive conduct, which do not cross the threshold of criminal cruelty.
- **Process Protection:** Entertaining vague claims would expose individuals to prolonged and oppressive litigation, undermining fairness.
- **Evidence Standard:** Criminal prosecution requires tangible material and specific acts, not inferences drawn from marital dissatisfaction.

Criticism of the Judgement

- **High Prevalence Reality:** Treating many complaints as "daily wear and tear" risks diluting protection for genuine victims; E.g., cases of cruelty by husband or relatives exceed 1.3 lakh annually.
- **Under-Reporting Risk:** Normalising financial dominance may discourage reporting of abuse; E.g., despite over 4.4 lakh crimes against women annually, experts note significant under-reporting.
- **Civil Remedy Burden:** Redirecting economic-control disputes to civil law may delay relief; E.g. in maintenance cases, the average delay from filing to final order often exceeds 12–18 months (NJDG).

Systemic Gaps in Indian Sports Administration

- A Task Force set up by the **Ministry of Youth Affairs and Sports (MYAS)** identified systemic weaknesses in Indian sports governance.

Key Gaps in Indian Sports Governance

- **Institutional Gap:** Administrative posts in the **Sports Authority of India (SAI)** and the **National Sports Federations (NSFs)** are filled by generalists, weakening domain-specific decision-making.
- **Poor Coordination:** Concentration of power in NSF leadership and fragmented coordination

between Central and State bodies result in overlapping roles.

- **Leadership Deficit:** Retiring athletes lack structured administrative training, leaving them unprepared for mandated governance roles.
- **Standardisation Gap:** Absence of a national framework or an accredited institute for training sports administrators leads to a lack of transparency.

Key Recommendations for Reform

- **Statutory Oversight:** Create the National Council for Sports Education and Capacity Building (NCSECB) as an autonomous body to regulate and accredit governance training.
- **Professionalisation:** Mandate the appointment of full-time CEOs and domain-specific directors in federations to clearly separate governance from execution.
- **Capacity Building:** Implement a five-level Capacity Building Maturity Model to improve organisational, digital, and pathway readiness.
- **Integrated Training:** Introduce mandatory sports governance modules for civil servants and create dual-career tracks to train athletes in administration.

QR Code-Enabled Road Signage in Delhi

- The Public Works Department (PWD), Delhi, issued guidelines mandating QR codes on all existing and future road signage throughout the capital.
- The QR codes will provide instant details about the manufacturer and the type of materials used.
- **Objective:** to standardise signage materials, improve visibility, and ensure uniformity across Delhi.
- **Rationale:** A 2024 audit by the Ministry of Road Transport and Highways (MoRTH) found inconsistent signage shapes and colours.

Implementation:

- Phase 1: QR codes will provide basic manufacturing and warranty information.
- Phase 2: Integration with the PWD Sewa app to enable citizen complaints on damaged signage.

Other Key Infrastructure Monitoring Initiatives

- The National Highways Authority (NHAI) of India is installing QR-coded Project Information Sign Boards on all national highways.

- The Ministry of Rural Development (MoRD) has integrated QR codes into the Pradhan Mantri Gram Sadak Yojana (PMGSY) to monitor the quality of rural roads digitally.
- The Ministry of Road Transport and Highways (MoRTH) has expanded the Road Asset Management System (RAMS) to serve as the national standard for infrastructure life-cycle monitoring.
- The **Indian Bridge Management System (IBMS)** digitally records the structural health ratings of national highway bridges to support preventive maintenance.

National Siddha Day

- The **Ministry of Ayush** will inaugurate celebrations in Chennai ahead of the observance of the 9th Siddha Day.
- National Siddha Day is observed annually on **January 6** to commemorate the birth anniversary of **Sage Agathiyar, the father of Siddha medicine**.
- This year's theme, '**Siddha for Global Health**', highlights the growing relevance of Siddha medicine in addressing contemporary global health challenges.

About Sage Agathiyar

- Sage Agathiyar, or Agastya, is a legendary **Vedic rishi** considered a bridge between northern and southern Indian traditions.
- He is regarded as the foremost among the **18 Siddhars** who founded the Siddha medical system.
- Sage Agathiyar is called the **father of Tamil grammar** and is credited with authoring Agattiyam, the earliest known work on Tamil grammar.
- He presided over the First Tamil Sangam in Madurai, laying the foundations of classical Tamil literature.
- He was one of the seven revered sages (Saptarishis); he and his wife, Lopamudra, composed hymns in the **first Mandala of the Rigveda**.

Need for Invalidation of All Forms of Unilateral Talaq

- The Supreme Court's ongoing reviews of Muslim personal law have reignited debate over abolishing **unilateral talaq** to ensure gender-neutral divorce rights.

Current Status of Unilateral Talaqs in India

- **Talaq-e-Biddat:** Instant triple talaq leading to irrevocable divorce was declared unconstitutional in **Shayara Bano v. Union of India (2017)** and was subsequently criminalised.
- **Talaq-e-Ahsan:** Single pronouncement followed by a 90-day waiting period (**iddat**) for reconciliation remains a legally valid **extra-judicial divorce** form.
- **Talaq-e-Hasan:** Three pronouncements across three months during the purity period (tuhr) is currently valid but under constitutional challenge (**Benazeer Heena v. Union of India, 2025**).

Key Rationale for Invalidation

- **Fundamental Rights:** Unilateral talaq violates Articles 14 and 15, which guarantee the right to equality and prohibit discrimination based on sex.
- **Human Dignity:** Instant divorce practices create fear and insecurity, undermining women's right to dignity enshrined under Article 21.
- **Economic Security:** Unilateral divorce often leads to homelessness and loss of financial support.
- **Gender Inequality:** Unilateral talaq grants men absolute divorce authority, while women need to pay or seek judicial relief.
- **Maintenance Evasion:** Extra-judicial divorces are often used to bypass legal obligations of alimony and child support.
- **International Norms:** India's international human rights commitments require equal divorce rights for men and women at marriage dissolution.

Legal Framework in India

- Parliament criminalised instant triple talaq as a **cognisable, non-bailable offence** punishable up to three years under the **Muslim Women (Protection of Rights on Marriage) Act (MWPRD), 2019**.
- **The Muslim Personal Law (Shariat) Application Act, 1937**, recognises various forms of talaq; it is currently under judicial review regarding whether personal laws yield to Article 13.
- **Section 144** of the Bharatiya Nagarik Suraksha Sanhita (BNSS) provides a secular framework for the maintenance of women after divorce.
- **Reform Pathways**
- **Personal Law Codification:** Codify Muslim personal law to standardise divorce procedures and align them with Articles 14, 15, and 21.
- **Gender-Neutral Divorce:** Provide a legal framework for equal divorce procedures for men and women under judicial oversight.

- **Post-Divorce Protection:** Strictly enforce maintenance laws and expand legal awareness to prevent women's post-divorce destitution.
- **Community Reform:** Internal reform to revise nikahnama clauses to prohibit unilateral or instant talaq.
- **Institutional Resolution:** Mediation and conciliation through Alternative Dispute Resolution (ADR) systems to encourage reconciliation and reduce social trauma.
- **Uniformity in Approach:** A consensus-based **Uniform Civil Code (UCC)** under **Article 44**, adopting best practices across personal laws.

Rah-Veer

- The **Ministry of Road Transport and Highways** reiterated protections and incentives under the **Rah-Veer** (Good Samaritan) Scheme to encourage bystanders to help road accident victims without fear of legal or procedural harassment.

About Rah-Veer:

- Rah-Veer is a **Good Samaritan initiative** notified under **Section 134A of the Motor Vehicles (Amendment) Act, 2019**, protecting citizens who help road accident victims during the Golden Hour from legal, police, or hospital-related harassment.

Key features

- **Legal protection:** No civil or criminal liability for helpers acting in good faith.
- **Right to anonymity:** Rah-Veers cannot be forced to disclose personal details or become witnesses.
- **Limited police interaction:** Only one voluntary statement, at a time and place convenient to the helper.
- **Hospital safeguards:** Hospitals must provide emergency care without demanding payment from the helper and issue an acknowledgement.
- **Recognition & incentive:** ₹25,000 reward and Certificate of Appreciation, up to five times a year for repeat acts.

Significance

- Addresses bystander hesitation, a key cause of preventable deaths during the Golden Hour.
- Helps reduce India's high road accident fatalities, which impose an economic cost of ~3% of GDP.

Battery Pack Aadhaar Number for EV Batteries

- The Ministry of Road Transport and Highways released draft guidelines proposing a **Battery Pack Aadhaar Number (BPAN) system** for electric vehicle batteries.

Battery Pack Aadhaar (BPA) Number System

- **Digital Identity:** Battery Pack Aadhaar (BPA) assigns each EV battery a unique 21-character alphanumeric number with a QR code.
- **Mandatory Coverage:** It will apply to EV batteries in categories L, M, and N, and industrial batteries above 2 kWh.
- **Data Storage:** The BPAN links each battery to a central digital portal storing verified lifecycle and compliance data.
- **Static Data:** Manufacturer details, specifications, material composition, and carbon footprint will be publicly available.
- **Dynamic Data:** A secure server will store real-time metrics like state of health (SoH), charge cycles, and thermal incident history for authorised access.
- **Producer Responsibility:** Battery producers and importers will be responsible for creating and assigning the BPAN.

Primary Objectives

- **Lifecycle Traceability:** Tracks batteries from raw material sourcing through recycling and final disposal.
- **Quality Control:** Prevents the circulation of counterfeit, substandard, or unsafe refurbished batteries.
- **PLI Verification:** Enables verification of domestic value addition under the PLI scheme for Advanced Chemistry Cells.

Significance

- Enables systematic recycling and second-life applications of batteries.
- Reduces risks from improper disposal of lithium-ion batteries.
- Strengthens enforcement of Extended Producer Responsibility (EPR).

Constitutional duty of the Election Commission of India

- The Election Commission of India (ECI) told the Supreme Court of India that **Article 324** grants it constitutional control over the preparation of electoral rolls, including the **power to conduct Special Intensive Revision (SIR)**.

Constitutional duty of the Election Commission of India:

- The ECI is a constitutional authority entrusted with ensuring free, fair, and credible elections in India.
- A core constitutional obligation of the ECI is to maintain the purity of the electoral process, which includes ensuring that only eligible Indian citizens are enrolled as voters.

Constitutional articles associated with the Election Commission:

Article 324 - Superintendence, direction and control of elections

- Vests the ECI with complete control over the preparation of electoral rolls and conduct of elections to Parliament, State Legislatures, and the offices of President and Vice-President.
- Forms the constitutional basis for exercises like Special Intensive Revision (SIR).

Article 325 - One general electoral roll

- Mandates a single electoral roll for each constituency.
- Prohibits discrimination in voter inclusion on grounds of religion, race, caste, sex, etc.

Article 326 - Adult suffrage

- Restricts the right to vote to Indian citizens aged 18 years and above, subject to lawful disqualifications.
- Makes citizenship a foundational requirement of voter registration.

Article 327 - Parliamentary power over elections

- Empowers Parliament to make laws on elections, including preparation of electoral rolls, but subject to Article 324, preserving ECI's operational control.

Article 328 - State legislature powers

- Allows States to legislate on elections where Parliament has not acted, again within the constitutional framework.

Significance of ECI's constitutional duty:

- Safeguards electoral integrity by preventing inclusion of ineligible persons.
- Ensures citizenship-based franchise, a core feature of Indian democracy.
- Balances autonomy of the ECI with legislative oversight, preventing executive overreach.

Government invites public comments on Draft Pesticides Management Bill, 2025

- The draft Bill seeks to modernize India's pesticide regulatory framework by replacing **the Insecticides Act, 1968 and the Insecticides Rules, 1971**.

Key provisions of the Draft

- **Central Pesticides Board:** A multi-sectorial body to advise the government on safety standards, disposal criteria, and the inclusion of new molecules in the official Schedule.
- **Registration Committee:** A technical committee tasked with scrutinizing pesticide applications in a mandatory digital mode before granting a certificate of registration.
- **Digital Transparency:** Provisions for a National Register of Pesticides and online tracking of manufacture, stock, and sales records to curb the distribution of falsified products.
- **Deemed Registration:** To prevent bureaucratic delays, if committee fails to decide on a complete application for a "generic pesticide" within 18 months, certificate is deemed to have been granted.
- **Surveillance and Protection:** A defined framework for reporting and analyzing poisoning occurrences and a dedicated plan for medical facilities to handle such exigencies.
- **Quality of pesticide:** Provides for mandatory accreditation of testing laboratories, ensuring that only quality pesticides are available to farmers.
- **Worker Welfare:** It mandates standards for training and working conditions for workers involved in handling toxic pesticides, addressing a critical gap in occupational health.

Pesticides and its Usage in India

- Pesticides are used to kill, prevent, reduce, destroy or repel a pest. It broadly constitutes insecticides, fungicides, herbicides, bio-pesticides etc.
- Herbicides (kill/control the growth of weeds) have the largest market share at **44% (as of 2023)**
- India's pesticide consumption is 0.5 kg/hectare (compared to 17 kg/hectare in some countries) (2023)
- States with highest Consumption: **Maharashtra, Uttar Pradesh, Punjab, and Telangana**

Centre issues notification for first phase of Census 2027

- House listing operations (first phase of Census) will be conducted between April and September 2026 across all States and Union Territories.
- Population Enumeration (second phase of Census) is scheduled for February 2027.
- For the Union Territory of Ladakh and snow-bound non-synchronous areas of the Union Territory of Jammu & Kashmir and states of Himachal Pradesh and Uttarakhand, the population enumeration will be conducted in September 2026.

Key Features in the 16th Census (2027)

- **India's First Digital Census:** Enumerators will primarily use mobile apps for data collection.
- **Historic Caste Enumeration:** This Census will include the first nationwide caste enumeration in independent India (last done in 1931) for all communities (beyond just Scheduled Castes and Scheduled Tribes).

Digital Features

- **Self-Enumeration Portal:** A secure platform where citizens can independently complete questionnaires;
- **Census Management and Monitoring System (CMMS):** Digital portal allowing supervisors and district officers to track enumeration progress.
- **Houselisting Block (HLB) Creator:** A satellite-based web mapping application that enables Charge Officers to create precise digital enumeration blocks.
- **Census as a Service (CaaS):** Provides ministries with a clean, machine-readable and queryable database to facilitate evidence-based policy planning.

About Census in India:

- **Conducted by:** Office of the Registrar General and Census Commissioner, Ministry of Home Affairs (decennially)
- **Legal Backing:** Census Act, 1948 and Census Rules, 1990.
- Census 2027 will be the 16th Census in the country and 8th after independence.
- The 1st synchronous Census started in the year 1881 (by W.C. Plowden).

India-AI Impact Summit

- India has announced the India-AI Impact Summit 2026, scheduled for **19–20 February 2026 in New Delhi**, making it the **first-ever global AI summit hosted in the Global South**.

India-AI Impact Summit: What it is?

- The India-AI Impact Summit is a high-level multilateral forum announced by the Prime Minister at the France AI Action Summit, designed to advance responsible, inclusive, and development-oriented AI cooperation, with a strong Global South

Key features:

- Global South leadership:** First global AI summit hosted in a developing country, amplifying Southern perspectives in AI governance.
- Multilateral continuity:** Builds on G20 AI Principles, UN & GPAI resolutions, African Declaration on AI, and Hamburg Declaration on Responsible AI.

Three Sutras framework

- People:** Human-centric, inclusive, culturally sensitive, and trustworthy AI.
- Planet:** Responsible AI aligned with climate action, sustainability, and reduced energy footprint.
- Progress:** AI for equitable growth across health, education, governance, agriculture, and public services.
- Outcome-oriented approach:** Focus on concrete deliverables, cooperative mechanisms, and implementation frameworks rather than declarations alone.
- Strategic geopolitics of AI:** Addresses employment disruption, algorithmic bias, and energy intensity in a rapidly evolving global order.

UIDAI launches Aadhaar mascot Udai

- The Unique Identification Authority of India (UIDAI) has launched Aadhaar mascot '**Udai (उदय)**' to make Aadhaar-related information more relatable and people-friendly.

Aadhaar mascot Udai:

- A resident-facing communication companion (official mascot) designed to simplify public understanding of Aadhaar services such as updates, authentication, offline verification, selective data sharing, and responsible usage.
- Organisation(s) involved:** Unique Identification Authority of India (UIDAI)

- **Aim:** To simplify, humanise, and standardise Aadhaar communication, enhance citizen trust through participation, and improve accessibility for over a billion residents.

Key features

- **People-centric communication:** Uses a friendly mascot to explain complex Aadhaar processes.
- **Wide service coverage:** Updates, authentication, offline verification, selective sharing, new tech adoption.
- **Participatory creation:** Selected via an open national contest (875 entries; multi-tier evaluation).
- **Inclusive outreach:** Designed to aid clarity across languages, literacy levels, and digital access.

Significance

- **Trust & acceptance:** Reinforces Aadhaar's core principle that participation builds trust.
- **Better service delivery:** Reduces information asymmetry and errors in Aadhaar usage.
- **Digital public goods:** Strengthens citizen engagement around a foundational DPI.

Indian diaspora is a living bridge connecting India with the world: Prime Minister

- On Pravasi Bharatiya Divas (PBD), the PM highlighted the role of the Indian diaspora as cultural ambassadors (**Rashtradoots**).
- PBD is a **biennial flagship** event celebrated on 9th January, the day in 1915 when Mahatma Gandhi returned to India from South Africa.

Indian Diaspora

- It is a term for addressing people who have migrated from the territories that are currently within the borders of India.
- **Includes:** Non-Resident Indians (NRIs), Persons of Indian Origin (PIOs) and Overseas Citizens of India (OCI).
- **PIO and OCI card holders** were merged under one category of OCI in 2015.
- **Status of Indian Diaspora:** 34.35 million (including 17.17 million NRIs) (January 2025).

Significance of the Indian Diaspora

- **Soft power:** Diaspora carry cultural spirit (E.g. Yoga, festivals like Diwali) worldwide and strengthen people-to-people connections.

- **Economic contribution:** India is the world's largest recipient of remittances (~USD 135 billion in FY25).
- **Trade & investment bridge:** E.g. Diaspora entrepreneurs facilitate India-US IT and services trade.
- **Diplomatic leverage:** Significant diaspora presence aids growing mutual relationship and positively shapes India's global image. E.g. India-West Asia relations
- **Political advocacy:** Diaspora can lobby their local governments and international organizations on issues important to India.

Initiatives taken for Indian Diaspora

- **4 Cs of Diaspora Engagement policy framework:** Care for our communities, Connect with global networks, Celebrate our shared heritage, and encourage Contributions that drive positive change
- **Know India Programme (KIP):** To familiarise young diaspora (18–35 years) with India's culture and heritage.
- **Indian Community Welfare Fund (ICWF):** For assisting Overseas Indian nationals in times of distress

'Forcing a woman to continue an unwanted pregnancy violates her bodily integrity' - HC

- **The Delhi High Court** ruled that **forcing a woman to continue an unwanted pregnancy violates her bodily integrity** and worsens mental trauma.

Key Highlights of the Ruling

- The ruling reiterated that the **Medical Termination of Pregnancy (MTP) Act** does not require the husband's consent for abortion.
- It reaffirmed a woman's right to abortion as part of personal autonomy and liberty under Article 21.
- Marital discord was accepted as a valid ground for termination because of its impact on mental health.
- The judgment stated that **MTP Rule 3-B(c)** should be interpreted broadly to include any 'change of material circumstances' affecting a woman's mental well-being.

Legal & Constitutional Framework for Abortion in India

- The Indian Penal Code (IPC) (now Bharatiya Nyaya Sanhita) **criminalises 'causing miscarriage'**, except under the Medical Termination of Pregnancy (MTP) Act.
- **MTP (Amendment) Act, 2021:** It allows abortion up to 20 weeks with one doctor's advice, and **between 20 and 24 weeks** with two doctors' approval.
- **Beyond 24 Weeks:** Termination permitted only for substantial fetal abnormalities certified by a four-member State Medical Board.
- **Life-Saving Clause:** Abortion permitted at any stage if necessary to save the woman's life.
- **Article 21:** The Supreme Court has interpreted a woman's reproductive autonomy, right to choose, and bodily integrity as part of her personal liberty.
- **Right to Privacy:** In the **Puttaswamy (2017) judgment**, the SC affirmed that the decision to procreate or abstain (including abortion) is a core aspect of the Fundamental Right to Privacy.
- **Right to Equality:** SC rulings (2022) have struck down distinctions based on marital status in access to abortion, ensuring equal rights.

Higher Education Regulation Bill 2025

- The **Viksit Bharat Shiksha Adhishthan Bill, 2025**, aims to overhaul higher education regulation by replacing fragmented regulators with a unified, NEP 2020-aligned framework.

Need For Regulation in Higher Education Sector

- **System Explosion:** India now has 1,000+ universities and ~42,000+ colleges (AISHE), but regulation is still fragmented, making approvals/monitoring slow and inconsistent.
- **Low Gross Enrolment:** India's Gross Enrolment Ratio (GER) ~28% (AISHE) is far below NEP's ambition.
- **Poor Research Focus:** India spends only ~0.7% of GDP on R&D (OECD), showing how institutions remain compliance-driven rather than research/innovation-driven.
- **Weak Global Standing:** Despite scale, India has only a limited presence at the top end globally; E.g., ~45 Indian institutions featured in QS World University Rankings 2025, indicating quality gaps.
- **Skill Mismatch Pressure:** India produces around 1.5 crore graduates annually, but multiple employability surveys (e.g., India Skills Report) indicate only ~45-50% are readily employable

Expected Impact of the Bill

- **Access Expansion:** A single-window clearance system can speed up approvals and capacity-building, helping raise India's Gross Enrolment Ratio from ~28% → 50% by 2035 (NEP target).
- **Global Recognition & Mobility:** Unified standards and credible accreditation improve international trust; E.g., India currently hosts only ~0.5% of global international students, showing huge potential.
- **Student Accountability Loop:** Structured student feedback & grievance systems can raise teaching quality and governance accountability at scale.

Key Provisions of the VBSA Bill, 2025

- **Umbrella Regulator:** Establishes Viksit Bharat Shiksha Adhishthan as the apex coordinating body.
- **Three Councils:** Separate Regulation, Accreditation, and Standards councils under VBSA.
- **Regulatory Unification:** Repeals UGC Act 1956, AICTE Act 1987, NCTE Act 1993.
- **Outcome Accreditation:** Introduces an outcome-based institutional accreditation framework.
- **Foreign Universities:** Regulates the entry and operation of foreign universities in India.
- **Grant Separation:** Removes grant-disbursal powers from the regulator; funding via the Ministry.
- **Digital Disclosure:** Mandates online public self-disclosure of finances, courses, and governance.
- **Institutions Covered:** Central & State Universities, Colleges and Higher Educational Institutions, Institutions of National Importance, Institutions of Eminence and Technical & Teacher Education Institutions
- **Institutions Exempted:** Medicine, Dentistry, Nursing, Law, Pharmacology, Veterinary Sciences.

Malayalam Language Bill, 2025

- An inter-state debate between Kerala and Karnataka arose after the Kerala Legislative Assembly passed the Malayalam Language Bill, 2025.
- **Language Transition:** The Bill seeks to replace Kerala's English-Malayalam bilingual system with Malayalam as the sole official language.
- **Karnataka's Opposition:** Karnataka argues the Bill violates Articles 29 and 30, which protect linguistic minorities' fundamental rights to preserve language and script.

The Malayalam Language Bill, 2025

- **Official Status:** Malayalam is designated as the exclusive official language for all state administrative and governmental purposes.

- **School Language:** The Bill mandates Malayalam as the compulsory first language in government and aided schools up to Class X.
- **Legislative Drafting:** All State Bills and Ordinances must be drafted and introduced in Malayalam.
- **Judicial Language:** Judicial orders and court proceedings, particularly in District and Sessions Courts, will be progressively translated into Malayalam.
- **Digital Enablement:** The IT Department will develop open-source software and AI tools that are natively functional in Malayalam.
- **Public Signage:** Government department signboards, advertisements, and public notices will prioritise Malayalam usage.
- **Product Labelling:** All products manufactured or sold in Kerala must carry directions and labels written in Malayalam.

Safeguards for Linguistic Minorities

- **Minority Communication:** In designated areas, Tamil, Kannada, Tulu, and Konkani speakers may communicate with the government in their mother tongues.
- **Exam Exemptions:** Non-Malayali and foreign students are exempt from Malayalam examinations in Classes 9, 10, and higher secondary levels.
- **Student Choice:** Students whose mother tongue is not Malayalam may choose other languages offered in the National Education Curriculum.
- **Criticisms of the Bill**
- **Border Access:** Kannada- and Tamil-speaking residents in border districts like Kasaragod may face barriers to access government services and courts.
- **Learning Burden:** Declaring Malayalam as the compulsory first language may impose a cognitive load on students from minority communities.
- **Drafting Process:** The Bill's drafting phase reportedly lacked adequate representation of district-level linguistic diversity.

Traditional Indelible Ink

- Maharashtra's State Election Commission has decided to revert to traditional indelible ink for zilla parishad and panchayat samiti elections after complaints that marker-pen ink used in municipal polls could be wiped off.

Traditional Indelible Ink:

- Indelible ink is a permanent marking ink applied on a voter's finger after voting to indicate that the person has already exercised their franchise and cannot vote again.

Origin:

- India began using indelible ink in **1962 (Third General Election)** as a simple, low-cost and effective method to prevent impersonation and repeat voting.

Manufactured by:

- The ink is manufactured exclusively by **Mysore Paints and Varnish Limited**, a Karnataka government undertaking, using a closely guarded formula developed by **India's National Physical Laboratory**.

Aim:

- To prevent multiple voting.
- To ensure the integrity and credibility of elections, especially in large-scale polls with millions of voters.

Key features:

- Silver nitrate-based formulation:** Reacts with keratin in the skin and exposure to light, creating a chemical stain rather than a surface coating.
- Dark, long-lasting stain:** Penetrates the upper skin layer and nail, making the mark clearly visible for days.
- Difficult to remove:** Does not wash off with soap, water or common chemicals, ensuring voter marking remains intact.
- Standardised application point:** Applied on the left index finger across the nail and cuticle, where removal is hardest.
- Extended visibility period:** Skin mark fades in 3–4 days, while nail stain lasts 2–4 weeks until it grows out.

Significance:

- Acts as a visible and universally understood electoral safeguard.
- Enhances public trust in free and fair elections.
- Proven reliability over six decades of Indian elections.

Responsible Nations Index

- The **World Intellectual Foundation (WIF)** is set to formally launch the Responsible Nations

Index (RNI) in New Delhi.

- RNI is an India-led initiative that assesses 154 countries on responsible governance, social well-being, environmental stewardship, and global responsibility.
- The index moves beyond traditional power and **GDP metrics**, relying on transparent global data to deliver credible and comparable evaluations.
- It is structured around three key dimensions—internal responsibility, environmental responsibility, and external responsibility.
- It was developed in partnership with Jawaharlal Nehru University (JNU) and the Indian Institute of Management (IIM), Mumbai.
- The index promotes global dialogue on ethics, responsibility, food security, and sustainable leadership in international affairs.
- The WIF is a New Delhi-based, global, non-partisan **think tank**, founded in 2021, that unites diverse stakeholders to advance pragmatic ideas for global prosperity and peace.

Lokpal of India

- Lokpal of India observed its Foundation Day on 16 January 2026, marking the day the institution legally came into force in 2014.

Lokpal of India:

- A statutory, independent anti-corruption ombudsman at the Union level.
- Designed as a **sui generis** institution to inquire into and investigate allegations of corruption against specified public functionaries, including those at the highest political and bureaucratic levels.

Established in:

- Created under the **Lokpal and Lokayuktas Act, 2013**.
- Came into force on 16 January 2014 through commencement of Section 3 of the Act.

Historical evolution:

- The idea of an ombudsman-type body was first proposed in 1963.
- The **First Administrative Reforms Commission (1966)** recommended a two-tier mechanism—Lokpal at the Centre and Lokayuktas in States.

- Multiple Lokpal Bills were introduced and **lapsed between 1968 and 2011**, reflecting prolonged political and parliamentary debate.
- The Act was finally passed in December 2013 and operationalised in January 2014, responding to sustained public demand for an autonomous anti-corruption authority.

Composition and members:

- Consists of a Chairperson and up to eight Members.**
- Includes an equal balance of Judicial Members and Non-Judicial Members.**
- Appointed by **the President** of India on the recommendation of a statutory Selection Committee.
- Tenure is five years or up to the age of 70, whichever is earlier.**

Eligibility criteria:

- Chairperson must be a former **Chief Justice of India** or a Judge of the Supreme Court.
- Judicial Members must be former Supreme Court Judges or former Chief Justices of High Courts.
- Non-Judicial Members must be persons of impeccable integrity with at least 25 years of experience in specified fields such as public administration, vigilance, law or finance.

Jurisdiction and coverage:

- Covers allegations against the Prime Minister, Union Ministers, Members of Parliament, and Central Government officials in Groups A, B, C and D.
- Extends to officials of PSUs, autonomous bodies, trusts and societies established or funded by the Union Government.
- Also covers certain bodies receiving foreign contributions beyond the prescribed threshold.

Key functions and powers:

- Receives complaints relating to offences under **the Prevention of Corruption Act, 1988**.
- Orders preliminary inquiries through its Inquiry Wing or other authorised agencies.
- Directs investigations, including referral to agencies such as the CBI, where a *prima facie* case exists.
- Exercises limited superintendence and direction over the CBI for cases referred by it.
- Possesses powers akin to a civil court for summoning, document production and examination on oath during inquiry.
- Can authorise search, seizure and provisional attachment of assets as per statutory provisions.
- Has exclusive authority to grant sanction for prosecution in cases before it, reducing procedural

delays.

- May recommend departmental action, prosecution or closure, and can proceed against complainants filing false or vexatious complaints.

Central Vigilance Commission (CVC)

- Shri Praveen Vashista, IPS (Bihar cadre, 1991 batch), has been appointed as Vigilance Commissioner in the Central Vigilance Commission and took oath on 16 January 2026.

Central Vigilance Commission (CVC):

- The apex integrity and vigilance institution of the Government of India.
- Mandated to promote integrity, transparency and accountability in public administration and to prevent corruption in Central Government organisations.

Established in:

- 1964 as an executive resolution of the Government of India.
- Given statutory status by the **Central Vigilance Commission Act, 2003**.

Historical background:

- Originated from the recommendations of the **Santhanam Committee (1962–64) on Prevention of Corruption**.
- Initially functioned without statutory backing, limiting its authority.
- Became a statutory and independent body in 2003, strengthening its supervisory and advisory role in vigilance administration.

Composition and members:

- Headed by a Central Vigilance Commissioner (Chairperson).
- Assisted by not more than two Vigilance Commissioners (Members).
- Appointed by the President of India on the recommendation of a high-level committee.
- Tenure **is four years** or up to **65 years of age**, whichever is earlier.

Organisational structure:

- Secretariat headed by a Secretary with supporting officers.
- Chief Technical Examiners' Wing (CTE) to examine technical aspects of works contracts.
- Commissioners for Departmental Inquiries (CDIs) who act as Inquiry Officers in disciplinary proceedings.
- Network of Chief Vigilance Officers (CVOs) in ministries, departments, PSUs and public sector banks, acting as the extended arm of the CVC.

Jurisdiction:

- Covers All India Services and Group 'A' officers of the Central Government.
- Includes senior officials of **Central Public Sector Undertakings, Public Sector Banks, RBI, NABARD, SIDBI, LIC, General Insurance Companies**, and specified societies and autonomous bodies controlled by the Union Government.
- Exercises superintendence over CBI investigations relating to offences under the Prevention of Corruption Act, 1988.
- Conducts preliminary inquiries on complaints referred by the Lokpal in respect of Group A, B, C and D officials.

Key functions:

- Supervises and coordinates the vigilance machinery across Central Government organisations.
- Inquires or causes inquiry/investigation into corruption complaints within its jurisdiction.
- Tenders vigilance advice to ministries, departments and PSUs.
- Exercises superintendence over the CBI for corruption-related investigations.
- Reviews progress of investigations and pendency of prosecution sanctions under the Prevention of Corruption Act.
- Recommends appointments to senior posts in the CBI and Directorate of Enforcement through statutory committees.
- Acts as the authority for complaints under the Public Interest Disclosure and Protection of Informers (PIDPI) Resolution, providing whistle-blower protection.

Hindu Adoptions and Maintenance Act, 1956

- The Supreme Court held that a widowed daughter-in-law can claim maintenance from her father-in-law's estate under the Hindu Adoptions and Maintenance Act, 1956.
- The Court clarified that "**any widow of his son**" qualifies as a defendant, irrespective of whether widowhood occurred before or after the father-in-law's death.
- The Hindu Adoptions and Maintenance Act, 1956, codifies adoption and maintenance obligations as part of the Hindu Code Bills, which standardised Hindu personal laws.
- The Act applies to Hindus, Buddhists, Jains, and Sikhs; it excludes Muslims, Christians, **Parsis, and Jews**.
- **Section 19 of the Act** mandates that a father-in-law maintain a widowed daughter-in-law lacking

independent means, and Section 22 requires heirs of his estate to support all dependents.

Report on Road Accidents in India

- The Ministry of Road Transport and Highways (MoRTH) and **SaveLIFE Foundation** released a report analysing road-accident severity in India.
- It highlights that structural issues undermine India's road safety efforts and suggests improved coordination and resource use to reduce fatalities.
- The report aims to provide a data-driven roadmap to achieve 'Zero-Fatality Districts'.

Key Findings

- **Geographic Concentration:** Over 25% of India's road deaths occur in just 100 districts. Uttar Pradesh has the most severe districts, followed by Tamil Nadu and Maharashtra.
- *Nashik Rural and Pune Rural recorded the highest severity.*
- **Key Causes:** Nearly 59% of fatalities occur without traffic violations, highlighting poor road design, including inadequate illumination, as a primary cause.
- **High-Risk Timing:** Around 53% of deaths occur between 6 PM and midnight due to poor visibility, fatigue, and night traffic.
- **Corridor Concentration:** Only 18 target corridors of NHAI and state PWD roads are responsible for around 54% of fatalities.
- **Vulnerable Groups:** Pedestrians and two-wheeler riders form a disproportionate share of deaths, accounting for 90% fatalities in Pune in 2025.
- **Medical Response Gaps:** The government's 108 ambulance service fails to reach about 80% of accident victims, leading to critical delays during the "Golden Hour."

Lok Sabha Speaker Can Act Unilaterally to Constitute Inquiry Committee

- The Supreme Court dismissed Justice Yashwant Varma's plea challenging the legality of the Lok Sabha Speaker's **3-member inquiry committee** under the **Judges (Inquiry) Act, 1968**.

Background of the Case

- **Accidental Discovery:** A fire at Delhi High Court judge Yashwant Varma's residence led to the accidental discovery of alleged unaccounted-for cash.

- **Simultaneous Motions:** Removal motions against Justice Varma were introduced in Lok Sabha and Rajya Sabha on the same day.
- **Divergent Decisions:** Lok Sabha Speaker admitted the motion, while Rajya Sabha Deputy Chairman rejected the identical motion.
- **Unilateral Action:** Despite Rajya Sabha rejection, the Lok Sabha Speaker constituted a three-member Inquiry Committee under the Judges (Inquiry) Act, 1968.

Grounds Raised by Justice Varma

- **Joint Requirement:** Simultaneous motions in both Houses require a joint inquiry committee; the Speaker cannot act unilaterally.
- **Mutual Dependence:** Rejection of the motion by the Rajya Sabha automatically invalidates the Lok Sabha's admission of the motion.
- **Authority Issue:** Deputy Chairman lacks the statutory power to reject motions; only the Chairman can exercise such authority.

Rulings by the Supreme Court

- **House Autonomy:** Rejection by one House does not bar the other from proceeding under the Judges (Inquiry) Act, 1968.
- Section 3(2) mandates a joint committee only when both Houses admit the removal motions.
- Treating one House's rejection as binding would create an unconstitutional veto.
- **Constitutional Power:** Deputy Chairman is empowered under **Article 91 to discharge the Chairman's statutory duties** during a vacancy.
- **Final Holding:** Lok Sabha Speaker's unilateral constitution of the Inquiry Committee was legally valid.

About Judges (Inquiry) Act, 1968

- **Core Purpose:** The Act lays down the procedure to investigate proven misbehaviour or incapacity of Supreme Court and High Court judges.
- **Removal Articles:** It operationalises the removal of Supreme Court judges under **Article 124(4)** and of High Court judges under **Article 218**.
- **Motion Threshold:** A removal motion needs signatures of 100 Lok Sabha members or 50 Rajya Sabha members to be introduced.
- **Admission Power:** The Speaker or Chairman may admit or refuse the motion after examining available material; the decision can be challenged only under Article 32 or for gross illegality.

- **Committee Setup:** Once admitted, the Speaker or Chairman constitutes a three-member judicial inquiry committee, comprising
 - A Supreme Court judge or Chief Justice of India
 - A High Court Chief Justice and
 - A distinguished jurist nominated by the Speaker/Chairman
- **Inquiry Powers:** The committee functions as a civil court, with the authority to summon witnesses and record evidence; it reports its findings to the Speaker or Chairman.
- **Reporting Step:** If charges are proved, the committee's report is laid before the House(s) where the motion is pending.
- **Voting Rule:** Each House must pass the motion in the same session by a special majority of the total membership and two-thirds of those present and voting.
- **Final Order:** After parliamentary approval, an address is sent to the President, who then issues the removal order.
- **Past Outcome:** No judge in India has been removed so far through the full statutory process.

Draft National Electricity Policy (NEP) 2026

- The Ministry of Power released the Draft National Electricity Policy 2026 for public consultation.
- **Policy Replacement:** It proposes replacing the **National Electricity Policy, 2005**, to align the power sector with **Viksit Bharat @ 2047**.
- **Climate Transition:** NEP 2026 aims to transform India from a power-deficient nation into a Net Zero-compliant economy by 2070 through:
 - **Per Capita Consumption:** 2,000 kWh by 2030 and over 4,000 kWh by 2047.
 - **Non-Fossil Fuel:** 500 GW generation capacity by 2030.
 - **Emission Intensity:** 45% reduction below 2005 levels by 2030.
 - **Nuclear Power:** 100 GW generation capacity by 2047.
 - **Efficiency:** Single-digit Aggregate Technical and Commercial (AT&C) losses across states.

Key Features of Draft NEP 2026

- **Tariff Reform:** State regulators must implement automatic annual tariff revisions to restore the financial viability of DISCOMS.
- Tariffs will be revised automatically through indexation if states delay issuing tariff orders.
- **Cross Subsidy:** The policy proposes a progressive reduction in cross-subsidies for manufacturing

and railways to improve competitiveness.

- **USO Exemption:** Regulators may exempt DISCOMs from **Universal Service Obligation (USO)** for consumers with connected loads of 1 MW and above.
- USO mandates Discoms to supply electricity to any consumer on request within the licensed area.
- **Resource Adequacy:** Mandatory 24x7 power planning introduced at the national, state, and utility levels to prevent shortages.
- **Market Structure:** Competition encouraged by permitting multiple distribution licensees in the same supply area.
- **Local Management:** Distribution System Operators (DSOs) will manage rooftop solar, electric vehicles, and other distributed resources.
- **Energy Storage:** Energy Storage Systems, including BESS and pumped storage, are recognised as critical grid infrastructure.
- **Data Sovereignty:** All operational data in the power sector must be stored domestically to ensure system security.
- **Grid Governance:** **State Load Despatch Centres (SLDCs)** will be functionally unbundled from State Transmission Utilities.
- **Consumer Rights:** The draft recognises Prosumers (producers + consumers) and mandates penalties on distribution licensees for gratuitous load-shedding.

Citizen-Centric Universal Health Coverage in India

- The **Lancet Commission** of experts called for a citizen-centred healthcare delivery system in India as the main vehicle for Universal Health Coverage.

Need for Citizen-Centric Health Coverage in India

- **High OOP Pressure:** Out-of-pocket spending is still ~47–50% of total health expenditure.
- **Low Public Spending:** Public health expenditure remains below 2% of GDP, far below the National Health Policy target of 2.5% of GDP.
- **Rising NCD Load:** Non-communicable diseases account for ~60% of deaths in India, requiring continuous primary care and prevention.
- **Disease Burden:** India has ~140 million elderly (60+), increasing demand for long-term care.
- **Challenges Faced**
- **Human Resource Shortage:** Many states face 20–30% vacancies in specialist and medical officer

positions at public facilities, which hinders quality and continuity.

- **High Catastrophic Spending:** Approximately 14–17% of households face catastrophic health expenditures (various estimates), indicating weak financial protection.
- **Fragmented Care System:** India has ~70% outpatient care largely in the private sector, causing discontinuity, duplication of tests and variable standards.
- **Poor Preventive Focus:** Screening and early diagnosis remain low; diabetes and hypertension often remain underdiagnosed for years, increasing complications load.

Key Recommendations by the Lancet Commission

Citizen-Centric Integrated Care

- **Citizen-Centric Care:** Shift from top-down public health planning to include people's priorities, lived experiences and feedback in decisions. E.g. Kerala's People's Plan model for local health governance.
- **Public Primary Vehicle:** Make publicly financed and publicly provided care the main backbone for Universal Health Coverage (UHC). E.g. Ayushman Bharat Health and Wellness Centres (HWCs)
- **AYUSH Integration:** Empower practitioners of Ayurveda, Yoga, Unani, Siddha and Homoeopathy (AYUSH) within integrated care teams for preventive coverage.

Workforce & Frontline Empowerment

- **Competency Focus:** Move beyond formal qualifications to evaluate provider competencies, values, motivations and ethical conduct in real service delivery.
- **Frontline Empowerment:** Strengthen autonomy, training and decision-support for frontline workers to improve last-mile continuity. E.g., Tamil Nadu's Makkalai Thedi Maruthuvam (doorstep care)

Digital Technology-Led Reform

- **Digital Integration:** Use digital platforms to link registered providers with payers and patients for seamless, integrated care delivery pathways. E.g. Ayushman Bharat Digital Mission (ABDM) with ABHA IDs.
- **Point-of-Need Delivery:** Deploy Artificial Intelligence (AI), genomics and capital-efficient innovations for advanced diagnostics at primary/community levels.

Governance & Financing Reforms

- **Fund Flow Efficiency:** Digitise fund flow, simplify procedures and reduce bureaucratic hurdles to improve utilisation and timely service delivery.
- **Outcome-Based Financing:** Shift from line-item budgets to global budgets with evaluation based

on health outcomes, building accountability and trust.

National Legislative Index

- At the 86th All India Presiding Officers Conference, Lok Sabha Speaker Om Birla announced the initiation of a National Legislative Index (NLI) to objectively assess and compare the performance of legislatures.

National Legislative Index (NLI):

- The National Legislative Index is a proposed performance-evaluation framework to objectively measure and compare the functioning of Parliament and State Legislatures using predefined indicators.

Aim:

- To promote healthy competition among legislatures.
- To enhance efficiency, accountability, and quality of legislative deliberation.
- To make legislatures more people-centric and outcome-oriented.

Key features

- Objective performance metrics:** Assesses legislatures on measurable parameters such as number of sittings, legislative output, committee work, and utilisation of House time, reducing subjective political judgement.
- Comparative and competitive framework:** Enables comparison across Parliament and State Legislatures to foster healthy competition and best-practice sharing.
- Accountability & transparency focus:** Encourages discipline, quality debate, and citizen-centric law making by linking performance with public scrutiny.

Significance

- Discourages disruptions and improves deliberative quality, reinforcing legislatures as core pillars of constitutional democracy.
- Aligns institutional performance with long-term national development goals by making legislatures more efficient and outcome-oriented.

Section 17A of the Prevention of Corruption Act, 1988

- A two-judge Bench of the Supreme Court of India delivered a split verdict on the constitutional validity of Section 17A of the Prevention of Corruption Act, 1988, which mandates prior approval before investigating public servants.

Section 17A of the Prevention of Corruption Act, 1988:

- Section 17A, inserted by the **Prevention of Corruption (Amendment) Act, 2018**, bars any police officer from conducting an enquiry, inquiry, or investigation into offences under the Act without prior approval of the competent authority, where the alleged offence relates to a decision or recommendation made in official duty

Key features of the 2018 Amendment (Section 17A):

- Prior approval mandatory at investigation stage for acts linked to official decisions or recommendations
- **Competent authority defined:** Union Government, State Government, or authority competent to remove the official from service, as applicable
- **Exception for trap cases:** No prior approval required when a public servant is caught red-handed accepting bribe
- **Time-bound approval:** Decision to be conveyed within 3 months, extendable by 1 month with recorded reasons
- Distinct from Section 19, which requires sanction only at the prosecution stage, not investigation

Court rulings and judicial trajectory

- **Vineet Narain vs Union of India (1998):** SC struck down the Single Directive requiring prior approval for investigation, holding it violated Article 14 (equality before law).
- **Dr Subramanian Swamy vs Director, CBI (2014):** Section 6A of the DSPE Act (prior approval for senior officers) was struck down as unconstitutional.

Current split verdict (2026)

- **Justice K. V. Viswanathan:** Upheld Section 17A conditionally, stressing protection for honest officers; held approval must be independent, preferably routed through Lokpal/Lokayuktas.
- **Justice B. V. Nagarathna:** Held Section 17A unconstitutional, calling it old wine in a new bottle, already invalidated in earlier rulings; Section 19 offers sufficient safeguard.

ECI Convenes Global Meet IICDEM 2026

- The Election Commission of India (ECI) is hosting the inaugural **India International Conference on Democracy and Election Management (IICDEM) 2026** in New Delhi.

IICDEM 2026

- 3-day global conference on democracy and election management, focused on sharing best practices among **Election Management Bodies (EMBs)** at Bharat Mandapam, New Delhi.
- Organised By:** India International Institute of Democracy and Election Management (IIIDEM) under the aegis of Election Commission of India (ECI).

Key Focus Areas

- Voter Roll Integrity:** Showcasing Special Intensive Revision (SIR) of electoral rolls as a credible reform.
- Election Technology:** Discussions around technology interventions, including modern practices.

About IIIDEM

- IIIDEM is the capacity-building & training arm of the Election Commission of India.
- Foundation:** Set up by ECI in 2011 to professionalise election management and democratic processes.
- Location:** Independent campus at Dwarka, New Delhi.
- Training:** Conducted 1300+ national training programmes & trained 2800+ international participants.

Election Commission of India (ECI)

- Article 324:** ECI has superintendence, direction and control of electoral rolls and elections to Parliament, State legislatures, President and Vice-President.
- Part XV:** Elections are covered under Part XV of the Constitution (Articles 324–329).
- Composition:** The ECI is a multi-member body composed of a Chief Election Commissioner and two other Election Commissioners, appointed by the President of India for six-year terms or until age 65.
- CEC Removal:** CEC can be removed like a Supreme Court judge, protecting autonomy.
- EC Removal:** Election Commissioners can be removed only on the recommendation of the CEC.

Lok Sabha to launch digital attendance system

- The Lok Sabha will introduce a digital attendance system from the Budget Session 2026 to ensure the physical presence of MPs inside the House.

Lok Sabha's digital attendance system:

- A seat-based biometric attendance mechanism where Members of Parliament mark attendance electronically from their designated seats inside the House, replacing the earlier lobby register system.
- **Announced by:** Om Birla, Speaker of the Lok Sabha

Aim:

- Ensure actual presence of MPs during sittings.
- Improve transparency, discipline, and productivity of Parliament.
- Link attendance with daily allowance strictly to House presence.

How it works?

- Every designated seat in the Lok Sabha chamber is fitted with a digital console, ensuring attendance can be marked only from within the House and not elsewhere in the Parliament complex.
- MPs authenticate their presence using biometric thumb verification, eliminating proxy marking and ensuring that attendance reflects the actual physical presence of the member.
- Once the House is adjourned—whether due to protests or completion of business—the system is locked, preventing members from retroactively marking attendance.
- If an MP fails to record attendance during a sitting, it results in the forfeiture of daily allowance and related entitlements, creating a direct financial accountability mechanism.

Key features:

- The earlier practice of signing a register outside the chamber is abolished, ensuring MPs remain present during proceedings, not just for formality.
- Biometric verification enhances accuracy, tamper-resistance, and transparency, aligning parliamentary functioning with modern e-governance standards.
- The strict time-bound system discourages strategic delays and reinforces the principle that attendance equals participation, not mere appearance.
- MPs can no longer mark attendance and leave immediately, promoting serious legislative

engagement and debate continuity.

- The system complements initiatives like real-time multilingual translation, paperless proceedings, and AI-assisted workflows, advancing a more efficient and citizen-centric Parliament.

Internet Governance Internship & Capacity Building Scheme (IGICBS)

- **National Internet Exchange of India (NIXI)** has completed one year of its Internet Governance Internship & Capacity Building Scheme (IGICBS) and marked the milestone with a national-level event in New Delhi.

Internet Governance Internship & Capacity Building Scheme (IGICBS): What it is?

- IGICBS is a national internship and **capacity-building programme** designed to train India's youth in internet governance, enabling informed participation in national and global internet policy, standards, and technical forums.

- **Launched in: 2025 (completed one year in January 2026)**

Organisations involved:

- National Internet Exchange of India (NIXI) – Nodal implementing body
- Ministry of Electronics and Information Technology (MeitY) – Administrative ministry

Aim:

- Build a skilled pool of Indian professionals in internet governance.
- Strengthen India's voice and representation in global internet decision-making platforms.
- Promote a safe, inclusive, resilient, and trustworthy internet ecosystem.

Key features:

- **Structured internships:** 6-month and 3-month terms combining research + practical outreach.
- **Mentorship model:** Each intern mentored by senior experts from government, academia, or global IG bodies.
- **Capacity building & outreach:** Mandatory awareness programmes in colleges, universities, NGOs, and local communities.
- **Global exposure:** Engagement with international internet governance institutions and processes.
- **NIXI Internet Influencer pathway:** High-performing interns certified to act as long-term ambassadors of internet governance.
- **Interdisciplinary focus:** Technology, law, public policy, cybersecurity, digital identity, and Universal Acceptance (UA).

Significance:

- Addresses India's strategic need for informed participation in global internet governance.
- Bridges policy-technology-academia, creating future-ready digital leadership.

UNESCO Media and Information Literacy (MIL) Alliance

- The UNESCO Media and Information Literacy Alliance has announced the election of its first-ever Global Board, marking a major milestone in its institutional governance.

UNESCO Media and Information Literacy (MIL) Alliance: What it is?

- The MIL Alliance is a global collaborative network coordinated by UNESCO, bringing together organisations and experts to advance media and information literacy (MIL) and counter disinformation, misinformation, and hate speech.

Launched in:

- 2013, at the Global Forum for Partnerships on MIL in Abuja, Nigeria.
- Relaunched in 2025 during Global MIL Week with the Cartagena Declaration, alongside a renewed strategic action plan.

Organisation(s) involved:

- UNESCO (coordination through its MIL Unit).
- 300+ organisations and 180 individual experts from 100+ countries.

Aim:

- Strengthen societal resilience to disinformation, misinformation, and hate speech.
- Enable the MIL community to shape policies and practices at global, regional, and national levels.

Key functions:

- The Global Board serves as the Alliance's primary decision-making and coordination body, ensuring inclusive governance, strategic coherence, and effective collaboration across regions.
- The Alliance contributes expert inputs to global and regional policy discussions, helping shape norms, standards, and strategies on media and information literacy.
- It facilitates the sharing of research, tools, and successful practices, strengthening institutional and community capacity to address disinformation and media risks.
- The Board oversees continuous improvement of the MIL Alliance platform, ensuring it remains responsive, user-centric, and aligned with evolving MIL needs.
- The Alliance enables structured growth through new chapters while maintaining transparency and accountability via coordinated monitoring and annual reporting.

Governor's Power to Address the State Legislatures

- Several States have seen fresh confrontations with Governors over the content and reading of the Governor's Address to the State Legislature, raising questions on constitutional propriety.

Governor's Power to Address the State Legislatures:

- The Governor's Address is a constitutional formality at the beginning of the first session of a State Legislature after elections and at the start of **the first session of every year**.
- It outlines the policies and priorities of the elected State government, not the personal views of the Governor.

Constitutional articles involved:

- **Article 163:** Governor acts on the aid and advice of the Council of Ministers, except in constitutionally specified discretionary matters.
- **Article 174:** Power to summon, prorogue and dissolve the State Legislature (to be exercised on Cabinet advice).
- **Article 175:** Governor may address or send messages to the House.
- **Article 176:** (1) At the commencement of the first session after each general election to the Legislative Assembly and at the commencement of the first session of each year, the Governor shall address the Legislative Assembly or, in the case of a State having a Legislative Council, both Houses assembled together and inform the Legislature of the causes of its summons. (2) Provision shall be made by the rules regulating the procedure of the House or either House for the allotment of time for discussion of the matters referred to in such address.

Powers of the Governor:

- **Mandatory address, not discretionary speech:** The Governor is constitutionally required to address the House but cannot alter, omit, or rewrite the speech prepared by the elected government.
- **No independent policy authority:** The Address reflects the Council of Ministers' agenda, reaffirming democratic accountability.
- **Limited discretion in summoning sessions:** As clarified by courts, the Governor cannot unilaterally summon or delay sessions contrary to Cabinet advice.
- **Symbolic constitutional role:** The address is meant to communicate government policy, not act as a veto or critique mechanism.

- **Procedural compliance:** Rules of the House provide time for discussion on the Address, reinforcing legislative scrutiny rather than gubernatorial control.

Key court judgements

- **Nabam Rebia v. Deputy Speaker (2016):** The Supreme Court held that the Governor cannot exercise discretion in summoning the Assembly under Article 174 and must act on aid and advice.
- **Rajasthan High Court (1966):** Held that even a partial reading of the Governor's Address satisfies constitutional requirements; it is an irregularity, not illegality.
- **Syed Habibullah v. Speaker, West Bengal Assembly (Calcutta HC):** Ruled that the Address is mandatory, but defects in delivery do not invalidate legislative proceedings.

Significance

- **Federal balance:** Reinforces that Governors are constitutional heads, not parallel power centres.
- **Democratic legitimacy:** Protects the authority of elected State governments over policy articulation.
- **Institutional harmony:** Prevents politicisation of the gubernatorial office.

Constitutional Limits on "Protective Custody" under PITA

- Bombay High Court ordered the release of an adult trafficking survivor under the **Immoral Traffic (Prevention) Act, 1956 (PITA)**, holding that "care" cannot become forced confinement.

Immoral Traffic (Prevention) Act, 1956 (PITA)

- **Objective Focus:** Aims to prevent commercial sexual exploitation and trafficking, targeting the organised trade ecosystem (brothels, traffickers, pimps), not victims.
- **Prostitution Not Per Se Illegal:** The Act does not criminalise prostitution itself; it criminalises activities around it like brothel management, procuring, detaining and living off earnings.
- **Protective vs Corrective Framework:** Protective Home (Section 2(g)) is for care of rescued victims; Corrective Institution (Section 2(b) + Section 10A) is for detention of offenders after guilt.
- **Custody Safeguards:** Post-rescue custody under Section 17 is time-bound with an inquiry requirement, ensuring rescue does not become unlawful confinement.

Key Observations by Bombay High Court

1. Constitutional Primacy Over Statute

- **Liberty First:** For an adult, protective home placement must satisfy constitutional liberty standards, not be treated as routine welfare custody.
- **Article 19 Weight:** Freedom of movement, residence and livelihood does not stand suspended merely because a person has been trafficked.

2. Procedural Safeguards

- **Strict Timelines:** Custody limits under PITA reflect legislative intent; 10 days of initial custody and 3 weeks of interim custody must be followed strictly.
- **Reasoned Inquiry:** Magistrate must conduct an inquiry and record reasons using material evidence, not assumptions about vulnerability or livelihood.

3. Court's Test for Care vs Detention

- **Care Meaning:** Care involves support measures respecting autonomy, counselling, shelter offered with consent, and rehabilitation assistance outside exploitation.
- **Detention Meaning:** Detention is marked by compulsion, restrictions on movement and choice, with confinement continuing even after refusal.
- **Consent Central:** For a major, institutional "care" cannot be forced; it must be voluntary, informed, autonomy-respecting, and consistent with constitutional liberty.
- **Exit Right:** Once an adult clearly expresses a wish to leave, continued stay becomes compulsory detention, not rehabilitation support or protective care.

4. Evidence Standard Against Detention

- **Material-Based Justification:** Any restraint on liberty must be supported by specific material placed on record, not vague welfare logic.
- **Reject Speculation:** "May return to sex work" is vague and cannot justify restricting personal liberty.
- **Victim ≠ Offender:** PITA targets trafficking networks, so survivors cannot be treated as offenders without any conduct attracting penal provisions.
- **Poverty Ground:** Lack of income may justify assistance, but cannot be used to curtail liberty.

5. Narrow Exceptions

- **Incapacity Grounds:** Detention may be justified only with medical material showing impaired decision-making capacity or inability to consent.
- **Public Danger:** Restraint needs demonstrable risk, not hypothetical fear.
- **Accused Status:** Confinement can apply if the person is also an accused in a criminal case.

Karnataka HC Limits BNS Section 69 in Consensual Relationships

- The Karnataka High Court ruled that Section 69 of the Bharatiya Nyaya Sanhita (BNS) cannot be misused as retaliation in failed consensual relationships.
- **Bharatiya Nyaya Sanhita, 2023**, is India's primary criminal code, which officially replaced the 163-year-old **Indian Penal Code (IPC)**.

Key Rulings of the Court

- **Purpose:** Section 69 of BNS aims to punish deceit, fraud, and sexual exploitation, not disappointment, failed affection or the collapse of a relationship.
- **Retroactivity:** The Court rejected retroactive criminalisation of consensual relationships based solely on later allegations.
- **Legal Threshold:** A 'false promise of marriage' is a criminal offence only if dishonest intention is proved to have existed from the beginning.

About Section 69 of Bharatiya Nyaya Sanhita

- It criminalises sexual intercourse, excluding rape, when consent is obtained by deceitful means.
- **Deceitful Means:** Includes false promises of employment or marriage, inducement through fraudulent means, and marriage after suppressing identity (hiding a previous marriage or true name).
- **Punishment:** Conviction may attract imprisonment up to ten years, along with a fine.
- **Legal Status:** It is a cognisable, non-bailable, non-compoundable offence triable by a Court of Session.

ECINET Digital Platform

- Election Commission of India launched **ECINET Digital Platform** at the **IICDEM 2026 in New Delhi** to strengthen end-to-end digital electoral governance.

About ECINET

- **Nature:** Unified digital election platform integrating over 40 apps and web services under a common, secure and interoperable architecture.
- **Users Covered:** Citizens, voters, candidates, political parties and election officials connected

through one seamless national digital interface.

- **Language Support:** Available in 22 Indian languages plus English, significantly improving accessibility for diverse voter populations.
- **Legal Alignment:** ECINET data usage is strictly governed by the **Representation of the People Act, 1950 & 1951, Registration of Electors Rules, 1960** and **Conduct of Election Rules, 1961**.

Key Features

- **Single Window:** Consolidates voter services, candidate processes and election administration tools into one integrated national access point.
- **Citizen Engagement:** Enables easier participation, grievance redressal and verified information access across all election stages.
- **Operational Integration:** Links backend systems used by election officials for real-time coordination, supervision and monitoring.

Delhi Declaration 2026

- Election commission of India's conference International Conference on Democracy and Election Management 2026 concluded with adoption of Delhi Declaration 2026.

Delhi Declaration 2026

- Global Election Management Bodies (EMBs) adopted 5 key-pillars to safeguarding democratic integrity:
- **Purity of Electoral Rolls:** EMBs should strive to provide Photo Identity Cards to all electors.
- **Conduct of Elections:** EMBs to function as per the mandate laid down in their Constitution or in their respective laws.
- **Research and Publications:** Bring out Encyclopaedia of Democracies of the World.
- **Use of Technology:** India to share its experience of the digital platform ECINET, for co-development of a similar platform for any other EMB.
- **Training and Capacity Building:** India to share its vast experience through training and exchange of its transparent practices.

Rajasthan's Disturbed Areas' Bill, 2026

- Rajasthan plans to introduce a 'Disturbed Areas' Bill, 2026, drawing from Gujarat's 1991 law, to curb "demographic imbalance" triggering civil liberty concerns.

What is the Disturbed Areas Act?

- A law in Gujarat to control communal polarisation and maintain demographic stability in specific areas affected by past communal riots.

Key Provisions of the Act

- Under this Act, the district collector designates an area as 'disturbed' due to communal tensions.
- Any **transfer of immovable property** in these areas requires prior permission from the collector under Section 5 (a) and (b) of the Act.
- The seller must submit an affidavit confirming the voluntary sale and a fair market price.
- The Collector conducts an inquiry before either approving or rejecting the property sale.

Amendments and Strengthened Powers (2020)

- The amendments granted the Collector enhanced authority to scrutinise property transactions for potential communal clustering.
- The state government can now review the Collector's decisions, even without an appeal being filed.
- Violation penalties were raised from six months to three to five years in prison.

Need for the Law in Rajasthan

- **Distress Sale Prevention:** To protect vulnerable property owners from being forced into below-market sales during communal tension or localised unrest.
- **Communal Stability:** To provide an administrative tool aimed at preventing sudden displacement that could trigger social friction in sensitive localities.
- **Orderly Urbanisation:** To regulate rapid, unplanned property transfers in mixed neighbourhoods, which the State views as destabilising settlement patterns.

Concerns Within the Act

- **Demographic Policing Risk:** The Act enables indirect regulation of who can buy property where, potentially reshaping neighbourhood composition through administrative discretion.
- **Fundamental Rights Conflict:** Restrictions raise serious concerns **under Article 19(1)(e) (right to reside and settle freely)** and **Article 15 (non-discrimination on religious grounds)**.
- **Judicially Stayed Logic:** Rajasthan's use of terms like "**improper clustering**" mirrors language

from Gujarat's 2020 amendment, which remains stayed by the High Court.

- **Chilling Effect on Transactions:** Genuine, voluntary inter-community property sales face delays, uncertainty, and fear of rejection despite free consent and fair value.

Republic Day 2026

- India celebrated its **77th Republic Day** on 26 January 2026, marking the enforcement of the Indian Constitution on this date in **1950**.
- **Chief Guests:** For the first time, two **European Union leaders** attended as chief guests—Antonio Costa (European Council President) and Ursula von der Leyen (European Commission President).
- **Central Theme:** “**150 Years of Vande Mataram**” commemorating 150th anniversary of the national song.
- The poem **Vande Mataram** (“I bow to thee, Mother”) was composed in Bengali script by **Bankim Chandra Chattopadhyay** in **1875** and adopted as India's National Song on **January 24, 1950**.
- Other Themes Tableaux and events highlighted “**Viksit Bharat**” and “**Bharat – Loktantra ki Matruka**”.
- **Gallantry Award:** **Shubhanshu Shukla**, the first Indian to visit the International Space Station (ISS), received the **Ashok Chakra**, India's highest peacetime gallantry award.
- **Public Participation:** The “**Jan Bhagidari**” initiative continued, with around 10,000 guests invited, including **PM Shram Yogi Maandhan** scheme beneficiaries.

Why is 26 January celebrated as Republic Day?

- **INC adopted Purna Swaraj (Lahore, 1929)** and observed 26 January 1930 as Independence Day; hence, the Constitution was enforced on 26 January 1950 to honour this legacy.
- On 26 January 1950, the Constitution came into force, and India became a **Sovereign Democratic Republic (Dr Rajendra Prasad became the first President)**.

Notable Tableaux and Displays

- **Ministry of I&B:** Presented “**Bharat Gatha**,” tracing India's storytelling from ancient oral traditions (Shruti) to Lord Ganesha's writing of the Mahabharata (Kriti) and modern cinema (Drishti).
- **Ministry of Home Affairs:** Featured two tableaux—one on “**Jan Kendrit Nyay Pranali**” and the other on “**Aatmanirbhar Bharat**.”
- **Uttar Pradesh:** Highlighted Bundelkhand's cultural and industrial heritage, featuring **Kalinjar**

Fort, Neelkanth Mahadev Temple, and “One District One Product” (ODOP) crafts.

- **Kerala:** Showcased modernisation through India's first Water Metro and the achievement of 100% digital literacy.
- **Nari Shakti:** Female personnel from CRPF and SSB performed a motorcycle display with high-skill formations like the “**Desh Rakshak**” pyramid.

Key Military Innovations and Displays

- Several indigenous systems made their first appearance —
- **Suryastra:** India's first indigenous, universal, multi-calibre, long-range rocket launcher system for surface-to-surface strikes.
- **Bhairav Light Commando Battalion:** A unit of around 250 personnel, for rapid-response and high-intensity missions, bridging the gap between infantry and Para Special Forces.
- **Shaktibaan Regiment:** A drone warfare unit under the Regiment of Artillery, specialising in unmanned aerial combat using swarm drones and loitering munitions.
- **EU Military Presence:** An EU military contingent joined the parade, marking its first participation outside Europe and signalling deeper India-EU strategic ties.
- **Battle Array Format:** The Indian Army showcased its first-ever “Phased Battle Array Format,” demonstrating real-time coordination between ground reconnaissance and aerial combat assets.
- **Animal Contingent:** The parade featured **Bactrian camels**, **Zanskar ponies**, and **black kites**, highlighting their operational roles in high-altitude and modern warfare.
- **Indigenisation Displays:** Included T-90 Bhishma, Arjun MBT, BrahMos missiles, and the Navy tableau featuring INS Kaundinya.
- **Operational Tribute:** Several tableaux and aerial formations honoured Operation Sindoos 2025.

Digital Content Age-Based Classification System

- The Ministry of Information and Broadcasting proposed the Draft IT (Digital Code) Rules, 2026, to regulate online obscenity and classify digital content.
- **Legal Basis:** The draft rules are proposed under **Section 87(1)** of the Information Technology Act, 2000.
- **Constitutional Balance:** The framework follows Supreme Court directives to balance the freedom of speech under Article 19(1)(a) with the reasonable restrictions under Article 19(2).
- **Broadcast Alignment:** The draft draws heavily on the **Cable Television Networks Rules, 1994**.

and extends similar content standards to digital platforms.

Key Provisions of the Draft Rules

- **Age Classification:** The draft proposes a five-tier classification system for online content, comprising U (Universal), U/A 7+, U/A 13+, U/A 16+, and A (Adult).
- **Mandatory Labels:** Platforms must clearly display age ratings and content warnings regarding violence or nudity before each programme begins.
- **Professional Content:** Exemptions apply to content meant exclusively for professional audiences, medical, scientific, or academic users.
- **Content Restrictions:** Digital platforms are barred from hosting material that attacks religions, promotes communal disharmony, or glorifies violence, crime, or substance abuse.
- **Parental Safeguards:** Platforms must provide parental controls for 13+ content and verified access systems for adult-only material.
- **Intermediary Liability:** Non-compliance with obscenity laws attracts civil consequences for Online Curated Content Providers (OCCPs).
- **Obscenity Definition:** Content is considered obscene if it is lascivious, prurient, corrupting to viewers' minds, or offensive to good taste or decency.

Concerns Regarding the Draft Rules

- **Digital Fit:** Applying broadcast-era standards to on-demand platforms may conflict with the flexibility of digital content consumption.
- **Vagueness Risk:** Subjective terms like "decency" create uncertainty and raise concerns about selective or arbitrary enforcement.
- **Speech Impact:** Strict liability provisions could deter content creators, resulting in a chilling effect on free expression and creative freedom.
- **OTT Distinction:** Eliminating the distinction between push-based television and pull-based OTT content remains a key industry objection.

PANCHAM Chatbot for Panchayats

- The Ministry of Panchayati Raj launched **PANCHAM (Panchayat Assistance & Messaging Chatbot)** on the eve of the 77th Republic Day.
- It is a flagship digital initiative to empower Panchayat Elected Representatives and Functionaries.

- It is designed as a digital companion for Panchayats, providing contextual guidance, simplified workflows, and easy access to governance information.
- Key Benefits:** The platform reduces reliance on intermediaries to curb corruption and enables photo-based grievance redressal with automated updates.
- Significance:** PANCHAM creates a first-of-its-kind direct digital bridge between the central government and grassroots administration, strengthening digital governance.

Key Features of PANCHAM

- WhatsApp Interface:** Enables user interaction through WhatsApp, eliminating the need for a separate mobile application.
- Multilingual Support:** The chatbot supports regional languages and voice notes to overcome literacy and language barriers.
- 24/7 Availability:** Provides round-the-clock assistance for governance and service delivery queries.
- Real-time Feedback:** Supports two-way communication for quicker resolution of field-level issues and continuous feedback loops.

New Aadhaar App

- The Government of India has launched the New Aadhaar App in January 2026, dedicated to the nation.
- This next-generation app, introduces a Privacy-First approach, allowing users to update mobile numbers from home.

About New Aadhaar App:

- The New Aadhaar App is a secure, next-generation mobile platform designed by the Unique Identification Authority of India (UIDAI).
- It is significantly different from the old mAadhaar app, focusing on consent-based control and data minimization in line with the DPDP Act.
- Developed by:** This next-generation app, developed by UIDAI.

Aim & Objectives:

- Eliminate Photocopies:** To stop the misuse of Aadhaar data during routine checks at hotels and

airports.

- **Resident-Centricity:** To provide Identity at Fingertips while allowing users to choose exactly what data they share.
- **Ease of Living:** To reduce physical visits to Aadhaar Seva Kendras for routine updates.

Key Features

- **Secure Offline Verification (No Internet Needed):**
- Users can now verify their identity without an active internet connection or sharing their 12-digit number.
- **Share ID:** Generate a password-protected file with only limited fields (e.g., just Name and Age).
- **QR Scanning:** Scan an entity's QR code to provide instant, digitally signed proof of identity.
- **Update Mobile Number & Address from Home:**
- For the first time, residents can update their registered mobile number directly through the app using Face Authentication.
- **Fee: A nominal fee of ₹75 is applicable.**
- **Timeline:** Updates are typically reflected within 15 days.

One Family - One App:

- The app allows the management of up to five Aadhaar profiles on a single smartphone. This makes it a perfect tool for parents to manage their children's or elderly dependents' digital IDs.
- **Selective Data Sharing:**
- Users no longer have to share their full digital card. You can choose to share only Photo and Age for a movie ticket or Name and Address for a hospital visit, masking the Aadhaar number entirely.
- **Biometric Lock & Unlock:**
- A single-click feature allows you to lock your biometrics, ensuring no one can use your fingerprint or iris data without your permission through the app.
- **Significance for the Common Man:**
- Aligns with the Digital Personal Data Protection (DPDP) Act by ensuring only digitally signed credentials are shared, not the actual Aadhaar number.
- Enables safe and instant verification for service partners and gig workers without exposing sensitive details.

Overseas Citizen of India (OCI)

- President of the European Council, Antonio Costa, known as the “Gandhi of Lisbon,” publicly showcased his OCI card at the conclusion of the India–EU Free FTA.
- An Overseas Citizen of India (OCI) is a foreign national of Indian origin granted a lifelong visa to reside and work in India. It is an **immigration status**, not dual citizenship.
- The OCI scheme was introduced by the **Citizenship (Amendment) Act, 2005**; the legal status of an OCI is defined under **Section 7A of the Citizenship Act, 1955**.
- In 2015, the Government of India merged the **Persons of Indian Origin (PIO) scheme** with OCI into a single “OCI Cardholder” category.

Eligibility Criteria

- Foreign nationals (excluding those with any link to Pakistan or Bangladesh) are eligible if they:
- Were Indian citizens at, or anytime after, the Constitution's commencement on 26 January 1950.
- Were eligible to become Indian citizens on 26 January 1950.
- Belonged to territories that became part of India after 15 August 1947.
- Are children, grandchildren, or great-grandchildren of such citizens mentioned above.
- A minor child is eligible if both parents are Indian citizens or if at least one parent is an Indian citizen; also, if the child is of any person covered under the categories mentioned above.
- A foreign spouse of an Indian citizen or an OCI cardholder is eligible if the marriage is registered and has subsisted continuously for at least two years before the application.

Mandatory Disqualifications

- Any person who is or was a citizen of Pakistan or Bangladesh, or whose ancestors held such citizenship.
- Serving or retired persons from foreign military, defence, or police (with limited exceptions).
- Applicants posing security risks or found guilty of fraud or material concealment.

Key Benefits of OCI Cardholders

- Lifelong Visa:** OCI cardholders receive a multi-entry, multi-purpose lifelong visa for visiting India.
- FRRO Exemption:** They are exempt from registration with the Foreigners Regional Registration Officer, irrespective of the duration of stay.
- Economic Parity:** They have parity with Non-Resident Indians (NRIs) in economic, financial, and educational matters, including ownership of non-agricultural property.
- Public Services:** They are treated on par with Indian citizens for domestic airfares and entry fees to national parks, monuments, and museums.

Major Restrictions for OCI Cardholders

- **Political Exclusion:** OCI cardholders cannot vote, contest elections, or hold legislative offices.
- **Constitutional Offices:** They are ineligible to hold posts such as President, Vice-President, or Judges of the Supreme Court and High Courts.
- **Public Employment:** They cannot hold government jobs unless allowed by the Central Government.
- **Land Ownership:** OCI holders cannot acquire agricultural land, farmhouses, or plantations.

Recent Updates related to OCIs

- **Special Permissions:** OCI cardholders now require special permits for activities such as missionary work, journalism, research, or mountaineering.
- **Restricted Area:** They need permits similar to those of other foreign nationals to visit notified regions.
- **Revocation Provisions:** OCI status may be cancelled for acts showing disaffection towards the Constitution or if the holder is sentenced to imprisonment of two years or more.

Health Ministry Notifies Amendments to NDCT Rules, 2019

- The Ministry of Health and Family Welfare notified amendments to the **New Drugs and Clinical Trials (NDCT) Rules, 2019**, to reduce regulatory burden.
- **Objective:** To promote R&D-led growth, align domestic rules with global best practices, and enhance India's R&D attractiveness.
- **Implementation:** Dedicated online modules will operate through the National Single Window System (NSWS) and the SUGAM portal to ensure transparency.

Key Amendments to NDCT Rules, 2019

- **Test Licence Waiver:** The mandatory test licence for small-quantity research drug manufacturing is replaced by prior online intimation to the Central Drugs Standard Control Organisation (CDSCO).
- High-risk substances like cytotoxic drugs, narcotics, and psychotropics still require a test licence.
- **Reduced Timelines:** For categories still requiring a test licence, the statutory processing time has been reduced from 90 days to 45 days.
- **BA/BE Reform:** Prior permission for low-risk Bioavailability and Bioequivalence studies is no

longer required, allowing commencement through simple CDSCO intimation.

New Drugs and Clinical Trials (NDCT) Rules, 2019

- The NDCT Rules, 2019, replaced the relevant provisions of the Drugs and Cosmetics Rules, 1945, to consolidate regulations for clinical trials and new drugs
- Regulatory Authority: The rules are administered by the CDSCO under the Drugs Controller General of India (DGI).
- New Drug Definition: A drug remains classified as “new” for four years after first approval, including investigational drugs and new indications or dosages for existing drugs.

Significance of the Amendments

- **Time Efficiency:** Drug development timelines are expected to shrink by nearly 90 days per project, enabling quicker transition from laboratory research to clinical evaluation stages.
- **Burden Reduction:** With CDSCO processing ~30,000–35,000 test licences and ~4,000–4,500 BA/BE applications annually, the regulatory workload will reduce substantially.
- **Generic Boost:** Faster BA/BE study initiation strengthens India's generic drug pipeline, supporting quicker market entry and export competitiveness.
- **Regulatory Focus:** Manpower savings allow CDSCO to concentrate more on high-risk drug oversight, inspections and pharmacovigilance functions.
- **Global Alignment:** Simplified norms bring India closer to US FDA and EU-style risk-based regulatory frameworks, improving investor confidence.

National Commission for Women marks its 34th Foundation Day

- The National Commission for Women (NCW) marked its 34th Foundation Day at Bharat Mandapam, New Delhi, reaffirming its commitment to women's rights and empowerment.

National Commission for Women

- The National Commission for Women (NCW) is a **statutory**, apex body of the Government of India tasked with protecting, promoting, and safeguarding the constitutional and legal rights of women.
- It acts as a watchdog, advisory body, and grievance redressal mechanism on issues affecting women.

When was NCW established?

- **Established:** 31 January 1992
- **Statutory basis:** National Commission for Women Act, 1990 (Act No. 20 of 1990)
- **Nature:** Statutory body (not a constitutional body)

Historical background:

- The Committee on the Status of Women in India (CSWI) first recommended an apex body to monitor safeguards for women.
- The idea was reinforced by the National Perspective Plan for Women (1988–2000).
- After extensive consultations with NGOs, social workers, and experts, the NCW Bill was introduced in Lok Sabha in May 1990.
- The Act received Presidential assent on 30 August 1990, and the first Commission was constituted in January 1992.

Structure of the National Commission for Women:

As per Section 3 of the NCW Act, 1990, the Commission consists of:

- **Chairperson:** nominated by the Central Government, committed to the cause of women
- **Five Members:** from fields such as law, administration, education, health, social welfare, labour, or women's movements
- **Mandatory representation:** At least one member each from SC and ST communities

Key functions of the NCW:

- The NCW performs wide-ranging quasi-judicial, advisory, and investigative functions, including:
- **Review of safeguards:** Examines constitutional and legal provisions for women and their implementation.
- **Policy advisory role:** Advises the Central and State governments on laws and policies affecting women.
- **Grievance redressal & suo motu action:** Takes up complaints and suo motu cases related to deprivation of women's rights and non-implementation of laws.
- **Legislative review & reform:** Recommends amendments to existing laws to address gaps and shortcomings.
- **Civil court powers:** Has powers of a civil court, including summoning, examining witnesses, and requisitioning documents.
- **Monitoring institutions:** Inspects jails, remand homes, and women's institutions where women

are kept in custody.

- **Research & advocacy:** Conducts studies, promotes awareness, and supports litigation affecting large groups of women.
- **Reporting to Parliament:** Submits annual and special reports, which are laid before Parliament with Action Taken Reports.

INTERNATIONAL RELATIONS AND SECURITY

Sudarshan Chakra Mission

- The Defence Minister has formally announced that the Defence Research and Development Organisation (DRDO) will lead the Sudarshan Chakra air defence initiative.
- DRDO is India's leading defence R&D agency, formed in 1958 under the Ministry of Defence; it is responsible for developing advanced technologies and systems for the armed forces.

About Mission Sudarshan Chakra

- It is a national security initiative to build a comprehensive, indigenous, AI-enabled, multi-layered air defence shield for India by 2035.
- **Hybrid System:** The Sudarshan Chakra is both a defensive shield and an offensive sword, shifting from passive defence to active deterrence.
- **AI Integration:** It utilises Artificial Intelligence and Big Data for real-time threat modelling, automated target allocation, and predictive interception.
- **Layered Architecture:** It has three layers—outer space-based long-range detection, middle-layer missile interception, and inner-layer point defence using lasers and anti-drone systems.
- **Cyber Security:** The mission incorporates strong anti-cyber warfare capabilities to protect power grids, communication networks, and command systems.
- **Civilian Coverage:** It explicitly protects civilian infrastructure, including nuclear plants, railways, hospitals, and major cultural sites, unlike conventional military-only systems.
- **Integrated Network:** It integrates the Integrated Air Command and Control System (IACCS), Akashteer, the Trigun system, and Project Kusha.

Project Kusha

- It is an indigenous long-range surface-to-air missile (LRSAM) development programme.
- **Developing Agencies:** The project is led by the DRDO in collaboration with Bharat Electronics

Limited (BEL) and private-sector partners.

- It features a three-layered interception system comprising three distinct missile variants—M1 (150 km), M2 (250 km), and M3 (350–400 km).
- It is designed to match or exceed the capabilities of Russia's S-400 system and to move toward S-500 performance standards.

India-Pakistan Exchange Nuclear and Prisoner Lists

- India and Pakistan exchanged lists of nuclear installations and prisoners in accordance with long-standing bilateral agreements.
- The 1991 Agreement** on the Prohibition of Attack (Article II) mandates the annual exchange of lists of nuclear installations.
- The agreement commits both nations to avoid actions that damage each other's nuclear facilities.
- The 2008 Agreement on Consular Access requires a biannual exchange of lists of civilian prisoners and fishermen in custody.
- It mandates arrest notification within three months, consular access within 90 days, and repatriation within one month after sentence completion and nationality verification.
- This exchange marks the 35th consecutive iteration, with the first exchange held on January 1, 1992.
- International Law:** Article 36 of the 1963 Vienna Convention on Consular Relations requires that arrested or detained foreign nationals be promptly told of their right to notify their embassy or consulate.

U.S. take over of Venezuela

- Nicolás Maduro was captured in a U.S. military operation and is being held in New York to **face narcotics-terrorism charges**, triggering a leadership vacuum in Venezuela.
- Venezuela:**
- Venezuela is a federal multiparty republic in northern South America, historically shaped by oil-led growth and, since 1999, by a **socialist political project** begun under **Hugo Chávez** and continued by Nicolás Maduro.
- Location:** Northern end of South America, with coastlines on the Caribbean Sea and Atlantic Ocean.
- Capital:** Caracas.

Key features:

1. **Andes Mountains:** In the northwest (Cordillera de Mérida), including Bolívar Peak.
2. **Lake Maracaibo Basin:** One of South America's major oil-producing regions.
3. **Llanos:** Vast tropical plains along the Orinoco River, important for cattle and hydrocarbons.
4. **Guiana Highlands:** Ancient crystalline uplands in the southeast with tepuis (tabletop mountains) and Angel Falls, the world's highest waterfall.
5. **Orinoco River System:** Drains most of the country and anchors its ecological and economic geography.

- **Neighbouring countries:** Caribbean Sea, Guyana, Brazil and Colombia.
- Venezuela also administers **several Caribbean islands** (e.g., Margarita, Los Roques) and has a long-running territorial dispute with Guyana over the **Essequibo region**.



Historical context

- **Pre-1999:** Periods of democratic stability supported by oil revenues.
- **1999 onwards:** Hugo Chávez launched the "**Bolivarian Revolution**," nationalising key sectors, especially oil.
- **Post-2013:** Under Nicolás Maduro, economic collapse, hyperinflation, sanctions, and rising

authoritarianism deepened political isolation.

- **January 2026:** The U.S. operation capturing Maduro marked an unprecedented escalation, with Washington signalling an interim external role until a political transition, including plans to revive Venezuela's oil infrastructure.

Suryastra rocket system

- The Indian Army has signed a ₹293-crore emergency procurement contract with NIBE Ltd., in collaboration with Elbit Systems, to induct the Suryastra rocket system, a long-range universal launcher with strike ranges up to 300 km.

Suryastra rocket system:

- Suryastra is India's **first indigenous** universal ***multi-calibre long-range rocket launcher*** system, capable of conducting precision surface-to-surface strikes at **150 km and 300 km ranges**. It is designed to integrate multiple rocket and missile types on a single launch platform.
- **Manufacturer:** NIBE Ltd. (India)
- **Technology partner:** Elbit Systems
- **Technology base:** Israeli PULS (Precise & Universal Launching System), adapted for Indian requirements under a Technology Collaboration Agreement (July 2025).

Aim:

- To enhance deep-strike and stand-off firepower of the Indian Army.
- To provide a single, flexible rocket artillery platform capable of both area saturation and high-precision strikes.
- To advance Make in India and reduce dependence on imported long-range artillery systems.

Key features

- **Range:** 150 km and 300 km (tactical deep-strike capability).
- **Universal launcher:** Can fire multiple calibres (122 mm, 160 mm, 306 mm) and compatible tactical missiles.
- **High precision:** Circular Error Probable (CEP) of < 5 metres in trials.
- **Multi-target engagement:** Simultaneous strikes at different ranges.
- **Mobility:** Adaptable to 4×4, 6×6, and 8×8 wheeled chassis.
- **Emergency procurement:** Acquired under EP powers for rapid induction without prolonged approvals.

Significance

- **Major leap over Pinaka:** Surpasses existing indigenous rocket systems in range and precision.
- **Deterrence enhancement:** Strengthens India's conventional deterrence against China and Pakistan through long-range precision fires.
- **Joint firepower:** Improves integration across Army strike formations and joint operations.

Army set to deploy ramjet-powered shells for 155 mm artillery guns

- The Indian Army is set to become the first armed force in the world to operationally **deploy ramjet-powered artillery shells** for its 155 mm guns.

About ramjet-powered shells artillery guns:

- Ramjet-powered artillery shells are advanced 155 mm projectiles fitted with an air-breathing ramjet propulsion module, allowing them to sustain thrust after being fired from a conventional artillery gun.

Key features

- **Extended range:** Enhances the reach of standard 155 mm shells by 30–50% without increasing gun barrel length.
- **Compatibility:** Can be retrofitted onto existing 155 mm shells, making them usable across the Army's current artillery inventory, including the M777 ultra-light howitzer.
- **High efficiency:** Uses air-breathing propulsion, providing a higher specific impulse (>4000 Ns/kg) compared to solid rocket-assisted projectiles.
- **Operational flexibility:** Enables deeper precision strikes while retaining the destructive power of conventional artillery ammunition.
- **Indigenous innovation:** Developed jointly by IIT Madras with support from the Army Technology Board (ATB).

About Ramjet technology:

- A ramjet is a type of air-breathing jet engine with no moving parts, designed to operate efficiently at supersonic speeds. Unlike rockets, it does not carry its own oxidiser and instead uses atmospheric oxygen for combustion.

How it works?

- The shell is first launched from an artillery gun at **~Mach 2**.

- At this speed, incoming air is naturally compressed (ram compression) as it enters the intake.
- Fuel injected into the compressed air ignites, producing thrust.
- The continuous thrust allows the shell to maintain velocity and extend range far beyond conventional ballistic limits.

Significance:

- First-ever practical application of ramjet propulsion in artillery shells.
- Achieves long-range capability without developing entirely new missile systems.
- Enhances India's deep-strike and counter-battery firepower against adversaries.

Monroe Doctrine

- The U.S. action against **Venezuela** and the capture of its president has been justified by Donald Trump by invoking the ***Monroe Doctrine, a 19th-century U.S. policy.***

Monroe Doctrine:

- The Monroe Doctrine is a U.S. foreign policy principle asserting that the Western Hemisphere is the exclusive sphere of influence of the United States, and that any external (especially European) interference would be treated as a hostile act against the U.S.

Established in:

- Proclaimed on December 2, 1823 by **James Monroe, the 5th President** of the United States.
- Announced during his State of the Union address to the U.S. Congress.

Core features of the doctrine

- **No new European colonisation:** European powers should not establish new colonies in North or South America.
- **Non-interference warning:** Any European intervention in the Americas would be viewed as a threat to U.S. security.
- **Reciprocal restraint:** The U.S. promised not to interfere in existing European colonies or in European internal affairs.
- **Separate spheres:** The political systems of Europe and the Americas were to remain distinct.

Expansion through the Roosevelt Corollary:

- In 1904, President Theodore Roosevelt added the **Roosevelt Corollary**, claiming a U.S. right to intervene in Latin American countries to prevent instability or European involvement—especially over debt crises.
- This transformed the doctrine from a defensive warning into a tool of active intervention.

Link to the recent Venezuela issue:

- In January 2026, after U.S. forces captured Venezuelan President Nicolás Maduro, President Trump described the operation as a modern update of the Monroe Doctrine.
- The U.S. argued that instability in Venezuela and the presence of rival global powers justified American control during a “transition period”.
- Critics argue this represents neo-imperialism, reviving a doctrine historically used to justify U.S. interventions in Cuba, Nicaragua, Haiti, the Dominican Republic, and now Venezuela.



China's proposal of the Global Governance Initiative (GGI)

- **Context:** China has reiterated its four global initiatives—with the **Global Governance Initiative (GGI)** at the core—as a people-centred framework for peace, security, and development.

Global Governance Initiative (GGI):

- The Global Governance Initiative (GGI) is China's proposal to reform and improve the existing global governance system so that it becomes more inclusive, representative, and people-centred, ensuring that all nations and peoples benefit from globalisation and international cooperation.

Four major proposals

1. **Global Development Initiative (GDI):** Focuses on shared and inclusive development, poverty reduction, livelihood protection, and equitable access to growth, ensuring development outcomes directly benefit people.
2. **Global Security Initiative (GSI):** Advocates common, comprehensive, cooperative, and sustainable security, emphasising peaceful dialogue, respect for sovereignty, and non-interference to ensure stability.
3. **Global Civilization Initiative (GCI):** Promotes mutual respect among civilisations, cultural dialogue, and rejection of civilisational superiority, recognising diversity as a strength of humanity.
4. **Global Governance Initiative (GGI):** Calls for people-centred global governance, greater participation of developing countries, reform of international institutions, and cooperation on climate change, AI, finance, and trade.

Significance:

- Presents China's alternative vision to Western-led global governance models.
- Emphasises sovereignty, inclusiveness, and non-interference, appealing to the Global South.
- Positions China as a provider of global public goods in development finance, climate action, and digital governance.

Renewed U.S. Interest in Acquiring Greenland

- Following recent U.S. military operations in Venezuela, President Donald Trump reiterated his interest in bringing Greenland under U.S. control.

Greenland

- It is the **world's largest non-continental island**, located between the Arctic and Atlantic Oceans.
- Nearly 80% of Greenland is covered by the **world's second-largest ice sheet**, after Antarctica.
- It is home to **Kaffeklubben Island**, the northernmost point of land in the world.
- Geographically part of North America but geopolitically linked to Europe, it's an autonomous territory of **Denmark**.
- Greenland manages internal affairs, while Denmark controls foreign policy, defence, and currency.
- It falls **under NATO Article 5** protection but is not part of the European Union.

Significance of Greenland for the United States

- Arctic Rivalry:** Global warming is opening Arctic shipping routes, positioning Greenland at the centre of U.S.–Russia–China rivalry for access to the Arctic region.
- GIUK Gap:** Greenland is part of the **Greenland–Iceland–UK Gap**, a strategic chokepoint for monitoring naval movements in the North Atlantic.
- Military infrastructure:** The U.S. operates the **Pituffik Space Base** in northern Greenland, supporting missile warning systems against Russia, China, and North Korea
- Critical Minerals:** Greenland hosts some of the world's largest untapped deposits of Rare Earth Elements (REE), vital for EVs, electronics, and defence supply chains.

United States Exit from 66 International Bodies

- The United States announced withdrawal from 66 international organisations and treaties under an **“America First”** review framework.
- Policy Rationale:** The review classifies selected international bodies as redundant, mismanaged, unnecessary, or wasteful for U.S. interests.

Key Organizations Planned for Exit

- Entity Split:** The 66 bodies comprise 35 non-UN bodies and 31 United Nations entities.
- Climate:** UNFCCC, IPCC, International Renewable Energy Agency, International Solar Alliance (ISA).
- The U.S. becomes the first country to attempt a formal withdrawal from the UNFCCC.
- Social Agencies:** UN Population Fund, UN Women, UN Human Rights Council (UNHRC).

- **Trade Bodies:** UN Conference on Trade and Development (UNCTAD).
- **Diplomatic Forums:** Global Counterterrorism Forum, Partnership for Atlantic Cooperation.

Possible Fallouts of the Withdrawal

- Weakens cooperative multilateralism and reduces collective capacity to manage global crises.
- Creates leadership vacuums, allowing China to expand its sphere of influence.
- Triggers a funding crunch, forcing agencies to cut staff and humanitarian programmes.
- Encourages transactional diplomacy, undermining trust in long-term collective commitments.

Anti-Government Protest in Iran

- Iran is currently witnessing its largest anti-government protests in recent years, driven by a deepening economic crisis and a rapid currency collapse.
- **Ideological Shift:** Unlike earlier reform-focused movements, current protests increasingly express explicit pro-monarchy sentiments.

Factors Behind the Iranian Protest

- **Hyper-Devaluation:** The Iranian rial dropped to a record low of 1.5 million per US dollar, losing almost 50% of its value in a year.
- **Fuel Pricing:** Recently introduced 3-tier gasoline pricing has sharply raised transport and food costs.
- **Hyperinflation:** Official inflation stands at 42.2%, while food prices have risen by 72% year-on-year.
- **Water Stress:** A 5-year drought and poor policies caused acute water shortages in provinces.
- **Energy Shortages:** Frequent blackouts and natural gas shortages during winter fuelled public anger.
- **War Impact:** The “Twelve-Day War” with Israel damaged nuclear and oil infrastructure, breaking the regime’s invincibility narrative.
- **Sanctions Snapback:** Iran was cut off from global banking and oil markets after the UN reimposed nuclear sanctions.

Iran Unrest for Implications for India

- **Port Disruption:** Strikes, internet shutdowns, and supply-chain disruptions are creating fresh uncertainty for **Chabahar Port's** operations.

- **Route Risk:** Prolonged instability threatens India's primary trade route to bypass Pakistan via the INSTC.
- **Price Volatility:** Iran's unrest and sanctions are affecting global oil supply, raising the risk of price hikes and import uncertainties for India.
- **Diplomatic Strain:** The worsening situation in Tehran challenges India's diplomatic balance between the U.S. and Iran.

United Nations Department of Economic and Social Affairs (UNDESA)

- The United Nations Department of Economic and Social Affairs (UNDESA), in its **World Economic Situation and Prospects 2026 report**, projected India's GDP growth at 7.4% in 2025-26.

United Nations Department of Economic and Social Affairs (UNDESA):

- UNDESA is a core department of the United Nations Secretariat that leads the UN's work on economic, social and environmental development, especially the implementation of the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs).
- **Established in:**
- 1948 (restructured into its present form in 1997 through mergers of UN development and policy departments)
- **Headquarters:** New York City, United States
- **Aim:** To support countries in achieving sustainable, inclusive and equitable development by translating global UN commitments into national policies and actions in the economic, social and environmental spheres.

Key functions

- **Global economic and social analysis:** Produces flagship reports like World Economic Situation and Prospects (WESP) to guide national and global policy.
- **SDG monitoring and coordination:** Tracks progress on the 17 SDGs and supports their implementation across countries.
- **Policy advice and technical assistance:** Helps governments design policies on poverty reduction, inequality, employment, climate action and social protection.
- **Intergovernmental support:** Provides secretariat services to the UN General Assembly, ECOSOC, UN Commissions and High-Level Political Forum (HLPF).
- **Global data and research:** Maintains major development databases and statistical platforms used

by policymakers worldwide.

Significance

- UNDESA is the institutional backbone of the 2030 Agenda, ensuring countries stay on track.
- Its economic forecasts influence IMF, World Bank, G20 and national budget planning.

National Improvised Explosive Device Data Management System (NIDMS)

- Union Home Minister inaugurated the National Improvised Explosive Device Data Management System (NIDMS) at the NSG garrison, Manesar, calling it a “next-generation shield against terrorism”.

National Improvised Explosive Device Data Management System (NIDMS):

- NIDMS is a secure national digital platform that stores, standardises and analyses all IED and bomb-blast related data in India since 1999, providing single-click access to investigators across the country.

Organisations involved

- **Ministry of Home Affairs (MHA) – Policy oversight**
- **National Security Guard (NSG) – Host and operational custodian**
- National Bomb Data Centre (NBDC), NSG – Technical and forensic backbone

User agencies:

- State Police Forces
- Central Armed Police Forces (CAPFs)
- National Investigation Agency (NIA)
- Anti-Terrorism Squads (ATS)
- **Aim:** To create “One Nation, One IED Data Repository” that:
- Enables faster and more scientific investigation of terror blasts
- Detects patterns, signatures and inter-linkages between attacks
- Supports predictive and AI-based counter-terror strategies

Key features

- Pan-India blast archive: Records every IED and bomb blast since 1999
- 1. **Two-way data window:**

- Agencies can upload new blast data
- And access historical cases in real time

2. Signature linking:

- Links incidents using location, device type, circuit, timer, explosive used

3. AI-enabled analytics:

- Finds modus operandi trends
- Supports predictive threat mapping

4. Inter-operability:

- Will integrate with CCTNS, ICJS-2, NAFIS, e-Prisons, e-Prosecution, Forensics databases.

5. Secure and standardised:

- Ensures uniform data formats, evidence tagging and secure sharing

Significance

- **Faster investigations:** Enables instant access to nationwide IED data, eliminating fragmented case files.
- **Stronger prosecutions:** Pattern recognition and scientific evidence strengthen court-ready terror cases.

Weimar Triangle

- Poland backed India amid US tariff threats over Russian oil imports, expressing satisfaction over India's import cutbacks during India's first engagement with the Weimar Triangle.

About the Weimar Triangle

- **Formation:** Established in 1991 by France, Germany, and Poland to promote European integration and political reconciliation in the post-Cold War era, especially between Western and Central Europe.
- **Core Objective:** Serves as a high-level forum for political dialogue and strategic coordination, especially on European security and Russia-Ukraine issues.
- **Areas of Cooperation:** Focuses on foreign policy, defence coordination, economic ties, and cultural exchanges, complementing EU and NATO processes.
- **Relevance for India:** India's engagement marks outreach beyond bilateral ties, signalling strategic convergence with key European powers on geopolitics and global governance.

Other Trilateral Groupings in World Politics

- **RIC Trilateral:** Russia-India-China forum aimed at promoting a multipolar world order, coordination on global governance, and strategic stability.
- **AUKUS:** A defence partnership between Australia, the UK, and the US, focused on nuclear-powered submarines and advanced defence technologies in the Indo-Pacific.
- **ANZUS:** A Cold War-era security treaty linking Australia, New Zealand, and the US, aimed at collective defence in the Pacific region.
- **Trilateral Commission:** An informal forum connecting North America, Europe, and Japan to discuss global economic governance and political coordination.

Operation Hawkeye

- The United States carried out large-scale airstrikes against ISIS targets in Syria under Operation Hawkeye after an ISIS ambush in **Palmyra** killed two US soldiers and a civilian interpreter.

Operation Hawkeye:

- Operation Hawkeye is a US-led military counter-terrorism operation involving air and precision strikes against Islamic State (ISIS) targets across Syria.
- **Launched by:** The operation was launched by the United States under President Donald Trump and executed through US Central Command (CENTCOM) in December 2025.



Aim:

- To avenge and respond to the Palmyra ISIS ambush that killed American personnel.
- To degrade ISIS networks, prevent regrouping, and protect US and coalition forces operating in Syria.
- To reinforce the message that attacks on US personnel will invite direct military retaliation.

Syria:

- Syria is a sovereign Middle Eastern country that has emerged from a 13-year civil war (2011-2024) and is currently governed by an interim government led by President Ahmed al-Sharaa.
- **Located in:** Syria lies in south-western Asia on the eastern coast of the Mediterranean Sea, forming a strategic land bridge between West Asia, the Levant and Mesopotamia.
- **Capital:** Damascus, one of the oldest continuously inhabited cities in the world.
- **Neighbouring nations:** Turkey, Iraq, Jordan, Lebanon and Israel.

Key features

- Mediterranean coastline – Gives Syria sea access for trade and naval activity.
- Al-Ansariyah Mountains – Separate the humid coast from the dry interior.
- Anti-Lebanon & Mount Hermon – Form a natural border and water source.
- Syrian Desert – A vast arid interior with strategic importance.
- Euphrates River – Syria's main lifeline for irrigation and power.
- Orontes River – Supports fertile western valleys and settlements.

Bhairav Battalion

- India's newly raised Bhairav Battalions will make their first public appearance at the Army Day Parade in Jaipur.

Bhairav Battalion:

- The Bhairav Battalion is a new-generation high-speed offensive combat unit of the Indian Army, created for hybrid warfare, rapid raids, drone operations and tactical special missions.
- **Under:** These battalions operate under Corps and Division-level formations of the Indian Army.
- **Positioned mainly along:** sensitive borders such as Rajasthan, Jammu, Ladakh and the Northeast.
- **Aim:** To bridge the gap between Para Special Forces and regular infantry by providing

commanders with “**fight tonight**” units capable of quick, decisive and tech-enabled operations.

Key Features:

- Compact strength of about 200–250 highly trained soldiers
- Specialised in drone warfare, electronic disruption, reconnaissance and rapid strikes
- Designed for hybrid warfare, combining ground action, unmanned systems and cyber-electronic support
- Deployed close to the border for immediate tactical response
- Integrated with the Army’s one lakh+ drone operator ecosystem

Significance:

- Enables the Army to respond instantly to border crises and grey-zone threats.
- Enhances India’s ability to conduct fast, precise and technology-driven military operations.
- Forms a key pillar of the Army’s force restructuring and modernisation, alongside Rudra Brigades and unmanned warfare units.

Exercise Sanjha Shakti

- A joint Military Civil Fusion (MCF) exercise “Sanjha Shakti” was held to test civil–military emergency response and security preparedness.

About Exercise Sanjha Shakti

- Location: Conducted at Dighi Range, Khadki Military Station (Pune) under Maharashtra, Gujarat & Goa Area of Southern Command.
- Participants: Exercise involved the Indian Army and 16 civil agencies, including Maharashtra Police, Force One commandos, and Fire Fighting Departments.

Key Focus Areas

- **SOP Validation:** Simulated realistic scenarios to test Standard Operating Procedures (SOPs) and role clarity across agencies.
- **Communication Links:** Checked real-time communication mechanisms between civil authorities and the Army chain of command.

Man Portable Anti-Tank Guided Missile (MPATGM)

- DRDO successfully flight-tested the **Third-Generation** Fire & Forget Man Portable Anti-Tank Guided Missile (MPATGM) with top-attack capability against a moving target.

About Man Portable Anti-Tank Guided Missile (MPATGM):

- MPATGM is a third-generation, fire-and-forget, shoulder-launched anti-tank guided missile system designed to destroy modern main battle tanks and armoured vehicles.

Developed by:

- Developed by DRDO, led by Defence Research & Development Laboratory (Hyderabad).

Aim:

- To provide Indian infantry with a high-precision, lightweight and lethal weapon capable of neutralising enemy armour under day-night and all-weather conditions.

Key Features:

- Fire & Forget system:** After launch, the missile locks onto the target and guides itself, allowing the soldier to take cover or relocate.
- IR homing seeker:** Uses thermal imaging to detect enemy vehicles, enabling accurate targeting in day, night and low visibility.
- Top-attack mode:** The missile strikes from above, where tank armour is thinnest, ensuring maximum destruction.
- Tandem HEAT warhead:** A two-stage explosive first defeats reactive armour and then penetrates the main armour.
- 200-4,000 m range:** Enables infantry to engage tanks from a safe stand-off distance.
- Man-portable launcher:** Can be carried by soldiers and also mounted on tripods or military vehicles for flexible deployment.

Significance:

- Greatly enhances infantry's anti-tank capability in high-intensity warfare.
- Reduces dependence on imported ATGMs like Spike and Javelin.
- Strengthens India's Aatmanirbhar Bharat in defence technology.

US regional bases in the Middle East

- Iran has warned it will strike U.S. military bases in the Middle East if Washington intervenes in

Iran's internal unrest, after President Donald Trump publicly backed Iranian protesters.

US regional bases in the Middle East:

- The United States maintains a network of permanent and rotational military bases across the Middle East to secure oil routes, protect allies, counter terrorism, and deter Iran and other regional threats under the **US Central Command (CENTCOM)** framework.

Major US bases in the region

1. Bahrain – Fifth Fleet Headquarters

- Hosts the US Navy's Fifth Fleet, which controls naval operations across the **Persian Gulf, Red Sea, Arabian Sea and parts of the Indian Ocean**, ensuring maritime security and oil flow.

2. Qatar – Al Udeid Air Base

- The largest US base in the Middle East, serving as CENTCOM's forward headquarters with around 10,000 troops, coordinating air, missile defence and regional military operations.

3. Kuwait – Camp Arifjan & Ali Al Salem Air Base

- Camp Arifjan is the forward HQ of US Army Central, while Ali Al Salem is a key air logistics hub near the Iraq border, supporting deployments to Iraq and Syria.

4. United Arab Emirates – Al Dhafra Air Base & Jebel Ali Port

- Al Dhafra **supports US air operations**, surveillance and anti-ISIS missions; Jebel Ali is the **US Navy's busiest port in the Middle East**, hosting aircraft carriers and warships.

5. Iraq – Ain Al Asad & Erbil Air Base

- Ain Al Asad supports Iraqi and NATO missions and was hit by Iranian missiles in 2020; Erbil is a key logistics, intelligence and training hub in northern Iraq.

6. Saudi Arabia – Prince Sultan Air Base

- Hosts US air defence systems such as Patriot and THAAD to protect the Kingdom and regional US assets from missile attacks.

7. Jordan – Muwaffaq al Salti Air Base

- Base of the US 332nd Air Expeditionary Wing, supporting air operations across Syria, Iraq and the Levant.

8. Turkey – Incirlik Air Base

- Jointly run by the US and Turkey, it hosts US nuclear weapons and supports NATO and anti-ISIS operations in West Asia.

78th Indian Army Day Parade Held Outside Cantonment

- The 78th Indian Army Day parade in Jaipur marked the first time the main event was held outside a military cantonment.
- **Historic Venue:** Traditionally, the parade was held at **Cariappa Parade Ground** in Delhi Cantonment until 2023, when it adopted a rotating city format.
- **New Unit:** The parade showcased the first public appearance of the newly raised Bhairav Battalion.

Indian Army Day

- Indian Army Day is observed annually on January 15 to honour the selfless service of soldiers.
- **Command Transition:** It marks the day when K. M. Cariappa was appointed the **first Indian Commander-in-Chief of the Army in 1949**.
- He succeeded **Sir Francis Roy Bucher**, the **last British Commander-in-Chief** of the Indian Army.
- **Annual Theme:** The theme for 2026 is "Year of Networking and Data Centricity."

Robotsystem 15 (RBS-15) Missile

- Swedish aerospace and defence company Saab showcased the RBS-15 missile's capability to destroy the Russian S-400 system.
- **About Missile:** Robotsystem 15 (RBS-15) is a long-range, fire-and-forget anti-ship missile with land-attack capability, developed by the Swedish defence firm Saab Bofors Dynamics.
- **Operational Design:** The missile is designed to operate effectively in complex littoral and coastal environments like the Baltic Sea.
- **Platforms:** An RBS-15 can be launched from naval ships, combat aircraft, and land-based mobile launchers.
- **Speed Range:** It operates at high subsonic speed near Mach 0.9, with an operational range exceeding 300 kilometres.
- **Sea Skimming:** The missile flies extremely close to the water's surface to evade radar detection.
- **Geographic Optimisation:** Unlike open-ocean missiles, the RBS-15 is optimised for narrow straits and island-dense Scandinavian archipelagos.

Recalibrating India's Critical Minerals Diplomacy

- India's clean-energy transition increasingly depends on imported critical minerals, and tightening export controls have made supply security a strategic priority.
- A critical mineral is a metallic or non-metallic element crucial for modern technologies, economies, and national security, with the potential risk of disruptions to its supply chains.

Significance of Minerals Diplomacy for India

- **Import Dependence:** India is 100% import-dependent for key minerals like lithium, cobalt and nickel, making energy transition supply chains externally vulnerable.
- **China Dominance:** China controls about 81% of the processing capacity of key critical minerals, turning minerals into a geopolitical choke point, not just a trade item.
- **Downstream Supply Vulnerability:** In 2024–25, India imported 53,000+ tonnes of rare earth magnets, with over 90% sourced from China, risking disruption for EVs, wind turbines and electronics.

India's Region-Wise Critical Mineral Partnership Assessment

1. Australia

- **Reliable Upstream Partner:** Australia offers stable politics and large reserves, making it a credible long-term supplier anchor for India's transition needs.
- **Investment Track:** Under the India-Australia Critical Minerals Investment Partnership (2022), five target projects were identified for possible investment in lithium and cobalt.

2. Japan

- **Resilience Template:** Japan's response to rare earth disruption focused on diversification, stockpiling, recycling and long-term R&D rather than reactive buying.
- **Upgraded Cooperation:** Partnership is expanding towards joint extraction/processing and possible stockpiling arrangements, including in third countries.

3. Africa

- **High Potential:** Africa's mineral abundance and rising demand for local value addition offer long-run opportunities beyond transactional ore extraction.
- **India's Push:** Deals with **Namibia (lithium, rare earths, uranium)** and talks in **Zambia (copper, cobalt)**.

4. United States

- **Dialogue Heavy:** Friend-shoring has struggled to move beyond discussions, as tariffs, trade rules and policy volatility reduce long-term reliability.
- **Key Frameworks:** **TRUST Initiative** and Strategic Minerals Recovery Initiative propose joint work on rare-earth processing and recycling tech.

5. European Union (EU)

- **Alignment Need:** India must align with lifecycle environmental norms to plug into EU standards.
- **Key Platforms:** Critical Raw Materials Act & European Battery Alliance offer a structured supply-chain.

6. West Asia (Gulf)

- **Midstream Potential:** UAE and Saudi Arabia are building battery materials and refining capacity, offering processing partnerships for mineral ores.
- **Gap:** Institutional depth remains limited, so India needs structured rather than ad-hoc arrangements.

7. Russia

- **Partnership:** Russia has sizeable reserves and scientific linkages with India, offering diversification.
- **Constraints:** Sanctions, financing and logistics reduce reliability, making Russia a hedge partner.

8. Latin America

- **New Frontier:** Argentina, Chile, Peru and Brazil are becoming central to global rare earth strategies.
- **Early Stage:** **KABIL** signed a ₹200 crore exploration agreement in **Argentina (Catamarca lithium blocks)**.

9. Canada

- **Re-emerging Partner:** Canada has strong reserves of nickel, cobalt, copper and rare earths and could become a stable partner post ties restoration.
- **Risk Factor:** Political stability in bilateral relations is key, else diplomacy could remain underutilised.

Way Forward

- **Processing Capacity:** Prioritise domestic refining and separation to reduce exposure to external chokepoints; E.g., build REE magnet and lithium refining clusters with assured offtake.
- **Value-Chain Deals:** Shift from MoUs to bankable projects with equity, technology and offtake terms; E.g., mining-to-processing packages instead of extraction-only contracts.
- **Recycling Scale:** Build urban mining capacity for batteries and magnets to reduce import dependence.
- **Institutional Clarity:** Create a single strategic command for minerals diplomacy & domestic mining policy integration; E.g., a Critical Minerals Board linking MEA, Mines, Commerce, and industry.

Yellow Line

- The Israeli military chief called the Yellow Line between Israel and Gaza as the new border.

About the Yellow Line

- The Yellow Line marks the zone to which Israeli forces have withdrawn under the 2025 US backed ceasefire.
- It divides Gaza into two parts i.e. Israeli-controlled eastern areas and Palestinian-administered western areas.

BRICS Plus naval exercise

- India's decision to skip the **BRICS Plus naval exercise "Will for Peace 2026"** has drawn attention as New Delhi clarified that such drills are not institutionalised BRICS activities and reflected a considered political choice amid evolving geopolitics.

BRICS Plus Naval Exercises:

- The BRICS Plus naval exercise is a host-led, non-institutionalised maritime drill involving selected BRICS members and invited partner countries, conducted outside the formal BRICS framework.
- **Host nation:** South Africa
- Conducted off the coast of **Simon's Town**, near Cape Town.

Member participants:

- **Participating navies:** China, Russia, Iran, United Arab Emirates, South Africa
- **Observers:** Brazil, Egypt, Ethiopia, Indonesia
- **Non-participants: India, Brazil (opted out of active participation)**
- **Aim:** To conduct joint maritime operations focused on the security of key shipping lanes and maritime economic activities, projected as cooperation among Global South nations.

Key features

- **Theme:** "Joint Actions to Ensure the Safety of Key Shipping Lanes and Maritime Economic Activities".
- Operations covering maritime security, counter-terrorism, anti-sea strike drills, and search & rescue.
- China-led operational coordination, with participation of sanctioned states like Russia and Iran.
- Framed as part of a broader "BRICS Plus" outreach, beyond core BRICS membership.

Significance:

- Highlights diverging visions within BRICS—economic cooperation versus security signalling.
- Raises concerns about militarisation of BRICS and perceptions of an anti-Western alignment.
- Explains India's emphasis on strategic autonomy, separation of economic forums from military blocs, and caution in defence engagement with China.

80 years of the United Nations Economic and Social Council (ECOSOC)

The United Nations Economic and Social Council (ECOSOC) will commemorate its **80th anniversary** on 23 January 2026, marking eight decades of coordinating global action on development.

United Nations Economic and Social Council (ECOSOC):

- ECOSOC is one of the six principal organs of the United Nations, serving as the central forum for international economic, social and environmental policy coordination, consensus-building and follow-up to global development commitments.
- **Established in: 1945 under the UN Charter**
- **First meeting:** 23 January 1946, London
- **Aim:** To advance sustainable development by integrating economic growth, social inclusion and

environmental protection, ensuring that no one is left behind.

Key functions:

- **Policy coordination:** Guides and coordinates UN development system, including specialised agencies and programmes.
- **Global platform:** Facilitates debate, consensus and innovative thinking on development challenges.
- **SDG follow-up:** Reviews progress on SDGs via the HLPF.
- **Inclusive engagement:** Grants consultative status to 6,500+ NGOs, enabling civil society participation.
- **Institutional linkage:** Oversees functional commissions, regional commissions and expert bodies.
- **UN system governance:** Elects executive boards of agencies like UNICEF, UNDP and UNHCR.

Significance:

- Aligns global economic, social and environmental action.
- Connects governments, civil society, youth, academia and private sector.
- Uses convening power to restore confidence in multilateral solutions.

Gaza Board of Peace

- US President Donald Trump invited PM Narendra Modi to join a proposed Gaza "Board of Peace", launched as part of the second phase of the Israel–Hamas ceasefire.

What is Trump's "Board of Peace"?

- A proposed international body aimed at bringing lasting peace and stability in Gaza through a new transition framework, beyond short-term ceasefire management.
- It is projected as a platform not just for Gaza but potentially for wider conflict-resolution, since it is framed as a "bold new approach" to resolve global conflict.

Core Mandates of the Board

- **Governance Transition:** The Board is meant to guide Gaza's transition towards stable, lawful governance after the war, reducing institutional vacuum risks.
- **Funding Coordination:** It is expected to coordinate international funding and channel

reconstruction resources in an organised manner, rebuilding sustained multi-year financing.

Structure & Membership Design

- **Heads-Only Top Tier:** The top level is proposed to include only heads of state, signalling high political authority in decision-making.
- **Trump-Led Framework:** It is projected as being led under Trump's leadership, indicating a US-driven architecture rather than a neutral multilateral body.

Why the Invite Matters for India?

- **West Asia Leverage:** India has high stakes in West Asia due to energy dependence, diaspora security and trade routes, so Gaza stability matters directly.
- **Global Standing Boost:** The invite signals India's acceptability as a responsible stakeholder, and it strengthens India's profile as a "consensus builder" rather than a bloc-aligned power.
- **Diplomatic Balancing Test:** Joining requires careful calibration between India's ties with Israel and strong relations with Arab states and Iran.

Key Concerns About the Board

- **Multilateral Legitimacy Risk:** A US-led peace mechanism can be viewed as bypassing established UN processes and frameworks, reducing acceptability among several stakeholders.
- **Representation Gap:** If Gaza's political representatives and regional actors are not meaningfully included, outcomes may lack local legitimacy.
- **Scope Creep Risk:** The claim that it may address wider "global conflicts" risks mission expansion beyond Gaza's practical needs dilute focus and delaying deliverables.

18th India-Japan Strategic Dialogue

- India and Japan concluded their 18th Strategic Dialogue in New Delhi, co-chaired by the Indian External Affairs Minister and his Japanese counterpart.

Key Outcomes

- **AI Cooperation:** Concurred to establish the "Japan-India AI Strategic Dialogue" under the **Japan-India AI Cooperation Initiative (JAI)**.
- Japan will invite 500 highly skilled Indian AI professionals by 2030 to strengthen joint research.
- **Economic Security:** Agreed to establish a Private-Sector Dialogue on Economic Security in early

2026, focusing on semiconductors, critical minerals, ICT, clean energy, and pharmaceuticals.

- **Critical Minerals:** Decided to convene a Joint Working Group (JWG) on Critical Minerals to build resilient supply chains and reduce dependence on single-source imports.
- **Defence Technology:** Discussed the transfer of Unified Complex Radio Antenna (UNICORN) technology for the Indian Navy, marking progress in defence technology cooperation.
- **Diplomatic Milestone:** Designated 2027 as the **75th Anniversary of the Establishment of Diplomatic Relations between Japan and India**, highlighting the long-standing bilateral ties.

About India-Japan Relations

- **Partnership Status:** India and Japan elevated bilateral ties to a Special Strategic Partnership in 2014.
- **Strategic Frameworks:** Cooperation rests on the Joint Declaration on Security Cooperation (2008) and the Acquisition and Cross-Servicing Agreement (ACSA, 2020) for logistics support.
- **Defence Engagement:** The **2+2 Ministerial Dialogue** anchors security talks, complemented by regular military drills like **IMEX, Dharma Guardian, and Veer Guardian**.
- **Trade Relations:** The 2011 CEPA liberalised trade; bilateral trade reached about USD 25.15 billion (FY 2024–25), with a trade deficit favouring Japan.
- **Investments:** Japan is India's 5th-largest FDI source, with investment of around USD 43 billion (2024).
- Building on a JPY 5 trillion target set in 2022, the 'Joint Vision for the Next Decade' (2025) aims for an additional JPY 10 trillion in private investment.
- **Development Cooperation:** Japan has been India's largest Official Development Assistance (ODA) donor since 1958; flagship projects include the Mumbai–Ahmedabad High-Speed Rail (MAHSR).
- **Technology Linkages:** Collaboration spans AI, semiconductors, ISRO–JAXA LUPEX mission, and the Clean Energy Partnership (2022).
- **Demographic Alignment:** To balance Japan's ageing population and India's youth bulge, both sides agreed to facilitate the mobility of 500,000 skilled Indian workers over five years.

Significance of India-Japan Relations

- **Indo-Pacific Stability:** India and Japan anchor the Quad to uphold a Free and Open Indo-Pacific (FOIP) and a rules-based order, countering China's regional assertiveness.
- **Global Governance:** Both countries coordinate in forums like the G20, G4, and the UN to advocate reforms reflecting contemporary power realities.
- **Derisking Global Economy:** The Supply Chain Resilience Initiative (SCRI), a trilateral framework

with Australia, diversifies supply chains to reduce over-reliance on a single country.

- **Africa Engagement:** Joint efforts for African development through the Asia-Africa Growth Corridor (AAGC) and the Japan-India Cooperation Initiative for Sustainable Economic Development in Africa.
- **Regional Connectivity:** Through the Act East Forum, Japan partners in developing India's Northeast, strengthening industrial linkages and cross-border connectivity with Bangladesh.

UAE President's Official Visit to India

- President of the United Arab Emirates (UAE), Sheikh Mohamed bin Zayed Al Nahyan (MBZ), concluded an official visit to New Delhi.

Key Outcomes of the Visit

- **Trade Target:** The leaders agreed to double India-UAE bilateral trade to USD 200 billion by 2032.
- **LNG Supply:** HPCL signed a 10-year deal with ADNOC Gas to import 0.5 MMTPA of LNG from 2028.
- **Industrial Investment:** The UAE is committed to large-scale investments in the **Dholera Special Investment Region (SIR)** in Gujarat. DP World and First Abu Dhabi Bank to set up operations in GIFT City.
- **Computing Collaboration:** C-DAC and G42 will jointly set up a supercomputing cluster in India.
- **Defence Framework:** India and the UAE signed a Letter of Intent to establish a Strategic Defence Partnership for defence manufacturing and interoperability.
- **Space Partnership:** IN-SPACe and the UAE Space Agency plan to jointly develop launch infrastructure and satellite facilities.
- **Culture and people-to-people ties:** Establishment of the House of India in Abu Dhabi, showcasing Indian art, heritage, and archaeology.

Overview of India-UAE Bilateral Relations

- **Strategic Upgrade:** India-UAE ties were elevated to a Comprehensive Strategic Partnership in 2017.
- **Economic Frameworks:** The countries operationalised the Comprehensive Economic Partnership Agreement (CEPA) in 2022 and signed a Bilateral Investment Treaty in 2024.
- **Trade Position:** The UAE is India's third-largest trading partner and second-largest export destination, with bilateral trade exceeding \$100 billion in FY 2024-25.

- **Digital Payments:** India's UPI is integrated with the UAE's **AANI platform**, and RuPay cards are linked to the **JAYWAN network**.
- **Energy Supplies:** The UAE is **India's fourth-largest crude oil supplier** and the second-largest supplier of LNG and LPG.
- **Strategic Reserves:** The UAE is the first foreign partner to invest in India's Strategic Petroleum Reserves in Mangalore.
- **Military Exercises:** Regular joint exercises include **Desert Cyclone (Army)**, **Zayed Talwar (Navy)**, and **Desert Flag (Air Force)**.
- **Regional Connectivity:** Both countries are founding partners of the **India-Middle East-Europe Economic Corridor (IMEC)** to strengthen inter-regional connectivity.
- **Indian Diaspora:** About 3.5 million Indians live in the UAE, forming its largest expatriate group and contributing nearly 20% of India's remittances.
- **Minilateral Grouping:** India and the UAE are key members of the I2U2 Group, focusing on joint investments in water, energy, and food security.

Spain Joins the Indo-Pacific Oceans Initiative

- IPOI is a **non-treaty-based** voluntary arrangement that promotes cooperation for a free and open Indo-Pacific and the rules-based regional order.
- Indo-Pacific is as an interconnected space between the Indian and the Pacific Ocean, joined together by its main trading channel, the Malacca strait.
- It is home to more than half of the world's population, and nearly 2/3rds of the global economy.

About Indo-Pacific Oceans Initiative (IPOI)

- Genesis: IPOI was launched by India at the **East Asia Summit in 2019**, held in Bangkok (Thailand).
- Background: It builds upon the "**Security and Growth for All in the Region**" (**SAGAR**) **initiative** announced by India in 2015.
- **SAGAR** encourages countries to cooperate and synergise efforts towards a safe, secure, and stable maritime domain.
- **7 pillars of IPOI:** It includes Maritime Security; Maritime Ecology, Capacity Building and Resource Sharing; Disaster Risk Reduction and Management, etc.

Key Significance of IPOI

- **Countering China's assertiveness:** E.g., In 2020, India and Vietnam agreed to enhance their bilateral cooperation in line with IPOI.
- **Convergences with other global initiatives:** E.g., AIPOIP (Australia-India Indo-Pacific Oceans Initiative Partnership), AOIP (ASEAN Outlook for the Indo-Pacific), IPEF, etc.

Security Fences to Move Closer to Pakistan Border in Punjab

- Punjab CM Bhagwant Mann stated that the Union government has tentatively agreed to shift the border security fence closer to the International Border.
- **Farmland Access:** The proposed realignment restores unhindered access to nearly 21,300 acres of fertile farmland along the Punjab-Pakistan border.

Regulated Farming Inside Border Fence

- **Controlled Access:** Farmers cross the fence only during fixed hours, using identity cards, under the supervision of **Border Security Force (BSF) Kisan Guards**.
- **Fence Misalignment:** In several stretches, the security fence lies 2-3 kilometres inside India, rather than the standard 150 metres from the Zero Line.
- **Visibility Norms:** Authorities ban tall crops like sugarcane or maize that exceed 3-4 feet in height to maintain clear visibility.
- **Machinery Regulation:** Farmers must pre-register and obtain approval to use heavy machinery, such as combine harvesters.
- **Tractor Quotas:** Border authorities cap the number of tractors allowed to cross the gates on specific, pre-designated weekdays.
- **Mandatory Escort:** Every tractor entering fenced farmland must be accompanied by two BSF Kisan Guards at all times.

Governance Framework for Border Fencing in India

- **Nodal Authority:** The Ministry of Home Affairs oversees border fencing through the Department of Border Management.
- **Executing Agencies:** Construction is executed by CPWD, NBCC, or BRO, depending on terrain, altitude, and operational conditions.
- **Guarding Forces:** Fences are manned by BSF (Pakistan, Bangladesh), ITBP (China), SSB (Nepal, Bhutan), and Assam Rifles (Myanmar).

- **Legal Authority:** Border fencing powers derive from the **Border Security Force Act, 1968**, and executive orders under the **Passport Act, 1920**.
- **Land Acquisition:** The land required for fencing is acquired under **the Right to Fair Compensation and Transparency in Land Acquisition Act, 2013**.
- **Policy Shift:** Border management has shifted towards a Smart Wall approach, integrating physical fencing with the Comprehensive Integrated Border Management System (CIBMS).

Current Status of Border Fencing in India

- **Pakistan Border:** Around 93% of the International Border (2290 km) is fenced; the Line of Control uses a separate Anti-Infiltration Obstacle System (AIOS).
- **Bangladesh Border:** Physical fencing covers nearly 79% of the 4,096 km India-Bangladesh boundary; riverine areas are covered by technological solutions like BOLD-QIT.
- **Myanmar Border:** Less than 2% of the 1,643-kilometre India-Myanmar border is fenced.
- The Ministry of Home Affairs approved a comprehensive border fencing project after scrapping the **Free Movement Regime (FMR)**.
- **China Border:** There is no continuous physical fence along the Line of Actual Control (LAC); focus remains on developing strategic "hard" infrastructure (roads, tunnels, landing grounds, etc.).

Operation Trashi-I

- Operation Trashi-I entered its fourth day in January 2026 as security forces intensified counter-terrorism operations in the dense forests of Kishtwar, Jammu & Kashmir.

Operation Trashi-I:

- Operation Trashi-I is a multi-day **counter-terrorism and area-domination operation** aimed at tracking, neutralising, and dismantling terrorist groups operating in the forested belts of the Chatroo region in Kishtwar district.
- **Launched by:** The operation is being conducted jointly by the Indian Army, Jammu & Kashmir Police (including SOG), and Central Reserve Police Force (CRPF), based on specific intelligence inputs.

Aim:

- To eliminate terrorists using forest cover as hideouts
- To destroy terrorist logistics and hideouts
- To disrupt infiltration and movement routes linking Jammu region to the Kashmir Valley

Significance:

- Kishtwar lies on a traditional militant transit route from Kathua-Udhampur-Doda towards Kashmir
- Indicates a shift of terrorist focus from Kashmir Valley to forested Jammu regions
- Use of aerial surveillance, sniffer dogs, and human intelligence reflects modern counter-insurgency doctrine

Trump Cites Diego Garcia to Justify Greenland Claim

- President Donald Trump cited Diego Garcia as a cautionary example to justify his renewed efforts to acquire Greenland.

About Chagos Islands and Diego Garcia

- Chagos is a group of 58 islands in the central Indian Ocean, located about 500 km south of the Maldives and 1,600 km southwest of India.



- It forms the southernmost part of the **Chagos-Laccadive Ridge**, a submerged mountain chain.

- Diego Garcia is the largest and southernmost island of the group; it is a V-shaped coral atoll with a deep-water lagoon.

Significance of Diego Garcia

- Military Hub:** It hosts a **major joint US-UK military base** that serves as a critical hub for operations across the Middle East, Africa, and South Asia.
- Maritime Surveillance:** It supports monitoring of key chokepoints, such as the **Strait of Malacca** and the **Bab el-Mandeb**, and helps counter China's influence in the Indian Ocean Region (IOR).

Historical and Legal Context

- BIOT Formation:** In 1965, three years before Mauritius's independence, the UK detached the Chagos Islands from Mauritius, creating the British Indian Ocean Territory (BIOT).
- Military Base:** In 1966, the **UK leased Diego Garcia to the United States** for a long-term military base.
- Forced Displacement:** The UK forcibly expelled the entire indigenous population (Chagossians) to Mauritius and Seychelles to clear the islands.
- Mauritius's Claim:** Mauritius has claimed sovereignty over the island since independence, arguing that the detachment violated UN decolonisation principles.
- ICJ Opinion:** In 2019, the International Court of Justice ruled that Mauritius' decolonisation was incomplete and the UK's administration illegal.
- UN Resolution 2019:** The UN General Assembly demanded the UK's withdrawal from the Chagos Islands within six months.
- 2025 Agreement:** The UK agreed to transfer sovereignty of the Chagos Islands to Mauritius; it retained control over Diego Garcia under a 99-year lease, paying an annual fee.
- India's Stand:** India has consistently supported Mauritius' claim as a necessary step toward decolonisation in the Global South.

Key Reasons for the UK Ceding Sovereignty

- International Pressure:** The 2019 ICJ opinion and UNGA resolution held the UK administration illegal and a violation of the right to self-determination.
- Military Base Security:** Sovereignty transfer with a 99-year lease for Diego Garcia legally insulated the joint UK-US base from future litigation.
- Diplomatic Reset:** The move supports the UK's post-Brexit "Global Britain" identity by shedding

its colonial image and improving ties with the Global South.

- **Financial Gain:** Paying an annual fee is cheaper and less risky than maintaining an internationally contested colonial possession.

Trump's Arguments and Comparison Rationale

- **Strategic Justification:** Trump argued that acquiring strategic territories is necessary to reduce reliance on alliances like the UK for defence.
- **Rival Signalling:** He claimed that China and Russia would interpret the deal as 'Western weakness', extending the logic to Arctic geopolitics.
- **Sovereignty Logic:** He dismissed long-term leases as insecure, arguing that only full US sovereignty over Greenland ensures permanent security.
- **Alliance Pressure:** The comparison sought to pressure Denmark and other NATO allies to align with US security priorities.

Nagpur Ammunition Facility

- Defence Minister inaugurated a Medium Calibre Ammunition Manufacturing Facility at Solar Defence & Aerospace Limited (SDAL), Nagpur, Maharashtra.
- The Defence Minister also flagged off the first export tranche of **Guided Pinaka** rockets to Armenia.
- The facility is a fully automated plant designed to manufacture 30mm ammunition for the Indian Army and the Indian Navy's weapon systems.
- **Significance:** It strengthens private-sector participation and advances India's indigenous defence manufacturing, supporting Atmanirbhar Bharat.

India's Indigenous Defence Manufacturing

- India achieved its highest defence production value of **₹1.54 lakh crore in FY 2024-25**, a rise of about 18% from the previous financial year.
- The private sector now contributes around 23% of total domestic defence production.
- **Key Targets:** India aims to raise annual defence production to ₹3 lakh crore by 2029 and boost private-sector participation to over 50% in the near future.

Military Quantum Mission Policy Framework

- The Chief of Defence Staff (CDS) General **Anil Chauhan** has released the **Military Quantum Mission Policy Framework** to integrate quantum technologies into the Indian Armed Forces.

Military Quantum Mission Policy Framework:

- The Military Quantum Mission Policy Framework is a strategic vision and roadmap document that lays down how quantum technologies will be systematically adopted and operationalised across the Army, Navy and Air Force to achieve future battlefield superiority.

Aim:

- To integrate quantum capabilities across tri-services through jointness and interoperability.
- To align defence requirements with the National Quantum Mission using a civil-military fusion approach.

Key features

- Four pillars of quantum integration:** Focuses on quantum communication, quantum computing, quantum sensing & metrology, and quantum materials & devices.
- Tri-services jointness:** Emphasises unified adoption across Army, Navy and Air Force rather than siloed development.
- Civil-military fusion model:** Leverages academia, startups, industry and multiple government sectors through dedicated governing bodies.
- Policy + implementation roadmap:** Provides phased milestones, institutional mechanisms and governance structures for execution.
- Future battlefield orientation:** Addresses secure communications, superior sensing, faster decision-making, and resilience against cyber-electronic threats.

Operation Megaburu

- Operation Megaburu, a major anti-Maoist offensive in Jharkhand's West Singhbhum district, led to the killing of 16 Maoists, including top CPI (Maoist) leader Anal alias Patiram Manjhi.

Operation Megaburu:

- Operation Megaburu is a large-scale counter-insurgency operation against the CPI (Maoist), conducted in the **Saranda forest region**, one of the last major Maoist strongholds in Jharkhand.
- Launched in: January 2026**

- **Location:** Kumdi area, Kiriburu police station, West Singhbhum district, Jharkhand
- **Forces involved:** Central Reserve Police Force (elite CoBRA units) and Jharkhand Police

Aim:

- Neutralise top Maoist leadership and dismantle command structures.
- Clear remaining Maoist pockets in Singhbhum region.
- Advance the Government of India's goal to end Naxalism by March 2026.

Key features:

- **Intelligence-driven operation:** Launched on specific inputs about the presence of senior Maoist leaders, including Central Committee members.
- **Elite force deployment:** Around 1,500 CoBRA commandos deployed for deep-jungle combat in difficult terrain.
- **Simultaneous leadership decapitation:** Elimination of several area, sub-zonal and regional committee members, including women cadres.
- **Largest recovery in Jharkhand:** Highest number of Maoist bodies recovered in a single encounter in the state.

Significance:

- Almost all Central Committee members in Jharkhand neutralised; only a small residual presence remains.
- Confirms that Maoists are now confined to limited forest pockets rather than widespread zones.
- Enhances civilian confidence and enables developmental activities in long-affected tribal areas.

Long-Range Anti-Ship Hypersonic Glide Missile (LRAShM)

- India will publicly debut its Long-Range Anti-Ship Hypersonic Glide Missile (LR-AShM) at the 77th Republic Day parade, marking India's entry into **the exclusive hypersonic anti-ship weapons club.**

Long-Range Anti-Ship Hypersonic Glide Missile (LRAShM):

- LR-AShM is an **indigenous hypersonic glide missile** designed to engage high-value naval targets, including aircraft carrier battle groups, at very long ranges with extreme speed and evasive

manoeuvres.

- **Developed by:** Defence Research and Development Organisation (DRDO) for the Indian Navy, primarily to meet coastal battery and maritime strike requirements.

Aim:

- Enhance maritime deterrence in the Indian Ocean Region (IOR).
- Neutralise enemy surface combatants at standoff distances, beyond the reach of conventional cruise missiles.
- Strengthen A2/AD (Anti-Access/Area Denial) capabilities through shore-based, mobile launchers.

Key features:

- **Hypersonic speed:** Operates in the hypersonic regime (up to ~Mach 10, average hypersonic glide around Mach 5+), drastically compressing enemy reaction time.
- **Long range:** ~1,500 km operational range (future variants reportedly aiming higher).
- **Boost-glide architecture:** Two-stage solid propulsion boosts the vehicle; post-burnout unpowered hypersonic glide with multiple manoeuvres.
- **Advanced guidance:** Inertial navigation + satellite aid + active radar seekers, enabling accurate engagement of moving targets and resilience against electronic countermeasures.
- **Low-altitude, manoeuvrable flight:** High speed and evasive trajectory reduce radar detection and interception probability.
- **Deployment flexibility:** Land-based mobile launchers initially; ship-borne and air-launched variants envisaged.

Significance:

- Places India alongside the US, Russia and China in hypersonic glide missile capability.
- Credibly threatens carrier strike groups and strengthens India's posture across the Arabian Sea and Bay of Bengal.

U.S. Formally Withdraws From the World Health Organization

- The United States is set to formally withdraw from the World Health Organization (WHO) after serving a one-year notice, despite warnings about adverse impacts on U.S. and global health governance.

What is the WHO?

- The World Health Organization is the specialised health agency of the United Nations responsible

for coordinating international public health, responding to health emergencies, and setting global health standards to ensure the highest attainable level of health for all.

Establishment and Headquarters:

- **Established:** 7 April 1948 (World Health Day)
- **Headquarters:** Geneva, Switzerland
- **Membership:** 194 Member States

Historical background:

- Emerged from earlier international sanitary efforts such as the International Sanitary Conferences (1851–1938).
- Incorporated the League of Nations Health Organization after World War II.
- Played a decisive role in landmark achievements like eradication of smallpox, near-eradication of polio, and coordination during Ebola and COVID-19 outbreaks.

Core functions of WHO

- **Global health leadership:** Coordinates international responses to pandemics, epidemics, and health emergencies.
- **Standard setting:** Develops global norms such as the International Classification of Diseases (ICD) and health regulations.
- **Universal Health Coverage (UHC):** Promotes equitable access to essential health services.
- **Technical assistance:** Supports countries with policy advice, data, and capacity building.
- **Data and surveillance:** Collects and disseminates global health statistics and early-warning alerts.

Process of withdrawal from WHO:

- Under U.S. domestic law, withdrawal requires:
- One-year advance notice, and
- Full payment of outstanding financial obligations.
- The current withdrawal has raised legal concerns as membership dues reportedly remain unpaid, and final modalities are under discussion within WHO's Executive Board.

Significance of the U.S. withdrawal:

- **For WHO:** Loss of ~18% of total funding, leading to staff reductions and scaled-back programmes.
- **For global health:** Weakens pandemic preparedness, disease surveillance, and coordinated emergency response.

- **For the U.S.:** Reduced access to real-time global health data, early warnings, and multilateral influence in setting health norms.

India's Dilemma on Joining the Board of Peace

- India was absent from the Board of Peace's ceremonial launch despite having received a formal invitation from President Donald Trump.

Significance of Board of Peace for India

- **Strategic Partnership:** Active participation strengthens the India-US Comprehensive Global Strategic Partnership and reduces the risk of future diplomatic friction.
- **Narrative Balance:** Having a presence on the board helps counter Pakistan's influence and curtail the spread of anti-India narratives in West Asian security discussions.
- **Economic Access:** Membership enables Indian infrastructure and pharmaceutical firms to bid for high-value post-war reconstruction contracts in Gaza.
- **Multilateral Bypass:** The board offers a pragmatic route to bypass the current deadlock and paralysis within the UNSC.

Board of Peace

- The Board of Peace is a US-led intergovernmental initiative launched by President Donald Trump during the World Economic Forum in Davos, Switzerland.
- **Primary Mandate:** The Board aims to oversee post-war reconstruction and governance of the Gaza Strip through a technocratic administrative framework.
- **Long-Term Vision:** Its charter proposes an expanded role in resolving global conflicts where traditional institutions have failed.
- **Governance Structure:** The organisation appoints Donald Trump as inaugural chairman with an indefinite tenure, with sole control over agendas and successor appointments.
- **Membership Model:** Standard membership lasts three years, while permanent membership requires a mandatory one-time contribution of one billion dollars.
- **Decision Authority:** The primary council is limited to Heads of State, ensuring high political authority and faster decision-making.
- **Notable Members:** Pakistan, Israel, Saudi Arabia, Turkey, Qatar, UAE, Egypt, Argentina, Hungary, Vietnam, Uzbekistan, Belarus, Kazakhstan, Mongolia, Morocco, Azerbaijan.

Challenges with Board of Peace for India

- **UN Primacy:** Participation in a parallel mechanism risks undermining the authority and centrality of the United Nations system.
- **Policy Autonomy:** Alignment with a US-led grouping may constrain India's tradition of independent foreign policy decision-making.
- **Governance Norms:** Provision for a permanent chairman for life contradicts India's support for democratic, rules-based global institutions.
- **Fiscal Burden:** A mandatory one-billion-dollar contribution could divert scarce resources from domestic development priorities.

Way Forward

- **Calculated Ambiguity:** India should initially seek observer status to assess the Board's functioning without committing to full membership.
- **Selective Engagement:** New Delhi can support specific humanitarian and Gaza reconstruction projects without endorsing contentious governance provisions.
- **UN Reform Push:** India must leverage this development to renew its advocacy for urgent United Nations Security Council reforms.
- **Interest Primacy:** Final decisions must prioritise India's energy security and diaspora welfare over external alignment pressures.

India's First Privately Manufactured C-295 Aircraft

- India's first indigenous and privately manufactured C-295 aircraft will soon roll out of the Vadodara manufacturing facility.
- It is being built by Tata Advanced Systems Limited (TASL) in partnership with Airbus Defence and Space.
- This marks a shift from public-sector dominance to private-sector participation in defence manufacturing, advancing the Make in India defence initiative.
- Vadodara facility, opened in 2024, is India's first private sector final assembly line (FAL) for military aircraft.

Airbus C-295

- The Airbus C-295 is a medium-range, twin-engine turboprop military transport aircraft.
- The aircraft will replace the Avro-748 fleet of Hindustan Aeronautics Limited (HAL).
- Payload Capacity:** It can carry up to 10 tonnes of cargo at a cruising speed of 480 km/h.
- Range & Endurance:** The aircraft offers a ferry range of 5,000–5,630 km with 11–13 hours endurance.
- Operational Flexibility:** It features Short Take-off and Landing (STOL) capabilities, enabling operations from short, unpaved, and semi-prepared airstrips.
- Multirole Design:** It supports troop transport, medical evacuation (MEDEVAC), maritime patrol, signals intelligence (SIGINT), and disaster response.
- Unique Feature:** Indian-built units will integrate an indigenous Electronic Warfare (EW) Suite developed by Bharat Electronics Ltd (BEL) and Bharat Dynamics Ltd (BDL).

Joining Pax Silica & Critical Minerals Strategy of India

- India joined Pax Silica (US-led capability club) and also participated in **G7 critical minerals talks** to counter China's dominance
- But India's external diplomacy is ahead of its domestic readiness: exploration is low, timelines are long, and mining policy credibility is weak.

About Pax Silica Initiative

- It is a US-led strategic initiative to secure the **end-to-end silicon and AI supply chain**, from critical minerals and energy inputs to semiconductors and logistics.
- The goal is to reduce coercive dependencies, safeguard AI-critical materials and capabilities, and enable trusted partners to develop and deploy advanced technologies at scale.

Key Issues in India's Critical Minerals Plan

Exploration & Project Pipeline

- Low Exploration Base:** Less than 20% of India's geological potential has been explored; capacity remains dominated by public agencies like the Geological Survey of India (GSI).
- Weak EL Incentives:** Exploration Licence (EL) lacks preferential right to mine and offers only 50% cost reimbursement capped at ₹20 crore vs ~₹150 crore exploration cost, deterring serious explorers.
- Long Project Timelines:** Global average mining project cycle from discovery to production is 16+ years (IEA); India often takes longer due to approvals and litigation.

Mining Allocation & Market Design

- **Auction Model Weakness:** Post-2015 auction-only concessions create high upfront capital risk and don't attract serious merchant miners or junior explorers.
- **Bid Distortion:** Overbidding (sometimes exceeding reserve valuation) skews blocks toward captive miners, who can offset losses via downstream industry, hurting open-market competition.
- **Cancelled Pipeline Shock:** Around 66,000 pending applications from the pre-2015 First-Come, First-Served regime were auto-cancelled, deepening investor uncertainty.

Taxation & Federal Uncertainty

- **High Effective Tax Burden:** Despite rationalised critical mineral royalties (2-4%), overall statutory burden makes effective tax rate ~60-65% for mining firms.
- **Federal Tax Risk:** Supreme Court (2024) upheld states' power to levy additional taxes (royalty not a tax), raising cost unpredictability and discouraging mine operationalisation.

What has India Improved Recently?

- **Policy Push:** MMDR Amendment Bill, 2025 prioritised critical minerals and aimed to streamline concessions, signalling urgency for energy transition supply chains.
- **Private Entry:** Six minerals removed from the "atomic minerals" list, allowing private participation.
- **Market Flexibility:** Captive mines can now sell in the open market without caps, improving commercial viability and reducing downstream distortions.
- **Overseas Asset Focus:** National Mineral Exploration Trust (NMET) has been repositioned to fund international mineral projects, strengthening India's resource diplomacy and supply security.

Way Forward

- **Exploration Mission:** Launch time-bound exploration drive for critical minerals using private tech, satellite & geophysics via GSI + private Joint Venture model.
- **Shared Risk Model:** Fund projects on a pari passu (equal sharing) basis, so both Centre and private miners share costs and risks from the start.
- **Auction Redesign:** Shift two-stage iterative bidding into a single sealed-bid to curb overbidding.
- **EL Incentive Upgrade:** Provide preferential rights or tax rebates for junior explorers to offset losses; E.g., Australia/Canada-style exploration incentive frameworks.

India-UK Education Partnership

- The UK announced a new International Education Strategy to raise education exports, with India among the five focus countries.
- Education cooperation is a key pillar under **India-UK Vision 2035**.

Why India is a Focus Country?

- **Scale Demand:** India aims to rapidly expand its ~40 million student base and needs ~30 million new student places, creating huge partnership space for foreign providers.
- **Campus Expansion:** 9 UK universities are set to open campuses in India, signalling a shift towards transnational education delivery and capacity support.
- **Student Mobility:** Estimates based on UK student visas suggest ~1,70,000 Indian students are currently in the UK, making India a top source market

Significance of Partnership for India

- **Capacity Creation:** India's higher education network has ~1,100+ universities and 45,000+ colleges, yet seat demand is rising, so foreign campuses can ease access pressure.
- **Quality Upgrade:** India's Gross Enrolment Ratio (GER) is ~28% (2021-22), so global institutions can support faster expansion with stronger quality benchmarks.
- **Skill Readiness:** India has one of the world's youngest populations, with ~65% below 35 years, so global curricula can improve job-readiness at scale.
- **Research Boost:** India spends only ~0.65% of GDP on R&D, so university partnerships can improve research capacity, labs and innovation output.

Significance of Partnership for the UK

- **Export Growth:** UK targets education exports of £40 billion/year by 2030, signalling education as a national economic driver like IT and services.
- **Economic Value:** Education exports already generate ~£32 billion/year, making it more valuable than several traditional UK export sectors.
- **Revenue Stability:** In 2021-22, international education supported ~758,000 jobs in the UK, so overseas expansion protects employment and income flows.
- **Global Brand:** The UK hosts 4 of the world's top 10 universities in many major rankings, so offshore campuses extend strong reputation-based demand.

India-UK Areas of Cooperation

- **Geopolitical:** UK supports India's UNSC permanent membership and collaborates in forums like the **AUKUS** alliance, G20, Commonwealth, and Indo-Pacific initiatives.
- **Economic:**
- **Record Trade:** Bilateral trade reached a significant milestone of **USD 21.34 billion** in 2023-24.
- **Major Trading Partner:** India is the UK's 11th largest trading partner.
- **Defence:** The Defence and International Security Partnership (DISP) 2015 enhances cooperation, with ~70 UK firms supplying critical components for Indian aircraft.
- **Health:** Partnerships like the AstraZeneca-SII vaccine collaboration address healthcare challenges.
- **Climate:** The India-UK Green Growth Equity Fund and **OSOWOG** initiative target renewable energy and sustainable development.
- **Diaspora:** The ~1.9 million Indian diaspora in the UK significantly contributes to British society.

First National Coordinators Meeting in Beijing & SCO

- The first meeting of the **SCO Council of National Coordinators (CNC) for 2026** opened in Beijing, under the chairmanship of the **Kyrgyz Republic**, to finalize the agenda for high-level summits later this year.

What it is?

- The Council of National Coordinators (CNC) is the primary coordination and management mechanism of the SCO. It serves as the vital link between the standing bodies of the organization and the member states.

Core functions

- **Coordination:** To synchronize the multilateral cooperation of member states in accordance with the SCO Charter.
- **Preparation:** To conduct all necessary groundwork for the meetings of the Council of Heads of State (CHS) and Council of Heads of Government (CHG).
- **Implementation:** To oversee the execution of decisions and agreements reached during previous summits.

Shanghai Cooperation Organization (SCO):

- The Shanghai Cooperation Organization (SCO) is a permanent intergovernmental international organization that has evolved into the world's largest regional body in terms of geographic scope

and population.

- It represents **approximately 42% of the world population** and over **23% of global nominal GDP**.
- **Headquarters (Secretariat): Beijing, China.**
- **Established In: June 15, 2001.**
- **Predecessor: The Shanghai Five (established in 1996).**
- **Official Languages: Russian and Chinese.**

The 10 Member States:

1. Republic of Belarus (Joined 2024)
2. Republic of India (Joined 2017)
3. Islamic Republic of Iran (Joined 2023)
4. Republic of Kazakhstan
5. People's Republic of China
6. Kyrgyz Republic
7. Islamic Republic of Pakistan (Joined 2017)
8. Russian Federation
9. Republic of Tajikistan
10. Republic of Uzbekistan

Permanent Bodies

- **SCO Secretariat (Beijing):** The main executive body implementing organizational decisions.
- **RATS (Tashkent):** The Regional Anti-Terrorist Structure, focusing on the "Three Evils"— Terrorism, Separatism, and Extremism.

The "Shanghai Spirit":

- The core philosophy of the SCO, known as the Shanghai Spirit, is defined by:
- Mutual trust and mutual benefit.
- Equality and consultation.
- Respect for the diversity of civilizations.
- Pursuit of common development.

Rojava Region

- Renewed fighting between Syrian government forces and the Kurdish-led SDF has endangered Rojava's autonomy after the collapse of Bashar al-Assad's regime in 2024.
- Despite a 14-point ceasefire and integration agreement, sharp disputes over autonomy, force deployment, and the roles of Türkiye and the U.S. continue.

About Rojava Region:

- Rojava, officially called the Democratic Autonomous Administration of North and East Syria (**DAANES**), is a de facto autonomous region in northeastern Syria.
- It follows the ideology of democratic confederalism, emphasizing local self-rule, gender equality, and ethnic pluralism, though it lacks international recognition.

Located in:

- Rojava lies in northeastern Syria, covering parts of Hasakah, Raqqa, Deir ez-Zor, Aleppo (Kobane)
- It is strategically located along the Euphrates basin and key oil- and gas-rich areas of eastern Syria.
- Neighbouring countries / regions



- Türkiye to the north

- Iraq (Kurdistan Region) to the east
- Syrian government-controlled areas to the west and south
- This location makes Rojava a geopolitical crossroads involving regional and global powers.

History

- 2012: Syrian state forces withdrew from Kurdish areas during the civil war, allowing Kurds to establish self-administration.
- 2014–2015: Kurdish militias, especially the People's Protection Units (YPG), gained global prominence after defeating ISIS at Kobane with U.S. air support.
- 2015: Formation of the **Syrian Democratic Forces (SDF)**, a multi-ethnic alliance led by Kurds.
- 2016–2023: Region evolved through multiple constitutional forms, culminating in DAANES.
- 2024–26: After Assad's fall, Syrian interim leader Ahmed al-Sharaa moved to re-centralise power, leading to clashes and loss of nearly 80% of DAANES-held territory.

Core issues

- **Autonomy vs centralisation:** Damascus wants a unified, centralised Syrian state; Kurds seek to retain self-rule built over a decade.
- **Security control:** The government demands individual integration of SDF fighters, while Kurds resist deployment of state troops in core Kurdish cities like Kobane and Qamishli.
- **External actors:**
 - Türkiye opposes Kurdish autonomy, viewing the YPG as linked to the PKK.
 - United States earlier backed the SDF against ISIS but is now warming to Damascus to counter Iran and Russia.
- **ISIS risk:** Fighting has enabled jailbreaks and instability, reviving jihadist threats.

India and EU Commit to Collaborate on Peaceful Nuclear Applications

- At the 16th India-EU Summit, India and the European Union reaffirmed their cooperation on peaceful nuclear energy applications.
- **Agreement Scope:** The collaboration is based on the **2020 India-Euratom Agreement**, covering peaceful, non-explosive nuclear energy uses.
- **Fusion Research:** Both parties are committed to better coordination in the ITER project to

accelerate fusion energy development as a clean power source.

- **Non-Power Use:** The partnership prioritises non-power nuclear uses, notably radiopharmaceuticals for cancer treatment and radioactive waste management.
- **Strategic Diversification:** This cooperation expands India's energy diplomacy by diversifying access to advanced nuclear safety technologies beyond Russia and the USA.

International Thermonuclear Experimental Reactor (ITER)

- **Project Overview:** ITER is the world's largest experimental nuclear fusion project, currently under construction in Saint-Paul-lès-Durance, France.
- **Global Partnership:** It comprises seven members, including the European Union, India, China, Japan, South Korea, Russia, and the United States.
- **Core Objective:** ITER aims to demonstrate the scientific and technological feasibility of nuclear fusion as a clean, carbon-free energy source.
- **Energy Target:** It plans to generate 500 MW of fusion power from a 50 MW input, achieving an energy gain of $Q=10$.
- **Key Component:** India has built the world's largest cryostat for ITER to maintain the ultra-low temperatures required for fusion.

V-BAT Autonomous Drones

- The Indian Army officially selected the US-based firm Shield AI to supply its cutting-edge V-BAT autonomous drones.
- This emergency procurement deal marks a milestone as India integrates the Hivemind AI software, allowing for sovereign development of autonomous military capabilities.

About V-BAT Autonomous Drones:

- The V-BAT is a Group 3 **Vertical Take-Off and Landing (VTOL)** Unmanned Aircraft System (UAS).
- Unlike traditional drones that require runways, the V-BAT uses a unique ducted-fan design to take off and land vertically like a rocket, then transition to horizontal flight for surveillance.
- **Developed By:**
- Original Equipment Manufacturer (OEM): Shield AI (US-based Deep-Tech firm).
- **Indian Partner:** JSW Defence, which is establishing a \$90 million manufacturing hub in Hyderabad to make India a global production base for the V-BAT.

Aim & Objectives:

- To provide persistent Intelligence, Surveillance, and Reconnaissance (ISR) in high-threat zones where GPS or communication might be jammed.
- To eliminate the need for runways, catapults, or recovery nets, making it deployable from ship decks, rooftops, and remote forward posts.
- Through the Hivemind SDK, the aim is to allow Indian engineers to build mission-specific AI behaviors tailored to India's unique borders.

Key Features:

- **Vertical Take-Off & Landing (VTOL):**
- The V-BAT's single-engine, enclosed-rotor design allows it to operate in austere environments. It can launch from a 12×12 foot clearing, making it ideal for the narrow ridges of the Himalayas or crowded Indian Navy ship decks.
- **Hivemind Autonomy Software**
The brain of the drone, Hivemind, enables the V-BAT to:
 - **Sense & Act:** Navigate without GPS or human input.
 - **Threat Avoidance:** Dynamically change paths when targeted by electronic warfare.
 - **Team Operations:** Allows multiple drones to collaborate autonomously on a single mission.
 - **Operational Specs**
 - **Endurance:** Over 12 hours of continuous flight.
 - **Engine:** Heavy-fuel engine (logistically compatible with standard military fuel).
 - **Payload:** High-definition ISR sensors and targeting systems.

Significance for Indian Defence:

- The V-BAT is uniquely suited for India's varied terrain—from the high-altitude LAC/LOC to the vast Indian Ocean Region (IOR).
- The deal isn't just a purchase; it's a technology transfer. The Hyderabad facility ensures that V-BATs are Made in India for the world.

Discombobulator Weapon System

- U.S. President Donald Trump mentioned a classified weapon, the "Discombobulator," allegedly used in Caracas during Operation Absolute Resolve to capture Nicolás Maduro.

- Weapon Type: It is described as a **directed-energy weapon (DEW)** that disables targets using electromagnetic interference.
- Electronic Action: The system reportedly uses **high-power microwave (HPM)** pulses to create voltage surges that disrupt radar systems and missile circuits.
- Human Effect: It is said to exploit the **Frey Effect** to induce phantom sounds and severe vertigo in exposed personnel.
- Expert View: Defence experts believe “Discombobulator” likely refers to a combination of existing electronic warfare and acoustic technologies, rather than a single new weapon.
- Frey Effect is the human perception of sound resulting from minute thermal expansion in brain tissue induced by pulsed microwave energy.

UAE central bank approves first USD-backed stable coin

- The Central Bank of the United Arab Emirates has approved the first **USD-backed stable coin (USDU)** under its **Payment Token Services Regulation**, marking a major step in regulating digital assets.

What is the USD-backed stablecoin (USDU)?

- A USD-backed stablecoin is a cryptocurrency pegged 1:1 to the US dollar, designed to maintain price stability while operating on blockchain networks.
- The newly approved USDU stablecoin is issued by Universal Digital, a crypto firm regulated by the **Abu Dhabi Global Market (ADGM)**, making it the first foreign payment token issuer registered with the UAE central bank.

Key features of the USDU stablecoin

- **Full USD backing:** Each token is backed by US dollar reserves, ensuring price stability.
- **Regulated framework:** Approved under the UAE's Payment Token Services Regulation.
- **Blockchain-based settlement:** Enables faster, cheaper, and transparent digital payments.
- **Cross-border utility:** Suitable for international transfers, trade settlement, and remittances.
- **Financial innovation:** Bridges traditional finance with digital asset infrastructure.

About the United Arab Emirates (UAE):

- The United Arab Emirates is a federal union of seven emirates located along the eastern coast of

the Arabian Peninsula.

- It is one of the Middle East's most influential economies, known for oil wealth, global finance, logistics, and technological innovation.
- **Capital:** Abu Dhabi – political centre and hub of the oil industry.
- **Neighbouring countries:**
 - Saudi Arabia – west and south
 - Oman – east and northeast
 - Maritime proximity to Iran across the Strait of Hormuz

Key geographical and geological features:

- Predominantly arid desert landscape with extensive sand dunes.
- **Hajar Mountains** in the northeast (shared with Oman), rising to ~2,000 m.

Long coastlines along:

- Persian Gulf (west)
- Gulf of Oman (east – Fujairah is the only emirate here)
- Strategic location near the Strait of Hormuz, a critical global oil transit chokepoint.
- Absence of perennial rivers; drainage through seasonal wadis.

Strategic importance of the UAE:

- Controls vital maritime routes connecting the Indian Ocean and Persian Gulf.
- Major player in global energy markets, logistics, aviation, and finance.
- Rapidly diversifying into digital economy, fintech, AI, and blockchain governance.

New START nuclear treaty

- The New START nuclear treaty, the last remaining arms control agreement between the United States and Russia, is set to expire **on 5 February 2026**, with no successor treaty in place.

What is the New START nuclear treaty?

- The New Strategic Arms Reduction Treaty (New START) is a **bilateral nuclear arms control agreement** between the United States and Russia that places legally binding limits on strategic nuclear weapons.
- It governs weapons designed to strike an adversary's core political, military, and industrial centres

in the event of a nuclear war.

Background:

- **Signed: April 2010**
- Entered into force: February 2011
- **Signed by:** US President Barack Obama and Russian President Dmitry Medvedev
- **Duration:** 10 years, with a single five-year extension, exercised in 2021
- In February 2023, Russia suspended participation in New START following the Ukraine conflict, halting inspections and data exchanges, though both sides continued to observe core numerical limits.

Aim of the New START treaty:

- **The treaty was designed to:**
- Prevent a strategic nuclear arms race
- Enhance predictability and transparency between the two largest nuclear powers
- Reduce the risk of miscalculation or accidental escalation
- Contribute to global strategic stability and nuclear risk reduction

Key features of the New START treaty:

- **Warhead limits:** Caps each side at 1,550 deployed strategic nuclear warheads.
- **Delivery system limits:**
- Maximum 700 deployed intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and heavy bombers
- 800 total launchers, deployed and non-deployed combined
- **Verification and transparency:**
- On-site inspections
- Regular data exchanges
- Notifications on movements and deployments
- **Predictability mechanism:** Creates shared expectations that shape nuclear force planning even during political hostility.

Why does the expiry of New START matter?

- **End of nuclear limits:** Its expiry would remove the last formal constraint on US–Russia strategic nuclear forces.

- **Risk of a new arms race:**
- Without limits, both sides could:
- Upload additional warheads onto existing missiles
- Expand delivery systems based on worst-case assumptions

Pechora Missile System

- Bengaluru-based Alpha Design Technologies Ltd has completed a full upgrade of the Pechora missile system for the Indian Air Force.
- **Modernisation:** The upgrade replaced obsolete valve-based electronics with digital chips, digitised the tracking radar, and refurbished legacy mechanical systems.

About Pechora Missile System

- Pechora is a **Soviet-origin, medium-range, solid-fuel, two-stage surface-to-air missile system**.
- **Induction:** Inducted into the Indian Air Force in the 1970s, it has now been upgraded for **Mission Sudarshan Chakra integration**.
- **Low-Level Role:** Unlike many medium-range systems, it specialises in intercepting low-flying threats, including aircraft and cruise missiles.
- **Engagement Envelope:** It can engage targets from as low as 20 metres up to 25 kilometres, with an operational range of 35 kilometres.
- **Speed Profile:** The missile is supersonic and can reach speeds between Mach 3 and Mach 3.5.
- **Radar System:** The system follows a two-step radar process.
- **Surveillance Stage:** Surveillance radars first detect incoming threats up to 100 kilometres.
- **Fire-Control Stage:** The SNR-125 radar then locks onto the target and guides the missile.

3 Years of India-Australia Economic Cooperation & Trade Agreement (ECTA)

- The India-Australia Economic Cooperation and Trade **Agreement (INDAUS ECTA)** is a landmark trade pact signed in 2022, aimed at doubling bilateral trade within five years.
- It is India's first agreement with a developed country in over a decade.

Key Features of the India-Australia ECTA

- **Trade in Goods:** Australia offers 100% duty-free access for Indian exports (textiles, leather, jewellery).

- **Trade in Services and Professional Mobility:** Extended post-study work visas (2-4 years) for Indian students and quota for "Work and Holiday" visas.
- **Safeguards and Regulatory Cooperation:** Robust Rules of Origin prevent third-party re-routing. Includes fast-track pharmaceutical approvals.
- **Other:** Eliminates double taxation on Indian IT offshore income, etc.

India Australia Economic Relations

- **Trade Status:** In FY25, India was Australia's 8th largest trading partner, and Australia was India's 14th largest trading partner.
- **Total Bilateral Trade:** The bilateral trade between India and Australia in FY25 stood at US\$ 24.1 billion.
- **Key Indian Exports:** petroleum products, engineering goods, Drugs and Pharmaceuticals,etc
- **Key Indian Imports:** Coal, gold, etc.

Significance of India Australia Relationship

Strategic and Geopolitical Significance:

- **Indo-Pacific Convergence:** E.g., Australia-India Indo-Pacific Oceans Initiative Partnership (AIPOIP)
- **The QUAD Pillar:** Australia and India are key members of the Quadrilateral Security Dialogue (QUAD), alongside the US and Japan.
- **Defense Cooperation:** Mutual Logistics Support Agreement (MLSA) and high-level military exercises like Exercise Malabar and AUSINDEX
- **Multilateral Alignment:** E.g., G20, East Asia Summit (EAS), and the Indian Ocean Rim Association (IORA).
- **Supply Chain Resilience:** E.g., Supply Chain Resilience Initiative (SCRI).
- **Critical Minerals Partnership:** Australia is a major source of critical minerals (lithium, cobalt) essential for India's Electric Vehicle (EV) mission and clean energy transition.

UAE-Saudi Rift in Yemen

- The United Arab Emirates announced the withdrawal of its troops from Saudi Arabia following Saudi airstrikes on Mukalla port in Yemen.

- Escalation among anti-Houthi actors complicates prospects for a unified political settlement.

What Happened in Mukalla?

- Port Strike:** Saudi Arabia bombed **Mukalla port (Southern Yemen)** after a shipment arrived from the UAE's Fujairah, alleging it carried weapons for southern separatists.
- Denial:** UAE stated the shipment contained vehicles for its own forces, rejecting claims of arms supply.

Actors and Alignments in Southern Yemen

- Southern Transitional Council (STC):** UAE-backed group seeking southern Yemen's sovereignty since 2017, recently expanding control *in Hadramout and Mahra*.
- Yemeni Military Bloc:** Opposes STC and is aligned with the Hadramout Tribal Alliance, which is supported and backed by Saudi Arabia.



Reasons Behind UAE Withdrawal

- Operational Safety:** The UAE cited concerns over the safety of its personnel amid rising airstrikes.
- Counterterror Focus:** Abu Dhabi reiterated that its Yemen presence is limited to counterterrorism.
- Political Signalling:** Withdrawal reinforces that Yemen's governance must be decided internally.

Yemen

- **Geographical Location:** Yemen lies at the south-western tip of the Arabian Peninsula, bordering Saudi Arabia, Oman, the Red Sea and the Gulf of Aden.
- **Strategic Position:** Controls access near the Bab-el-Mandeb Strait, a vital maritime chokepoint linking the Red Sea with the Indian Ocean.
- **Capital Status:** Sana'a is the constitutional capital, but it remains under Houthi control.
- **Civil War:** Conflict began in 2014 when rebels seized Sana'a, leading to Saudi-led intervention in 2015.
- **Major Ports:** Aden, Hodeidah, Mukalla and Mocha, which are critical to the economy.
- **River System:** Yemen has no perennial rivers; instead, it has seasonal riverbeds called wadis. Important wadis include Wadi Hadramawt and Wadi Zabid, which support agriculture and settlements.
- **Marib Dam:** The Marib Dam, an ancient structure, is crucial for irrigation and water security.

SOCIETY AND SOCIAL JUSTICE

India's Agrarian Suicide Crisis

- A 28-year analysis of NCRB data (1995–2023) shows persistent and regionally concentrated farmer suicides, with a sharp resurgence in 2023 after a decade of decline.

Status of India's Agrarian Suicide

- **Scale And Long-Term Trends**
- **Cumulative Burden:** Between 1995 and 2023, **~3.94 lakh farmers** and agricultural labourers died by suicide, averaging **~13,600 deaths annually**.
- **Crisis Peak:** The worst phase was 2000–2009, with **~1.54 lakh suicides**, and **2002 alone recorded 17,971 deaths**, the highest on record.
- **Recent Spike:** In 2023, farmer suicides rose to 10,786, a **~75% increase over 2022**.
- **Changing Profile:** Of 10,786 suicides, 6,096 were agricultural labourers and 4,690 cultivators.

- Regional Concentration
- **Epicentre States:** Maharashtra reported 4,151 suicides and Karnataka 2,423, the highest in the country.
- **Regional Share:** Southern and western India account for ~72.5% of all farmer suicides since 1995.
- **Other Hotspots:** Andhra Pradesh and Telangana together have seen ~1.7 lakh suicides over 28 years.

- **Role Of Welfare Interventions**
- **MGNREGA Impact:** From around 2010 onwards, suicides declined steadily, coinciding with expanded MGNREGA wage employment.
- **State Turnarounds:** Kerala reduced farmer suicides from 1,118 (2005) to 105 (2014), while West Bengal reported zero cases by 2012.

- **Structural Drivers of Distress**
- **Rainfed Vulnerability:** Agrarian distress is concentrated in rainfed belts; E.g., ~52% of India's net sown area remains rainfed, but accounts for a disproportionate share of farmer suicides.
- **Debt Trap:** Repeated crop failures and price volatility deepened indebtedness; E.g., ~50% of agricultural households are indebted, with average debt exceeding ₹74,000 per household.
- **Trade Exposure:** Post-1990s liberalisation weakened farm income support; E.g., agricultural subsidies as a share of farm income declined while import competition increased after WTO entry in 1995.
- **Input Cost Inflation:** Costs rose faster than output prices; E.g., fertiliser, seed and pesticide costs increased by over 300% since the early 2000s, while real farm incomes stagnated.

Way Forward

- **Income Assurance:** Strengthen predictable farm incomes through price and income support; E.g., expand MSP procurement beyond rice-wheat and pilot price-deficiency payment schemes.
- **Risk Protection:** Fix crop insurance design to reduce distress from climate and price shocks; E.g., reform PM Fasal Bima Yojana with automatic weather-triggered payouts.
- **Rainfed Resilience:** Reduce dependence on single rainfed cash crops; E.g., scale integrated farming systems under NICRA combining millets, pulses and livestock in cotton belts.
- **Labour Security:** Ensure income stability for agricultural labourers; E.g., **Kerala's Ayyankali Urban Employment Guarantee Scheme** provides wage support during lean seasons, reducing

livelihood shocks.

Contaminated Water Crisis in Indore

- Indore is currently facing a public health crisis due to widespread reports of drinking water contamination in the **Bhagirathpura area**.
- **Contamination Source:** Laboratory tests confirmed bacterial contamination caused by sewage seeping into drinking water through a loose pipeline joint.
- **Health Impact:** The waterborne disease outbreak, primarily diarrhoea and vomiting, caused multiple deaths and thousands of reported illnesses.

Water Contamination in India

- **Sewage Treatment:** Only 28% of urban sewage is treated, while 72% is discharged into water bodies.
- **Nitrate Levels:** 56% of districts exceed the safe nitrate limit of 45 mg/L, primarily due to fertiliser runoff.
- **Arsenic Risk:** Arsenic contamination persists across the Ganga-Brahmaputra plains, disproportionately affecting West Bengal, Bihar, and Assam. [CGWB, 2023]
- **Disease Burden:** About 11 million Indians suffer from waterborne diseases each year, resulting in over 10,000 reported deaths between 2017 and 2021. [CBHI, 2022]
- **Child Mortality:** Diarrhoea causes about 1 lakh child deaths annually and ranks as the fourth leading cause of under-five mortality. [WHO, UNICEF]
- **Primary Contaminants:** Arsenic, fluoride, nitrate, uranium, and radon remain the primary chemical contaminants in India.

Key Government Initiatives

- **Jal Jeevan Mission (JJM):** Aims to provide safe drinking water through household tap connections to every rural household.
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0:** Targets universal urban water supply with emphasis on wastewater treatment and reuse.
- **National Water Mission (NWM):** Seeks to improve water-use efficiency by 20% and promote the reuse of treated wastewater for non-drinking purposes.
- **National Aquifer Mapping and Management (NAQUIM) Programme:** Maps aquifers to manage

groundwater scientifically and identify contamination-prone zones.

- **Atal Bhujal Yojana (ATAL JAL):** Targets water-stressed Gram Panchayats in seven states, strengthening real-time monitoring of groundwater levels and quality.

PANKHUDI portal

- Union Minister has launched PANKHUDI, an integrated digital portal to enhance ease of living for women and children by streamlining CSR partnerships and stakeholder collaboration.

PANKHUDI portal:

- A single-window, integrated digital platform that facilitates CSR and voluntary partnerships for women and child development, enabling transparent contributions, proposal tracking, and outcome monitoring across priority social sectors.
- Ministry: **Ministry of Women and Child Development**
- Aim: To strengthen coordination, transparency, and structured participation among government, citizens, NRIs, NGOs, and corporates, thereby improving service delivery and outcomes for women and children nationwide.

Key features

- **Unified CSR interface:** One platform for individuals, NRIs, NGOs, corporates, and government agencies.
- **Priority themes:** Nutrition, health, Early Childhood Care and Education (ECCE), child welfare & protection, and women's safety & empowerment.
- **Flagship mission support:** Digitally strengthens implementation of **Mission Saksham Anganwadi & Poshan 2.0, Mission Vatsalya, and Mission Shakti** through defined workflows.
- **End-to-end transparency:** Online registration, proposal submission, approvals, and real-time tracking; non-cash contributions only to ensure traceability.
- **Scale of impact:** Improves infrastructure and services across 14+ lakh Anganwadi Centres, ~5,000 Child Care Institutions, ~800 One Stop Centres, ~500 Shakhi Niwas, and ~400 Shakti Sadan.

Significance:

- Reduces friction for partnerships with government via a trusted, tech-enabled framework.
- Enhances monitoring, convergence, and measurable impact of social investments.

Narco Coordination Centre

- Union Home Minister chaired the **9th Apex Level NCORD** meeting in New Delhi to review national anti-drug efforts.

About NCORD

- Established:** 2016 (restructured in 2019) under Ministry of Home Affairs.
- Mandate:** Coordinating Central and State drug law enforcement in controlling drug trafficking and abuse in India.
- Structure:** Four-tier framework (Apex, Executive, State, and District Committees)
- Helps enforce the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985
- Initiatives linked to NCORD:** NCORD Portal by Narcotics Control Bureau (NCB) provides information related to drug law enforcement; MANAS 24x7 toll-free helpline (1933); NIDAAN offender database, etc.

Rajasthan Panchayat Organic Pledge

- Bamanwas Kankar panchayat** in Rajasthan has become the first village body in the State to be certified as fully organic, marking a major grassroots milestone in India's shift towards chemical-free and sustainable agriculture.

Rajasthan Panchayat Organic Pledge:

- Bamanwas Kankar panchayat, comprising seven hamlets in **Kotputli-Behrur district**, has formally committed to 100% organic farming and eco-friendly animal husbandry, eliminating chemical fertilisers, pesticides, and synthetic inputs from all agricultural and livestock practices.

Key features

- Chemical-free farming:** All crops grown without synthetic fertilisers or pesticides.
- Eco-friendly livestock management:** Animal husbandry aligned with health and ecological standards.
- Community-led transition:** Shift driven by collective village decisions, not top-down mandates.
- Institutional support:** Backed by COFED (Cofarmin Federation of Organic Societies and Producer Companies) for certification, data collection, and market access.
- Market linkage:** Organic certification enables farmers to access premium markets and reduce

input costs.

Significance

- **Soil and water revival:** Helps reverse soil degradation and declining groundwater levels.
- **Farmer welfare:** Lowers input costs and improves income through better prices.
- **Public health:** Reduces exposure to toxic agrochemicals for farmers and consumers.
- **Biodiversity gains:** Increased beneficial insects and soil microorganisms.

UGC's new rules against caste discrimination

- The University Grants Commission (UGC) has notified the Promotion of Equity in Higher Education Institutions Regulations, 2026 to curb caste-based discrimination on campuses.

UGC's new rules against caste discrimination:

- The *University Grants Commission (Promotion of Equity in Higher Education Institutions) Regulations, 2026* is a revised legal framework to prevent caste-based discrimination in universities and colleges across India. It updates and strengthens the earlier 2012 anti-discrimination regulations.

Key features:

- **Expanded definition of caste-based discrimination:** Discrimination now explicitly includes acts against SCs, STs and OBCs, correcting the exclusion of OBCs in the draft rules.
- **Broad definition of discrimination:** Covers unfair or biased treatment based on caste, tribe, religion, gender, disability, place of birth, and includes actions that harm human dignity or equality in education.
- **Mandatory Equal Opportunity Centres (EOCs):** Every higher education institution must set up an EOC to promote equity, inclusion and access for disadvantaged groups.
- **Equity Committees in each institution:** Headed by the institution's chief, with mandatory representation of SCs, STs, OBCs, women and persons with disabilities, to handle complaints and monitor inclusion.
- **Regular monitoring and reporting:** EOCs must submit bi-annual reports, and equity committees must meet at least twice a year.
- **Strong penalties for violations:** Institutions violating the rules can be debarred from offering

degrees or academic programmes, and may even lose recognition.

- **National-level oversight:** A UGC monitoring committee with professional councils will oversee compliance across the country.

Young Ambassadors of Change Initiative

- A government school in Trichy, Tamil Nadu, has launched an innovative value-education programme to inculcate moral values and social responsibility among children through daily practice rather than rote learning.

About Young Ambassadors of Change Initiative:

- A school-based value education initiative launched at the Government Aadi Dravidar Primary School, Kattur, aimed at nurturing core moral and civic values among children through experiential and community-linked learning.

Key features

- **Values-focused learning:** Emphasises honesty, kindness, respect, responsibility, patience, discipline and gratitude.
- **Storytelling & reflection:** Value-based stories during morning assemblies followed by prayers and reflective discussions.
- **Practice-oriented approach:** Children apply values both at school and at home through simple daily actions.
- **Parental involvement:** Parents are engaged through WhatsApp communication to reinforce values at home.
- **Inclusive participation:** Students rotate in batches every 15 days to ensure equal opportunity.
- **Non-evaluative assessment:** No marks or registers; teachers assess through observation, encouragement and behaviour change.
- **Motivational tools:** Character badges and value-quote walls at school and home.

Significance

- Promotes character building alongside cognitive learning, especially at the foundational stage.
- Strengthens family-school-community linkage in moral education.

Convention against Discrimination in Education

- UNESCO unveiled a report titled **Right to Education: Past, Present and Future** which reflected on the achievements of the **1960 UNESCO Convention against Discrimination in Education**.

About the Convention

- Origin** - It was adopted in 1960 by UNESCO.
- Legality**: It is the First legally binding international instrument which is entirely dedicated to the right to education.
- Rights and Obligations**: It reaffirms education as a fundamental human right and obligates states to ensure:
 - Free and compulsory Primary education
 - Secondary Education accessible and available to all
 - Higher education equally accessible to all on the basis of individual capacity
 - It bans any form of discrimination in education etc.
 - India has not ratified it.

Lambadas Tribe

- A **Special Leave Petition (SLP)** in the Supreme Court challenges the inclusion of Lambadas in Telangana's Scheduled Tribes (ST) list.

About Lambadas

- Other Names: Sugalis / Banjaras**; a major ST community across Telangana and Andhra Pradesh.
- Community Type**: Traditionally a nomadic/trading community with a distinct socio-cultural identity.
- Origin**: Believed to have originated from the Marwar region of Rajasthan.
- Traditional Occupation**: Semi-nomadic community historically engaged in caravan-based transport of goods, which declined under British rule.
- Language Spoken**: Speak "**Gor Boli**" / **Lambadi**, a distinct dialect used within the community.
- Cultural Identity**: Known for distinct dress, rich embroidery & traditional music performed by **Dappans**.

4B Movement

- The 4B movement, a radical feminist current originating in South Korea, has resurfaced in public debate amid renewed discussions on patriarchy, gender violence, and women's autonomy.

4B Movement:

- The 4B movement is a feminist resistance framework where women refuse participation in four core institutions associated with patriarchy:
 - Bihon (No marriage):** Refusing heterosexual marriage.
 - Bichulsan (No childbirth):** Refusing to have children.
 - Biyeonae (No dating):** Refusing to date men.
 - Bisekseu (No sex):** Refusing sexual relationships with men.
- It represents a political and social rejection, not merely a lifestyle choice, of traditional heterosexual norms.

Origin:

- Emerged in South Korea in the late 2010s
- Rooted in long-standing gender inequality, online misogyny, and institutional indifference
- Gained visibility through social media during South Korea's #MeToo movement

Key features:

- Non-negotiation with patriarchy rather than reform from within.
- Rejection of unpaid care work, emotional labour, and reproductive expectations placed on women.
- Emphasis on bodily autonomy, consent, and self-determination.
- Collective resistance instead of individual coping strategies.

Significance:

- Challenges the assumption that marriage and motherhood are essential to womanhood.
- Highlights how structural misogyny, not isolated incidents, shapes women's lives.
- Reframes abstention as a form of political agency.
- Sparks global debates on feminism, demography, social norms, and gender justice.

Maharashtra launches country's first menopause clinics

- Maharashtra has launched the country's first dedicated menopause clinics across government hospitals and urban health facilities to address women's physical and mental health needs.
- About country's first menopause clinics:**
- Dedicated menopause clinics within the public healthcare system that provide integrated medical

and psychological care for women undergoing menopause, recognising it as a natural but health-sensitive life stage.

Aim:

- To provide holistic, dignified, and accessible healthcare to women during menopause.
- To address physical, hormonal, and mental health challenges associated with menopause.
- To mainstream menopause-related care into public health policy.

Key features:

- One-stop care model offering gynaecological consultation, counselling, screening, and medicines.
- Mental health counselling to address stress, anxiety, sleep disorders, and depression.
- Screening services for bone health (osteoporosis), heart health, and hormonal imbalance.
- Free or affordable services through government hospitals and urban health centres.
- Focus on awareness, guidance, and emotional support, not just clinical treatment.

Kheechna Festival Raises Child Rights Concerns in Rajasthan

- Recent reports have highlighted the adverse impacts of Rajasthan's Kheechna festival on underage girls in rural areas.

Kheechna (Bhagoria) Festival

- Kheechna, also known as Bhagoria, is a tribal festival celebrated by the **Bhil** and **Garasia** communities.
- It is primarily celebrated in western Madhya Pradesh and southern Rajasthan.
- The festival is held annually for about seven days in March (Phalguna), leading up to Holi.
- It traditionally symbolises freedom of choice, enabling young men and women (often minors) to choose partners for informal unions.
- Such unions involve no formal marriage rituals, priests, dowry, or written documentation.

Key Issues and Concerns

- **Legal Grey Zone:** Informal unions circumvent the Prohibition of Child Marriage Act, 2006, leaving authorities without legal grounds to intervene.
- **Practice Normalisation:** Mobile phones and social media have transformed Kheechna from an annual event into year-round informal elopements.
- **Loss of Childhood:** Informal unions cause school dropouts and adolescent pregnancies, increasing

long-term economic exclusion and health risks.

- **Constitutional Conflict:** The practice exposes a conflict between preserving cultural rights (Article 29) and education and child protection mandates (Articles 21A & 24).

Social Representation Patterns in Central Government Employment

- DoPT's Annual Report 2024–25 shows significant **Group C safai karmacharis belong to SC, ST and OBC** communities, highlighting continued caste concentration in sanitation roles.

Caste Concentration in Central Government Employment

- **Occupational Segregation:** Over 66% of safai karmacharis come from SC, ST and OBC groups, reflecting the persistence of caste-linked sanitation work.
- **Under-Representation:** In Group A services, SCs hold only 14.20%, STs 6.54% and OBCs 19.14% positions, far below combined reservation entitlements.
- **Data Transparency Gaps:** Absence of EWS representation figures despite 10% quota weakens monitoring of inclusive recruitment outcomes.
- **Slow SC Progress:** SC share declined from 17.49% in 2018–19 to 16.84% in 2024–25, showing stagnation despite the long-standing reservation policy.
- **Uneven Reservation Gains:** OBC representation increased sharply from 21.57% to 26.32%, while SC and ST growth remained marginal over six years.
- **Reporting Delays:** For several years after 2019, DoPT released only partial workforce data covering only 19–20 lakh employees instead of the full 32 lakh employees.

Way Forward

- **Upward Mobility:** Expand structured leadership training, promotions and skill enhancement for reserved category employees; E.g., **Mission Karmayogi** competency-based capacity building.
- **Occupational Diversification:** Enable transition from sanitation roles into technical and administrative posts through targeted skilling; E.g., Skill India Mission and **PM Kaushal Vikas Yojana (PMKVY)**.
- **Data Disclosure:** Mandate annual publication of complete caste-wise and EWS-wise workforce data across all departments; E.g., digitised HR dashboards under e-Office reforms.
- **Reservation Compliance:** Strengthen periodic compliance audits and corrective recruitment drives; E.g., special recruitment campaigns by DoPT for backlog vacancies.

- **Institutional Support:** Provide mentoring, coaching and preparatory assistance for higher service examinations; E.g., SC/ST/OBC coaching schemes under the Ministry of Social Justice and Tribal Affairs.

WaSH Warriors

- The **Ministry of Jal Shakti** honoured WaSH Warriors from across India at a special **Samvad Samaroh** in New Delhi in January 2026, recognising grassroots leadership in water and sanitation.

WaSH Warriors:

- WaSH Warriors are grassroots champions—individuals from rural communities—who lead efforts in Water, Sanitation and Hygiene (WaSH), especially under the Jal Jeevan Mission and allied programmes.

Aim

- To promote safe drinking water, sanitation, and hygiene through community ownership (Jan Bhagidari).
- To ensure inclusive, equitable, and sustainable WaSH outcomes, particularly for women and vulnerable groups.

Functions:

- Mobilising communities for water conservation and safe water practices.
- Supporting implementation and sustainability of Har Ghar Jal tap connections.
- Promoting ODF Plus behaviours and hygiene awareness under Swachh Bharat Mission (Grameen).
- Encouraging local monitoring, maintenance, and long-term functionality of water assets.

Significance:

- Reduces women's **drudgery** and improves health outcomes (lower diarrhoeal disease burden).
- Strengthens last-mile governance and accountability in rural service delivery.
- Demonstrates the success of people-centric development and decentralised implementation.

France Social Media Controls

- France's National Assembly passed a bill banning social media use for minors under 15 and restricting mobile phones in high schools to protect child mental health.

Key Features of the Bill

- **Phased Rollout:** Restrictions on new social media accounts to begin from the 2026 school year, allowing transition for platforms and users.
- **School Phone Ban:** Prohibits mobile phone use in high schools, extending earlier restrictions imposed in middle schools since 2018.
- **Account Deactivation Rule:** Social media companies must disable existing accounts that violate age limits by 31 December after enforcement begins.
- **Mental Health Focus:** Targets harms linked to excessive screen exposure, such as emotional stress and declining adolescent well-being.
- **Algorithm Safeguard:** Shield minors from behavioural manipulation driven by platform algorithms.
- **Foreign Influence Check:** Aims to limit external digital influence shaping youth opinions.
- **Platform Exemptions:** Excludes online encyclopedias and educational websites from the ban.

About Social Media Usage in India

- India regulates social media through the **IT Act, 2000**, **IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021**, and the **Digital Personal Data Protection Act, 2023**.
- India hosts 820+ million internet users and 500+ million social-media users, making online safety a national-scale governance challenge.
- India recorded a 65% surge in cybercrimes between 2019 and 2023; child-related cyber offences rose over 400%, per NCRB, highlighting the urgent need for stronger controls.
- India reports the world's highest WhatsApp misinformation spread, contributing to mob violence and public disorder events documented by law enforcement agencies.
- Under the DPDP Act 2023, minors (<18) require verifiable parental consent, and platforms cannot track, profile or target-advertise to children, ensuring a privacy-first architecture.

Social Sector Paradox

- The Economic Survey 2025–26 has highlighted a social sector paradox, noting that while India has made significant gains in health outcomes, progress in education quality and urbanisation has remained uneven and stagnant.

What is the social sector paradox?

- The social sector paradox refers to a situation where headline social indicators improve, but

foundational capacities lag behind. In India's case, the Survey shows that:

- Health indicators (**life expectancy, maternal and child mortality**) have steadily improved, while education outcomes and urban capacity have not kept pace with enrolment, population growth, and economic expansion.
- In short, access has expanded, but outcomes and quality remain constrained.

Key trends highlighted by the Survey:

1. Education: Enrolment without learning

- Near-universal elementary enrolment, but low learning levels in reading and arithmetic.
- Expected years of schooling (13 years) remain below major economies.
- Sharp dropouts after Grade VIII, with **secondary net enrolment** at just 52.2%.

2. Health: Sustained progress with emerging risks

- Decline in maternal mortality, under-five deaths, and rise in life expectancy (70+ years).
- Expansion of digital health and insurance coverage.
- New challenges from non-communicable diseases, obesity, and lifestyle disorders.

3. Urbanisation: Economic engines with weak foundations

- Cities generate a large share of GDP but suffer from:
- Low municipal revenues
- Limited capacity for housing, transport, sanitation, and climate resilience
- Weak urban finance constrains productivity and quality of life.

Implications of the social sector paradox

- **Human capital risk:** Low learning outcomes and adolescent dropouts can weaken India's demographic dividend.
- **Inequality persistence:** Rural, poor, and marginalised groups face compounded disadvantages despite higher enrolment.
- **Urban growth bottlenecks:** Under-funded cities may become constraints rather than catalysts of growth.
- **Policy reorientation needed:** The focus must shift from coverage-led expansion to outcome-led governance—learning quality, preventive healthcare, and empowered urban local bodies.

Paathara (Khoni) Practice

- The ancient Paathara (or Khoni) grain storage tradition in **Andhra Pradesh's Srikakulam district** is facing imminent extinction in January 2026.

Paathara (Khoni) Practice:

- Paathara (referred to as Khoni in Odia) is a traditional underground grain storage pit. It is a highly scientific, indigenous method used by farmers to preserve freshly harvested paddy for long-term household consumption and rituals.

Origin:

- **Geographical Hub:** Observed primarily in the Uddanam region of Srikakulam (Andhra Pradesh), along the banks of the **Mahendratanaya River**, near the Odisha border.
- **Terrain Specificity:** The tradition thrives in inland, hilly terrains. It is rarely found in coastal belts because high moisture levels in seaside soil can spoil the grain.

Key Features

- **The Structure:** A rectangular or circular pit is dug into the earth, usually in front of the house or cattle shed.
- **Insulation:** The pit is meticulously plastered with straw and clay. A base layer of hand-woven straw ropes is laid to prevent ground moisture from touching the grain.
- **Sealing:** Once filled with paddy, the top is sealed with a thick layer of clay and cow dung, making it airtight and pest-proof.
- **Ritualistic Start:** The storage process begins with a puja, where women draw a bindi on the pit and offer wildflowers and paddy grains to ensure prosperity.

Significance:

- **Superior flavour and health:** Paathara-stored rice is valued as aged rice, with enhanced taste and better nutrition, including a lower glycaemic index—now preferred by health-conscious consumers.
- **Natural pest control and security:** Its airtight underground storage protects grain from insects and rodents without chemicals, while its location near homes reduces theft.
- **Zero-waste sustainability:** At a time when India loses nearly 10% of food grains to poor storage, Paathara stands out as a low-cost, zero-carbon method using only local, biodegradable materials.

GEOGRAPHY, ENVIRONMENT, BIODIVERSITY AND DISASTER MANAGEMENT

A Amazon's Stingless Bees Become First Insect with Legal Rights

- Two municipalities in Peru passed an ordinance making **Amazonian stingless bees** the first insect in the world to be granted legal rights.
- **Rights of Nature:** The ordinance is part of the **Rights of Nature movement**, which recognises species as living entities with inherent rights.
- **Previous Law:** In 2024, Peru enacted a national law recognising stingless bees as a native species of national interest.

Key Rights

- The municipal ordinances grant specific legal rights to Amazonian stingless bees to:
- Exist and thrive within their natural ecological environments.
- Maintain healthy populations and regenerate natural ecological cycles.
- Live in pollution-free habitats and within an ecologically stable climate.
- Be legally represented by humans or organisations filing lawsuits on their behalf.

Amazonian Stingless Bees

- Amazonian stingless bees, belonging to the **tribe Meliponini**, represent one of the oldest bee lineages.
- **Pollination Role:** They are keystone pollinators, responsible for pollinating over 80% of the Amazon rainforest flora.
- **Defence Mechanism:** Despite the name, the bees have a vestigial stinger too weak to pierce human skin. They instead defend themselves with biting, caustic secretions or sticky resins.
- **Nest Structure:** Unlike honeybees with uniform combs, stingless bees exhibit diverse brood cell arrangements like spirals, layers, or clusters.
- **Pot Honey:** They produce **pot-honey** with a unique sweet-sour taste and higher water content. It has anti-inflammatory, antiviral, and antibacterial properties.
- **Distribution:** Stingless bees occur across tropical and subtropical regions, with the Neotropics (Central and South America) showing the highest species richness.
- About 175 of the 500 recorded stingless bee species are found in Peru alone.

- **Social Structure:** They are highly eusocial, living in complex, perennial colonies with a single egg-laying queen and a clear division of labour.
- **Nesting Habitat:** They are cavity nesters, commonly using hollow tree trunks, branches, underground cavities, rock crevices, and abandoned ant or termite nests.
- **Major Threats:** Deforestation, pesticide exposure, forest fires, overgrazing, global warming, etc.

Key Roles Played by Amazonian Stingless Bees

- **Crop Pollination:** They are highly efficient pollinators of Neotropical crops, including coffee, cacao, avocado, and açaí berries.
- **Traditional Medicine:** Indigenous communities use their pot-honey for respiratory ailments, cataracts, and wound healing.
- **Unique Sugar:** Some species produce honey containing trehalulose, a rare sugar with a very low glycaemic index.
- **Cultural Significance:** For many Amazonian tribes, stingless bees play central roles in creation myths and spiritual practices.

Bomb Cyclone

- A powerful 'bomb cyclone' recently struck the northern United States, causing severe winter weather, power outages, and significant travel disruptions.
- A bomb cyclone, or weather bomb, is an **intense mid-latitude storm** that undergoes **bombogenesis**.
- Bombogenesis is a rapid atmospheric pressure drop of at least 24 millibars in 24 hours, which sharply increases pressure gradients and wind strength.
- These storms usually develop in winter when **cold Arctic air collides with warm, oceanic air**.
- The collision causes warm air to rise rapidly, creating a vacuum effect that triggers explosive intensification of wind and precipitation.
- Impacts: These storms cause hurricane-like winds (up to 95 mph), heavy rain, blizzards, and rapid temperature drops of 40–50°F within a few hours.
- **Global Hotspots:** Northwest Atlantic influenced by the Gulf Stream, Northwest Pacific, influenced by the Kuroshio Current, and along the eastern coasts of Australia and South America.

Cetacean morbillivirus

- First of its kind **R&D Roadmap to Enable Net Zero Targets through CCUS launc**
- Scientists have detected cetacean morbillivirus in Arctic waters for the first time by using drones to collect whale breath (blow) samples, a non-invasive technique.

What it is?

- Cetacean morbillivirus is a highly **infectious viral disease** affecting marine mammals such as whales, dolphins, porpoises, and pilot whales, closely related to measles and canine distemper viruses.

Found in:

- It has been widely reported in the North Atlantic, Mediterranean Sea, and Pacific regions, and has now been detected circulating in Arctic waters, particularly among **humpback and sperm whales**.
- **Origin:** First identified in 1987, the virus likely evolved from terrestrial morbilliviruses and adapted to marine mammals, spreading through close contact and respiratory droplets.

Key features:

- Attacks respiratory, immune, and nervous systems.
- Transmitted through direct contact and aerosolised blow.
- Can cross species barriers among cetaceans.
- Often detected post-mortem, making early surveillance difficult.

Implications:

- Linked to mass strandings and large-scale mortality events.
- Signals emerging disease risks in the Arctic, possibly amplified by climate change and shifting whale migration routes.
- Highlights the importance of non-invasive drone-based monitoring for long-term marine conservation and biosecurity.
- Enables authorities to adopt stress-reduction measures to protect infected whales.

Galaxy Frog

- According to a recent study, a group of seven galaxy frogs vanished from the Western Ghats due to rise in photo tourism.

About Galaxy frog

- **Location:** The only known species of its genus (***Melanobatrachus indicus***), it is endemic to the Western Ghats of south-western Ghats.
- It is mostly found in high-altitude evergreen forest and shola forest.

Characteristics:

- It is a rare frog with a slender, elongated body of uniform width.
- This species is terrestrial and associated with leaf-litter, rocks and another ground cover of moist evergreen tropical forests.
- IUCN status: Vulnerable

Circular Model for Waste Management in India

- India must transition from linear waste management to a circular model to minimise waste and recover energy and material resources.

India's Waste Management Landscape

- **Waste Generation:** India generates about 1.70 lakh tonnes of municipal solid waste daily, projected to reach 165 million tonnes annually by 2030.
- **Processing Gap:** Only 55-70% of collected waste is scientifically treated, leaving over 16 crore tonnes of legacy waste piled at 2,450 active dumpsites.
- **E-Waste Growth:** India ranks third globally in e-waste generation, with volumes increasing annually by nearly 15-20%.
- **C&D Waste:** 150 million tonnes of construction and demolition waste are generated annually, often illegally dumped in wetlands or along roadsides.
- **Plastic Burden:** India generates about 9 million tonnes of plastic waste annually, dominated by single-use plastics.

Waste Management Framework in India

- **Municipal Powers:** *Article 243W* and the *12th Schedule* empower municipalities to manage public health, sanitation, conservancy, and solid waste.
- **Fundamental Duty:** *Article 51A(g)* places a fundamental duty on citizens to protect and improve the natural environment.

- **Umbrella Law:** The Environment (Protection) Act, 1986, serves as the umbrella legislation for all waste management rules.
- **SWM Rules:** The Solid Waste Management Rules, 2016, mandate source segregation into wet, dry, and domestic hazardous waste streams.
- **C&D Rules:** The Construction and Demolition Waste Management Rules, 2025, introduce Extended Producer Responsibility (EPR) and mandatory recycling targets.
- **Plastic Rules:** The Plastic Waste Management Amendment Rules, 2025, mandate QR-based digital tracking and set targets for recycled-plastic content.

Remarkable New Species Discovered in India in 2025

- In December 2025, scientists in India announced several significant new species discoveries, spanning from the high-altitude Eastern Himalayas to the rainforests of the Western Ghats.

New Species Discovered in India in 2025:

1. *Bridgeoporus kanadii* (A "Colossal" Fungi)

- A "colossal" new species of **macro fungi** characterized by thick, leathery, and massive fruiting bodies.
- **Found in:** The West Kameng district of Arunachal Pradesh, specifically growing on old-growth Abies (fir) trees.
- **Features:** It is remarkably sturdy and large; the lead researcher noted it was strong enough for a person to sit on while remaining firmly attached to the tree.

2. *Rhinophis siruvaniensis* (Siruvani Shieldtail Snake)

- A new species of **non-venomous**, burrowing shieldtail snake belonging to the ***Uropeltidae*** family.
- **Found in:** The **Siruvani Hills** of the Western Ghats in the Palakkad district of Kerala.
- **Features:** It is a fossorial (burrowing) snake with a specialized tail shield used for digging and defense in high-rainfall rainforest habitats.

3. *Neelus sikkimensis* (High-Altitude Springtail)

- A tiny, wingless arthropod known as a "springtail" (***Collembola***), marking the first record of the **genus Neelus** in India.
- **Found in:** The high-altitude, cold-desert soils of Sikkim in the Eastern Himalayas.
- **Features:** Like other springtails, it possesses a "furcula," a tail-like jumping organ that allows it to spring away from predators.

- **Significance:** Identified by ZSI scientists, this discovery expands the global count of known *Neelus* species to just eight.

4. *Parasynnemellisia khasiana* (Bamboo Forest Fungus)

- A completely new **genus and species of fungus** that did not fit into any existing biological classification.
- **Found in:** The dense, humid bamboo forests around **Mawsynram** in the Khasi Hills, Meghalaya.
- **Features:** It is uniquely adapted to one of the wettest environments on Earth and grows specifically in association with bamboo ecosystems.

5. *Dolomedes indicus* (The Indian Fishing Spider)

- The first confirmed instance of a “fishing spider” discovered in India.
- **Found in:** Streams and rainforests of **Wayanad and Lakkidi** in Kerala’s Western Ghats.
- **Features:** These spiders are semi-aquatic and capable of “skating” on water surfaces to hunt small fish and aquatic insects.

6. *Ophiorrhiza mizoramensis* (Mizoram Coffee-Family Plant)

- A new species of **flowering shrub** belonging to the **Rubiaceae (coffee)** family.
- **Found in:** Murlen National Park, Mizoram, near the Indo-Myanmar border.
- **Features:** It grows up to one meter high and produces striking dark purplish-pink tubular flowers with uniquely structured stigma lobes.
- **Significance:** Provisionally assessed as “Critically Endangered,” with fewer than 200 mature individuals found in the wild.

Union Government eased rules for private afforestation work on leased forest land

- The change was enacted by amending the consolidated guidelines of the **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 (formerly the Forest Conservation Act)**.

Key Amendments

- It allows assisted natural regeneration including afforestation/plantation, carried out by Government or non-Government entities to be treated as “forestry activities”.
- Consequently, on such activities, the requirements of Compensatory Afforestation and payment of Net Present Value (NPV) shall not be applicable to such activities.
- **Compensatory Afforestation (CA):** CA means afforestation done in lieu of diversion of forest land for non-forest purposes.
- It compensates the loss of "**land by land**" and loss of "**trees by trees**" and is done on **non-forest**

land

- **Net Present Value (NPV):** NPV is a mandatory fee intended to compensate for the loss of ecosystem services like carbon sequestration, water recharge, and biodiversity.
- Funds collected towards CA and NPV are deposited in State Compensatory Afforestation Fund Management and Planning Authority (**CAMPA**), established under the Compensatory Afforestation Fund (CAF) Act, 2016.
- State government can devise a framework for utilization of such plantations and for revenue sharing.
- **Van (Sanrakshan Evam Samvardhan) Adhiniyam 1980**
- The Forest (Conservation) Amendment Act, 2023, renames the Forest (Conservation) Act, 1980.

Other key amendments include

- **Applicability:** Limits the Act to the land that has been declared or notified as a forest in accordance with the provisions of the Indian Forest Act, 1927.
- **Strategic Exemptions:** Removes restrictions on forest land within 100 km of international borders for national security projects.
- **Permitted Activities:** Reclassifies eco-tourism, zoos, and silvicultural operations as "forestry activities," exempting them from certain non-forest use restrictions.

Doomsday Glacier (Thwaites Glacier)

- A new scientific study has found rapidly increasing ice fractures in the Thwaites Glacier, indicating possible destabilisation pathways for the **West Antarctic Ice Sheet**.

About Doomsday Glacier (Thwaites Glacier)

- The Thwaites Glacier, popularly called **the "Doomsday Glacier"**, is one of the largest and fastest-changing glaciers on Earth. It acts as a critical outlet glacier draining ice from the West Antarctic Ice Sheet into the ocean.

Location:

- Situated in West Antarctica, flowing into the **Amundsen Sea**
- Forms part of the West Antarctic Ice Sheet, one of the most unstable ice masses globally

Key features

- **Massive scale:** Roughly the size of the UK; complete collapse could raise global sea levels by ~65 cm.
- **Eastern Ice Shelf (TEIS):** A floating extension anchored by an undersea ridge (pinning point) that

slows ice flow.

- **Shear zone fracturing:** Study shows fractures developing in two stages—long cracks parallel to ice flow followed by perpendicular cracks.
- **Rapid deterioration:** Annual fracture length doubled from ~165 km (2002) to ~335 km (2022).
Implications
- Accelerated sea-level rise threatening coastal cities, deltas, and island nations.
- **Cascade effects:** Collapse could destabilise neighbouring glaciers and the entire West Antarctic Ice Sheet.

Madhav Gadgil

- Renowned Indian ecologist **Madhav Gadgil passed away** recently.
- He pioneered the '**People's Biodiversity Register**' to document traditional knowledge and local biodiversity; he was known as the "**people's ecologist**" for his community-based conservation.
- He chaired the Western Ghats Ecology Expert Panel (**Gadgil Commission, 2010**), recommending strict protection for nearly 75% of the Western Ghats.
- Gadgil founded the Centre for Ecological Sciences (CES) at the Indian Institute of Science (IISc) in 1983.
- **Major Awards:** Includes Padma Shri (1981) and Padma Bhushan (2006), the Shanti Swarup Bhatnagar Prize (1986) and the UNEP Champions of the Earth award (2024).

India's First Urban Night Safari to be Launched in Lucknow

- India's first urban night safari is being developed **in Kukrail Forest Area** in Lucknow, UP.
- **Design Model:** The project is inspired by Singapore's Night Safari and integrates wildlife conservation, urban tourism and public awareness.
- **Experience Format:** It will offer controlled nocturnal wildlife viewing via illuminated trails and guided tours, with minimal disturbance to animals..

About the Kukrail Forest

- **Green Lung:** Kukrail Forest Area is a 5,000-acre ecological buffer located near the city of

Lucknow.

- **Urban Interface:** It is a rare urban-adjacent zone where wildlife conservation & public access coexist.
- **Captive Breeding:** The forest has a captive breeding and rehabilitation centre for endangered freshwater gharials.
- **River System:** Kukrail River, a tributary of the **Gomti River**, flows through the Kukrail Forest Area.

Three New Species of Meadow Katydid Discovered in Jammu and Kashmir

- Entomologists have discovered three new species of Meadow Katydid from Jammu & Kashmir.

About Meadow Katydid

- Meadow katydid are small- to medium-sized insects in the **family Tettigoniidae**.
- **Appearance:** Most species are slender and grass-green, with extremely long, threadlike antennae that exceed body length.
- Although they resemble grasshoppers, Meadow katydid are more closely related to crickets.
- **Habitat:** They inhabit open grassy areas, meadows, and wetlands, usually near freshwater sources.
- **Stridulation:** Males have microscopic tooth-like rows on their forewings, called stridulatory files. They produce a rhythmic sound when the wings rub together.

Three Newly Discovered Meadow Katydid

1. **Conocephalus usmanii:** This species has a flat, elongated abdominal plate and a stridulatory file with 36 teeth.
2. **Conocephalus nagariensis:** It has spindle-shaped appendages and a stridulatory file with 34 teeth.
3. **Conocephalus ganderbali:** It is a small, slender species with a 28-tooth stridulatory file and a V-shaped incision on the underbelly.

Kashmir Markhor

- The Kashmir markhor, India's rarest wild goat, is facing local extinction, with only 200-300

individuals left, mostly confined to the Kazinag range of Jammu & Kashmir.

Kashmir Markhor:

- The Kashmir markhor is a large, cliff-dwelling wild goat and a subspecies of the markhor (**Capra falconeri**), known for its majestic spiral horns and exceptional ability to move across steep mountain slopes.

Origin:

- The name "markhor" comes from Persian meaning "**snake-killer**", based on ancient folklore.
- In India, the Kashmir markhor is **endemic only to Jammu & Kashmir**, making it a unique Himalayan species.

Habitat:

- Found in the high mountains of the **Pir Panjal range** in Jammu & Kashmir



Survives mainly in:

- Kazinag National Park (last stronghold)
- Hirpora Wildlife Sanctuary
- Tattakuti Wildlife Sanctuary
- Khara Gali Conservation Reserve
- Lives in steep rocky cliffs, open forests and alpine meadows

Key characters:

- The Kashmir markhor can weigh up to 100 kg, giving it great strength and dominance in rugged mountain terrain.
- Males grow massive spiral horns up to 160 cm, used for defence, display and fighting during mating season.
- The long flowing hair helps the animal stay warm in cold Himalayan climates and gives it a majestic appearance.
- Markhor can move on nearly vertical cliffs, allowing them to escape predators and access food in hard-to-reach areas.
- Herbivorous diet: They feed on grasses, herbs, shrubs, leaves and twigs, helping control vegetation and maintain mountain ecology.

Significance:

- Ecological indicator – a healthy markhor population reflects a healthy mountain ecosystem.
- Prey species for predators like snow leopards, common leopards and wolves.
- Helps control vegetation growth and maintain soil health.

National Environmental Standard Laboratory (NESL)

- CSIR-National Physical Laboratory established two apex levels Calibration Facilities- NESL and National Primary Standard Facility for **Solar Cell Calibration**.
- CSIR-NPL is the apex institution for metrology and custodian of India's national standards.
- National Primary Standard Facility for Solar Cell Calibration brought India among a select group of global leaders in photovoltaic measurement standards.

About NESL

- Apex national facility for testing, calibration and certification of air pollution monitoring instruments.
- Considered as world's second NESL.
- At present, only the UK has such a laboratory.
- Benefits: Develop India-specific standards, ensured credible data for the National Clean Air Programme (NCAP), industrial emission audits, etc.

Orobanche aegyptiaca

- India's largest oilseed crop, mustard, is facing a major yield threat due to the rapid spread of the parasitic weed **Orobanche aegyptiaca** in Rajasthan and Haryana.

Orobanche aegyptiaca:

- Orobanche aegyptiaca (locally called **Margoja**) is a **root-parasitic flowering weed** that attaches itself to the roots of crops like mustard, extracting water, carbon and nutrients, leading to severe yield loss.
- Origin:** It is native to the Mediterranean-West Asian region and has spread to South Asia, North Africa and parts of Europe, becoming a major problem in oilseed and vegetable crops.

Spread and habitat:

- Thrives in mustard-growing regions of north-western India, especially Rajasthan and Haryana.
- Its seeds can remain viable in soil for up to 20 years, allowing infestation to recur even after crop rotation.
- Spreads through wind, irrigation water, farm tools and contaminated soil.

Key features

- Obligate parasite:** Cannot survive without a host plant.
- Underground attack:** Attaches to crop roots before appearing above ground, making early detection difficult.
- High reproductive capacity:** One plant produces 40–45 flowers, each releasing 4,000–5,000 microscopic seeds.
- Triggered by irrigation:** Moist soil after the first irrigation promotes seed germination and attachment to mustard roots.

Implications:

- Causes wilting, yellowing, stunted growth and yield loss of mustard.
- Reduces farmers' confidence, leading to shift away from mustard cultivation.
- Threatens India's goal of cutting edible oil imports, as mustard contributes over 4 million tonnes to domestic oil production.

Swachh Jal Abhiyan

- Madhya Pradesh has launched the Swachh Jal Abhiyan after over 20 deaths in Indore's Bhagirathpura due to contaminated drinking water.

Swachh Jal Abhiyan:

- A state-wide technology-driven drinking water safety campaign launched by the Madhya Pradesh government to ensure safe, clean and accountable water supply after the Indore contamination disaster.
- **Aim:** To ensure zero tolerance to contaminated drinking water through mapping, monitoring, grievance redressal, and accountability across urban and rural MP.

Key Features

- **GIS mapping:** Creates a digital map of all water and sewer lines so leaks, overlaps, and contamination risks can be quickly identified and fixed.
- **Robotic inspection:** Uses robots to check underground pipelines at critical junctions where sewage and drinking water may mix.
- **Jal Sunwai:** Weekly public hearings allow citizens to directly report water problems and demand accountability from officials.
- **CM Helpline 181:** A dedicated phone platform ensures fast registration and tracking of drinking water complaints across the state.
- **Time-bound disposal:** Sets fixed deadlines for officials to resolve complaints, preventing delays and bureaucratic neglect.
- Accountability and ethical governance, Public service values, Probity in governance, and Attitude of public servants

Greenland's Resource Wealth

- Greenland holds large reserves of critical raw materials, minerals/metals and hydrocarbons, drawing strong interest due to the global clean-energy transition.

Resources Highlighted in Greenland

- **Hydrocarbons Potential:** USGS estimates ~31 billion barrels of oil-equivalent hydrocarbons in onshore northeast Greenland (including ice-covered areas), signalling major untapped energy wealth.
- **Sedimentary Basins:** Onshore basins like the **Jameson Land Basin** are seen as the most

promising oil-gas zones, often compared to Norway's hydrocarbon-rich shelf.

- **Strategic Rare Earths:** Greenland is predicted to hold ~40 million tonnes of dysprosium + neodymium, enough to meet >25% of projected future global demand.
- **Gems & Special Minerals:** Greenland hosts diamond-bearing kimberlite pipes, native iron lumps, Lead, copper, iron and zinc occur in mostly ice-free basins

Climate Change Link

- **Ice Melt Unlocks Access:** Since 1995, Greenland has lost ice over an area roughly the size of **Albania**, increasing the exposure of buried minerals and hydrocarbons.
- **Transition vs Emissions Trap:** Climate change makes resources more accessible, but large-scale extraction (especially oil/gas) can worsen emissions, deepening the crisis.

Why is Greenland so Resource-Rich?

- **4-Billion-Year Geology:** Greenland contains some of Earth's oldest rocks, meaning a long geological time for multiple mineral-forming events and deposit concentration.
- **Three Resource Pathways:** Unusually, Greenland experienced mountain building + rifting + volcanic activity, the three major geological processes that generate oil/gas, ores and REEs.
- **Mountain Building Deposits:** Compression fractured crust and created pathways for gold, rubies, and graphite to form in faults and fractures.
- **Rifting Advantage:** Repeated rifting (incl. Atlantic opening ~200 million years ago) formed sedimentary basins ideal for oil, gas, and metal mineralisation.
- **Volcanic Contribution:** Igneous layers & hydrothermal activity concentrated REEs (niobium, tantalum, ytterbium, etc.), similar to hydrothermal mineral deposits elsewhere.

Greenland

- It is the world's **largest non-continental island**, located between the Arctic and Atlantic Oceans.
- Nearly 80% of Greenland is covered by the world's second-largest ice sheet, after Antarctica.
- It is home to **Kaffeklubben Island**, the northernmost point of land in the world.
- Geographically part of North America but geopolitically linked to Europe, it's an autonomous territory of Denmark.
- Greenland manages internal affairs, while Denmark controls foreign policy, defence, and currency.
- It falls under **NATO Article 5** protection but is not part of the European Union.
- Home to **Pituffik Space Base**, vital for US missile defence operations & space monitoring in the Arctic.



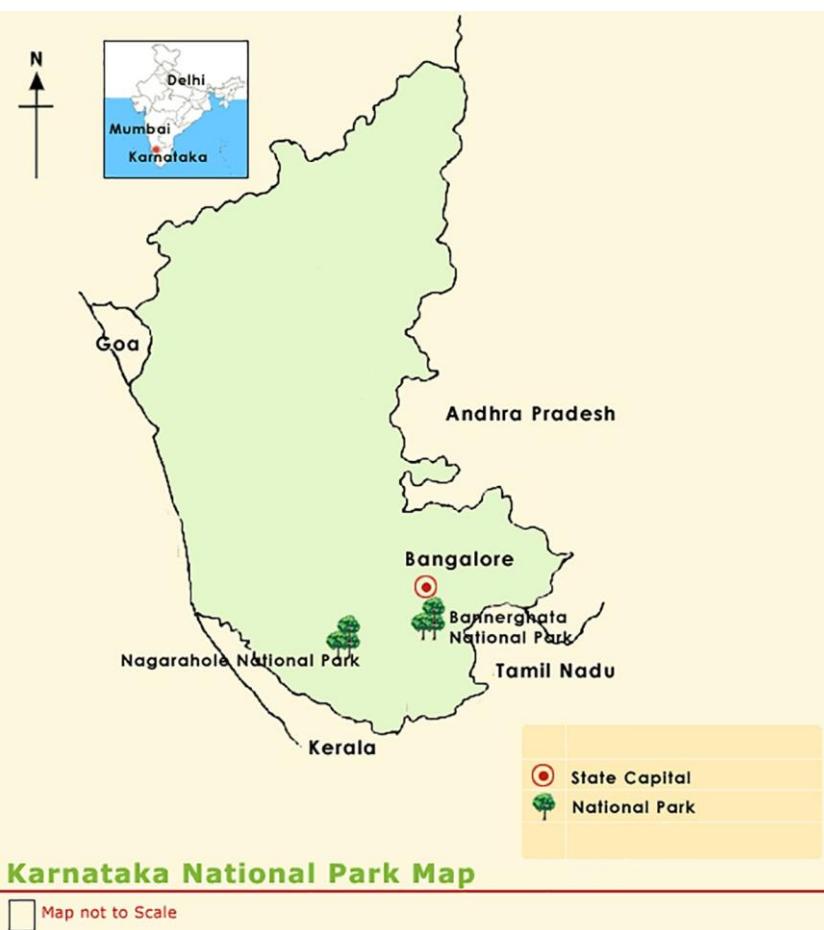
Bannerghatta National Park

- The **Central Empowered Committee (CEC)** in January 2026 recommended restoring the original 2016 Ecologically Sensitive Zone (ESZ) around Bannerghatta National Park, undoing the reduced 2020 notification.

About Bannerghatta National Park:

- Bannerghatta National Park is a protected wildlife reserve and biodiversity hotspot forming the southern green lung of Bengaluru, crucial for conserving forests, elephants, and other wildlife.

- **Located in:**
- It lies about 22 km south of Bengaluru across Bengaluru Urban and Ramanagara districts in Karnataka, in the **Anekal hill range**.
- **History:**
- The area was declared a reserve forest in 1970 and became a national park in 1974.
- In 2002, a portion was carved out as the Bannerghatta Biological Park (zoo and safari) to promote conservation and tourism.



Geological and physical features

- **Granite hill ranges:** Part of the Anekal Hills, formed of ancient granite sheets that shape the park's rugged terrain.
- **Moist deciduous valleys:** Lower elevations support dense forests that sustain elephants, deer, and predators.
- **Dry scrub uplands:** Higher elevations have scrub vegetation, important for grazing species.
- **Wildlife corridors:** BNP forms a vital elephant corridor linking BR Hills and Sathyamangalam forests.
- **Water system:** The **Suvarnamukhi stream flows** through the park, sustaining wildlife in a semi-

arid landscape.

What is the issue?

- The Ecologically Sensitive Zone (ESZ) around BNP was reduced from 268.9 sq km (2016 draft) to 168.64 sq km (2020 notification), excluding key elephant corridors and forest buffers.
- This opened the door to real estate, quarrying and industrial expansion, increasing human-animal conflict and degrading wildlife habitats near a fast-expanding Bengaluru.

16th International Renewable Energy Agency (IRENA) Assembly

- **Source (PIB):** The 16th Assembly of the International Renewable Energy Agency (IRENA) was held in Abu Dhabi, United Arab Emirates.
- The Assembly focused on accelerating the renewable transition aligned with the UAE Consensus, the 2030 SDG Agenda, and the Paris Agreement.

About IRENA

- The IRENA is the leading global intergovernmental organisation and the principal platform for international cooperation on all forms of renewable energy.
- It was founded in 2009 in Bonn, Germany, and is headquartered in Masdar City, Abu Dhabi.
- It supports its member countries in transitioning toward a sustainable energy future by providing data, policy advice, and financial expertise.
- It holds United Nations (UN) Observer status while operating as an independent body.
- **Membership:** It has 171 members (170 countries and the European Union); India is a founding member.
- **India's Role:** India has a permanent seat on the IRENA Council; it signed a Strategic Partnership Agreement in 2022 to collaborate on green hydrogen and energy planning.
- **Global Targets:** IRENA promotes tripling renewable capacity and doubling energy efficiency by 2030, aligning with COP28.

Governance Structure

- **The Assembly:** It serves as the supreme decision-making body, convening once a year with one representative from each member.
- **The Council:** It oversees budgeting and reporting and has 21 elected members serving two-year terms, ensuring regional balance.

- **Secretariat:** It is the executive branch, providing administrative and technical support.

Flamingo Festival 2026

- The annual Flamingo Festival 2026, celebrating the arrival of thousands of migratory birds, is underway at the **Nelapattu Bird Sanctuary**.

About Nelapattu Bird Sanctuary

- Nelapattu Bird Sanctuary is a protected wetland ecosystem located in Andhra Pradesh.
- It lies near Pulicat Lake, India's 2nd -largest brackish lagoon and a major flamingo feeding ground.
- The sanctuary hosts one of Southeast Asia's largest breeding colonies of spot-billed pelicans.

About Flamingos

- Flamingos are long-legged wading birds known for their distinctive pink plumage, S-shaped necks, and unique filter-feeding bills.
- **Types:** Six flamingo species exist globally, with the Greater Flamingo being the largest and the Lesser Flamingo the smallest.
- **Unique Feature:** They have downward-curved bills with comb-like structures (lamellae) that filter food from water and mud; their vibrant colour comes from carotenoids in their diet.
- **Habitat:** They prefer warm wetlands and occur worldwide except Antarctica and Australia.
- **Diet:** They are omnivorous, primarily feeding on insects, blue-green algae and small crustaceans..
- **Behaviour Traits:** Flamingos are highly social and live in large colonies called flamboyances; they exhibit seasonal migratory movements.

Warmest La Niña Year

- **Berkeley Earth Annual Temperature Report 2025** reports that 2025 became the warmest La Niña year on record, despite La Niña's usual cooling influence.

Key Findings of the Report

- **High Global Anomaly:** The global annual average temperature anomaly in 2025 reached $+1.44^{\circ}\text{C}$, despite months of La Niña influence. It ranked as the 3rd warmest year globally.
- **Record Heat Footprint:** About 9.1% of Earth's surface recorded its highest annual average

temperature in 2025, showing widespread extreme heat conditions.

- **Land Vs Ocean Extremes:** Record warmth covered 10.6% of land areas and 8.3% of ocean areas, showing widespread heating across systems.
- **Population Exposure:** Around 770 million people (8.5% of the global population) experienced record warm annual temperatures, mainly across Asia.
- **No Record Cold:** The report noted no regions recorded a record cold year.
- **Warmest-Year Streak:** The last 11 years include all 11 warmest years in the instrumental record.

La Niña

- La Niña is the cool phase of the **El Niño Southern Oscillation (ENSO)**, marked by cooler-than-normal **sea surface temperatures** in the equatorial Pacific.
- **Cycle Nature:** La Niña usually occurs every few years and can last multiple months, sometimes appearing in consecutive years (**“double-dip” events**).
- **Triple dip La Nina:** La Nina event that lasted for about three years (began in 2020 to early 2023).
- **Effects of La Nina**
 - Abnormally heavy monsoons in India and Southeast Asia.
 - Cool and wet winter weather in southeastern Africa, wet weather in eastern Australia.
 - Cold winter in western Canada and northwestern United States.
 - Winter drought in the southern United States.

Similipal National Park

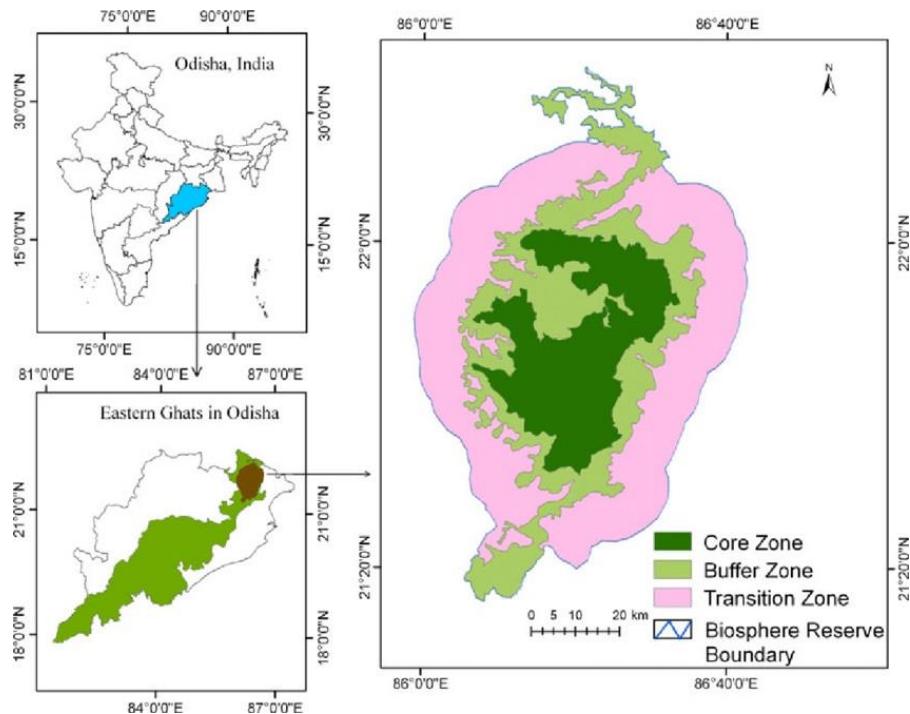
- Similipal National Park in Odisha recorded a rise in its mugger crocodile population to 84 during the three-day census, reversing a declining trend seen in recent years.

Similipal National Park:

- Similipal is a National Park, Tiger Reserve and Biosphere Reserve forming part of the **Mayurbhanj Elephant Reserve**.
- It is one of India's most biodiverse protected landscapes and is part of the **UNESCO World Network of Biosphere Reserves (since 2009)**.

Location:

- Located in Mayurbhanj district of **northern Odisha**, it lies in the **Eastern Ghats** and spreads over about 2,750 sq km, making it one of India's largest tiger reserves.
- Key geographical features:**
- Similipal is a **high-plateau** forested massif with an average elevation of about 900 m.
- It contains prominent peaks such as **Meghasani (1,158 m)** and **Khairiburu (1,178 m)** and famous waterfalls like **Barehipani (217 m)** and **Joranda (181 m)**.
- The landscape is drained by rivers such as **Budhabalanga, Salandi, Deo and Khairi**, which create ideal wetland habitats for crocodiles and other wildlife.



Crocodile census and conservation:

- The 2026 census counted 84 mugger crocodiles, up from 81 in 2025, with **West Deo River** alone hosting around 60 individuals.
- The recovery is attributed to the **Ramtirtha Mugger Crocodile Breeding Centre**, which releases hatchlings annually into Similipal's rivers.

India - Israel Joint Declaration on Fisheries and Aquaculture

- India and Israel signed a Joint Ministerial Declaration of Intent to deepen cooperation in fisheries and aquaculture during the **Global Summit on Blue Food Security 2026** in Eilat.

India-Israel Joint Declaration on Fisheries and Aquaculture:

- A bilateral declaration between India and Israel to strengthen collaboration in fisheries and aquaculture through technology transfer, joint research, innovation, and capacity building, aligned with sustainable and climate-resilient development goals.

Key features

- **Advanced aquaculture technologies:** Cooperation on **RAS, biofloc, cage culture, aquaponics, mariculture, seaweed farming, and aquarium systems.**
- **Genetic & seed improvement:** Joint work on high-yield species, pathogen-free seed, brood stock development, and genetic enhancement programmes.
- **Water & resource efficiency:** Adoption of Israeli water-saving and water-management technologies in aquaculture systems.
- **Innovation & startups:** Promotion of startups and R&D ecosystems to advance the Blue Economy.
- **Monitoring & traceability:** Technology-driven fisheries monitoring, data systems, transparency, and traceability for responsible fishing.
- **Capacity building:** Training in deep-sea fishing, vessel design, coastal aquaculture, processing, marketing, and infrastructure (harbours, landing centres).

Significance:

- Enhances productivity and resilience of fisheries, supporting nutrition and coastal livelihoods.
- Integrates technology, sustainability, and entrepreneurship to unlock ocean-based growth.
- Promotes efficient water use, sustainable practices, and ecosystem conservation.

Kruger National Park

- Kruger National Park was temporarily shut to day visitors after severe flooding caused multiple rivers to overflow due to prolonged heavy rainfall.

Kruger National Park:

- Kruger National Park is **South Africa's largest and oldest national park**, and one of Africa's most renowned wildlife reserves, globally famous for conservation and eco-tourism.
- **Located in:** It lies in northeastern South Africa, spanning the provinces of Limpopo and Mpumalanga, **bordering Mozambique and Zimbabwe**.

History:

- Originally proclaimed as the **Sabi Game Reserve** in 1898.
- Declared a national park in 1926 and named after **Paul Kruger**, former President of the South African Republic.
- It became South Africa's first national park and a cornerstone of modern wildlife conservation in the region.

Geographical features:

- Covers about 19,623 sq km, stretching ~360 km north-south.
- Characterised by savannah grasslands, riverine forests, and bushveld ecosystems.
- Major rivers include the **Limpopo, Letaba, Olifants, Sabie and Crocodile**, which sustain wildlife but also make parts of the park flood-prone.
- Forms part of the **Kruger-to-Canyons Biosphere Reserve**, recognised by UNESCO.

Significance:

- Home to the **Big Five** (lion, leopard, elephant, rhino, buffalo) and hundreds of bird, reptile, and mammal species.
- A key pillar of Africa's conservation science, anti-poaching efforts, and transboundary biodiversity corridors.

Orobanche Threat to Mustard Crops

- Orobanche aegyptiaca, or Margoja, has emerged as a hidden threat to mustard crops.
- **Impact:** Severe infestations have reduced mustard yields by nearly half across many areas, threatening edible oil self-sufficiency targets.

Orobanche

- It is a root-parasitic weed that lacks chlorophyll and cannot photosynthesise independently.
- It attaches to host roots via a specialised organ called a **haustorium** to extract nutrients, water, & carbon.
- **Hidden Threat:** Early growth remains underground, causing major crop damage before the shoots emerge above the soil.
- **Proliferation:** A single plant produces up to five lakh microscopic seeds viable for nearly 20 years.

- **Host Range:** It mainly attacks mustard but also affects tomato, potato, lentil, and cabbage.
- **Geographical Spread:** Infestations are concentrated in the semi-arid mustard belts of Rajasthan, Haryana, and Madhya Pradesh.

Management and Solutions

- **HT Hybrids:** Herbicide-tolerant hybrids like **Pioneer-45S42CL** resist **imidazolinone** herbicides, enabling selective weed control.
- **GM Research:** Scientists are developing GM mustard variants tolerant to multiple broad-spectrum herbicides, thereby reducing resistance risks.
- **Soil Solarisation:** Clear polyethene mulch applied during summer raises soil temperatures, destroying up to 95% of viable Orobanche seeds.
- **Nitrogen Fertilisation:** High nitrogen application suppresses Orobanche growth, though not all crops tolerate high nitrogen levels.

Mustard (*Brassica juncea*)

- Mustard is a **Rabi crop**, usually sown between September and October.
- **Climate:** It thrives in cool, dry subtropical climates with temperatures between 10°C and 25°C.
- **Soil:** Mustard grows best in well-drained sandy loam to alluvial loam soils.
- **Economic Role:** Mustard contributes over 40% of India's domestic edible oil production.
- **Major Producers:** Rajasthan leads with 40–45% output, followed by Haryana, Madhya Pradesh, Uttar Pradesh, and West Bengal.

Coconut root wilt disease

- Coconut Root Wilt Disease is in the news due to its rapid spread across major coconut-growing regions of Kerala, Tamil Nadu and Karnataka, affecting lakhs of palms.

Coconut root wilt disease:

- A debilitating, **non-fatal** disease of coconut caused by a **phytoplasma** (phloem-limited pathogen), leading to chronic decline and major yield loss.
- Infected palms often remain alive but become long-term inoculum sources, enabling continued spread through vectors.

Origin and spread:

- First reported over 150 years ago from Erattupetta (Kerala) and has remained a persistent endemic problem.
- Spread is vector-borne, and is accelerated by continuous coconut belts, wind-assisted vector movement, and rising abiotic stress (temperature extremes) plus biotic stress (new sucking pests like whiteflies) that increase palm susceptibility.

Vector:

- Transmitted through **sap-sucking insect vectors**; commonly cited vectors in endemic areas include **Stephanitis typica** and **Proutista moesta**.

Key symptoms:

- **Leaves look weak and droopy:** The small leaf strips lose stiffness and hang down instead of standing firm — this is usually the first visible sign.
- **Leaves turn yellow from the tips:** Yellowing starts at the ends of leaves and slowly spreads inward; in later stages, parts of the leaves dry up and die.
- **Leaves curl and cup inward:** The leaf strips bend inward, making the whole leaf look ribbed or cup-shaped.
- **Poor flowering and nut fall:** The tree produces fewer flowers, nuts fall prematurely, and overall yield drops sharply.
- **Tree slowly weakens:** Roots start decaying, growth becomes poor, and in some cases the top of the trunk becomes thin and tapered.

Solutions and management:

- **Select and multiply tolerant palms:** Palms that continue to yield well despite disease pressure should be identified in farmers' fields, scientifically confirmed, and multiplied through local nurseries.
- **Good field and crop management:** Remove badly affected, low-yielding palms to reduce disease spread. Improve soil health using green manure crops, ensure regular irrigation, proper drainage, and follow suitable intercropping to reduce stress on coconut palms.
- **Strengthen palms with organic nutrition:** Apply farmyard manure or green manure along with neem cake every year. Healthy soil and strong roots help palms tolerate disease better even if infection occurs.

Dugongs

- The Union government's Expert Appraisal Committee (MoEFCC) has asked Tamil Nadu to revise the design of the proposed **International Dugong Conservation Centre at Manora (Thanjavur)**.

Dugongs:

- Dugong is a large, slow-moving **marine mammal**, commonly called a "**sea cow**", that feeds exclusively on seagrass.
- It is a **keystone species**, playing a vital role in maintaining healthy seagrass meadows.
- **Scientific name: Dugong dugon**

Habitat:

- Found in warm, shallow coastal waters of the Indian and western Pacific Oceans.
- Lives mainly in seagrass meadows, estuaries, lagoons, and nearshore areas.
- Unlike manatees, dugongs are strictly marine and do not enter freshwater.
- IUCN status: **Vulnerable**.

Key characteristics of dugong:

- Large, plump body with paddle-like flippers and a whale-like tail fluke.
- Grows up to 3 metres in length and can weigh 400 kg or more.
- Gentle, **herbivorous grazer** that feeds almost continuously on seagrass.
- Acts as an ecosystem engineer, helping seagrass regenerate and supporting marine biodiversity.
- Holds cultural significance for many coastal and indigenous communities and is linked to ancient mermaid legends.

Mount Elbrus

- A controlled (artificially triggered) avalanche was carried out on **Mount Elbrus in Russia** to safely release accumulated snow after heavy snowfall.

Mount Elbrus:

- Mount Elbrus is the highest mountain in Europe and an ancient, extinct volcano with two distinct peaks (East and West).

- It is part of the **Caucasus mountain system** and a major centre for mountaineering and alpine tourism.

Located in:

- Southwestern Russia, in the Caucasus Mountains, just north of the **Georgia** border.
- Lies between the Black Sea and the Caspian Sea mountain corridor.

Key geological features:

- A twin-coned **stratovolcano** formed over 2.5 million years ago.
- Highest peak reaches 5,642 metres, the second peak 5,595 metres.
- Covered by 22 glaciers, which feed rivers like the Kuban and Terek.
- Though dormant for nearly 2,000 years, sulphurous gases and mineral springs are still present.

Significance:

- Recognised as Europe's highest peak, making it one of the Seven Summits for climbers.
- A key site for glaciological and climate research, including studies observed from the International Space Station.
- Economically important for tourism and adventure sports in the Caucasus region.

Aquatic Biodiversity Conservation Initiatives Launched Under Namami Gange

- Several aquatic biodiversity conservation initiatives were launched at the Wildlife Institute of India (WII), Dehradun, under the Namami Gange Mission.

Key Initiatives Launched

- Aqua Centre:** Aqua Life Conservation Monitoring Centre was established as a national research and policy hub for freshwater biodiversity conservation.
- Framework:** It operates under the Namami Gange Programme and has laboratories for ecotoxicology, aquatic ecology, spatial ecology, and microplastics analysis.
- Dolphin Response:** A Dolphin Rescue Ambulance was launched to provide rapid emergency response to distressed Gangetic dolphins.
- Skimmer Project:** A conservation project for the Indian Skimmer birds was launched in collaboration with the Bombay Natural History Society.
- Habitat Frameworks:** New conservation frameworks were introduced to support habitat restoration for the critically endangered Gharial.
- Afforestation:** 'Ek Ped Maa Ke Naam' campaign was initiated to support river ecosystem conservation.

About Namami Gange

- **Origin:** Namami Gange is a central sector programme launched in 2014 to rejuvenate the River Ganga and its tributaries.
- **Implementing Agency:** It is implemented by the National Mission for Clean Ganga under the Ministry of Jal Shakti.
- **Core Objectives:** Two primary objectives are (1) Pollution abatement and (2) River Rejuvenation, including biodiversity conservation.
- **Pillars:** The scheme is based on 8 strategic pillars, i.e. sewerage infrastructure, biodiversity conservation, afforestation, riverfront development, Ganga Gram, effluent monitoring, awareness, and river-surface cleaning
- **Extension:** The programme has been extended up to March 2026 as Namami Gange Mission-II.

Finke River

- The Finke River in central Australia is widely regarded as the world's oldest river system still flowing, dating back around 300–400 million years.

About the Finke River

- **Type:** About 600–640 km, a major but intermittent (not perennial) river of central Australia.
- **Indigenous Name:** **Larapinta**, named by the indigenous Arrernte people.
- **Key Tributaries:** Ellery Creek, Palmer River, and Hugh River feed into the Finke system.
- **Antecedence:** The river existed before mountains rose, & Its uniqueness lies in its extreme geological persistence, as it maintained the same broad course since ancient time despite major land uplift events.

Course of the River

- **Origin Region:** Starts in the MacDonnell Ranges (Northern Territory).
- **Formation Point:** Begins where Davenport Creek and Ormiston Creek meet.
- **Flow Direction:** Runs southwest towards South Australia and the Simpson Desert region.
- **Flood Extension:** During major floods, flow can reach the Macumba River and ultimately Lake Eyre.

Karan Fries and Vrindavani Cattle Breeds

- The National Bureau of Animal Genetic Resources (NBAGR) registered the Karan Fries and Vrindavani cattle breeds to boost national dairy productivity.
- The breeds can produce about 1.5–3 times more milk per 10-month lactation than indigenous breeds.
- **Karan Fries:** Developed by the National Dairy Research Institute (NDRI), it is a cross between exotic **Holstein-Friesian bulls** and indigenous **Tharparkar cattle**.
- **Vrindavani:** Developed by ICAR-Indian Veterinary Research Institute (IVRI), it is a blend of exotic **Holstein-Friesian, Brown Swiss, Jersey, and indigenous Hariana cattle**.

About NBGAR

- NBAGR serves as India's nodal agency for identification, characterisation, and registration of livestock and poultry genetic resources.
- Established in 1984, based in Karnal, Haryana, it functions as an autonomous body under the Indian Council of Agricultural Research (ICAR).
- **National Repository:** The National Biodiversity Authority (NBA) recognises NBAGR as the national germplasm repository for domesticated animals.
- **Global Linkage:** It serves as India's nodal agency for the Food and Agriculture Organisation (FAO) and monitors SDG Target 2.5.

Second range-wide Dolphin Survey

- The second range-wide Dolphin Survey has been launched from Bijnor, Uttar Pradesh under Project Dolphin to update population estimates, assess habitats and threats.

Project Dolphin:

- Project Dolphin is a national conservation initiative of the Government of India aimed at protecting riverine and oceanic dolphins through habitat protection, scientific monitoring, and stakeholder participation.
- **Launched in: 15 August 2020**

- **Nodal ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC)
- **Aim:** To safeguard India's dolphin diversity by addressing threats such as habitat degradation, pollution, by-catch, and flow alteration, while empowering local communities in conservation.

Key features:

- 10-year initiative with national coverage.
- Focus on riverine & oceanic species.
- Scientific monitoring & surveys for population and habitat status.
- Integration with river ecosystem conservation and policy action.
- **Second range-wide Dolphin Survey (under Project Dolphin):**
- A pan-India scientific estimation exercise to assess population, distribution, habitat condition and threats to riverine and estuarine dolphins, conducted in two phases across major river systems and coastal/estuarine stretches.

Implementation & coverage

- **Phase I:** Main stem of the Ganga (Bijnor to Ganga Sagar) and the Indus River.
- **Phase II:** Brahmaputra, Ganga tributaries, Sundarbans, and Odisha.
- Coordinated by Wildlife Institute of India, with State Forest Departments and conservation partners.
- Uses standardised protocols, hydrophones for acoustic monitoring, and trained field teams.
- **Previous survey data (2021-23):**
- ~6,327 riverine dolphins recorded nationwide.
- Highest numbers in Uttar Pradesh and Bihar, followed by West Bengal and Assam.
- Small population of Indus River Dolphin recorded in the Beas system.

UN Biodiversity Beyond National Jurisdiction (BBNJ) Treaty

- The UN Biodiversity Beyond National Jurisdiction (BBNJ) Treaty, also known as the **High Seas Treaty**, has entered into force after crossing the required 60 ratifications, creating the **first legally binding global framework** to protect biodiversity in international waters.

UN Biodiversity Beyond National Jurisdiction (BBNJ) Treaty:

- The BBNJ Agreement is a legally binding international treaty under the **United Nations Convention on the Law of the Sea (UNCLOS)** to conserve and sustainably use marine

biodiversity in areas beyond national jurisdiction (the High Seas).

Origin and history:

- Negotiations began in 2008 amid growing concern over unregulated exploitation of the high seas.
- After 15 years of negotiations, the treaty was finalised in March 2023.
- It entered into force 120 days after the 60th ratification, which was achieved in September 2025.

Targets:

- Achieve the **“30 by 30” goal**: protect 30% of the global ocean area by 2030.
- Enable large-scale conservation across two-thirds of the ocean, which lies beyond national control.

Key features:

- **Marine Protected Areas (MPAs)**: Enables creation of a global network of MPAs in international waters to conserve fragile and previously unregulated ecosystems.
- **Environmental Impact Assessments (EIAs)**: Mandates prior assessment of activities that may significantly harm marine ecosystems in the high seas.
- **Marine Genetic Resources (MGRs)**: Establishes fair and equitable sharing of benefits derived from genetic resources used in biotechnology and pharmaceuticals.
- **Capacity building and technology transfer**: Supports developing countries through training, access to data, scientific cooperation, and marine technologies.
- **Ecosystem-based and precautionary approach**: Promotes decision-making based on best available science, traditional knowledge, and the precautionary principle.
- **No sovereignty claims**: Reaffirms that no state can claim sovereign rights over high-seas biological resources.

First open-sea Marine Fish Farming Project in Andaman Sea

- India has launched its first open-sea marine fish farming project in the Andaman Sea, marking a major step in advancing the Blue Economy through science-led, livelihood-oriented utilisation of ocean resources.

First open-sea Marine Fish Farming Project in Andaman Sea:

- India's first pilot open-sea aquaculture initiative involving marine finfish and seaweed farming in natural oceanic conditions using indigenously developed open-sea cages and marine technologies.

Located in

- North Bay, near Sri Vijaya Puram, Andaman Sea.
- Union Territory of Andaman & Nicobar Islands.

Implementing agencies

- **Ministry of Earth Sciences (MoES)** & National Institute of Ocean Technology (NIOT).
- **Aim:** To unlock ocean-based economic potential, generate sustainable coastal livelihoods, and build technical feasibility for scaling open-sea aquaculture under India's Blue Economy vision.

Key features

- Open-sea finfish farming using NIOT-designed cages resilient to natural ocean conditions.
- Deep-water seaweed cultivation with seed distribution to local fishers.
- Livelihood-centric pilot integrating science, technology, and community participation.
- PPP-ready model for future scale-up based on feasibility and field experience.
- Strengthens marine food security, employment, and coastal resilience.

Andaman Sea:

- The Andaman Sea is a marginal sea of the northeastern Indian Ocean, historically significant for trade and strategically important for maritime connectivity and regional ecology.
- **Located in:** The Andaman Sea is located in the north-eastern Indian Ocean, adjoining South-East Asia.
- **Bordering:** Irrawaddy River delta, Myanmar and Thailand, Sumatra (Indonesia) and the Strait of Malacca.

Key features:

- **Large marginal sea (~7.98 lakh sq km):** The Andaman Sea forms a vast part of the north-eastern Indian Ocean, providing significant space for ocean circulation, sediment deposition, and marine resource utilisation.
- **Andaman-Nicobar Ridge (active subduction zone):** It lies along a tectonically active boundary where the Indian Plate subducts beneath the Burma microplate, shaping the region's seismic and volcanic characteristics.
- **Deep submarine valleys (>4,400 m):** The sea contains deep oceanic trenches and valleys formed by tectonic movement, making parts of it among the deepest zones in the eastern Indian Ocean.
- **Shallow northern continental shelf:** Extensive sediment deposition from the Irrawaddy River has created a relatively shallow seabed in the north, influencing salinity, turbidity, and marine habitats.

Microscopic crustacean

- A microscopic crustacean discovered in the Kavaratti lagoon, Lakshadweep, has been formally established as a new genus and species, named **Indiaphonte bijoyi**.

Microscopic crustacean:

- **Indiaphonte bijoyi** is a microscopic **crustacean (copepod)** belonging to the family Laophontidae under the order Harpacticoida. It is part of **meiofauna—tiny invertebrates** (less than 1 mm) that live within aquatic sediments and are visible only under a microscope.
- **Found in:** The species was discovered in the Kavaratti lagoon, a coral-rich, shallow lagoon ecosystem known for high marine biodiversity.
- The genus name **Indiaphonte** honours India; the species name **bijoyi** honours S. Bijoy Nandan, a noted Indian marine scientist.
- Recognised as a new genus due to a unique combination of morphological traits not seen in any known Laophontidae genus.

Key crustacean group:

1. Macroscopic crustaceans:

- Crab, Lobster, Shrimp / Prawn, **Krill, and Barnacle**.

2. Microscopic crustaceans:

- Copepods, Cladocerans, Ostracods, and Amphipods etc.

Key characteristics

- **Size:** ~518–772 micrometres; females slightly larger than males.
- **Body:** Semi-cylindrical, dorsoventrally depressed, widest at mid-body and tapering posteriorly.
- **Appendages:** Antennae-like structures at the front; specialised limbs adapted for sediment life.

Significance

- **Ecosystem health:** Meiofaunal copepods recycle nutrients, graze on microalgae, and form the base of aquatic food webs.
- **Biodiversity science:** Adds a new genus to global taxonomy, underscoring India's role in marine discovery.

Royle's pika (*Ochotona roylei*)

- Rising temperatures and changing monsoon patterns are threatening the Royle's pika's survival by disrupting its specialised alpine habitat.

About Royle's pika (*Ochotona roylei*)

- Royle's pika, also known as the **Himalayan mouse-hare**, is a small, high-altitude mammal in the order Lagomorpha (the same order as rabbits and hares).
- **Physical Traits:** It has a greyish-brown body, a slightly arched head, and a distinctive chestnut-coloured head; in winter, its coat becomes duller.
- **Habitat Preference:** It inhabits talus slopes, alpine meadows, and open rhododendron or conifer forests at elevations between 2,400 and 5,200 metres.
- **Geographic Range:** Royle's pika is endemic to the Himalayas across India, Nepal, Pakistan, and Tibet. In India, it is recorded in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and Sikkim.
- **Nesting:** Unlike burrowing pikas, it nests in natural crevices formed between rocks and boulders.
- **Winter Activity:** The species does not hibernate; It continues to forage under the snow layers.
- **Diet Pattern:** Royle's pika is herbivorous, feeding on grasses, herbs, mosses, and lichens in alpine zones.
- **Ecological Role:** It acts as an indicator species for climate change due to its high sensitivity to temperature rise.
- **Key Threats:** Habitat fragmentation, climate change, population bottlenecks, invasive species, etc.
- **Conservation Status:** **IUCN: Least Concern; WPA: Schedule I**

Environmental Protection Fund

- The Union Government has notified detailed rules for the utilisation and administration of the Environmental (Protection) Fund, operationalising provisions introduced under the **Jan Vishwas Act, 2023**.

Environmental Protection Fund:

- The Environmental (Protection) Fund is a **statutory fund** of the Government of India created to utilise penalties imposed for violations of environmental laws for pollution control, environmental restoration, monitoring, research, and capacity building.

Established in:

- **Provided for under the Environment (Protection) Act, 1986**
- Operationalised through rules notified in January 2026
- Strengthened by the Jan Vishwas Act, 2023, which decriminalised several environmental offences while retaining monetary penalties

Nodal authority:

- Administered by the Ministry of Environment, Forest and Climate Change (MoEFCC) or any body notified by the Central Government
- **Aim:** To ensure that pollution penalties are recycled for environmental protection, remediation, clean technology promotion, and strengthening regulatory institutions.

Key features

- **Source of funds:** Penalties under the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, interest from investments, and other prescribed sources.
- **Permitted uses (11 activities):** Pollution prevention and mitigation, remediation of contaminated sites, environmental monitoring equipment, clean technology research, IT-enabled systems, laboratory infrastructure, and capacity building of regulatory bodies.
- **Revenue sharing:** 75% of penalty proceeds transferred to the Consolidated Fund of the State/UT, 25% retained by the Centre.
- **Governance mechanism:** Creation of dedicated Project Management Units at Central and State levels.

Oversight & transparency:

- Comptroller and Auditor General of India (CAG) to audit the Fund
- Central Pollution Control Board (CPCB) to develop and maintain a centralised online portal for fund implementation

Significance:

- Strengthens the “polluter pays principle” by directly linking penalties to environmental remediation.
- Converts decriminalisation into deterrence with accountability, avoiding regulatory dilution.
- Enhances Centre-State cooperation in environmental governance through revenue sharing.

Greenhouse Gases Emission Intensity (GEI) Target (Amendment) Rules, 2025

- The Union Government has notified the second round of **legally binding** emission reduction targets for carbon-intensive industries under the Greenhouse Gases Emission Intensity (GEI) Target (Amendment) Rules, 2025.

Greenhouse Gases Emission Intensity (GEI) Target (Amendment) Rules, 2025:

- The GEI Target (Amendment) Rules, 2025 are statutory rules notified under the Environment (Protection) Act, 1986 to set mandatory, sector-specific greenhouse gas (GHG) emission-intensity reduction targets for industrial entities, operationalising **India's Carbon Credit Trading Scheme (CCTS)**.

Came into force:

- Came into force on October 9, 2025, becoming India's first legally binding industrial emission intensity rules
- Builds on the Carbon Credit Trading Scheme (CCTS), 2023.

Nodal ministry / agencies:

- Ministry of Environment, Forest and Climate Change (MoEFCC) – rule notification
- Bureau of Energy Efficiency (BEE)** – issuance and calculation of carbon credits
- Central Pollution Control Board (CPCB)** – compliance enforcement and penalties

Sectors covered (second round):

- Petroleum refineries, Petrochemical units, Textile sector (spinning, processing, fibre, composite units), and Secondary aluminium.
- 208 industrial units added, including PSUs like Indian Oil, BPCL, HPCL, ONGC, Numaligarh Refinery and private players such as Reliance Industries.
- Earlier round – Oct 2025:** aluminium, cement, chlor-alkali, pulp & paper were added.

Key features

- Emission intensity metric:** Targets expressed as tCO₂e per unit of output, covering all greenhouse gases by global warming potential.
- Baseline year:** 2023–24; compliance targets set for 2025–26 and 2026–27.
- Carbon market linkage:** Covered entities are brought under India's domestic carbon market via the CCTS.

Incentive mechanism:

- Entities exceeding targets earn carbon credit certificates.
- Credits can be traded or banked for future compliance years.

Penalty for non-compliance:

- Environmental compensation = twice the average carbon credit price of that compliance year.
- Payable within 90 days, enforced by CPCB.
- Overall reduction ambition: ~3-7% reduction in emission intensity by 2026-27 compared to baseline.

Significance:

- Marks India's shift from voluntary efficiency measures to legally binding climate compliance.
- Strengthens the Indian Carbon Market (ICM) and price discovery for carbon.
- Supports India's NDC commitment of 45% reduction in GDP emission intensity by 2030 (vs 2005).

Indian Skimmer

- The Bombay Natural History Society (BNHS) and the National Mission for Clean Ganga (NMCG) have launched a new conservation project to protect the **endangered Indian Skimmer** and its breeding habitats across the Ganga Basin.

Indian Skimmer:

- The Indian Skimmer (*Rynchops albicollis*) is a **riverine bird species** known for its unique feeding behaviour of skimming the water surface with an elongated lower mandible to catch fish.

Habitat:

- Large, slow-flowing rivers with exposed sandbars and islands.
- Breeds mainly along river systems such as the Ganga, Chambal, Yamuna, and their tributaries.
- Uses coastal areas during the non-breeding season.

IUCN status:

- Endangered (EN) on the IUCN Red List
- Global population estimated at 3,700–4,400 individuals, with India hosting nearly 90% of the world population

Key characteristics:

- **Distinctive bill:** bright orange, with the lower mandible longer than the upper.
- **Plumage:** black upperparts and white underparts.
- Colonial nester, often **sharing sandbars with terns**.

- Indicator species of healthy riverine ecosystems.

Significance:

- Acts as a **flagship and indicator species for river health** and sediment dynamics.
- Sharp decline signals degradation of riverine habitats due to dams, altered flows, sand mining, and human disturbance.

Parakaempferia alba

- Scientists have discovered Parakaempferia alba, a new ginger species, in the Siang Valley region of Arunachal Pradesh.
- Taxonomic Family:** It is a herbaceous plant species belonging to the ginger family Zingiberaceae.
- Habitat Preference:** The species thrives in the moist, shaded undergrowth of tropical semi-evergreen forests with limited direct sunlight.
- Environment:** It typically grows at elevations of 150-400 metres, preferring humid, sandy soils along shaded streambanks.
- Ecological Role:** The plant acts as a ground-level stabiliser in riparian zones, reducing soil erosion through its root system.

World Enters Era of 'Global Water Bankruptcy'

- The United Nations University Institute for Water, Environment and Health (**UNU-INWEH**) report warns that the world has entered a state of "global water bankruptcy".

Water Bankruptcy

- It is a chronic condition in which long-term water use and pollution exceed renewable inflows, preventing natural systems from returning to historical baselines.

Key Drivers

- Climate Change:** It intensifies drought-flood extremes, disrupting predictable recharge cycles in rivers, aquifers, and glaciers.
- Pollution & Salinity:** Industrial waste, untreated sewage, and farm runoff render water unusable; over-irrigation and sea-level rise have salinised about 100 million hectares.
- Anthropogenic Drought:** Scarcity results from human over-allocation, mismanagement, and

over-extraction beyond sustainable limits.

Key Findings of the Report

- **Human Toll:** About 75% of humanity lives in water-insecure countries, while 4 billion people face water scarcity for 1 month each year.
- **Groundwater Collapse:** Nearly 70% of major aquifers are depleting, causing land subsidence across ~5% of the global land area.
- **Food Security Risk:** Over 50% of global food production is concentrated in regions with unstable or shrinking water storage.
- **Vanishing Ecosystems:** Around 410 million hectares of wetlands vanished over 50 years, eroding ecosystem services valued at \$5.1 trillion.
- **Glacial Loss:** Since 1970, glaciers have lost over 30% of their mass, reducing natural freshwater storage.
- **Day Zero Crisis:** Cities like Tehran and parts of Turkey face sudden municipal water system failures.
- **Regional Hotspots:** The highest irreversible risks lie in the Middle East and North Africa, Central-South Asia, Southwest US–Northern Mexico, Southern Africa, and Australia regions.
- **India's Status:** India is among the most critically affected countries, shifting from manageable water stress to a persistent hydrological deficit.

Key Recommendations of the Report

- **New Water Agenda:** Move away from “emergency fixes” (like deeper wells) towards the fundamental restructuring of water rights and claims.
- **Reforming Agriculture:** Transitioning away from water-intensive crops in arid regions and implementing a circular water economy with 100% wastewater reuse.
- **Natural Capital:** Protecting the remaining forests and wetlands as critical infrastructure rather than treating them as “free” land.
- **Global Monitoring:** Establishing a formal global framework to monitor “hydrological debt” and prevent total system collapse.

Darwin's Bark Spider

- Scientists studied Darwin's bark spider to identify conditions enabling the production of exceptionally tough silk.

- Darwin's bark spider is an orb-weaver endemic to Madagascar that produces the toughest biological material and constructs the largest orb webs recorded.
- The species was named after Charles Darwin to mark the **150th anniversary of The Origin of Species**.
- **Appearance:** They are medium-sized spiders with mottled dark brown to black colouration and a hairy texture: females are larger and about 14 times heavier than males.
- **Habitat:** The species occurs exclusively in Madagascar's riverine forests and wetlands.

Key Characteristics

- **Crypsis:** They mimic tree bark or twigs to remain hidden from predators during the day.
- **Web Gigantism:** They build large orb webs supported by long 'bridge lines' (up to 25 meters) to suspend webs across rivers and lakes.
- **Silk Strength:** Their silk is 10 times tougher than Kevlar and twice as tough as other spider silks.
- Only adult females produce ultra-tough silk; males and juveniles produce weaker, standard silk.
- **Unique Protein:** Female silk contains proline-rich proteins that confer record-breaking toughness and spring-like elasticity.
- **Proline** is a **non-essential amino acid** and a vital building block of proteins in living organisms.
- **Kevlar is a durable**, heat-resistant synthetic fibre about five times stronger than steel; it is used in safety gear such as bulletproof vests.

Kumbhalgarh Wildlife Sanctuary

- The Ministry of Environment, Forest and Climate Change has notified the Kumbhalgarh Wildlife Sanctuary as an Eco-Sensitive Zone (ESZ) to strengthen conservation in the Aravalli Range.

Kumbhalgarh Wildlife Sanctuary:

- Kumbhalgarh Wildlife Sanctuary is a protected wildlife reserve known for its dry deciduous forest ecosystem and rich faunal diversity, surrounding the historic Kumbhalgarh Fort.
- **Located in:**
- Rajasthan, spread across Rajsamand, Udaipur, and Pali districts.
- Part of the Aravalli hill system in western India.
- Total area: ~610.5 sq km, comprising a core and buffer zone.

Geological features:

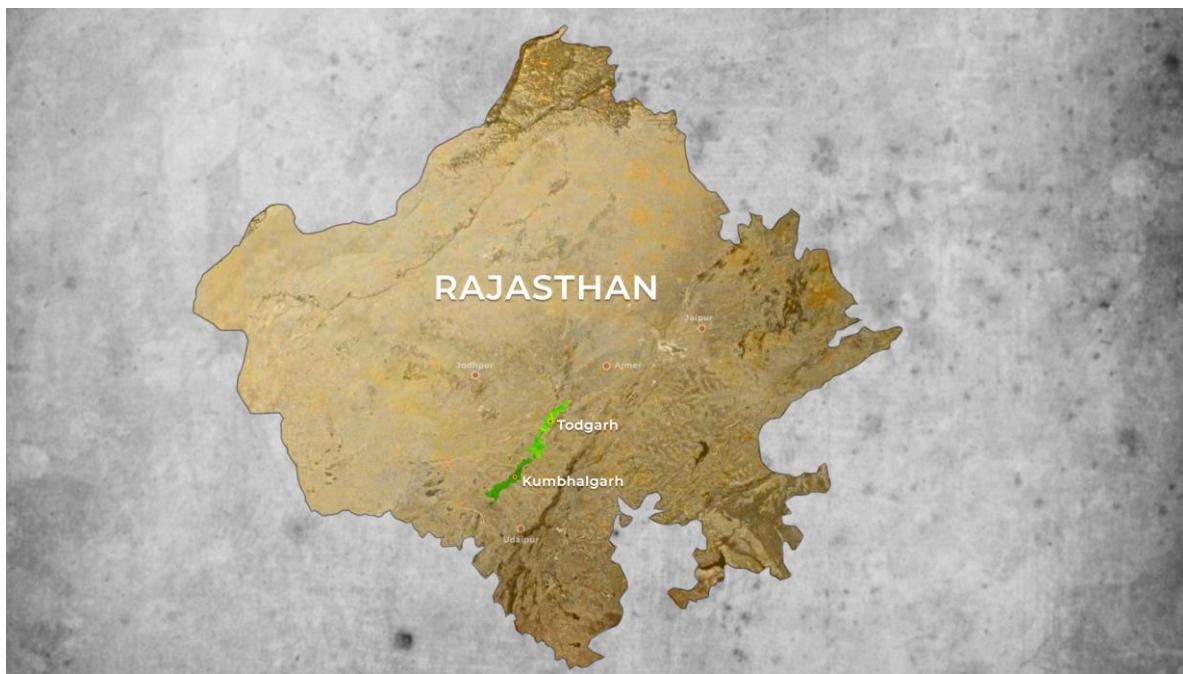
- Lies at an elevation of 500–1,300 metres, covering four Aravalli ranges: **Kumbhalgarh, Sadri,**

Desuri, and Bokhada.

- Dominated by ancient **metamorphic (Archean) rocks** with thin sandy-loam soils.
- Falls under the **Khathiar-Gir dry deciduous forest ecoregion**, supporting scrub forests, grasslands, and woodland species.
- **Fauna:** Leopard (apex predator), Indian wolf, sloth bear, striped hyena, jungle cat, golden jackal, sambhar, nilgai, chousingha, chinkara, Indian hare, Indian pangolin.
- **Avifauna:** Grey junglefowl, painted francolin, Indian eagle-owl.
- **Herpetofauna & aquatic life:** Indian cobra, rat snake, checkered keelback; fish like mahseer, rohu, katla.

Significance:

- Acts as a critical biodiversity corridor in the Aravalli landscape.
- ESZ status (0-1 km around the sanctuary) helps regulate harmful activities and reduce habitat fragmentation.



Two new rare ant fly species discovered

- Researchers have discovered two new, extremely rare ant fly species from Delhi and the Western Ghats, underscoring the hidden biodiversity of urban forests and biodiversity hotspots.

What it is?

- Ant flies belong to the subfamily **Microdontinae** (family **Syrphidae**) and are renowned for **myrmecophily**—their larvae live inside ant nests and feed on ant brood. This specialised ecology makes them exceptionally rare and hard to detect.

Metadon ghorpadei

- Scientific name: ***Metadon ghorpadei***
- Discovery site: Northern Ridge Forest, Delhi Ridge (urban, disturbed habitat)
- **Key features:**
 - Microdontinae ant fly with ant-nest-dependent larval stage (myrmecophily).
 - Adults are **inconspicuous**, seldom visit flowers, and stay close to ant colonies.
- **Significance:**
 - Reveals high conservation value of urban green patches, even fragmented forests.
 - Highlights risks of habitat-specific biodiversity loss when urban planning focuses only on green cover.

Metadon reemeri

- Scientific name: ***Metadon reemeri***
- Discovery site: **Siruvani Hills**, Western Ghats, Tamil Nadu
- **Key features:**
 - Shares specialised ant-associated life cycle typical of Microdontinae.
 - Part of a poorly studied insect group despite the region's strong protection.
- **Significance:**
 - Adds to endemism-rich insect diversity of the Western Ghats.
 - Signals the need for targeted surveys and molecular phylogenetics for lesser-known taxa.

Significance:

- Only 27 Microdontinae species are known from the Indian subcontinent (out of ~454 globally).
- Discoveries stress habitat mapping, invasive control, and native vegetation restoration to conserve cryptic insect fauna across urban forests and biodiversity hotspots.

Sacred Groves in the Northern Western Ghats

- A new study comparing four forest protection regimes in the **Konkan-Northern Western**

Ghats finds that sacred groves face the highest human disturbance.

Key Findings of the Study

- **High Disturbance:** Sacred groves recorded the highest Combined Disturbance Index (CDI) ~47.75, indicating maximum cumulative human pressure.
- **Private Forests:** Private forests (coffee plantations/silviculture, etc.) had CDI ~34.5, showing high degradation among non-state regimes.
- **State Protection:** Reserve Forests CDI ~31.5 and Protected Areas CDI ~17.5, showing stronger control.
- **Landscape Richness:** Researchers recorded 3,360 woody plants from 148 species and 43 families.
- **Shared Biodiversity:** ~ 50% species were shared across all four regimes, showing ecological overlap.

Why Sacred Groves are Facing Higher Pressure?

- **Urbanisation Spillover:** Expansion of settlements and roads increases fragmentation of groves.
- **Cultural Erosion:** Decline of taboos and nature-worship norms weakens community enforcement.
- **Livestock & Fuel Dependence:** Grazing & lopping for fodder & firewood gradually damage the canopy.
- **Festival/Tourism Load:** Study counts festivals & tourism as a disturbance driver; E.g., Kodagu's "*Devara Kadu Habba*" (*Sacred Grove Festival*) draws visitors and increases trampling inside groves.

Way Forward

- **Mosaic Governance:** Manage landscapes as a mixed protection system (sacred groves + reserve forests + protected areas + private forests) with regime-specific disturbance control.
- **Community Revival:** Rebuild local conservation norms through Gram Sabha & community bodies.
- **Disturbance Zoning:** Create entry/path regulation, seasonal caps on festivals, and no-construction buffer zones; E.g., notified "eco-sensitive micro-zones" around groves.
- **Fire Management:** Install early warning and a joint fire-preparedness model with the Forest Department.

Sacred Groves

- **Forested patches preserved by local communities due to cultural and religious beliefs.**
- **Legal Basis:** The Wild Life (Protection) Act, 1972 empowers the State Government to declare any private or community land as a community reserve for protecting fauna, flora and cultural practices.
- **Ecological Role:** They serve as biodiversity hotspots, regulate local climates & prevent soil erosion.
- **Cultural Importance:** These are integral to community rituals, symbolising respect for nature.
- **Local Names:** Kavu/Sarpa Kavu (Kerala), Devarakadu (Karnataka), Devrai/Devrahati (Konkan), Oran (Rajasthan), Dev Van/Deodar patches (HP-Uttarakhand) and Kovil Kadu (Tamil Nadu).

Commission for Air Quality Management (CAQM) Report on Causes of Air Pollution in Delhi-NCR

- The expert report was prepared following a Supreme Court order related to the M.C. Mehta vs. Union of India case.

Key findings of the Report

- **Secondary Particulate Matter:** Largest contributor (27%) to Delhi's winter pollution.
- Secondary Particulate Matter are fine particles formed in the atmosphere through chemical reactions of precursor gases like SO₂, NO_x, NH₃ and VOCs, e.g., ammonium nitrate and ammonium sulphate aerosols.
- **Other Major Winter Contributors:** Transport is the largest primary source at 23%, followed by biomass burning (20%).
- Dust accounts for 15% (comprising road, soil, and construction & demolition sources), while industry including thermal power plants contributes 9%.
- **Trends in PM2.5 and PM10:** A gradual decline and stable trends are noted in both PM2.5 and PM10 concentrations in Delhi since 2016
- However, there is still a huge gap to meet the annual National Ambient Air Quality Standards (NAAQS).
- **Transboundary Pollution:** Around two-thirds of Delhi's PM2.5 originates outside Delhi.
- **Seasonality:** Pollution peaks during winter mainly due to low wind speed, shallow planetary

boundary layer and atmospheric stagnation which traps pollutants, rather than sudden emission spikes.

Recommendations

- **Infrastructure:** Augment waste-to-energy plants, installing barrier-free toll systems and rationalizing the Environment Compensation Charge.
- **Transport Reforms:** Phasing out polluting vehicles, expanding electric/CNG public transport and zero-emission mobility, address congestion with traffic management etc.
- **Governance:** Implementing mandatory annual action plans for NCR states to ensure accountability.

State of Finance for Nature 2026 Report by UN Environment Programme (UNEP)

- The report highlights a global financial imbalance in spending, skewed towards nature-negative finance in comparison to nature-positive finance.
- Nature-positive finance are investments in activities promoting environmental conservation. E.g. Nature-based Solutions (NbS)
- Nature-negative finance are investments that potentially degrade natural infrastructure. E.g. Environmentally Harmful Subsidies

Key Highlights of the Report

- **Massive Funding Gap:** In 2023, finance for nature-negative activities reached \$7.3 trillion (30 times higher), while investment in nature-based solutions (NbS) was just \$220 billion.
- **Public-Private finance gap:** 90% of NbS finance is public finance while private finance is concentrated in high-impact sectors like fossil fuels, heavy industry, etc.
- **Investment Need:** To meet the Rio Convention targets (limiting warming to 1.5°C and halting biodiversity loss), annual NbS investment must increase by >2.5 times to \$571 billion by 2030.
- **Key Recommendations:** Redirecting capital flows away from nature-negative activities, reforming harmful subsidies, Mandating disclosure of nature-related risks, Expanding blended finance and de-risking investments to mobilise private capital.

Nature Based Solutions (NbS)

- NbS leverage nature and the power of healthy ecosystems to address societal challenges through

actions to protect, sustainably manage, and restore natural and modified ecosystems, benefiting people and nature at the same time. E.g. Protecting and restoring coral reefs, Building greener cities, etc.

Key Initiatives for NbS

1. Global

- **Kunming-Montreal Global Biodiversity Framework (GBF):** Aims to protect 30% of land and sea by 2030 and \$500 billion/year reduction in harmful subsidies.
- **Taskforce on Nature-related Financial Disclosures (TNFD):** A framework for businesses to report and act on nature-related risks and impacts.

2. India

- **MISHTI Scheme** (Mangrove Initiative for Shoreline Habitats & Tangible Incomes): Aimed at mangrove plantation along the coastline and salt pans.
- **Amrit Dharohar:** To promote the conservation of Ramsar sites (wetlands) through community participation.

Pangolakha Wildlife Sanctuary

- A forest fire has been raging since 20 January 2026 in Pangolakha Wildlife Sanctuary, near the Indo-China border, affecting about 12 hectares of forest land.
- **Pangolakha Wildlife Sanctuary:**
- Pangolakha Wildlife Sanctuary is a high-altitude protected area and a designated Important Bird Area (IBA), known for its exceptional alpine to subtropical biodiversity and strategic location along India's eastern Himalayan frontier.
- **Located in: East Sikkim, Sikkim.**
- **Altitude (~1,300 m to >4,000 m):** Wide elevation range creates subtropical, temperate and alpine ecosystems, supporting high biodiversity and climate-sensitive species.
- **Area (~12,400 hectares):** Large contiguous forest expanse enables ecological connectivity, wildlife movement, and functioning of high-altitude watersheds.
- **Established (2002):** Notified to legally protect fragile eastern Himalayan ecosystems and conserve rare flora, fauna, and migratory bird habitats.
- **Neighbouring states / nations**
- Bhutan to the east

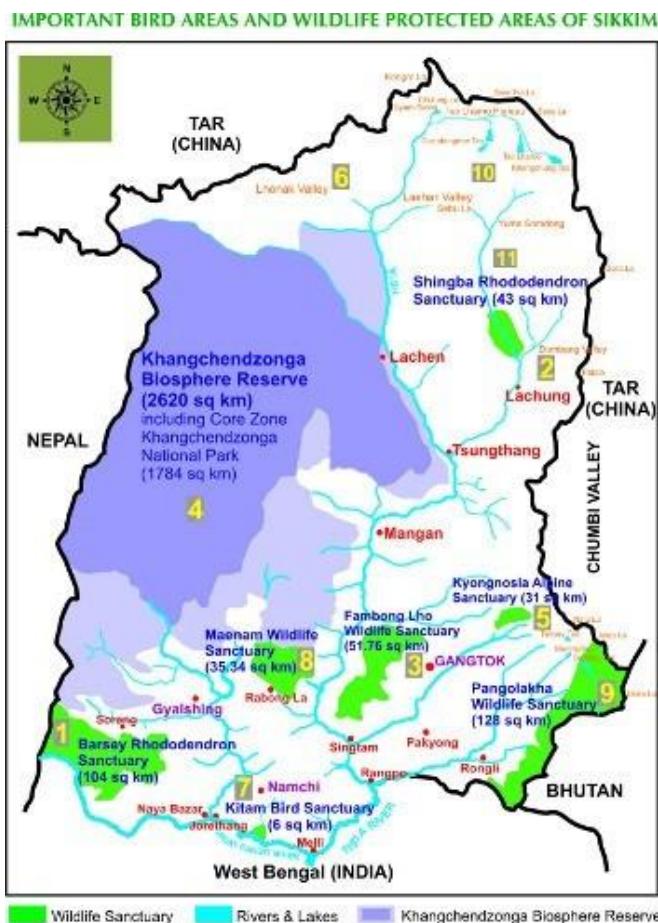
- China (Tibet Autonomous Region) to the north (via Nathu La-Jelep La corridor)
- Extends southwards towards West Bengal, connecting with Neora Valley National Park

Key features:

- Unique biogeography:
- Part of the Eastern Himalayas biodiversity hotspot

Encompasses three biomes:

1. Eurasian High Montane (Alpine & Tibetan)
2. Sino-Himalayan Temperate Forest
3. Sino-Himalayan Subtropical Forest



Rich flora:

- Rhododendron forests, Silver Fir, Juniper, oak forests with dense bamboo thickets
- Alpine pastures and high-altitude wetlands such as Bedang Tso Lake

Diverse fauna:

- Tiger, Leopard, Takin, Musk Deer, Goral, Serow, Asiatic Black Bear

- Himalayan Monal, Snow Partridge, Pallas's Fish Eagle, Wood Snipe (Vulnerable), Tibetan Eared Pheasant (Near Threatened)

- Acts as a migratory corridor via Nathu La and Jelep La passes

Strategic & military significance:

- Located along sensitive India–China–Bhutan tri-junction zone
- Area hosts Army deployments, affecting access and conservation operations

Significance:

- Critical habitat for endangered Himalayan species and high-altitude wetlands.
- Acts as a natural water regulator through forests and alpine lakes.
- Highly sensitive to climate change, forest fires and reduced snowfall.

Whale Shark

- A whale shark (*Rhincodon typus*) was recently sighted near **Rushikonda Beach** in Visakhapatnam, Andhra Pradesh.

Whale Shark (*Rhincodon typus*)

- **About:** The Whale Shark is the world's **largest living fish** and belongs to Class **Chondrichthyes (cartilaginous fishes)**.
- **Appearance:** It has a flattened head, a wide terminal mouth, and a dark grey body marked by white spots and stripes.
- **Spot Pattern:** The arrangement of spots and lines on the skin is unique to each whale shark.
- **Mouth Position:** Unlike most sharks, its mouth opens at the front of the head, not on the underside.
- **Habitat Preference:** The species prefers warm surface waters, typically between 21°C and 30°C.
- **Distribution:** It is found in tropical and warm-temperate oceans but is rare in the Mediterranean Sea.
- **Indian Range:** Major aggregations occur along Gujarat's Saurashtra coast, with smaller populations in Lakshadweep, Kerala, and Andhra Pradesh.
- **Behaviour Traits:** Despite its enormous size, it is solitary, gentle, and harmless to humans, earning it the name "**gentle giant**."
- **Feeding Method:** It is a **filter feeder** that consumes plankton, krill, and small fish by sucking in water and filtering it through gill rakers.
- **Ecological Role:** Whale Shark serves as an **indicator species**, reflecting nutrient-rich waters and

high plankton productivity.

- **Reproductive:** The species is **ovoviviparous**, with eggs hatching inside the female and releasing fully formed live pups.
- **Key Threats:** Net bycatch, vessel collisions, and ingestion of marine plastic debris.
- **Conservation Status:** IUCN: Endangered; CITES: Appendix II; WPA: Schedule I
- **Conservation Initiative:** The “Save the Whale Shark Campaign”, launched in 2004 by Wildlife Trust of India (WTI), is recognised as a community-based marine conservation model.

Gangapur Dam

- The Indian Air Force (IAF) conducted an aerial display over the Gangapur Dam.
- Gangapur Dam is an **earthfill dam** near Nashik, Maharashtra. It is the **longest earthen dam in Asia**.
- It is built on the **Godavari River** at the confluence with **the Kashyapi River**.
- The dam is designed using **Terzaghi's** soil mechanics principles, ensuring structural stability.
- It has a unique emergency spillway designed to protect the dam body in case the main spillway fails.
- The dam supplies irrigation and drinking water to Nashik and the surrounding drought-prone regions.

Asiatic Wild Dog (Dhole)

- A rare Asiatic Wild Dog (Dhole) has been camera-trapped for the first time in **Ratapani Tiger Reserve**, Madhya Pradesh, indicating improving habitat and prey conditions.

Asiatic Wild Dog (Dhole):

- The Asiatic Wild Dog, commonly called the **Dhole (Cuon alpinus)**, is a wild canid native to South and Southeast Asia. It is a **highly social, pack-hunting** top predator that plays a key role in regulating herbivore populations.

Habitat and distribution

- **Preferred habitats:** Dense forests, forest-grassland mosaics, and hilly/undulating landscapes with adequate prey.

- **India:** Found mainly in central Indian forests and the Western/Eastern Ghats, typically within or near large protected landscapes where prey base is strong.
- **Ecological requirement:** Needs large, connected habitats because packs range widely and depend on continuous prey availability.
- **IUCN Red List: Endangered (EN)**

Key characteristics

- **Pack hunter:** Typically hunts in cooperative groups, relying on teamwork rather than solitary ambush.
- **Prey preference:** Medium-to-large ungulates such as chital, sambar, deer, etc.
- **Highly social:** Lives in clans/packs with cooperative care of young; strong coordination during hunts.
- **Distinctive identity:** Reddish coat, rounded ears, and specialised dentition adapted for meat-shearing.
- **Competition:** Coexists with tigers and leopards; overlaps in prey but often differentiates through hunting strategy and pack behaviour.

Significance:

- Presence suggests good prey base + habitat quality + reduced disturbance.
- Adds another apex/meso-level predator, improving trophic balance and biodiversity stability.

Government launches Digital Climate Atlas, marking 15 years of NICRA

- A new digital platform, Atlas of Climate Adaptation in Indian Agriculture (**ACASA-India**) has been launched to help farmers plan for climate challenges.
- It has been developed by ICAR-led **National Agricultural Research and Extension System (NARES)** in collaboration with **Borlaug Institute for South Asia (BISA) -CIMMYT** to support location-specific, data-driven adaptation planning for climate resilient agriculture.
- Insights from ACASA-India would help government agencies determine future investment requirements for climate risk mitigation and scaling opportunities.

National Innovations in Climate Resilient Agriculture (NICRA)

- **Launched by:** Indian Council of Agricultural Research (ICAR) in 2011
- **Objective:**

- To enhance resilience of Indian agriculture to climate change and vulnerability
- To validate and demonstrate climate resilient technologies on farmer's fields.

What is Climate Resilient Agriculture (CRA)?

- It refers to adopting adaptation and mitigation practices in agriculture to enhance system's ability to withstand climate shocks and recover quickly.

Need for CRA

- **Preventing Yield loss:** Climate change can reduce yields by 4.5 to 9.0% resulting in around 1.5% GDP loss per year.
- **Protecting Livelihoods:** Around 57% of rural households depend on farming for income.
- **Rainfed Area Vulnerability:** 51% of India's net sown area is rainfed, producing ~40% of food, making it highly sensitive to climate variability.
- **Food security:** India faces increased issues of undernourishment, child malnutrition, micronutrient deficiency etc.

Environmental (Protection) Fund Rules, 2026

- Government notified rules for utilisation of Environmental (Protection) Fund (EPF) to ensure penalties collected under environmental laws are used for pollution control.

About Environmental (Protection) Fund (EPF)

- **Legal Backing:** Enabled through the **Jan Vishwas (Amendment of Provisions) Act, 2023**, which decriminalised minor environmental offences but retained monetary penalties.
- **Core Idea:** Converts "polluter pays" penalties into restorative environmental outcomes.
- **Penalty Pool:** Fund is built from penalties/compensation imposed under key environmental laws like the Air Act, Water Act, and Environment (Protection) Act, 1986.

Administrative & Digital Architecture

- **Nodal Authority:** MoEFCC will administer the fund (or notify another competent body).
- **PMU Model:** Dedicated Project Management Units at the Centre and States for implementation.
- **Online Portal:** CPCB online portal enables tracking of allocation, utilisation and project outputs.
- **CAG Audit:** Fund to be audited periodically by CAG to prevent misuse/diversion.
- **Centre-State Sharing:** 75% penalty amount transferred to the Consolidated Fund of the concerned State & 25% retained by the Centre for national-level environmental initiatives.

- **Permitted Activities:** Rules allow fund use across 11 broad categories.

Permitted Uses of the Fund

- **Pollution Control:** Prevention, control and mitigation of air, water, and soil pollution.
- **Site Remediation:** Restoration of contaminated/degraded environmental sites.
- **Monitoring Systems:** Installation, operation and maintenance of monitoring equipment.
- **Lab Strengthening:** Building/upgrading lab infrastructure for environmental testing and compliance.
- **Institutional Capacity:** Capacity building of regulators & technical personnel for stronger enforcement.
- **Clean-Tech Push:** Research, innovation and adoption of clean/green technologies for sustainability.

Agarwood

- Union Minister laid the foundation stone of the ₹80 crore **Agarwood Value Chain Development Scheme** in Tripura to strengthen the sector from farm to global markets.

Agarwood: What it is?

- Agarwood (also called oud, gaharu, aloeswood) is a highly fragrant, **resinous heartwood** formed in **Aquilaria trees** when they are wounded and infected by fungi, triggering a defensive resin response.

Origin:

- Mentioned in ancient Ayurvedic texts such as the **Susruta Samhita** and in early Islamic literature, agarwood has been traded for thousands of years across Asia and the Middle East.

Habitat:

- Found mainly in South and Southeast Asia, including India (Tripura, Assam and the Northeast), Bangladesh, Vietnam, Indonesia, Malaysia and China.
- Aquilaria species thrive in tropical evergreen and semi-evergreen forests.

Key features:

- Resin formation is rare in nature (only ~10% of wild trees), making agarwood extremely valuable.
- Natural agarwood can take 20–50 years to develop, prompting artificial induction (biological, chemical and physical methods).
- Listed under **CITES Appendix II** due to overexploitation and illegal trade risks.

Applications

- **Perfumery:** High-end fragrances and essential oils, especially in the Middle East.
- **Incense & rituals:** Widely used in religious and cultural ceremonies.
- **Medicine:** Traditional Ayurvedic, Chinese and Unani systems (bioactive compounds like chromones and terpenoids).
- **Trade & exports:** One of the most expensive forest products, with premium agarwood oil fetching very high prices globally.

Bactrian Camel

- Two Bactrian camels named '**Galwan**' and '**Nubra**' will feature in the **Republic Day Parade 2026** on **Kartavya Path** as part of the **Army's Animal Contingent**, highlighting Ladakh's unique cold-desert heritage.

Bactrian Camel: What it is?

- A double-humped camel adapted to extreme cold and arid conditions of Central Asian cold deserts.

Found in:

- **India:** The species is found only in Ladakh (Nubra Valley) in India, making its appearance nationally significant.

- **Global:** Mongolia, China, Kazakhstan, parts of Central Asia.

Origin:

- Domesticated ~5,000–6,000 years ago in Central Asia (around modern Uzbekistan–West Kazakhstan region).
- Named after Bactria, an ancient Central Asian region.

IUCN Status:

- Wild Bactrian camel (*Camelus ferus*): **Critically Endangered**.

Types

1. **Wild Bactrian Camel: *Camelus ferus* (Critically Endangered).**

2. **Domestic Bactrian Camel: *Camelus bactrianus* (Common, domesticated).**

Key characteristics

- **Two humps:** Store fat (not water), providing energy during long periods of food scarcity in cold deserts.
- **Cold tolerance:** Long, shaggy winter coat insulates against sub-zero temperatures and is shed in summer to prevent overheating.
- **Water efficiency:** Can drink up to ~35 gallons at once and safely consume saline water unavailable to most animals.
- **Diet adaptability:** Tough, leathery lips allow it to eat thorny, bitter and highly saline desert vegetation.
- **Desert adaptations:** Broad hooves prevent sinking in sand, while long eyelashes and a third eyelid protect eyes from sandstorms.
- **Role in Indian history:**
 - Integral to Silk Road trade, linking India–Central Asia–China; famed as the “ships of the Silk Road”.
 - Used by caravans that enabled movement of goods (jade, horses), ideas, and monks (e.g., Buddhist pilgrims to India).
 - In Ladakh, supported trans-Himalayan commerce and connectivity before mechanisation.

Polar Vortex induced Winter storm

- A polar vortex–driven winter storm swept across the United States in January 2026, bringing heavy snow, freezing rain and sub-zero temperatures to nearly 17 states, causing deaths and severe travel disruptions.

What it is?

- The polar vortex is a large, persistent area of **low pressure** and extremely cold air that circulates around the Earth's polar regions.
- Polar vortex is a large persistent low-pressure zone having a mass of extremely cold air, contained within the Polar Regions by the polar-front jet stream.
- **Polar-front jet stream** is an **eastward-moving belt** of strong stratospheric winds that separates warm tropical air from cold polar air in the mid-latitudes.
- **Direction of Rotation:** It rotates counter-clockwise at the North Pole and clockwise at the South Pole.
- **Factors responsible for its formation:** Temperature Gradients (between cold Polar regions and warm tropical regions), Earth's Rotation (Coriolis Force), Pressure Gradient Force and Jet Stream

Interaction.

- **Stability:** When the vortex is strong and stable, it keeps the jet stream traveling in a tight, circular path, trapping cold air north and keeping warm air south.
- When weakened, it becomes wavy (see image), thus, bringing extreme cold to south.

It exists in two forms: Types of Polar Vortex

1. Tropospheric polar vortex (10 km to 15 km), where most weather phenomena occur.
2. Stratospheric polar vortex (15-50 Km), it is strongest in winter season.

Impacts of Polar Vortex

- **Cold weather:** It is believed that due to rapid warming of the Arctic (Arctic amplification) the temperature contrast between poles and mid-latitudes is reducing, which may make the vortex more unstable, increasing the frequency of severe winter outbreaks.
- **Ozone depletion:** The trapped cold air in the vortex accelerates ozone depletion, particularly over Antarctica, leading to the ozone hole.
- **Impact on India:** There is no direct relation between the Polar Vortex and Indian weather but the Arctic winds are pushing various weather systems, including the western disturbance.

Antarctic Activities and Environmental Protection Law

- China has proposed a draft Antarctic Activities and Environmental Protection Law, submitted for first reading to the National People's Congress Standing Committee in December 2025.

Antarctic Activities and Environmental Protection Law:

- A comprehensive domestic law to regulate all China-linked activities in Antarctica, aligning national practice with the Antarctic Treaty System.

Proposed by:

- The Government of China, tabled before the National People's Congress Standing Committee for legislative scrutiny.

Aim:

- To coordinate, manage and legally regulate Antarctic activities;
- Ensure peaceful use and environmental protection;
- Strengthen China's role in global Antarctic governance.

Key features

- **Wide jurisdiction:** Applies to Chinese citizens/entities and foreign expeditions organised from

China or departing Chinese ports.

- **Permitting regime:** Expands administrative permissions beyond science to tourism, shipping and fishing.
- **Environmental safeguards:** Mandatory Environmental Impact Assessments (EIAs), waste management rules, marine pollution control, and protection of flora, fauna, and heritage sites.
- **Peaceful use:** Military activities prohibited, except limited support for peaceful purposes; no weapons testing or combat operations.
- **Resource protection:** Ban on mineral exploitation, except for scientific research.
- **Compliance & penalties:** Sanctions for unauthorised activities; requirements for insurance/financial guarantees and emergency response plans.
- **Low-carbon conduct:** Encourages environmentally friendly operations and incident-response mechanisms.

Significance

- Marks China's shift from policy-based management to a binding legal framework for Antarctic engagement.
- Helps close regulatory gaps around private tourism and commercial activities amid rising Chinese presence.

Day Zero

- The concept of "Day Zero" has re-entered global focus as the United Nations warned that worsening climate change, groundwater depletion, and weak water governance could push many cities—including in India—towards acute water collapse.
- **Day Zero:**
- "Day Zero" refers to the point at which a city or region's usable water supply falls below a critical threshold, forcing authorities to shut off regular tap water and supply water only through rationed emergency distribution points.
- **Origin of the term:**
- The term gained global prominence during **Cape Town's near Day Zero crisis in 2018**, when reservoir levels dropped to dangerously low levels.
- Since then, UN agencies have adopted the term to describe systemic urban water collapse, not just temporary droughts.

Key features of Day Zero:

- Suspension of normal water supply to households.
- Water prioritised for essential services such as hospitals, sanitation, and firefighting.
- Rationing of water through public collection points with strict per-person limits.
- Triggered by long-term stressors, not a single bad monsoon or drought year.
- Often linked to over-extraction of groundwater, poor planning, and climate variability.

Implications:

- Public health crises due to lack of safe drinking water and sanitation.
- Urban disruption, including power shortages, food supply stress, and economic losses.
- Social unrest and inequality, with women, children, and informal settlements disproportionately affected.
- Agricultural and food security risks, especially in groundwater-dependent regions.

Aralam Butterfly Sanctuary

- The Kerala government has officially renamed Aralam Wildlife Sanctuary as **Aralam Butterfly Sanctuary**, making it the **first butterfly sanctuary in Kerala**.

Aralam Butterfly Sanctuary:

- A protected area in the Western Ghats, now exclusively recognised as Kerala's first butterfly sanctuary, dedicated to the conservation of butterfly species and their habitats.
- **Located in:** Kannur district, Kerala, on the western slopes of the Western Ghats, bordering **Brahmagiri Wildlife Sanctuary (Karnataka)** and adjoining **Kottiyoor Wildlife Sanctuary**.
- Constituted in 1984 under the Wildlife (Protection) Act, 1972.
- Originally notified as Aralam Wildlife Sanctuary, carved out from vested private forests and reserved forests.
- Renamed in July 2025–January 2026 following a recommendation of the State Board for Wildlife, citing unmatched butterfly richness.

Key geographical features:

- Area: ~55 sq km of evergreen and semi-evergreen forests.
- Hydrology: Drained by the **Cheenkanni River**, a major tributary system of Kannur district.

Climate:

- High rainfall (~4000–6000 mm annually).
- Temperature range: 11°C–40°C.
- High humidity supporting rich microclimates.

Biodiversity hotspot:

- 266 of Kerala's 327 butterfly species recorded.
- Noted for mass butterfly migration and mud-puddling.
- Habitat of the Schedule I Slender Loris and other Western Ghats endemics.



Significance:

- Elevates Aralam as a nationally unique conservation model focused on insects, especially pollinators.
- Strengthens protection of butterflies as indicators of ecosystem health.
- Enhances Kerala's profile in biodiversity conservation and eco-tourism.

- Supports Western Ghats conservation, a UNESCO World Heritage biodiversity hotspot.

Ocean Floor Emerging as the World's Largest Dump Site

- A 2021 review paper, "**The Quest for Seafloor Macrolitter**," warns that the seafloor has become a permanent waste reservoir.
- The study focuses on anthropogenic items larger than 2.5 cm (**macrolitter**), which constitute most of the mass of ocean-floor debris, unlike microplastics.
- Monitoring Challenge:** Most data come from bottom-trawl fishing surveys, which damage seafloors and exclude cliffs and reefs, leaving out nearly half the seafloor.

Key Findings of the Study

- Global Sink:** Over 90% of marine plastic ultimately sinks, making the seafloor a cumulative, semi-permanent plastic repository.
- Dominant Materials:** Plastics account for about 62% of seafloor litter, followed by metal, glass, processed wood, and abandoned, lost, or discarded fishing gear.
- Geomorphic Hotspots:** High-density "patches" occur in submarine canyons and enclosed seas, such as the Mediterranean.
- Persistence:** Cold, dark, low-oxygen deep-sea conditions inhibit polymer degradation, enabling litter to persist for centuries.

Ecological Impacts of Seafloor Litter

- Biodiversity Risk:** Seafloor macrolitter affects more than 700 marine species; about 17% of these are listed as threatened on the IUCN Red List.
- Ghost Fishing:** Abandoned synthetic fishing gear continues to capture and kill marine fauna for decades, depleting stocks and disrupting deep-sea food webs.
- Ecosystem Alteration:** Large items like containers and tyres form artificial reefs, allowing invasive species to colonise deep-sea soft sediments, changing local ecology.
- Chemical Leaching:** Litter transports toxic chemicals (xenobiotics) and heavy metals, which can enter the food chain and reach humans through seafood.

Key Recommendations

- Non-Invasive Tools:** Greater use of ROVs (Remotely Operated Vehicles) and AUVs (Autonomous

Underwater Vehicles) for comprehensive, low-impact seafloor monitoring.

- **Data Harmonisation:** Standardising reporting units is essential for global comparative assessments.
- **AI Integration:** Machine-learning tools are required to process vast video datasets generated by underwater survey drones.
- **Upstream Mitigation:** Since deep-sea cleanup is unviable, policy must prioritise source-to-sea waste reduction and circular economy measures.

Smart Fishing Harbour at Mayabunder

- In a major boost to India's maritime infrastructure, the Union Department of Fisheries has sanctioned the development of a Smart and Integrated Fishing Harbour at Mayabunder, Andaman & Nicobar Islands.

Mayabunder: Where it is?

- Mayabunder is a town and tehsil and the administrative headquarters of the North and Middle Andaman district, serving as a key economic, fisheries, and tourism hub in northern Andaman.

Located in:

- Northern part of Middle Andaman Island, within the Andaman and Nicobar Islands.
- About 242 km from Port Blair by road (Andaman Trunk Road) and 136 km by sea.

Geographical features:

- **Karmatang Beach:** Known as the "Turtle Paradise" of Andaman, Karmatang Beach is a globally recognized sea turtle nesting ground. It serves as a vital eco-sensitive zone where **Olive Ridley and Leatherback turtles** return annually
- **Interview Island:** As the largest wildlife island in the Andaman group, Interview Island is notable for its natural freshwater springs and limestone caves, a rare feature in saline island systems.
- **Avis (Aves) Island:** Located near Mayabunder, Avis Island is an uninhabited coral island known for extensive coconut plantations and clear lagoons.
- Mayabunder lies within a seismically active zone and a highly productive marine ecosystem.

Key Features of the Mayabunder Smart Harbour:

- The new harbour isn't just a landing site; it's an integrated tech-ecosystem designed to handle 9,900 tonnes of fish annually.

- **Vessel Capacity:** Safe berthing and landing facilities for 430 fishing vessels.
- **IoT-Enabled Systems:** Integration of digital traceability and IoT for real-time monitoring
- **Sustainable Management:** Focused on combating Illegal, Unreported, and Unregulated (IUU) fishing.
- **Energy Efficiency:** Implementation of green energy and eco-friendly post-harvest handling to reduce losses.

Lonar Lake Faces Threat from Rising Water Levels

- A new digital platform, Atlas of Climate Adaptation in Indian Agriculture (**ACASA-India**) has been launched to help farmers plan for climate challenges.
- Lonar Lake is facing a critical threat from an unprecedented rise in water levels.
- **Key Causes:** Borewell drilling in catchment areas punctured basalt layers, activating underground channels that direct groundwater into the crater; new springs and higher rainfall increased inflow.
- **Key Impacts:** Freshwater inflow has lowered lake alkalinity, threatening microbe diversity; rising water levels have submerged ancient temples, while pesticide use is causing geological damage.

About Lonar Lake

- Lonar Lake is a hyper-velocity impact crater formed when a meteorite struck the **basaltic Deccan Plateau** during the **Pleistocene Epoch**.
- It is India's only basaltic impact crater and one of only four high-velocity basaltic impact craters worldwide (others are in Brazil).
- **National Status:** The site is a notified **National Geo-heritage Monument** under the Geological Survey of India (GSI) and is located within the **Lonar Wildlife Sanctuary**.
- **Ramsar Recognition:** It was designated a Ramsar Site in 2020, making it Maharashtra's 2nd such site.
- **Hydrological Nature:** The lake is an endorheic basin with no outlet, historically containing highly saline and alkaline water; It is often called a '**Soda Lake**' because of its high alkalinity.
- **Microbial Diversity:** The lake hosts extremophiles such as **haloarchaea**, which produce carotenoid pigments in high salinity.
- These haloarchaea caused the lake's striking pink colour change observed prominently in 2020.
- **Cultural Heritage:** The crater rim contains ancient temples, including the **Daitya Sudan Temple** in the **Hemadpanthi style** and the **Kamalja Devi Temple**.

A New Mushroom Species Discovered in Uttarakhand

- Researchers have discovered a new mushroom species, *Hemileccinum indicum*, in the temperate oak forests of Bageshwar district, Uttarakhand.
- The discovery marks the first official record of this group of fungi in India.
- ***Hemileccinum indicum*** is a bolete mushroom characterised by pores rather than gills under its cap.
- **Morphology:** It has a wrinkled violet-brown cap that matures into a leathery brown surface.
- **Pore Surface:** The pastel yellow pore layer shows no colour change when bruised.
- **Unique Feature:** Scanning Electron Microscope (SEM) analysis reveals tiny, intricate pits on the spores.
- **Diagnostic Distinction:** The microscopic pinholes and a smooth stem surface distinguish it from American and Asian relatives.
- **Ecological Role:** The species is ectomycorrhizal, forming symbiotic root associations with oak trees to enable nutrient exchange and forest health.

New plant species: *Hoya nagaensis*

- Researchers from Nagaland University have recorded a new plant species, *Hoya nagaensis*, from a community-managed forest in Nagaland.

***Hoya nagaensis* : What it is?**

- *Hoya nagaensis* is a previously undocumented flowering plant species belonging to the *Hoya* genus (known for ornamental and waxy flowers), newly described through taxonomic research.

Region found in:

- **Kavünhou Community Reserved Forest,**
- Located in **Phek district**, within the Eastern Himalayan biodiversity region.

Key features:

- Distinctive leaf morphology and floral traits that clearly differentiate it from known *Hoya* species
- High-altitude temperate forest habitat, largely unexplored scientifically

- Extremely restricted distribution, recorded from a single location
- Provisionally assessed as Critically Endangered due to limited range and habitat pressures

Significance:

- Biodiversity discovery: Reinforces the Eastern Himalaya as a global biodiversity hotspot with many undocumented species
- Community conservation model: Demonstrates the effectiveness of indigenous and community-led forest management in conserving rare flora
- Scientific value: Adds to global plant taxonomy; findings published in Kew Bulletin, a leading international journal

Health Impacts of Plastics

- A global lifecycle assessment published in The Lancet Planetary Health warns that health burdens from plastic-related emissions will drastically increase.

Key Findings of the Study

- **Doubling of Health Burden:** Emissions from plastics are expected to cause more than double the increase in disability-adjusted life years (DALYs) by 2040 under business-as-usual trends.
- **Delayed Production Peak:** Global plastic production is unlikely to peak before 2100, prolonging environmental and health pressures worldwide.
- **Global Lifecycle Estimate:** The study provides the first comprehensive global-scale quantification of health impacts across the entire plastics lifecycle using DALYs as a unified health metric.
- **Chemical Opacity:** Limited transparency and non-disclosure of plastic chemical compositions severely restrict precise health risk evaluation and evidence-based policymaking.
- **Disability-Adjusted Life Years (DALYs):** A measure combining years of life lost due to premature death and years lived with illness or disability to reflect total health burden.

Major Health Impacts Identified

- **Air Pollution Exposure:** Fine particulate matter from production and open burning increases risks of asthma, cardiovascular diseases and premature deaths.
- **Toxicity-Induced Illnesses:** Release of hazardous chemicals across plastic lifecycles is strongly linked to rising cancers and long-term non-communicable diseases globally.

Recommendations by the Lancet Study

- **Reduce Virgin Plastic Production:** Call for deep cuts in primary (new) plastic manufacturing, especially for non-essential and single-use applications.
- **Full Lifecycle Policies:** Urges governments to regulate plastics from raw material extraction to disposal and environmental leakage stages.
- **Chemical Transparency:** Recommends mandatory disclosure of plastic chemical composition to improve health risk assessments and policy design.
- **Global Coordinated Action:** Emphasises fast-tracking a legally binding Global Plastics Treaty to control pollution and health impacts worldwide.

Lepidagathis konkanensis

- Scientists have discovered a new wildflower species, Lepidagathis konkanensis, from **the lateritic plateaus** of the Konkan region in Maharashtra.
- **Floral Morphology:** The plant bears bright yellow, bilabiate flowers arranged in short, compact, and densely packed spikes.
- **Reproductive Traits:** It shows smaller seeds and a distinctly shorter style than closely allied Lepidagathis species.
- **Habitat Adaptation:** The species thrives on iron-rich lateritic plateaus, locally known as 'sadas', in harsh, rocky environments.
- **Survival:** It survives in extremely thin soil layers with high exposure to sunlight, wind, and seasonal moisture stress.
- **Key Threats:** Agricultural expansion, mango orchards, tourism growth, and rapid urbanisation

Sunabeda Wildlife Sanctuary

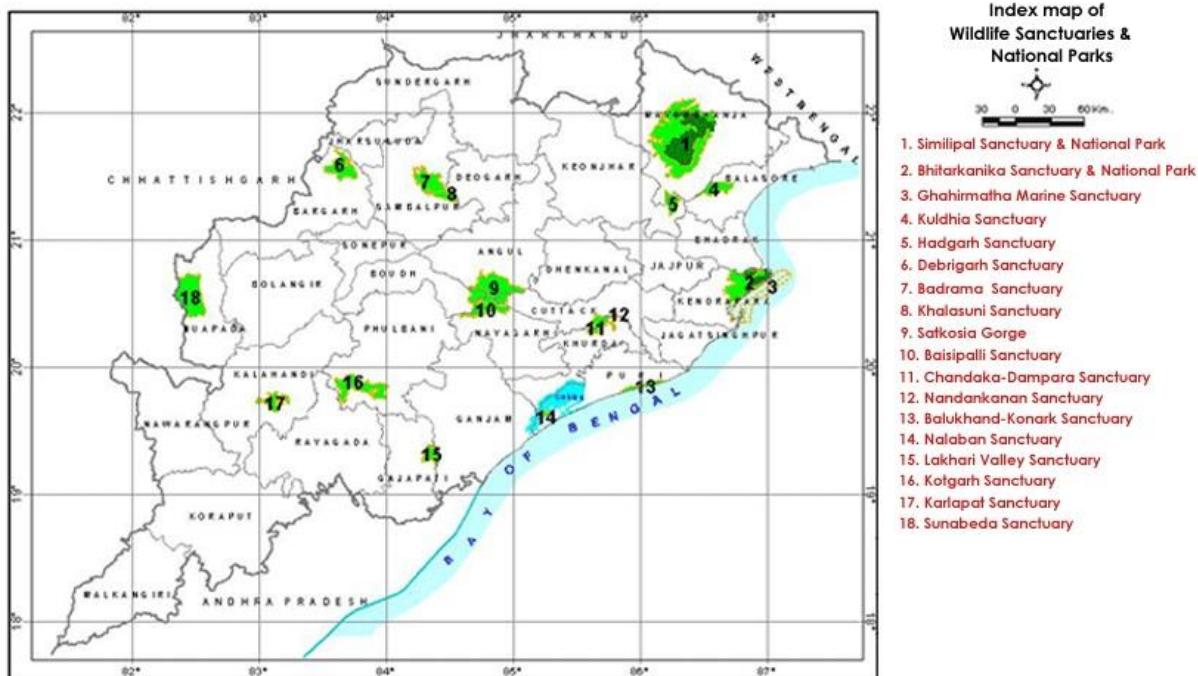
- The Sunabeda Wildlife Sanctuary in Odisha was officially declared '**Maoist-free**' in January 2026, leading to a major breakthrough in wildlife monitoring.
- Recent camera trap data reveals a flourishing leopard population (estimated over 70), marking its transition from a conflict zone to a potential Leopard Haven.

About Sunabeda Wildlife Sanctuary:

- Sunabeda Wildlife Sanctuary is a sprawling biodiversity hotspot and a proposed Tiger Reserve located in the western reaches of Odisha.
- Established in 1983, it is part of the Deccan Peninsula biogeographic zone and serves as a vital ecological bridge in Central India.

Located in:

- **District:** Nuapada, Odisha.
- **Border:** Adjoins the **Sitanadi and Udanti Sanctuaries** of Chhattisgarh.
- **Area:** Approximately 600 sq. km (proposed reserve extends over 956 sq. km).



Key Geological & Natural Features

- **Terrain:** A vast, high-altitude grass-covered plateau characterized by deep canyons, multiple valleys, and gorges.
- **Hydrology:** It forms the primary catchment area for the Jonk River, a tributary of the Mahanadi. The sanctuary is also the source of the Sunder and Indra.
- **Waterfalls:** Home to 11 magnificent waterfalls, making it a prime destination for eco-tourism.
- **Vegetation:** Predominantly Dry Deciduous Tropical Forest. Key flora includes Bija, Teak, Sissoo, and Sandalwood.

Significance

- Acts as a critical corridor for Wild Water Buffalo migrating between Odisha and Chhattisgarh.
- One of the few ideal habitats left for the Hard-ground **Barasingha (Swamp Deer)** and Nilgai.
- Over 200 bird species have been reported, including the elusive Forest Owlet and the Banded Bay Cuckoo.

The Shiveluch volcano

- The Shiveluch volcano, one of the most explosive in Russia, erupted twice sending massive ash columns nearly 9,000 meters (29,500 feet) into the sky.

The Shiveluch volcano:

- Shiveluch (also spelled Sheveluch) is a massive **stratovolcano—a cone-shaped volcano** built up by many layers of hardened lava, tephra, and volcanic ash. It is renowned for its superhydrous magmas (water-rich) which contribute to its highly explosive nature.

Located in:

- **Region:** Kamchatka Peninsula, Far Eastern Federal District, Russia.
- **Proximity:** Approximately 450 kilometers (280 miles) north of Petropavlovsk-Kamchatsky and 50 kilometers from the nearest settlement, Klyuchi.

Origin & Age

- **Geologic Age:** Estimated to be between 60,000 and 70,000 years old, dating back to the late Pleistocene epoch.
- **Formation:** Created by the subduction of the Pacific Plate beneath the Okhotsk Plate, part of the geologically intense Pacific Ring of Fire.

Key Features:

- **Structure:** Composed of three main elements: the Old Shiveluch (extinct), an ancient caldera, and the Young Shiveluch (the currently active peak).
- **Elevation:** Reaches a peak height of 3,283 meters (10,771 feet).
- **Activity Level:** It is the northernmost active volcano in Kamchatka and has experienced at least 60 major eruptions in the last 10,000 years, remaining in a state of near-continuous eruption since 1999.

Strategic Significance:

- **UNESCO World Heritage value:** Shiveluch forms part of the Volcanoes of Kamchatka UNESCO site (1996), noted for its dramatic landscape shaped by active volcanoes and glaciers.
- **Global aviation relevance:** Located under major trans-Pacific air routes, Shiveluch eruptions threaten aviation safety as volcanic ash can damage jet engines.
- **Scientific importance:** Its water-rich magmas help scientists understand subduction-zone volcanism and the role of volcanoes in the global water cycle.

Desynchronisation of Earth's Seasonal Cycles

- A recent study based on 20 years of satellite observations shows that Earth's seasons are becoming uneven, fragmented, and locally unpredictable.
- **Key Drivers:** Anthropogenic climate change, particularly rising temperatures and altered precipitation patterns, is driving shifts in seasonal cycles.

Key Findings of the Study

- **Seasonal Asynchrony:** Regions located nearby, even in climatically similar areas, are experiencing mismatched seasonal timings instead of coordinated transitions.
- **Geographic Hotspots:** Seasonal breakdown is most evident in complex topography, notably in tropical mountains and Mediterranean climate zones.
- **Divergent Growth:** Mediterranean forests may reach peak growth weeks or months after grasslands or show two growth peaks, disrupting ecosystem synchrony.

Major Impacts

- **Biodiversity Disruption:** Desynchronisation creates biological mismatches, such as pollinators emerging before flowering, accelerating biodiversity loss.
- **Agricultural Fragility:** In Colombia, nearby coffee farms now follow different harvest cycles, increasing the risk of reliance on historical seasonal cues.
- **Water Cycle Instability:** Earlier snowmelt and short, intense bursts of rainfall cause floods and droughts in the same region in the same year.
- **Anthropogenic Seasons:** Human-driven unnatural cycles are emerging, such as Southeast Asia's "haze season" and Bali's "trash season."

Human-Leopard Conflict Case

- A farmer in Gujarat's Gir Somnath district killed a leopard in self-defence during an attack and was subsequently booked under the Wildlife (Protection) Act, 1972.

The Indian Leopard

- **Adaptable Big Cat:** Leopards are the smallest among major big cats and can thrive across diverse landscapes ranging from dense forests to human-dominated regions.
- **Population Range:** India hosts an estimated 13,000–14,000 leopards (**Fifth Cycle Leopard Population Estimation 2024**), making it the global stronghold for the species.
- **Protection Status:** Classified as Vulnerable (VU) under the IUCN Red List and placed under **Schedule I of the Wildlife (Protection) Act, 1972**.
- **Habitat Spread:** Found in tropical rainforests, dry deciduous forests, temperate regions and northern coniferous forests, but absent in deserts and Sundarbans mangroves.
- **Nocturnal Nature:** Primarily active at night, leopards are stealth hunters that avoid human presence.
- **Solitary Lifestyle:** Leopards generally live and hunt alone except during mating or while rearing cubs.
- **Gestation Period:** Pregnancy lasts around 90 to 105 days, after which cubs are born in concealed dens.
- **Hotspots:** Madhya Pradesh leads India with around 3,900+ leopards, followed by Maharashtra (~1,980) and Karnataka (~1,870), reflecting strong central & western conservation.
- **Highest Density:** Sanjay Gandhi National Park (Mumbai) records the world's highest urban leopard density at over 21 leopards per 100 sq km.

Wildlife (Protection) Act, 1972

- **Purpose:** A central law to protect wild animals, birds, and plants, regulate hunting, trade, and habitat protection through protected areas and enforcement powers.
- **Constitutional Basis:** Enacted under Concurrent List (Seventh Schedule); strengthens the **Article 48A** duty of the State to protect the wildlife & aligns with the **Article 51A(g) fundamental duty**.

Animal Protection Under WPA, 1972

- **Section 9:** Prohibits hunting of wild animals except under narrowly defined statutory exceptions, making “hunting” the default illegality.
- **Section 2(16):** “Hunting” Includes killing, poisoning, trapping, capturing, and even attempting these acts, so liability can arise even without a successful kill.
- **Section 11:** Allows hunting only with written permission in limited situations, such as danger to human life or certain protective grounds, preventing “self-defence” from becoming a blanket excuse.
- **Section 12:** Enables special permits for scientific research, education, scientific management, or collection, with conditions, useful for public health and conservation science.
- **Section 39:** Many wildlife/trophies become government property, tightening enforcement against illegal possession/retention after seizures.

Four Schedules in WPA, 1972

- **Schedule I (Highest Protection):** Covers species with maximum legal protection; offences generally attract stricter punishment and tighter controls on possession/trade.
- **Schedule II (High Protection):** Protected species with strong safeguards, though generally lower than Schedule I in priority/penal severity.
- **Schedule III (Protected Plants):** Lists specified plants where picking, uprooting, trade/possession are regulated to prevent biodiversity loss.
- **Schedule IV (CITES-Linked Specimens):** A distinct schedule to operationalise CITES obligations, regulating international trade, permits, documentation, and compliance for listed specimens.

Transboundary Airshed Cooperation in South Asia

- A World Bank report, 'A Breath of Change,' highlights that air pollution in the Indo-Gangetic Plains and Himalayan Foothills spreads across national borders, demanding regional action .

Need for Transboundary Airshed Cooperation in South Asia

- **Cross-Border Pollution:** Up to 30% of air pollution in Indian Punjab during winters comes from Pakistan's Punjab due to north-westerly winds (World Bank).
- **High External Contribution:** In Nepal's Terai region, nearly 68% of air pollution originates from

neighbouring countries, limiting domestic-only solutions (World Bank).

- **Weak Regional Frameworks:** South Asia lacks a legally binding treaty like Europe's **LRTAP**, relying mainly on voluntary platforms such as the **Malé Declaration**.
- **Funding Constraints:** Regional air quality cooperation slowed after Swedish aid under Malé Declaration ended in 2013, weakening monitoring and joint action.
- **City-Centric Approach:** India's NCAP funds flow mainly to urban bodies, though major pollution sources often lie beyond municipal boundaries.

Way Forward

- **Binding Cooperation:** Develop a South Asia transboundary air pollution agreement with emission targets; E.g., Europe's UNECE LRTAP Convention.
- **Airshed Planning:** Shift from city-based control to regional airshed management frameworks; E.g., CAQM's Delhi-NCR multi-state model.
- **Stable Financing:** Create pooled regional air quality funds for long-term monitoring and mitigation; E.g., EU's sustained environmental financing mechanisms.
- **Cross-Border Action:** Coordinate crop residue management, industrial controls and transport norms across countries; E.g., US-Canada acid rain cooperation model.

Greylag Goose

- A flock of migratory greylag geese was poisoned with pesticides in Majuli district, Assam.

Greylag Goose (*Anser anser*)

- The Greylag goose is the largest grey goose species and the primary wild ancestor of most domesticated goose breeds.
- **Appearance:** The bird has grey-brown plumage, a thick neck, a large orange or pink bill, & pink legs.
- **Unique Marker:** It shows a distinctive pale grey forewing in flight.
- **Habitat Preference:** The species prefers open freshwater wetlands, marshes, and lakes with extensive reed beds.
- **Geographic Range:** It has a Palearctic distribution, breeding throughout northern Eurasia and migrating south in winter. It is a common winter visitor to the wetlands of North and North-West India.
- **Behaviour:** The species is highly social; they form large flocks and fly in V-shaped skeins.

- **Diet:** Primarily herbivorous, they graze on grasses, roots and tubers, and also feed on cereal crops.
- **Ecological Role:** It helps regulate aquatic vegetation and supports nutrient cycling in wetlands.
- **Key Threats:** Habitat loss, illegal hunting, water pollution, avian influenza, etc.
- **Earliest Domestication:** Greylag geese were among the first domesticated animals, with records from Ancient Egypt dating back over 4,000 years.
- **Conservation Status:** IUCN: Least Concern; CMS: Appendix II; WPA: Schedule II

SCIENCE AND TECHNOLOGY

Mpemba Effect

- Indian scientists have developed the **first supercomputer-powered simulation** that successfully captures the Mpemba effect, resolving a long-standing scientific paradox of hot water freezing faster than cold.

Mpemba Effect:

- The Mpemba effect refers to the **counterintuitive phenomenon** where **hot water freezes faster than cold water** under specific experimental conditions.
- Named after **Erasto Mpemba**, a **Tanzanian student** who reported it scientifically in 1969, though it was noted earlier by Aristotle, Bacon, and Descartes.

How it works?

- The Mpemba effect occurs because water's behaviour is shaped by more than just its temperature. When water is heated, its physical and molecular state changes, which can influence how it freezes later.
- **Evaporation:** Hot water loses some mass as vapour, so less water remains to freeze, speeding up the process.
- **Dissolved gases:** Heating drives out dissolved gases, subtly changing the water's freezing characteristics.
- **Convection currents:** Temperature gradients in hot water create internal circulation that enhances heat loss.

- **Supercooling:** Hot water may begin freezing at a higher temperature than cold water, allowing it to solidify sooner.
- **Environmental effects:** Hot containers can alter their surroundings, improving overall cooling efficiency.
- Since these factors vary with conditions, no single mechanism explains the effect universally; different processes dominate in different situations.

Applications:

- Advances understanding of non-equilibrium physics and phase transitions.
- Improves climate and cryosphere modelling, including ice formation processes.
- Relevant to industrial freezing, food processing, and materials science.
- Demonstrates the power of supercomputing in resolving classical scientific paradoxes.

Study Finds Superbugs in Delhi Air

- A recent study by researchers at Jawaharlal Nehru University reveals that Delhi's air is a significant carrier of "superbugs".
- A superbug is a **microorganism** that has **evolved antimicrobial resistance (AMR)** to multiple drugs or "last-resort" antibiotics.

Key Findings

- **Drug Resistance:** About 73% of isolated airborne bacterial strains were single-drug resistant, while 36% showed multidrug resistance.
- **Bacterial Types:** The study identified eight species of airborne staphylococci, including methicillin-resistant staphylococci.
- **Methicillin-resistant Staphylococcus**, a "superbug," has developed resistance to antibiotics like penicillin and methicillin, making treatment very difficult.
- **Key Concern:** The concentration of staphylococci at all tested sites exceeded World Health Organisation (WHO) recommended safety limits.
- **Seasonal Pattern:** Bacterial abundance rises during winter as cooler temperatures and poor air quality aid survival.

About staphylococci

- Staphylococci are Gram-positive bacteria characterised by their spherical shape (cocci).
- They are facultative anaerobes, meaning they can grow in both the presence and absence of oxygen.
- **Common Species:** *Staphylococcus aureus* usually lives on skin and in nasal passages but can become pathogenic if it enters the bloodstream or tissues.
- **Disease Caused:** Infections range from minor skin conditions to severe diseases like pneumonia, endocarditis, and sepsis.

Earth Observation Satellite EOS-N1 (Anvesha)

- Indian Space Research Organisation (ISRO) will begin 2026 with the **PSLV-C62** mission, launching the advanced surveillance **satellite EOS-N1 (Anvesha)** along with 18 co-passenger payloads.

Earth Observation Satellite EOS-N1 (Anvesha):

- EOS-N1 (codenamed 'Anvesha') is an advanced hyperspectral Earth observation satellite developed primarily to support India's strategic and civilian remote-sensing needs.
- To be launched in: January 2026, aboard PSLV-C62 from Sriharikota.

Aim:

- To enhance space-based surveillance and reconnaissance capabilities while supporting civil applications such as agriculture, urban planning, and environmental monitoring.

Key functions

- **Hyperspectral imaging:** Captures data across hundreds of spectral bands, enabling precise identification of materials and surface features.
- **Strategic surveillance:** Assists in border monitoring, terrain analysis, and threat detection, strengthening national security.
- **Agriculture support:** Enables crop health assessment, soil moisture analysis, and yield estimation.
- **Urban and infrastructure mapping:** Supports land-use planning, infrastructure monitoring, and disaster preparedness.
- **Environmental monitoring:** Tracks ecosystem changes, pollution patterns, and climate-related impacts.

Significance:

- Acts as a high-priority space asset for surveillance, developed in close alignment with requirements of Defence Research and Development Organisation (DRDO).
- Demonstrates India's maturity in hyperspectral remote sensing, a capability possessed by only a few nations.
- Simultaneously serves defence, agriculture, disaster management, and environmental governance.

White dwarf system

- NASA's Imaging X-ray Polarization Explorer (IXPE) has, for the first time, probed the internal structure of a white dwarf system, revealing unexpected details about gas flows and X-ray behaviour in the binary system EX Hydrae.

White dwarf system:

- A white dwarf system typically consists of a white dwarf—the dense, Earth-sized remnant of a Sun-like star—often paired with a companion star in a binary arrangement.

Discovered / studied by:

- White dwarfs as a class were identified in the early 20th century through stellar spectroscopy.
- The current breakthrough comes from NASA's IXPE mission, which studied EX Hydrae, about 200 light-years away in the constellation Hydra, by analysing X-ray polarisation, not just brightness.

How it forms?

- A star like the Sun exhausts its nuclear fuel, sheds its outer layers as a planetary nebula, and leaves behind a hot, compact core—the white dwarf.
- In a binary system, the white dwarf's gravity pulls gas from its companion star.
- In systems like EX Hydrae, known as intermediate polars, the white dwarf's moderate magnetic field partially disrupts the accretion disc and channels gas along magnetic field lines onto its surface.

Key characteristics

- Extreme density: Mass comparable to the Sun, size similar to Earth.
- Degenerate matter: Supported by electron degeneracy pressure (Pauli Exclusion Principle), not nuclear fusion.

- High-energy emissions: Infalling matter heats to tens of millions of degrees, emitting X-rays.
- Magnetic influence: In intermediate polars, gas forms columns rising thousands of kilometres above the surface.
- Chandrasekhar limit: Maximum mass ~ 1.4 times the Sun, beyond which collapse or explosion occurs.

Significance:

- IXPE's polarisation data allowed scientists to estimate the height of hot gas columns and detect X-rays reflecting off the white dwarf's surface—details previously inaccessible.
- Enables direct testing of theories about accretion, magnetism, and extreme matter.

Dust EXperiment (DEX)

- ISRO has confirmed that an interplanetary dust particle (IDP) enters Earth's atmosphere roughly every 16 minutes, based on measurements from India's first cosmic dust detector Dust EXperiment (DEX).

Dust EXperiment (DEX):

- DEX is India's first indigenously developed **cosmic dust detector**, designed to detect and measure high-speed interplanetary and orbital dust particles impacting Earth's upper atmosphere.

Developed by:

- Indian Space Research Organisation (ISRO)
- Developed by Physical Research Laboratory (PRL), Ahmedabad
- Flown aboard **PSLV Orbital Experimental Module (POEM)** of the **PSLV-C58 XPosat** mission.
- **Aim:** To directly measure cosmic dust flux in Earth's atmosphere and generate mission-critical data for space environment monitoring, satellite safety, and future crewed deep-space missions.

Key features

- **Hypervelocity principle:** Detects dust impacts travelling at >4 km/s, capable of melting or disintegrating on impact.
- **Compact & efficient:** 3 kg payload with ultra-low 4.5 W power consumption.
- **Wide field of view:** 140° detector for enhanced hit probability.
- **Low-Earth orbit testing:** Operated at ~ 350 km altitude with 9.5° inclination.

- **High detection rate:** Logged impacts at a rate of ~1 particle per 1,000 seconds.
- **Measured dust flux:** $\sim 6.5 \times 10^{-3}$ particles $m^{-2} s^{-1}$, validating global dust models.

Interplanetary Dust Particles (IDPs):

- IDPs are microscopic fragments of comets, asteroids, and meteoroids that constantly rain onto planetary atmospheres and produce the “meteor layer”, visible occasionally as shooting stars.

How they are formed?

- **Cometary debris:** Released when comets heat up near the Sun.
- **Asteroidal collisions:** Generated from high-energy impacts in the asteroid belt.
- **Cosmic erosion:** Gradual breakdown of celestial bodies over millions of years.

Implications

- **Spacecraft safety:** Even tiny particles at hypervelocity can cause catastrophic damage to satellites and crewed spacecraft.
- **Space weather & environment:** Influence orbital debris dynamics and near-Earth space conditions.
- **Planetary science:** Provide clues about early solar system evolution.
- **Future missions:** DEX-like instruments can enable first-ever dust measurements in Venusian and Martian atmospheres, and around the Moon—crucial for Moon-Mars human exploration.

Spina Bifida

- Experts call for making **folic acid** awareness and fortification a public health priority to prevent Spina Bifida, one of India's most common **birth defects**.

Spina Bifida

- **Definition:** A neural tube defect where the spinal cord does not develop properly during early pregnancy, causing paralysis and lifelong disability.
- **Burden in India:** Affects >25,000 children every year (~ 4 per 1,000 births), among the highest globally.
- **Key Symptoms:** Lower-limb weakness to paralysis, loss of bladder-bowel control, clubfoot/orthopaedic deformities, and hydrocephalus in many cases.
- **Prevention:** Periconceptional folic acid (before conception) can prevent >70% cases.
- **Treatment:** Requires early neurosurgery (closure of defect), management of hydrocephalus (often

shunt), plus rehabilitation, orthopaedic care, and lifelong urology support; cognition is usually normal.

- **Cognitive Ability:** No intellectual impairment; children can lead productive lives with timely medical care.

Types of Spina Bifida

- **Spina Bifida Occulta:** Mild "hidden" defect, often asymptomatic; detected incidentally on imaging.
- **Meningocele:** Sac-like protrusion of meninges with fluid; usually less severe.
- **Myelomeningocele:** Most severe form with spinal cord involvement; commonly causes paralysis.
- Folic acid is a **B-complex vitamin** essential for early fetal neural tube development, and its intake before conception and during early pregnancy can prevent most neural tube defects.

Vehicle-to-Vehicle (V2V) Communication Technology

- The Government of India has announced that Vehicle-to-Vehicle (V2V) communication technology will be rolled out nationwide by end-2026 to reduce road crashes.

Vehicle-to-Vehicle (V2V) communication technology:

- V2V is a wireless communication system that allows vehicles to directly exchange data with nearby vehicles without relying on mobile networks, enabling cars to "talk to each other" in real time.

Aim:

- Prevent collisions and pile-ups by giving vehicles real-time warnings about sudden braking, speed changes and nearby traffic.
- Improve safety in blind-spot and low-visibility conditions by alerting drivers about hidden, stationary or fog-covered vehicles.

How it works?

- Each vehicle will have a small SIM-like device installed inside it. This device allows the vehicle to send and receive signals from nearby vehicles.
- As the car moves, it keeps sharing information such as its location, speed, direction, and whether it is braking or accelerating. At the same time, it also receives the same information from other vehicles around it.
- All this communication happens using a special **radio frequency band (5.875–5.905**

GHz) approved by the Department of Telecommunications, so it works even without mobile internet.

- If the system detects that another vehicle is too close, suddenly braking, or approaching from a blind spot, it instantly warns the driver. In vehicles with Advanced Driver Assistance Systems (ADAS), these alerts can also help the car automatically slow down or avoid danger.

Key features

- **360-degree communication:** Alerts come from all directions — front, rear and sides.
- **Real-time safety alerts:** Warns about nearby moving, slow, or stationary vehicles, even beyond the driver's line of sight.
- **Fog and low-visibility support:** Prevents highway pile-ups in dense fog or dust storms.
- **Network-independent:** Works without mobile internet, using direct short-range radio signals.
- **Compatible with ADAS:** Integrates with Advanced Driver Assistance Systems, allowing smarter braking and avoidance.
- **Limitations**
- **Requires large-scale adoption:** Benefits increase only when many vehicles are equipped.
- **Cost to consumers:** Devices will be charged to buyers, adding to vehicle cost.
- **Limited range:** Works best within a few hundred metres; long-distance hazards still depend on other systems.
- **Not fully autonomous:** Early phases will be warning-based, not automatic vehicle control.

Upcoming Challenges for ISRO

- After landmark missions like **Chandrayaan-3 (2023)**, **Aditya-L1 (2024)** and **NISAR (2025)**, ISRO faces the challenge of converting mission success into routine, large-scale capability.

Reasons for the Shift in Challenge for ISRO

- **Rising Complexity:** ISRO is preparing human spaceflight, advanced science missions and a heavy-lift launcher simultaneously, stretching institutional capacity.
- **Expectation Reset:** Reliable PSLV/GSLV launches and lunar landing success have raised expectations from occasional excellence to consistent delivery at scale.

Upcoming Challenges for ISRO

1. Operational Bottlenecks

- **Low Launch Cadence:** ISRO carried out only 5 launches in 2025 against a projected 8, indicating congestion due to parallel big-ticket missions like **Gaganyaan** and **NGLV**.
- **Single-Point Bottleneck:** ISRO continues to act as designer-integrator-operator for most missions; a delay in one mission often cascades across timelines of others.
- **Infrastructure Constraint:** Limited integration bays and test stands restrict parallel processing, slowing launch turnaround despite rising mission complexity.

2. Governance and Legal Gaps

- **No Space Law:** India lacks a comprehensive national space law, creating ambiguity over authorisation.
- **Role Confusion:** Despite reforms, functional separation between ISRO, IN-SPACe and NSIL remains weak.

3. Competitiveness Constraints

- **Capital Shortage:** Investment in India's space sector fell sharply in 2024, mirroring a ~40% global decline in space-tech funding, reflecting long gestation risks of hardware-heavy ventures.
- **Manufacturing Depth:** India still imports over 50% of high-end space-grade electronics and avionics, limiting the rapid scaling of launch vehicles and satellite production.

Way Forward

- **Capacity Expansion:** Build parallel integration and test infrastructure to raise launch frequency; E.g., expansion under the ISRO-Industry Consortium model for launch vehicle integration.
- **Role Separation:** Insulate ISRO's frontier R&D from routine operations; E.g., operational missions routed through New Space India Limited (NSIL).
- **Industrial Scaling:** Strengthen domestic manufacturing for space hardware; E.g., IN-SPACe Technology Adoption Fund to move firms from prototype to production.
- **Global Benchmark:** Adopt high-cadence, reusable launch practices; E.g., SpaceX-style industrial launch workflows adapted to India's public-private ecosystem.

ISRO's PSLV-C62/EOS-N1 Mission Encountered Anomaly during 3rd Stage

- The launch marked the **64th** flight of Polar Satellite Launch Vehicle (PSLV) and 9th dedicated commercial mission undertaken by **New Space India Limited (NSIL)**.
- NSIL, incorporated in 2019, is wholly owned Government Company under administrative control

of Department of Space and is the commercial arm of Indian Space Research Organisation (ISRO).

About PSLV-C62 / EOS-N1 Mission

- It includes the launch of **EOS-N1 earth observation satellite** along with 15 co-passenger satellites from domestic & international customers.
- EOS-N1 is designed to strengthen space-based monitoring capabilities.
- It will also demonstrate KID or **Kestrel Initial Technology Demonstrator** from a Spanish startup.
- KID is a small-scale prototype of a **re-entry vehicle** which after launch is slated to re-enter the earth's atmosphere towards splashdown in South Pacific Ocean.
- EOS-N1 and 14 Co-passenger satellites will be injected into a **Sun Synchronous Orbit** and KID Capsule into a re-entry trajectory.

About PSLV

- **3rd generation** launch vehicle and is first Indian launch vehicle to be equipped with liquid stages.
- **Workhorse of ISRO:** Consistently delivered satellites to Low Earth Orbits, can take up to 1,750 kg of payload to Sun-Synchronous Polar Orbits of 600 km altitude.

Stages in PSLV

- **First Stage:** Uses the **S139 solid rocket motor** augmented by 6 solid strap-on boosters.
- **Second Stage:** Uses Earth storable **liquid rocket engine** known as **Vikas engine**, developed by Liquid Propulsion Systems Centre.
- **Third Stage:** **Solid rocket motor** that provides high thrust to upper stages.
- **Fourth Stage:** Uppermost stage of PSLV, comprising of **two Earth storable liquid engines**.

- **Notable Missions:** Chandrayaan-1, Mars Orbiter Mission, Aditya-L1 and Astrosat Mission, PSLV set a world record by launching 104 satellites in a single mission in 2017.

OrbitAid's AyulSAT

- India is set to demonstrate **in-orbit satellite refuelling** for the first time as **Chennai-based OrbitAid's AyulSAT is launched onboard ISRO's PSLV-C62**.

AyulSAT:

- AyulSAT is a 25-kg dedicated tanker-satellite and target spacecraft designed to demonstrate fuel transfer, power transfer and data transfer in orbit using a standardized docking and refuelling interface.
- **Developed by:** OrbitAid Aerospace, a Chennai-based Indian space startup founded by Sakthikumar Ramachandran.
- **Launched through:** ISRO's PSLV-C62 mission.
- **Aim:** To demonstrate in-orbit propellant transfer and docking readiness, enabling satellite life-extension, servicing, and reduction of space debris, and to lay the foundation of an on-orbit space economy.

Key Features

- **Internal refuelling demonstration:** Transfers fuel from one tank to another within the same satellite to study fluid behaviour in microgravity.
- **SIDRP interface:** Uses OrbitAid's Standard Interface for Docking and Refuelling Port for future spacecraft-to-spacecraft refuelling.
- **Multi-utility transfer:** Capable of fuel, power and data transfer.
- **RPOD-ready:** Will act as the target satellite for a future chaser satellite that will dock and perform actual in-orbit refuelling by end-2026.
- **Commercially oriented:** India's first commercial docking and refuelling interface deployed in orbit.

Significance

- **Satellite life extension:** Allows satellites in LEO and GEO to be refuelled instead of being abandoned.
- **Space debris reduction:** Prevents dead satellites from becoming orbital junk, supporting Debris-Free Space Mission 2030.

PARAM Shakti Supercomputer

- The Ministry of Electronics and Information Technology (MeitY) has launched '**PARAM Shakti**' *supercomputing facility* at the IIT Madras.
- **Param Shakti**
- Param Shakti is a state-of-the-art supercomputing facility inaugurated at IIT Madras as part of the **National Supercomputing Mission (NSM)**.

- **Indigenous Hardware:** The system is built on the indigenous Rudra motherboard, designed and manufactured by C-DAC.
- **Computing Power:** Param Shakti achieves a peak performance of 3.1 Petaflops, performing over 3.1 quadrillion calculations every second.
- **Network Fabric:** The system uses the **Trinitra interconnect**, an indigenously developed high-speed communication fabric that links computing nodes.
- **Energy Efficiency:** It has high energy efficiency, with a Power Usage Effectiveness (PUE) ratio between 1.2 and 1.4.
- **Access Model:** The facility follows an open-access model, with 40% of capacity reserved for external researchers from academic institutions.
- **Software Stack:** The system operates on a native AlmaLinux-based software stack, offering full control over the operating environment.

Key Areas of Application

- **Healthcare Research:** Simulates molecular interactions to accelerate drug discovery.
- **Climate Science:** High-resolution weather forecasting and advanced climate change modelling.
- **Engineering Design:** Simulations in aerospace propulsion, nuclear sciences, and fluid dynamics.
- **Artificial Intelligence:** Training of large-scale AI models for the IndiaAI Mission.

Supercomputers in India

- **National Mission:** The **National Supercomputing Mission (NSM)** was launched in 2015 by MeitY and the DST to establish a nationwide network of supercomputing facilities.
- **System Deployment:** A total of 38 supercomputing systems has been installed under the NSM.
- **National Capacity:** India's aggregate supercomputing capacity has reached **44 petaflops**. The **IndiaAI Mission** aims to scale it **beyond 200 Petaflops**.
- **First Supercomputer:** **PARAM 8000**, developed by C-DAC in 1991, is recognised as India's first indigenous supercomputer.
- **First NSM-System:** **Param Shivay at IIT (BHU) Varanasi** was the first indigenously assembled supercomputer under NSM.
- **Largest Academic:** **Param Pravega at IISc**, Bengaluru, is among the largest academic supercomputers, with a capacity of 3.3 Petaflops.

BHASHINI Samuday

- **BHASHINI Samudaye** is being organised by MeitY in New Delhi to strengthen India's language AI ecosystem.

BHASHINI Samudaye:

- BHASHINI Samudaye is a collaborative ecosystem platform under BHASHINI that enables co-creation, governance and scaling of Indian-language AI tools, datasets and services through partnerships with academia, civil society and technology developers.

Developed by:

- It is led by the Digital India BHASHINI Division (DIBD) under the Ministry of Electronics and Information Technology (MeitY) as part of the **National Language Translation Mission (NLTM)**.

Key Features

- **Ecosystem-led AI governance:** participatory model involving researchers, states, NGOs and startups.
- **BHASHINI platform & APIs:** enables real-time translation, speech-to-text and text-to-speech in Indian languages.
- **BhashaDaan:** citizen contribution platform for building open Indian-language datasets.
- **Ethical data framework:** ensures inclusive, consent-based and standardised data creation.
- **Live use-case demonstrations:** showing application in governance, education and public services.

Aerosols

- A new IIT Madras-led study published in Science Advances shows that air pollution aerosols are intensifying and prolonging winter fog over north India.

Aerosols : What they are?

- Aerosols are tiny solid or liquid particles suspended in the atmosphere, often invisible to the naked eye, that strongly influence air quality, weather and climate.

Origin:

- **Natural sources:** desert dust, sea spray, volcanic ash, forest fires
- **Human sources:** vehicle emissions, industrial pollution, biomass burning, coal and diesel use
- They can be primary aerosols (emitted directly) or secondary aerosols (formed from gases like sulphur dioxide and nitrogen oxides in the air).

Key features:

- **Extremely small in size:** Their tiny size allows aerosols to enter deep into lungs and stay suspended easily in the air.
- **Stay in air for days to weeks:** They travel long distances before settling or being washed out by rain.
- **Condensation nuclei:** Aerosols provide surfaces for water vapour to condense, forming fog and cloud droplets.
- **Scatter or absorb sunlight:** Some aerosols reflect sunlight, while others like black carbon absorb heat.

Implications

- **Health:** Aerosols worsen asthma, lung infections and heart diseases by penetrating the respiratory system.
- **Weather:** They make fog thicker and longer-lasting by increasing droplet formation and cooling.
- **Climate (cooling):** Reflective aerosols send sunlight back to space, lowering surface temperature.
- **Climate (warming):** Black carbon absorbs solar heat, warming the atmosphere.
- **Cloud and rainfall changes:** Aerosols make clouds brighter and longer-lived, altering rainfall patterns.

Greenwald Limit

- **China's EAST fusion reactor** has achieved stable plasma densities up to 65% beyond the Greenwald limit, a long-standing barrier in nuclear fusion research.

Greenwald Limit:

- The Greenwald limit is a theoretical density ceiling for plasma in a **tokamak (fusion reactor)**, beyond which the plasma becomes unstable and collapses.
- It links the maximum safe plasma density to the plasma current and size of the reactor.

Why it is important?

- Fusion reactions require very high plasma density, temperature, and confinement time.
- The Greenwald limit has long been a major bottleneck, preventing reactors from packing enough fuel to reach self-sustaining fusion (ignition).

Key features

- **Tokamak-specific limit:** The Greenwald limit applies to donut-shaped magnetic fusion reactors,

where plasma is confined using strong magnetic fields.

- **Stability threshold:** Exceeding this limit normally causes plasma to become unstable and collapse, risking damage to the reactor.
- **Density-energy link:** Higher plasma density leads to more atomic collisions, which increases the rate of fusion and energy output.
- **Design barrier:** For decades, it was treated as a fixed ceiling, forcing engineers to limit fuel density in fusion reactors.

Achievement & Significance:

- China's EAST reactor achieved 1.3–1.65 times the Greenwald limit while maintaining stability.
- Done by cooling the divertor and reducing tungsten impurities, allowing cleaner, denser plasma.
- Confirms Plasma-Wall Self-Organisation (PWSO) theory, proving a new “density-free” operating regime.

NASA's Pandora Mission

- SpaceX's Falcon 9 rocket successfully launched NASA's Pandora satellite into a **Sun-synchronous low Earth orbit**.
- **Twilight Mission:** The launch was part of **SpaceX's “Twilight”** rideshare mission, which carried 40 payloads, including NASA's:
- **SPARCS CubeSat:** To monitor ultraviolet flares from nearby low-mass stars.
- **BlackCAT:** A wide-field X-ray telescope to detect high-energy events such as gamma-ray bursts.

About Pandora Mission

- Pandora is a low-cost SmallSat mission under NASA's Astrophysics Pioneers program aimed at studying the atmospheres of at least 20 exoplanets.
- **Objective:** It seeks to decouple a planet's true atmospheric signals from the 'stellar contamination' (noise) produced by its host star.
- **Dual Vision:** The satellite observes targets simultaneously in visible and infrared wavelengths to correct measurement errors.
- **Visible-Light:** Monitors the host star's brightness to track starspots and measure its rotation speed.
- **Infrared:** Analyses the composition of exoplanet atmospheres using transmission spectroscopy.
- **Dusk-Dawn Orbit:** It orbits along Earth's “terminator” line (the boundary between day and night),

ensuring continuous sunlight and thermal stability.

Nipah Virus

- Two nurses in West Bengal have tested positive for the Nipah virus, with one in coma and another on ventilator support, triggering emergency contact tracing and isolation of over 120 people.

About Nipah Virus:

- Nipah virus (NiV) is a **zoonotic virus (animal-to-human)** that can also **spread between humans**, causing illnesses ranging from mild fever to **fatal encephalitis** and severe respiratory disease.

Natural Host

- Primary reservoir:** Fruit bats (Pteropus species – flying foxes)
- Intermediate hosts:** Pigs, horses, goats, dogs (can infect humans)
- Human transmission:**
 - Contact with bat-contaminated food (e.g., fruits, date-palm sap)
 - Contact with infected animals
 - Human-to-human via respiratory droplets, body fluids, or close care

Symptoms

- Early symptoms:** Fever, headache, muscle pain, sore throat, vomiting
- Progressive symptoms:** Dizziness, drowsiness, confusion

Severe disease:

- Acute respiratory distress
- Encephalitis (**brain inflammation**)
- Seizures and coma within 24–48 hours

Key Features

- Case fatality rate:** 40%–75% (very high)
- Incubation period:** 4–14 days (can extend up to 45 days)
- WHO Priority Pathogen:** Listed under WHO R&D Blueprint for urgent vaccine and drug research.

Treatment:

- No specific antiviral drug or vaccine available.
- Supportive care is the mainstay:
- Oxygen and ventilator support

- Intensive care for brain and lung complications
- Symptom-based management
- Early isolation, contact tracing, and infection control are critical to stop outbreaks.

Ultracold Atoms

- Ultracold atoms are enabling the **world's most precise atomic clocks** and are emerging platforms for quantum simulation and quantum computing.

Ultracold Atoms

- **Meaning:** Atoms cooled to just a few billionths of a degree above absolute zero (absolute zero is **minus 273.15 degrees Celsius**).
- **Quantum Behaviour:** At such low temperatures, atoms behave like **overlapping waves**, so quantum effects become visible at a larger scale.

How They Are Made?

- **Laser Cooling:** Laser light is tuned slightly below an atomic transition so atoms absorb photons opposite to motion & slow down. Repeated absorption & re-emission works like a braking force, reducing speed.
- **Nobel Link:** Cooling and trapping atoms using laser light was recognised with the **1997 Nobel Prize in Physics**. It laid the foundation of modern cold-atom physics.
- **Deep Cooling:** Laser cooling alone cannot reach the lowest temperatures, so hottest atoms are allowed to escape in a second step. The remaining atoms redistribute energy and cool further.
- **Dark Spot Trap:** A “dark spot” inside the light trap shelters the coldest atoms from stray light that causes heating. This prevents re-heating and helps reach absolute temperature.

Key Applications

- **Atomic Clocks:** Cold atoms improve time precision since atoms are nearly motionless, stabilising “tick”.
- **Navigation Link:** Atomic clocks are essential for GPS timing and internet synchronisation.
- **Gravity Sensors:** Cold-atom gravimeters can detect underground structures and monitor volcanoes.

Menkes Disease

- The U.S. Food and Drug Administration (FDA) approved **Zycubo (copper histidinate)** as the first treatment for Menkes disease.
- Menkes disease, also known as **kinky hair syndrome**, is a severe genetic disorder that affects infants at 2–3 months of age.
- It is caused by a defect in the **ATP7A gene**, which produces a protein responsible for transporting **copper across** cell membranes.
- The disease impairs copper absorption and transport, causing accumulation in the intestine and kidneys, while the brain and liver become severely copper-deficient.
- The condition primarily affects males; females are usually asymptomatic carriers.
- **Incidence:** It is a rare disease occurring in approximately 1 per 100,000–250,000 live births worldwide.
- **Symptoms:** Include brittle, colourless “steely” hair, seizures, hypotonia, developmental delay, bone weakness, and fragile blood vessels.
- Copper is an essential trace mineral important for **cellular energy production**, connective tissue formation, iron metabolism, and **brain development**.

Project Suncatcher

- Google Research has unveiled Project Suncatcher, exploring **AI datacentres in low-Earth orbit** powered entirely by solar energy to tackle AI's **surging electricity demand**.

Project Suncatcher:

- Project Suncatcher is a concept and research programme to place AI datacentres in low-Earth orbit (LEO), operating continuously on solar power to run energy-intensive AI workloads.
- **Launched by: Google (Google Research).**

Aim:

- Cut AI's energy footprint by using uninterrupted solar power.
- Decouple AI compute growth from terrestrial grids, land use, and water-intensive cooling.

How it works?

- Deploys densely clustered satellites (not a sparse global swarm) flying in **sun-synchronous orbits** to ensure constant sunlight.
- AI workloads are distributed across satellites using ultra-high-bandwidth inter-satellite links; Earth downlinks handle only inputs/outputs.

- Uses **radiation-tolerant TPUs** and specialised thermal designs to operate in vacuum.

Key features:

- **Always-on solar energy** – no atmosphere, no night cycles in chosen orbits.
- **Petabit-scale inter-satellite** networking to support distributed AI training/inference.
- **Radiation-hard compute** – **tests** show TPUs tolerate doses beyond multi-year mission needs.
- Minimal Earth bandwidth dependency compared to internal cluster bandwidth.
- Scalable constellation architecture, with satellites replaced as units age out.

Significance:

- Offers a new path to power AI sustainably as model sizes and training runs explode.
- Reduces pressure on grids, water, and land near terrestrial datacentres.

New Study on Role of Magnetic Fields in Star Formation

- **Source (PIB):** A recent study by the **Indian Institute of Astrophysics (IIA)** provided new insights into how magnetic fields regulate star formation.
- Researchers examined the **L328 molecular cloud** (about 700 light-years away) using data from the POL-2 polarimeter on the **James Clerk Maxwell Telescope** in Hawaii.

Key Findings

- **Multi-Scale Connectivity:** Magnetic fields remain highly ordered and connected from large molecular clouds to dense star-forming cores.
- **Field Orientation:** The magnetic field maintains a consistent northeast–southwest alignment, guiding the inward collapse of matter.
- **Magnetic Balance:** The study identifies magnetic criticality—the balance between magnetic pressure and gravitational pull—as a decisive factor for star formation.
- In sub-critical cores, where magnetic support exceeds gravity, a cloud core can remain starless.
- **Strength Scaling:** Near the L328 core, magnetic forces, gravity, and turbulence are about ten times stronger than thermal energy, strongly shaping star formation.

NASA's Chromospheric Magnetism Explorer (CMEx) Mission

- NASA has selected the Chromospheric Magnetism Explorer (CMEx) mission for an extended concept study.
- **Mission Objective:** CMEx aims to study the magnetic nature of the Sun's chromosphere to better predict space weather events.
- **Observation Focus:** It is designed to perform the first continuous, high-resolution observations of the solar chromosphere.
- **Primary Goal:** The mission maps the chromospheric magnetic fields to understand how solar eruptions and flares are triggered.
- **Key Technique:** It uses ultraviolet spectropolarimetry to measure light polarisation and infer properties of magnetic fields.
- **Forecast Value:** Data generated by CMEx is intended to improve the accuracy of space weather forecasts and increase warning lead time.

About Chromosphere

- **Layer Position:** The chromosphere is a thin atmospheric layer of the Sun located between the photosphere and the outer corona.
- **Extent:** It extends approximately 2,000-3,000 kilometres above the photosphere.
- **Visual Feature:** The chromosphere appears as a **reddish-pink rim** during total solar eclipses due to **hydrogen-alpha emission**.
- **Thermal Profile:** Unlike lower layers, the chromospheric temperature increases with height, from about 4,000 K to 25,000 K.
- **Plasma Makeup:** It is primarily composed of hydrogen and helium in an ionised plasma state.
- **Magnetic Role:** Chromosphere is considered the Sun's magnetic heart, where solar flares and prominences (loops of gas) commonly originate.
- **Dynamic Activity:** The layer contains spicules, i.e., fast plasma jets that rise at 20-30 km/s and carry energy upward.

New Solid-Liquid Hybrid State of Matter Discovered

- Researchers from Germany and the UK recently reported the discovery of a hybrid solid-liquid state of matter.
- This state occurs at the **nanoscale**, where matter exhibits both solid and liquid properties.

- **Applications:** It could lead to more efficient, sustainable catalysts, especially platinum-on-carbon catalysts used in fuel cells, hydrogen vehicles, pharmaceuticals, and petrochemicals.

Key Features of the New State

- **Atomic Coexistence:** Within a single nanoparticle, some atoms remain stationary while others flow freely like a liquid.
- **Atomic Corralling:** Stationary atoms form a rigid atomic 'fence' or 'corral' that confines and controls the motion of mobile atoms.
- **Extreme Supercooling:** Atomic confinement allows metals like platinum to remain liquid at around 350°C, far below normal freezing points.
- **Unstable Solidification:** The liquid solidifies into a highly unstable amorphous glass-like solid that reverts to a crystal when the atomic "corral" is broken.

NASA's Artemis II Mission

- NASA will soon launch the Artemis II mission, which will fly four astronauts around the Moon and return them to Earth.
- Artemis II is the first crewed Artemis mission, returning humans to the lunar vicinity since **Apollo 17**.
- It will conduct a lunar flyby without landing, carrying the first woman and the first person of colour.
- **International Partners:** NASA has partnered with the European Space Agency (ESA), Japan Aerospace Exploration Agency (JAXA), and the Canadian Space Agency (CSA).
- **Launch Vehicle:** The mission will launch aboard the Space Launch System (SLS) rocket carrying the Orion Multi-Purpose Crew Vehicle (MPCV).
- **Trajectory:** Orion will use a free-return trajectory, looping around the Moon's far side and returning to Earth under natural gravity.
- **Distance & Altitude:** Astronauts will fly 7,400 km above the Moon and almost 400,000 km from Earth—the farthest humans have ever travelled.
- **Significance:** The mission will test the Orion spacecraft's deep-space exploration systems under realistic conditions for the Artemis III lunar landing.
- **NASA's Artemis mission** is a multinational programme to establish a long-term lunar presence and prepare for future crewed Mars missions.

- The Orion MPCV is NASA's next-generation partially reusable spacecraft.
- The SLS rocket is NASA's super-heavy-lift vehicle and the world's most powerful launch vehicle.

India's First Private National Earth Observation Satellite

- A consortium led by **Pixxel** signed an agreement with **IN-SPACe** to build India's first private national Earth Observation (EO) satellite constellation.
- **IN-SPACe**: The Indian National Space Promotion and Authorisation Centre is the nodal agency for authorising, regulating, and promoting private-sector participation in space activities.
- The consortium, led by Pixxel, includes Indian startups **Dhruva Space, PierSight, and SatSure**.
- The constellation will consist of 12 satellites with very high-resolution optical, multispectral, hyperspectral, and **Synthetic Aperture Radar (SAR) imaging**.
- It will deliver an end-to-end EO ecosystem spanning satellite deployment, ground infrastructure, data processing, and value-added intelligence services.
- **Objective**: To reduce India's dependence on foreign geospatial data while marketing EO data globally.
- **Operational Model**: Under a public-private partnership, the consortium owns and operates the satellites, with the government having priority access to data.
- **Significance**: This marks a transition in Earth observation operations from government to industry.

Earth Observation Satellites

- EO satellites are spacecraft equipped with remote sensing technology to monitor Earth's physical, chemical, and biological systems from space.
- **Sensor Types**: They use active sensors, which emit their own radiation, like radar or passive sensors, which detect reflected solar radiation or thermal emissions.
- **Indian Milestones**: The first experimental EOS was Bhaskara-I (1979), and IRS-1A (1988) was the first operational remote sensing satellite.
- **Key Applications**: Include agricultural monitoring, disaster management, environmental assessment, ocean studies, and high-resolution cartography.

Reusable Rockets for Sustainable Access to Space

- Reusable rocket technology is transforming the commercial space sector, reducing launch expenses as the global space market is projected to surpass \$1 trillion by 2030.

About Reusable Rockets

- Reusable rockets are launch vehicles designed to return intact after missions, allowing the refurbishment and reuse of engines and avionics.
- Operational Shift:** The approach shifts spaceflight from disposable launches to a transportation model comparable to commercial aviation.

Core Enabling Technologies

- Guidance Systems:** GPS sensors and inertial measurement units guide rockets from orbital altitudes to precise landing pads or to ocean-based drone ships.
- Retro Propulsion:** Engines reignite multiple times during descent to dissipate kinetic energy and slow vehicles from supersonic speeds.
- Aerodynamic Control:** Deployable grid fins and active control surfaces manage the rocket's trajectory during atmospheric descent.
- Thermal Protection:** Silica tiles, **phenolic impregnated carbon ablators (PICA)**, and heat-resistant steel alloys protect vehicles from the ~2000 °C atmospheric re-entry heat.
- Clean Propellants:** Rocket designs increasingly use liquid oxygen and methane (**Methalox**) engines because these engines prevent "coking" (residue buildup) and simplify refurbishment.

Landing & Recovery Systems

- Vertical Landing:** Pioneered by **SpaceX's Falcon 9**, vertical take-off and vertical landing (VTVL) use engine thrust and landing legs to touch down upright.
- Mechanical Catch (Chopsticks):** **SpaceX's Mechazilla** launch tower uses large robotic arms to catch returning boosters midair.
- Horizontal Landing:** Winged spaceplanes, such as India's **Pushpak RLV-TD**, glide and land on a runway like a jet.
- In-Air Capture:** A towing helicopter snags the parachute line of a descending booster to prevent it from crashing into the ocean.
- Parachute Splash-Down:** Parachutes are used to slow crew capsules and smaller launch vehicles for controlled splashdowns in the ocean.

Significance of Reusable Rockets

- **Economic Efficiency:** Reusable technology lowers cost-to-orbit by recovering and reusing expensive components like engines and avionics.
- **Strategic Capability:** It enables a rapid launch cadence, allowing quick satellite deployment or replacement during emergencies or conflict scenarios.
- **Environmental Sustainability:** Recovering rocket stages reduces space debris accumulation and marine pollution from splashdowns.
- **Downmass Capability:** Unlike expendable rockets, reusable vehicles like Starship can return heavy cargo safely to Earth.
- **Democratized Access:** Lower seat costs enable universities, smaller nations, and private researchers to access space.

First Commercial Space Station Haven-1

- Haven-1 is planned to be the world's first commercial space station.
- It is a **single-module station** that will operate in **low-Earth orbit (LEO)** and will serve as a precursor to the larger multi-module station, **Haven-2**.
- It is being developed by the American aerospace company Vast, with support from NASA and private partners.
- **Objective:** To host short-duration missions and support microgravity research, in-space manufacturing, and orbital tourism.
- **Launch:** Haven-1 is expected to launch in 2027 aboard a SpaceX Falcon 9 rocket, initially uncrewed.
- **Design:** It follows a human-centric design, featuring a domed window and private crew quarters.
- **Mission Duration:** The station is built for a three-year orbital lifespan, with missions lasting 10–30 days.
- **Significance:** Haven-1 marks a structural shift from state-led space programmes to a commercially sustained space research ecosystem.

Fatty Liver Disease MASLD

- **Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)** is emerging as a silent health threat in India.
- It was earlier termed **Non-Alcoholic Fatty Liver Disease (NAFLD)** but renamed to allow diagnosis based on metabolic risk factors, not alcohol exclusion.
- It is characterised by hepatic steatosis (over 5% fat in the liver) and at least one cardiometabolic risk factor (e.g., obesity, Type 2 diabetes, hypertension).
- **Primary Causes:** Sedentary behaviour, high-calorie diets with excess fructose, and insulin resistance.
- **Disease Spectrum:** It is a progressive condition that can lead to several stages of liver damage.
- **Simple Steatosis:** Fat accumulates in the liver without significant inflammation or damage.
- **MASH:** Metabolic Dysfunction-Associated Steatohepatitis causes liver inflammation and cell damage.
- **MetALD:** This sub-category includes MASLD patients consuming moderate alcohol, below alcoholic liver disease thresholds.
- **Fibrosis and Cirrhosis:** Chronic inflammation leads to scarring (fibrosis). Severe scarring (cirrhosis) can cause liver failure or Hepatocellular Carcinoma (HCC), a liver cancer.
- **Symptoms:** It is asymptomatic in early stages; advanced stages cause fatigue, right upper abdominal pain, jaundice, ascites, and bruising.
- **Management Strategy:** Sustained 5–10% weight loss reverses early MASLD; Resmetirom is the first FDA-approved medication for non-cirrhotic MASH.
- **Monitoring:** High-risk groups, especially Type 2 diabetes patients, should be screened with the FIB-4 score or **FibroScan**.
- **Disease Burden:** MASLD affects 30–38% of adults worldwide, with prevalence reaching nearly 70% among Type 2 diabetes patients.
- **India Burden:** India ranks among the top three most affected countries, with a general prevalence of 16–32% and an adult prevalence of 38.6%.

Solar Radiation Storm

- The Sun unleashed the largest solar radiation storm in over 20 years, ranked S4 (Severe) by the NOAA Space Weather Prediction Center, causing intense auroras across Europe and disruptions to aviation GPS systems.

Solar Radiation Storm:

- A solar radiation storm occurs when the Sun ejects extremely fast, high-energy charged particles—mainly protons—towards Earth following powerful solar eruptions.
- These particles can penetrate Earth's magnetic shield and pose risks to space-based and high-altitude technologies.

How it forms?

- Triggered by X-class solar flares, the most intense category of solar flares.
- Often accompanied by a **Coronal Mass Ejection (CME)**, where plasma and magnetic fields are expelled from the Sun's corona.
- Charged particles accelerated to near-light speeds reach Earth in minutes to hours, travelling ~150 million km.

Measurement & classification:

- Classified using the NOAA Space Weather Scale (S1–S5).
- Based on proton flux ≥ 10 MeV, measured by GOES satellites in geosynchronous orbit.
- S4 storms are rare and last occurred during the Halloween Storms of October 2003.

Implications on Earth

- **Space & astronaut safety:** Increased radiation exposure for astronauts aboard the International Space Station.
- **Aviation:** Radiation risk for polar flights; GPS and HF radio disruptions.
- **Satellites:** Damage to electronics, navigation errors, orbital drag changes.
- **Power grids:** Geomagnetic storms linked to transformer damage.
- **Auroras:** Intense aurora borealis and australis visible far beyond polar regions.

Small Language Models (SLMs) as future of Artificial Intelligence

- The Union Minister for Electronics and IT stated that the future of AI will be shaped by SLMs rather than extremely Large Language Models (LLMs).

What are SLMs?

- SLMs are compact AI systems built on simpler neural network architectures, designed to generate and understand natural language, as LLMs do.
- **Parameters used by SLMs:** several million to 30 billion parameters, whereas LLMs often possess hundreds of billions or even trillions parameters.
- At present, nearly 95% of AI work globally is currently handled by SLMs. E.g. Llama, Mistral, Gemma and Granite etc.

Advantages of SLMs over LLMs

- **Cheaper:** Smaller models typically require less computational power, reducing costs.
- **Ideal for on-device deployment:** As they are optimized for efficiency and performance on resource-constrained devices with limited connectivity, memory, and electricity.
- **Democratization of AI:** More organizations can participate in developing models with a more diverse range of perspectives and societal needs.
- **Other:** Streamlined monitoring and maintenance, Improved data privacy and security, Lower infrastructure, deeper expertise for domain-specific tasks, lower latency etc.

Limitations of SLMs

- **Less accuracy:** Larger models offer superior accuracy and versatility and are well-suited for more complex tasks.
- **Narrow scope:** SLMs are typically trained on smaller, specialized datasets, limiting their flexibility and general knowledge compared to larger models.
- **Other:** Less Creativity, Lesser data analysis etc.

Japan's Akatsuki Mission

- Japan officially terminated the Akatsuki mission after losing contact with the spacecraft for more than a year.
- Akatsuki, also known as **PLANET-C or the Venus Climate Orbiter (VCO)**, was a mission by the Japan Aerospace Exploration Agency (JAXA) and the only active spacecraft orbiting Venus.
- **Objective:** It studied Venusian volcanism and atmospheric dynamics, particularly super-rotation.
- **Super-Rotation:** Venusian winds circulate nearly 60 times faster than the planet's slow rotation.
- **Orbit:** It operated in an elliptical near-equatorial orbit, enabling continuous monitoring of cloud movements and global atmospheric flows.
- **Scientific Payload:** The orbiter had five cameras across infrared, ultraviolet, and visible bands, plus an ultra-stable oscillator for 3D atmospheric radio-science mapping.

Key Findings:

- The mission discovered a massive 10,000 km bow-shaped wave in the upper atmosphere that remained stationary over a highland region.
- Observations showed that Venus's super-rotation is driven by solar heating and thermal tides.

India's Venus Mission

- ISRO will launch India's maiden mission to Venus, the **Venus Orbiter Mission (VOM)**, also known as **Shukrayaan-1**, in 2028.
- Objectives:** To map Venus's surface and subsurface geology, analyse its atmosphere, study its interaction with the solar wind, and understand its evolutionary differences from Earth.
- Launch Vehicle:** It will use **LVM-3** (Launch Vehicle Mark 3), India's heaviest operational rocket.
- Orbit:** The spacecraft will begin in a highly elliptical orbit, later lowered through aerobraking to a lower science orbit.

Blue Origin TeraWave Satellite Constellation

- Blue Origin announced plans to launch the TeraWave satellite constellation in **2027**.
- TeraWave is a multi-orbit, space-based communications network developed by Blue Origin.
- It is designed to serve enterprise, data centre, and government customers who need mission-critical, high-capacity connectivity.
- The system integrates Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellites to create a global space backbone.
- Data Capacity:** The network is designed to deliver 6 terabits per second of throughput with symmetrical upload and download speeds, supporting real-time IoT data transfers and cloud operations.
- Significance:** TeraWave complements fibre networks, offering route diversity and resilience, particularly in remote or suburban areas where fibre deployment is costly.

Humanoid Robot ASC ARJUN

- Source (PIB):** Indian Railways has deployed a **humanoid robot** named "ASC ARJUN" at **Visakhapatnam Railway Station**.
- Objective:** To modernise station security, improve passenger services, and work alongside the Railway Protection Force (RPF) to support station operations
- Significance:** It is developed using fully indigenous technology and marks a first-of-its-kind deployment across the Indian Railways network.

Key Features & Capabilities

- **AI Surveillance:** The robot uses a Face Recognition System (FRS) and AI-based crowd analytics to detect intrusions and manage congestion.
- **Multilingual Assistance:** It delivers automated safety messages in English, Hindi, and Telugu.
- **Autonomous Navigation:** The system conducts round-the-clock platform patrols using semi-autonomous navigation and obstacle avoidance.
- **Emergency Response:** Integrated fire and smoke sensors generate real-time alerts to control rooms.
- **Interactive Design:** It features a passenger-friendly interface supporting familiar gestures like "Namaste" and salutes for RPF personnel.

Space Insurance in India

- Space insurance demand in India is rising following the consecutive launch failures of **PSLV-C61** and **PSLV-C62** missions.
- Space insurance offers financial coverage for losses from manufacturing, transport, launch, and in-orbit operations of space assets.

Need for Space Insurance in India

- **State Responsibility:** Under the **Outer Space Treaty, 1967**, India bears international responsibility for all space activities from its territory, including private missions.
- **Absolute Liability:** The **Liability Convention, 1972**, makes India absolutely liable for Earth or aircraft damage caused by its space objects.
- **Startup De-Risking:** Space missions are capital-intensive; insurance safeguards startups from bankruptcy resulting from launch failures.
- **FDI Confidence:** A clear insurance framework builds investor confidence and supports the 100% FDI liberalisation in the space sector (2024).
- **Private Participation:** India's goal of shifting its space sector to a demand-driven, commercially independent ecosystem requires a structured risk-management mechanism.
- **Global Competitiveness:** International customers prefer insured launches; mission assurance is essential for access to the \$500+ billion global space economy.

Key Challenges of Space Insurance in India

- **High Premiums:** Launch insurance costs 15–20% of mission value; premiums increased 20–30%

after PSLV launch failures.

- **Capital Strain:** Early-stage startups struggle to pay upfront premiums, diverting funds from R&D and hardware development.
- **Reinsurance Dependency:** Domestic insurers lack capacity for large risks, relying on foreign reinsurance markets, exposing missions to global market volatility.
- **Legislative Gap:** The absence of an umbrella Space Activities Act leaves liability caps undefined, complicating insurers' actuarial pricing.
- **Orbital Risks:** Rising space debris and **Kessler Syndrome (fear of a chain reaction of collisions)** increase in-orbit insurance costs and complexity.

Way Forward

- **National Space Act:** Enact legislation defining Maximum Probable Loss and government indemnity beyond thresholds to keep premiums affordable.
- **Domestic Pool:** Create a public-private space insurance pool involving New India Assurance and GIC Re to retain risks domestically.
- **Risk Guarantee Fund:** Establish a government-backed partial risk guarantee to subsidise premiums for early-stage startups.
- **Data Sharing:** Enable ISRO and IN-SPACe to share non-sensitive performance data with insurers for accurate actuarial pricing.
- **Regulatory Empowerment:** Grant IN-SPACe statutory authority to enforce insurance compliance, verify satellite health, and resolve claim disputes.

Europe's new Space Phone Line

- The **European Space Agency (ESA)** inaugurated **New Norcia 3 (NN03)**, a deep-space communication antenna described as a “permanent space phone line”.
- It is the fourth deep-space antenna in the **Estrack network**, complementing sister stations to provide uninterrupted 24/7 global coverage.
- The antenna is located at **the New Norcia Ground Station** in Western Australia.
- **Estrack** is ESA's global network of ground stations that provide communication links between mission control and spacecraft across the Solar System; it currently tracks over 20 missions.
- **Advanced Technology:** It features a 35-metre reflector dish and cryogenic cooling to about -263 °C, enabling detection of weak signals.

- **AI Integration:** It is ESA's first antenna to use AI for noise filtering and more precise auto-tracking.
- **Partnerships:** The antenna is operated locally by CSIRO, Australia's national science agency.
- **Significance:** It enhances Etrack's data-handling capacity and can provide cross-support to NASA, JAXA, and ISRO, thereby strengthening international space cooperation.

Eliminating Malaria by 2030

- Under the National Framework for Malaria Elimination (2016–2030), India targets zero indigenous malaria cases by 2030, with nationwide transmission interruption by 2027.

India's Progress in Eliminating Malaria

- **District Milestone:** 160 districts across 23 States/UTs reported zero indigenous cases between 2022–2024, indicating widespread transmission interruption progress (MoHFW).
- **Case Reduction:** Malaria incidence fell by nearly 80% between 2015 and 2023 nationwide.
- **Regional Share:** India accounted for 73.3% of South-East Asia's 2.7 million cases in 2024.
- **State Example:** Tamil Nadu cases declined from 5,587 (2015) to 321 (2025).

Key Strategies Adopted by India

- **Surveillance Strengthening:** Real-time case detection, digital reporting and rapid outbreak response to interrupt local transmission chains; E.g. Integrated Disease Surveillance Programme (IDSP).
- **Universal Diagnosis:** “Test, Treat, Track” ensures early confirmation and complete treatment across public health systems; E.g., National Strategic Plan for Malaria Elimination (2023–2027).
- **Vector Control:** Large-scale larval management, insecticide spraying and preventive measures reduce mosquito breeding and spread; E.g., National Vector Borne Disease Control Programme (NVBDCP).

Major Challenges Ahead

- **Migration Risk:** Population movement from endemic neighbouring States contributes to reintroduction, with imported cases forming a growing share in low-burden districts.
- **API Disparity:** In 2023, 34 States/UTs achieved an Annual Parasite Incidence (API) below one, while Tripura (5.69) and Mizoram (14.23) remained high (MoHFW).
- **Urban Malaria:** Rapid urbanisation increases breeding sites, with urban areas accounting for a

rising proportion of reported malaria cases annually.

- **Plasmodium Vivax Burden:** Plasmodium vivax causes **nearly two-thirds of malaria** cases in the South-East Asia Region, complicating efforts to eliminate the disease.
- **Drug Resistance Threat:** Partial resistance to **artemisinin** derivatives has been confirmed or suspected in at least eight African countries, posing global treatment risks.

Way Forward

- **Migrant Monitoring:** Active surveillance among migrant workers from endemic regions prevents importation-led outbreaks; E.g., targeted screening under state malaria elimination drives.
- **Resistance Tracking:** Continuous monitoring of drug and insecticide resistance guides treatment and control strategies; E.g., National Malaria Drug Resistance Monitoring Network.
- **Cross-Border Coordination:** Institutionalise joint surveillance and response in border and migrant-heavy corridors; E.g., WHO-led Greater Mekong Subregion malaria elimination cooperation model.
- **Digital Surveillance:** Use integrated digital health platforms for real-time case alerts and outbreak prediction; E.g., Ayushman Bharat Digital Mission (ABDM).

About Malaria

- Malaria is a mosquito-borne infectious disease that affects humans and other animals.
- **Causative Agent:** It is caused by single-celled microorganisms of the Plasmodium group of **protozoans (microscopic heterotrophs that live as predators or parasites)**.
- **Transmission:** Infected female Anopheles mosquitoes transmit Plasmodium parasites through bites. The parasites multiply in the liver and destroy red blood cells (RBCs).
- **Symptoms:** High fever, chills, yellow skin, seizures and severe body weakness in advanced cases.
- **Treatment & Prevention:** Malaria is both preventable and curable; E.g., WHO-approved vaccines like **R21/Matrix-M and RTS, S**, combined with artemisinin-based combination therapies (ACTs).

Plasmodium Group of Protozoans

1. **Plasmodium falciparum** and **Plasmodium vivax** pose the greatest threat.
2. **Plasmodium ovale** and **Plasmodium malariae** generally cause a milder form of malaria.
3. **Plasmodium knowlesi** rarely causes disease in humans.

Kerala Declared *Bacillus subtilis* as State Microbe

- Kerala became India's first state to officially designate a State Microbe, *Bacillus subtilis*, to promote microbiome awareness.
- **Institution Launch:** The announcement coincided with the opening of the Centre of Excellence in Microbiome (CoEM) in Thiruvananthapuram.
- CoEM is India's first state-level institution dedicated solely to microbiome research.

About *Bacillus Subtilis*

- *Bacillus subtilis*, known as **hay or grass bacillus**, is a rod-shaped, Gram-positive bacterium.
- **Natural Habitat:** It naturally occurs in soil, vegetation, and the gastrointestinal tracts of humans and ruminant animals.
- **Survival Trait:** The bacterium forms protective endospores that withstand extreme heat, radiation, and prolonged environmental dryness.
- **Metabolic Nature:** It is a facultative anaerobe capable of growth in both oxygen-rich and oxygen-poor environments.

Key Applications of *Bacillus subtilis*

- **Probiotic Use:** Supports gut health and immunity in humans and animals.
- **Fermentation:** Used in fermenting traditional foods like Kinema in Sikkim and Akhuni in Nagaland.
- **Crop Protection:** Acts as a bio-fungicide and plant growth promoter by colonising crop root systems.
- **Industrial Use:** Produces industrial enzymes like amylases and proteases, and vitamins B2 and K2.
- **Bioremediation:** Cleans heavy metals and hydrocarbons from contaminated soil and water.
- **Research:** Serves as a model Gram-positive organism due to its natural ability to take up foreign DNA.

India's National Microbe

- **National Microbe:** In 2012, the Ministry of Environment and Forests (MoEF)

declared **Lactobacillus delbrueckii subsp. Bulgaricus** as India's National Microbe.

- **Global Event:** The declaration was made during the **COP-11 Convention on Biological Diversity (CBD), held in Hyderabad.**
- **Selection Rationale:** It was chosen to highlight the importance of invisible biodiversity and the bacterium's everyday role in fermenting milk into curd (dahi).

Scabies

- A global resurgence in scabies cases has revived public health concerns about it.
- Scabies is a **contagious skin infestation** caused by the microscopic **mite Sarcoptes scabiei var. hominis**.
- **Infection Mechanism:** Female mites burrow into the upper layer of the skin (epidermis) to lay eggs, triggering allergic itching from mite proteins and faeces.
- **Transmission:** Scabies spreads mainly through prolonged direct skin-to-skin contact.
- **Types:** Classic scabies occurs with a low mite burden and intense itching, or as crusted (Norwegian) scabies with massive mite infestation and thick crusts in immunocompromised individuals.
- **Symptoms:** Intense itching (pruritus), especially at night, and pimple-like rashes.
- **Complications:** Scratching facilitates *Staphylococcus* or *Streptococcus* infection, potentially causing septicaemia, heart disease, or kidney damage.
- **Treatment:** Standard management involves topical Permethrin cream or oral Ivermectin.
- **Disease Burden:** Scabies affects over 200 million globally, mainly in tropical and crowded areas.
- Indian prevalence ranges from 13–59%, with rural household attack rates as high as 30.9%.
- **Vulnerable Groups:** Children, the elderly, and institutional populations face a higher risk due to close contact and limited access to hygiene.
- **NTD Recognition:** The World Health Organisation (WHO) declared scabies a Neglected Tropical Disease in 2017.

Stealth Coronal Mass Ejection (CME)

- Astronomers have linked an intense geomagnetic storm that struck Earth in March 2023 to a Stealth Coronal Mass Ejection (CME)—a faint solar eruption with no obvious warning signals.

Stealth Coronal Mass Ejection (CME):

- Stealth Coronal Mass Ejections (CMEs) are solar eruptions that lack clear low-coronal signatures, such as solar flares, X-ray bursts, or strong radio emissions.
- Unlike typical CMEs, they appear optically weak or invisible in standard solar observations, yet can still travel to Earth and trigger severe geomagnetic storms.

Origin of Stealth CMEs:

- Active regions on the Sun with weak or slowly evolving magnetic fields
- Areas close to coronal holes—regions where the Sun's magnetic field is open
- Unlike explosive eruptions, stealth CMEs emerge from gradual magnetic restructuring, making them difficult to detect in real time.

How do Stealth CMEs form?

- The formation of stealth CMEs involves a subtle sequence of processes:
- **Magnetic flux rope buildup:** A twisted magnetic structure forms in the Sun's corona without producing flares.
- **Low-energy magnetic reconnection:** Weak reconnection releases plasma slowly, leaving minimal electromagnetic signatures.
- **Acceleration via coronal holes:** Nearby coronal holes emit high-speed solar wind, which can accelerate the CME and guide it toward Earth.
- **Interplanetary evolution:** As the CME travels through space, it may expand, rotate its magnetic field, and align in a way that strongly interacts with Earth's magnetosphere—especially if the magnetic field turns southward.

Why are Stealth CMEs geoeffective?

- Despite being slow and faint, stealth CMEs can cause intense geomagnetic storms because:
- They may travel behind high-speed solar wind streams, increasing impact energy
- Their magnetic clouds can expand significantly en route to Earth
- A southward-oriented magnetic field enhances magnetic reconnection with Earth's magnetosphere.

Implications of Stealth CMEs:

- Space weather forecasting challenge: Current early-warning systems rely on visible solar flares and radio bursts, which stealth CMEs often lack.

Risks to modern infrastructure:

They can disrupt:

1. Satellites and GPS systems
2. Radio communications
3. Power grids and aviation routes

- **Need for multi-point observation:** The study used data from NASA Solar Dynamics Observatory, Solar Orbiter, STEREO-A, and WIND, showing that multi-spacecraft monitoring is essential.
- **Strategic importance for India:** As India expands space assets, navigation systems, and digital infrastructure, accurate space weather prediction becomes a national resilience issue.

The drug-resistant fungal species *Candida auris*

- An Indian-led study has warned that *Candida auris*, a **drug-resistant fungal pathogen**, is becoming more virulent and spreading globally, with high mortality even after treatment.

The drug-resistant fungal species *Candida auris*:

- *Candida auris* is a multidrug-resistant fungal pathogen that causes severe invasive infections, especially in hospitalised and immunocompromised patients.
- First identified in 2009, it is now classified as an emerging global health threat due to high fatality rates and treatment failure.

Vector / Reservoir:

- Primarily healthcare settings such as hospitals and long-term care facilities.
- Persists on human skin, medical devices, and inanimate surfaces for prolonged periods.

Symptoms:

- Symptoms vary by site of infection and often resemble bacterial sepsis, making detection difficult.
- Common signs include fever, chills, low blood pressure, tachycardia, and in severe cases, bloodstream infections (candidemia).

Key features:

- Multidrug resistance: Resistant to multiple antifungal classes, limiting treatment options.
- High virulence: Mortality often exceeds 50%, even with therapy.
- Morphological flexibility: Can switch from yeast form to filamentous growth, aiding invasion.
- Immune evasion: Adapts rapidly to host immune responses and environmental stress.

Transmission:

- Spreads through direct contact with infected or colonised individuals (even asymptomatic).
- Transmitted via contaminated surfaces, medical equipment, and invasive devices like catheters or

ventilators.

HISTORY, HERITAGE AND CULTURE

194th birth anniversary of Savitribai Phule

- Prime Minister paid tributes to **Savitribai Phule** on her birth anniversary, recalling her lifelong commitment to education, equality, and social transformation.

About Savitribai Phule:

- Savitribai Phule (1831–1897) was a pioneering social reformer, poet, and educator, widely regarded as the **first female teacher** of modern India and a foundational figure of Indian feminism.
- Born in **Naigaon** (present-day Maharashtra), she was **married in childhood to Jyotirao Phule** and later moved to **Pune**. Her early exposure to learning ignited a lifelong mission to reform society through education.
- Encouraged by Jyotirao Phule, she learned to read and write and undertook teacher training at institutions in Ahmednagar and Pune, becoming a qualified teacher in 1847—an extraordinary achievement for women of that era.

Key contributions

- **Pioneer of girls' education:** In 1848, she co-founded India's **first girls' school at Bhidewada, Pune**, and went on to help establish 18 schools for girls and marginalized communities. **Social reform for the oppressed:** Opened shelters for widows, destitute women, and child brides (1854; expanded in 1864); campaigned against child marriage, caste discrimination, and untouchability.

Institution building: Played a central role in nurturing the Satyashodhak Samaj, which fought caste hierarchy and promoted equality; popularized Satyashodhak marriages without priests or dowry.

Public service with courage: Defied social hostility—often facing abuse on her way to school—and served plague victims during the 1897 epidemic, sacrificing her life in the process.

Significance

- Savitribai Phule's life symbolizes education as a tool of emancipation, laying the groundwork for women's rights, social justice, and inclusive reform in India.
- Her legacy endures in institutions like **Savitribai Phule Pune University**, national commemorations, and continued relevance to debates on equality and access to education.

Prime Minister Pays Tribute to Rani Velu Nachiyar on Her Birth Anniversary.

Rani Velu Nachiyar (1730-96)

- **Born:** In 1730 as the **princess of Ramnad (Ramanathapuram)**, Tamil Nadu.
- **Skills:** Trained extensively in warfare, including horse riding, archery, and martial arts like Silambam and Valari.

Key Contributions:

- Forged an alliance with Hyder Ali of Mysore.
- Established the "**Udaiyaal**" **battalion**: one of the first all-women army units in world history.
- **Pioneer of Suicide Tactics:** Her loyal commander, Kuyili, is credited with the first recorded suicide attack in Indian history by setting herself on fire to destroy a British ammunition depot in 1780.
- In 1780, she successfully recaptured Sivaganga, defeating the British nearly 77 years before the 1857 Revolt.

Somnath Swabhiman Parv

- Somnath Swabhiman Parv has been launched to honour civilisational resilience, marking **1,000 years since Mahmud of Ghazni's attack** on the Somnath Temple.

About Somnath Temple

- The Somnath Temple is revered as the first among the **twelve Jyotirlingas** of Lord Shiva.
- It is located at **Prabhas Patan, Gujarat**, at the confluence of the **Kapila, Hiran, and Saraswati rivers**, where they meet the Arabian Sea.
- **Mythic Origins:** Tradition attributes phased construction — first in gold by the Moon God, Somraj; then in silver by Ravana; and later in wood by Lord Krishna.
- **Reconstruction:** **Bhimdev I** rebuilt it in stone after Mahmud of Ghazni's attack in 1026 CE. It was renovated by **Kumarapala (Chalukya)** and later by **Mahipala I** after Alauddin Khalji's attack in

1299.

- Maratha queen **Ahilyabai Holkar** built a small temple ("Old Somnath") next to the ruins in 1783 CE.
- **Architectural Style:** The structure follows the **Māru-Gurjara (Chaulukya) style** featuring a Garbhagriha, Sabha Mandapa, and Nritya Mandapa.
- **Baan Stambh:** The arrow pillar on the sea wall marks an unobstructed sea route to the South Pole.
- **Shrine Eternal:** The temple was destroyed and rebuilt several times due to repeated attacks by Muslim invaders and the Portuguese; the present structure was completed in 1951.

Māru-Gurjara Architecture

- It is a form of West Indian architecture that originated during the 11th and 13th centuries.
- It synthesises the Maha-Maru tradition of Rajasthan and the **Maha-Gurjara tradition** of Gujarat.
- The style flourished under **Solanki patronage** and is a sub-style of the **Nagara tradition**.
- It is characterised by extreme ornamentation and complex geometric designs.
- **Key Feature:** It uses intricate carvings across interiors, exteriors, pillars, and ceilings; exterior walls show multiple projections and recesses.
- **Components:** Include Garbhagriha (inner sanctum), a Gudha-mandapa (closed hall), and a Sabha-mandapa (assembly hall), often fronted by a Kirti-torana (ceremonial arch).
- The main Shikhara is often surrounded by smaller subsidiary spires, called **Urushringas**, creating a "mountain-like" appearance.
- Major Examples: Sun Temple at Modhera, Dilwara Temples at Mount Abu, and Rani-ki-Vav at Patan.

Sri Govindaraja Swamy Temple

- Sri Govindaraja Swamy Temple is an ancient and prominent Hindu temple located in Tirupati, Andhra Pradesh.
- The temple was consecrated in **1130 AD** by the Vaishnavite philosopher-saint **Ramanujacharya**.
- Original Deity: Before the installation of Govindaraja Swamy, the presiding deity was Sri Parthasarathi, a form of Lord Krishna.
- **Legend Shift:** It is believed that Govindaraja's idol was shifted from **Chidambaram to Tirupati** by **Kulothunga Chola II** during religious upheavals.
- **Rituals:** The temple is a major Sri Vaishnava centre, and its rituals strictly follow the Vaikhanasa

Agama.

- **Architecture:** The complex reflects a blend of Dravidian and Vijayanagara architectural styles.
- **Structural Features:** It has several gopurams, including a seven-storeyed Rajagopuram at the entrance with intricate carvings, a pyramidal vimana, and pillared halls.
- The temple complex includes several smaller shrines dedicated to other Vaishnavite deities.
- Sri Ramanujacharya articulated **Vishishtadvaita**, a philosophical **middle path between Advaita and Dvaita**. His major works **include Sri Bhashya** and Bhagavad Gita Bhashya.

75 Projects Completed Under Swadesh Darshan Scheme

Swadesh Darshan Scheme

- **Genesis:** Launched in 2015, it is a flagship scheme of **Ministry of Tourism**.
- **Objective:** Development of theme-based tourist circuits like **Buddhist Circuit, Eco Circuit, Heritage Circuit, Himalayan Circuit**, etc.
- **Swadesh Darshan 2.0:** Revamped version of Swadesh Darshan Scheme to develop sustainable and responsible destinations following a tourist & destination-centric approach.

Sub Schemes Under SD 2.0

- **Challenge Based Destination Development (CBDD):** It has 36 projects sanctioned under four thematic categories viz Spiritual Tourism, Culture & Heritage, Vibrant Village Program, Ecotourism and **Amrit Dharohar Sites**.
- It has identified 5 destinations in **Vibrant Village category** including **Arunachal Pradesh (Kibitho), Himachal Pradesh (Rakchham-Chhitkul), Sikkim (Grathang) and Uttarakhand (Jadung & Mana)**.
- **Guidelines for Tribal Homestay development:** To develop 1,000 Tribal Homestays under the Pradhan Mantri Janjatiya Unnat Gram Abhiyan (**PM-JUGA**) Scheme.
- **Special Assistance to States for Capital Investment (SACI)** – Development of Iconic Tourist Centres to Global Scale: To infuse long term interest free loans for 50 years to States
- **Other Initiatives taken to Enhance Tourism In India**
- **Pilgrimage Rejuvenation and Spiritual Augmentation Drive (PRASHAD) Scheme:** To enhance infrastructure at major pilgrimage sites and heritage cities.
- **Medical Tourism:** India's Medical Value Travel (MVT) sector is projected to reach \$13.42 billion by 2026.

- **MICE (Meetings, Incentives, Conferences and Exhibitions) Tourism:** A National Strategy and Roadmap formulated by Tourism Ministry.
- **Facilitating Employment-Led Growth:** Skill development programme in hospitality management; MUDRA loans for Homestays, etc.

Zehanpora Stupa

- The 2,000-year-old Buddhist stupas and monastic complex at **Zehanpora in Baramulla, Kashmir**, dating to the **Kushan period**, have been scientifically excavated.

Zehanpora Stupa:

- The Zehanpora site is a large Kushan-era Buddhist complex comprising multiple stupas, apsidal chaityas (prayer halls), viharas (monk residences), urban-type settlements, and artefacts, spread over nearly 10 acres in Baramulla district, Jammu & Kashmir.

Discovered at:

- Zehanpora village, Baramulla district, North Kashmir
- Located along the ancient Silk Route corridor linking Kashmir with Gandhara (Afghanistan-Pakistan region)

History:

- The site dates to the Kushan period (1st-3rd century CE)
- Kashmir was a major centre of Buddhist learning during this time under rulers like **Kanishka and Huvishka**
- Buddhism in Kashmir began earlier under Ashoka (3rd century BCE) and flourished through **Mahayana Buddhism**, which later spread to Central Asia and China
- Zehanpora was likely part of the Gandhara Buddhist network, a trans-regional system of monasteries, trade routes and learning centres

Key characteristics of the stupa

- **Stupa-like plateau/mounds:** The mounds appear as man-made raised platforms, resembling stupa bases that have been reduced by time but remain prominent.
- **Multiple mounds (clustered layout):** The landscape suggests more than one stupa, indicating a complex, not an isolated shrine.
- **Evidence of superstructure:** Indications of a wooden super-structure above the mound(s), implying layered construction.
- **Scientific mapping & survey:** Documentation used drones, remote sensing, aerial photography

and ground mapping, indicating the site is structurally dense beyond what is visible on the surface.

- **Signature-link potential:** The excavation narrative highlights comparing construction patterns/circuits/modus features across regional sites.

Significance:

- Experts note no other regional site matches Zehanpora's scale, making it a key addition to Kashmir's material history.
- The complex strengthens Kashmir's position as a hub of Buddhist learning and monastic activity, linked to movement of monks, ideas and pilgrims.

Bhadrakali Temple Inscription

- The Bhadrakali inscription, a significant **12th-century epigraphic record**, has drawn attention for confirming the historical continuity, reconstruction narrative, and royal patronage associated with the Somnath Temple, particularly under the **Solanki dynasty**.

What is the Bhadrakali Inscription ?

- The Bhadrakali inscription is a **eulogistic Sanskrit inscription** dating back to **1169 CE**, offering valuable insights into medieval religious, political, and cultural history.
- It is engraved on the wall of the Bhadrakali Temple at **Prabhas Patan, Gujarat**.
- The inscription serves as an important source for understanding the religious patronage and temple-building traditions of the Solanki period.
- It reinforces the historical centrality of Somnath as a major **Shaivite centre**.
- Carved in 1169 CE, it records Somnath temple's construction across four yugas by Chandra (in gold), Ravana (in silver), Krishna (in wood), and **Bhimdev Solanki** (in stone).
- The inscription records the fourth reconstruction of the temple by Bhimdev Solanki, followed later by a fifth rebuilding under **Kumarapala**.

Historical Context and Authorship

- The inscription eulogises Param Pashupata Acharya Shriman **Bhavabrihaspati**, a revered Shaivite scholar.
- Bhavabrihaspati served as the spiritual preceptor of **Maharajadhiraj Kumarapala**, the powerful Solanki ruler of **Anhilwad Patan**.

- The reference highlights the close link between royal authority and religious institutions in medieval western India.

Information Contained in the Bhadrakali Inscription

- The inscription mentions the construction and restoration of the Somnath Temple across all four yugas, emphasising its eternal and sacred character.
- It reflects the deep devotional ethos of Solanki rulers toward Shaivism.
- The text underlines the role of learned acharyas in shaping temple culture and legitimising royal patronage.
- It contributes to the broader historical narrative of Somnath's resilience and repeated revival.

Significance for Somnath Temple History

- Acts as a primary epigraphic source validating medieval accounts of Somnath's reconstruction.
- Demonstrates the cultural and religious continuity of the site despite political upheavals.
- Highlights the Solanki dynasty's contribution to temple patronage, art, and religious scholarship.
- Strengthens the historiography of temple architecture and Shaivite traditions in western India.

Protection and Conservation

- The Bhadrakali inscription is currently protected by the State Department of Archaeology, Gujarat.
- Conservation ensures the preservation of this crucial epigraphic evidence for future historical and archaeological research.

Karthigai Deepam at Thiruparankundram Hill

- The Madras High Court allowed the ceremonial lamp lighting for Karthigai Deepam at Thiruparankundram Hill, granting access only to temple officials and excluding the public.
- Karthigai Deepam is the oldest festival of lights in Tamil Nadu, celebrated during the Tamil month of Karthigai to honour Lord Shiva and Lord Murugan.

About Thiruparankundram Hill

- Thiruparankundram Hill near Madurai is a **319-metre monolithic rock** in the Vaigai River basin.
- Murugan Abode:** It is considered the first among the six holy abodes of Lord Murugan.
- Hindu Temple:** The Arulmigu Subramanian Swamy Cave Temple at the base is an 8th-century

rock-cut shrine from the Pandya period.

- **Rare Iconography:** The temple depicts Lord Shiva and Lord Vishnu facing each other.
- **Jain Remains:** **Tamil-Brahmi inscriptions** and stone beds show Jain monks using rock shelters since the 2nd century BCE.
- **Dargah Summit:** The summit houses the Sikandar Badusha Dargah, the tomb of Madurai's last Sultan.
- **Religious Legacy:** The coexistence of a Vedic temple and an Islamic shrine represents a shared religious heritage.

Thiruvalluvar Day

- Prime Minister of India paid homage to Thiruvalluvar on Thiruvalluvar Day and urged citizens to read the Tirukkural, highlighting its timeless ethical and social values.

Thiruvalluvar: Who he was?

- Thiruvalluvar was a celebrated Tamil poet-philosopher, traditionally linked to the Sangam/post-Sangam intellectual milieu, revered as a moral teacher across South India.

History:

- His exact dates are debated (often placed roughly between 300 BCE and 600 CE in different traditions), but he is strongly associated in popular memory with Mylapore (Chennai).

Key contributions

- **Ethical philosophy for common life:** Presented practical morality for individuals, society and rulers through concise couplets.
- **Governance and statecraft:** Laid down ideals of just rule, good administration, and public welfare.
- **Universal humanism:** Advocated values like truth, compassion, self-control, non-violence, and social harmony beyond sectarian boundaries.

Tirukkural:

- The Tirukkural is a classical Tamil text of 1,330 short couplets (kurals) offering teachings on ethics, polity/economics, and love.

Author: Traditionally attributed to Thiruvalluvar.

Key features

- **Structure:** 3 books — **Aram (Virtue)**, **Porul (Wealth/Polity)**, **Inbam (Love)**.
- **Style:** Extremely concise **aphorisms**, easy to remember, rich in meaning.
- **Scope:** Covers personal conduct, social life, governance, justice, leadership, friendship, and family life.
- **Universal tone:** Often seen as secular and widely applicable, hence **called “Tamil Veda”** in popular tradition.

Significance

- **Ethics for public life:** A foundational source for thinking on integrity, justice, duty, and welfare-oriented governance.
- **Cultural identity:** A pillar of Tamil literary heritage and civilisational continuity.
- **Global influence:** Among the most translated Tamil works and frequently cited for universal moral reasoning.

Sammakka-Saralamma Jatara

- Telangana is preparing for the biennial Sammakka-Saralamma Jatara beginning 28 January 2026, alongside a large-scale redevelopment of the sacred precinct at Medaram.

Sammakka-Saralamma Jatara:

- A biennial tribal spiritual festival honouring Sammakka and Saralamma, revered as ancestral goddesses of the **Koya Adivasi community**.
- Recognised as Asia's largest tribal festival and one of the largest human congregations in the world.

Held in:

- Celebrated at Medaram village in Mulugu district, Telangana, located inside the **Eturnagaram Wildlife Sanctuary**, part of the Dandakaranya forest belt.
- Conducted during the full moon of the Hindu month of Magh.

Origin:

- Rooted in Koya tribal history and legend, centred on Sammakka, a forest-born woman adopted by tribals, and her daughter Saralamma.

- According to tradition, they resisted the **Kakatiya rulers'** tax oppression, attained martyrdom, and are remembered as symbols of tribal resistance and sacrifice.
- The deities are not worshipped permanently in temples; instead, they are symbolically brought from the forest to stay with the people for a few sacred days.

Key features:

- Rituals are conducted exclusively by Koya tribal priests, following indigenous customs.
- Devotees offer "Bangaram" (jaggery) instead of gold or money, symbolising equality and agrarian life.
- Worship centres around sacred trees, bamboo totems, flags (dalgudda) and clan symbols rather than idols.
- Attracts over one crore devotees, second only to the Kumbh Mela in scale within India.
- The festival space has recently expanded with arches, platforms and granite flooring to manage massive crowds.

Significance:

- Represents tribal identity, collective memory and resistance against historical injustice.
- Preserves an animistic, kinship-based belief system, where deities are treated as family members.

Parbati Giri

- Prime Minister of India paid tribute to Parbati Giri on her birth centenary, highlighting her role in the freedom struggle and her lifelong dedication to social service.
- Parbati Giri:**
- Parbati Giri (1926–1995) was an **Indian freedom fighter and social reformer from Odisha**, widely known as the "**Mother Teresa of Western Odisha**" for her humanitarian work among the poor, tribals, and marginalised communities.

Early days:

- Born on 19 January 1926 at Samlaipadar village, Bargh district (Odisha).
- Inspired by nationalist activities led by Congress leaders, including her uncle Ramachandra Giri.
- Left formal education at a young age and joined Congress organisational work by 1938, adopting Gandhian principles as a way of life.

Contributions to the freedom movement:

- Actively participated in **Individual Satyagraha (1940)** and mobilised villagers for the Khadi and Charkha movement.
- Joined the **Quit India Movement (1942)** at the age of 16, leading rallies and openly defying British authority.
- Known for bold acts of resistance, including urging Indians to boycott British institutions; arrested and imprisoned for two years.
- Earned the epithet "**Banhi Kanya**" for her fearless nationalism and mass mobilisation.

Literary and social work:

- While not primarily known for literary writings, her legacy lies in grassroots activism, institution-building, and community service.
- After Independence, devoted herself to relief work during the 1951 Odisha famine, prison reforms, eradication of leprosy, and welfare of tribal communities.

End days and recognition:

- Awarded by the Department of Social Welfare, Government of India (1984) for exemplary service.
- Conferred an Honorary Doctorate by Sambalpur University (1988).
- Passed away on 17 August 1995, leaving behind a legacy of service-driven nationalism and ethical public life.

Bagurumba Dwhou 2026

- PM Modi attended **Bagurumba Dwhou 2026** and laid the foundation stone for the **Kaziranga Elevated Corridor Project** in Assam.

About Bagurumba Dwhou

- Bagurumba Dwhou was a historic mass cultural event showcasing the traditional Bagurumba dance of the **Bodo community**. The word **Dwhou** means "wave" in Bodo.
- Bagurumba is also known as the "**Butterfly Dance**" for its graceful, flowing movements that mimic butterflies, birds, and swaying trees.
- Inspired by nature, the dance symbolises peace, fertility, joy, and collective harmony between humans and the natural world.

- Traditionally, Bodo women perform it while men provide musical accompaniment at festivals like **Bwisagu (Bodo New Year)** and **Domasi**.
- Attire:** Handwoven Bodo garments like the Dokhona, Jwmgra or Fasra scarf, and Aronai stole.
- Musical Instruments:** Sifung (flute), Kham (drum), Serja (violin-like), and Tharkha (bamboo clapper).

Bodo Tribe

- The Bodo tribe is the largest indigenous ethnolinguistic group and a **Scheduled Tribe in Assam**.
- They are a part of the greater **Bodo-Kachari family** and spread across states like Nagaland, Meghalaya, Arunachal Pradesh, West Bengal and Tripura.
- They belong to the **Indo-Mongoloid group**; the Bodo language is part of the Tibeto-Burman family.

Kaziranga Elevated Corridor Project

- It is a major environmentally conscious highway project in Assam, aimed at ensuring the safe movement of wildlife and improving regional connectivity.
- The project is part of **National Highway 715 (formerly NH-37)**, connecting Kaliabor and Numaligarh.
- Key Feature:** A 35 km elevated stretch that will pass through Kaziranga National Park, allowing animals to move freely beneath.

Rash Behari Bose

- Union Home Minister paid tribute to freedom fighter Ras Behari Bose on his death anniversary.
- About Rash Behari Bose (1886-1945)**
- Born in Bardhaman district (Bengal).
- Was deeply inspired by the French Revolution of 1789.

Key Contributions

- Was an active member of the **Yugantar group** of revolutionaries under the leadership of Motilal

Roy.

- Acted as an effective link between revolutionaries of Punjab, United Provinces and Bengal.
- Involved in the **Delhi Conspiracy Case (1912)** related to the bomb attack on Viceroy Lord Hardinge.
- Founded the **Indian Independence League (1942)** in Tokyo.
- Played a key role in the **Ghadar Movement** and in the formation of **the Azad Hind Fauj (Indian National Army)**.
- Japanese Government honoured him with the **Order of the Rising Sun** (2nd grade)

2nd Global Buddhist Summit

- Source (PIB):** The **International Buddhist Confederation (IBC)**, in collaboration with the Ministry of Culture, will organise the 2nd Global Buddhist Summit (GBS) in New Delhi.
- Its theme, "**Collective Wisdom, United Voice, and Mutual Coexistence**", reinforces the relevance of Buddhist philosophy in social harmony and global dialogue.
- The summit will showcase **NORBU** (Neural Operator for Responsible Buddhist Understanding), an AI model designed to engage youth with Buddhist teachings.
- Significance:** The summit strengthens India's cultural diplomacy by projecting India as the global hub of Buddha Dhamma.
- The first Global Buddhist Summit, held in 2023, adopted the **Delhi Declaration**, which linked Buddhist philosophy with mental well-being and environmental sustainability.

International Buddhist Confederation (IBC)

- The IBC is the largest global Buddhist umbrella organisation, headquartered in New Delhi, India.
- Establishment:** It was conceived in 2011 and formally established in 2012 under **the Ministry of Culture**.
- Objective:** Integrate Buddhist values into global discourse to address contemporary challenges.
- Membership:** It comprises over 320 organisations across 39 countries.
- Structure:** It is governed by a Council of Patrons, a Dhamma Council, and a General Assembly that elects office bearers every 3 years.
- Key Initiatives:** It organised the 1st Asian Buddhist Summit in 2024 and is developing the India International Centre for Buddhist Culture and Heritage (IICBCH) at Lumbini, Nepal.

Honouring Subhas Chandra Bose on Parakram Diwas

- PM Narendra Modi paid tribute to Subhas Chandra Bose on his birth anniversary, observed as Parakram Diwas.
- The Centre is organising **Parakram Diwas-2026** in the Andaman and Nicobar Islands to commemorate the **129th Birth Anniversary of Netaji Subhas Chandra Bose**, celebrating his legacy of courage, sacrifice, and patriotism.

Netaji Subhas Chandra Bose: Who he was?

- Netaji Subhas Chandra Bose was a revolutionary nationalist leader who advocated complete independence through assertive and military means, diverging from the dominant non-violent strategy of the freedom movement.
- Early life:**
- Born on 23 January 1897 in **Cuttack, Odisha**, to a prominent family.
- Brilliant student; studied at Presidency College and Scottish Church College.
- Cleared the **Indian Civil Services (ICS)** exam in England (1920) but resigned voluntarily to serve the freedom struggle.
- He considered Chittaranjan Das as his political mentor and Swami Vivekananda as his spiritual guide.

Contribution to the Freedom Movement

- Radical Congress leadership:** Rose as a mass leader of the Left wing; elected Congress President in **1938 (Haripura) and 1939 (Tripuri)**, signalling a shift towards assertive anti-colonial politics.
- Uncompromising demand for Purna Swaraj:** Rejected dominion status and constitutional gradualism; argued for immediate independence, especially during Britain's wartime vulnerability.
- Socialist economic vision:** Founded the **National Planning Committee (1938)**, advocating state-led industrialisation, scientific planning, and economic self-reliance.
- Ideological challenge within the INC:** Resigned after the Tripuri crisis, exposing tensions between Gandhian non-violence and Bose's militant political realism.
- Forward Bloc and radical mobilisation:** Established the Forward Bloc (1939) to consolidate leftists, youth, and workers under a militant nationalist platform.
- Ideology:** Advocated Socialism and Purna Swaraj; rejected the 1928 Nehru Report's Dominion

Status.

Exile and Armed Struggle:

- **Escape and globalisation of the struggle:** Escaped house arrest in 1941, internationalising India's freedom movement and shifting it to the geopolitical arena.
- **Pragmatic Axis engagement:** Sought support from Germany and Japan as a strategic anti-imperialist move, not ideological alignment.
- **Revival of the INA:** Reorganised the Indian National Army, instilling discipline, nationalism, and a direct military challenge to British authority.
- **INA Leadership:** He assumed command of the Indian National Army in Singapore in 1943 and established the Rani of Jhansi Regiment as the INA's women's combat unit.
- **Azad Hind:** He proclaimed the Provisional Government of Free India in Singapore in 1943.
- **INA** was formed in 1942 by Mohan Singh, with Indian Prisoners of War (PoWs) captured by the Japanese.
- **Azad Hind Government (1943):** Proclaimed **India's first government-in-exile**, with symbols of sovereignty including currency, courts, and diplomatic recognition.
- **Psychological blow to colonial rule:** INA's advance to Imphal and Kohima (1944), though militarily unsuccessful, broke the myth of British invincibility and hastened colonial exit.
- **Last days and mystery:**
- Reported to have died in a plane crash in Taiwan on 18 August 1945, though circumstances remain controversial.
- Multiple inquiries were held; debates over his death continue to this day.

Significance and legacy:

- Popularised the slogan "**Give me blood, and I will give you freedom.**"
- Inspired mass nationalism, particularly among soldiers and youth.
- INA trials (1945–46) weakened British moral authority and accelerated India's independence.
- 23 January is celebrated as **Parakram Diwas** to honour his indomitable spirit.

World's Oldest Known Rock Art Discovered in Indonesia's Muna Island

- Archaeologists discovered the world's oldest known rock art in Liang Metanduno cave on Muna Island, Indonesia.

- **Artwork Type:** The artwork is a hand stencil in which the fingers were deliberately narrowed to resemble a claw-like or animal feature.
- **Dating Method:** Uranium-series dating indicates the calcium carbonate layer covering the artwork is at least 67,800 years old.
- **Age Record:** This finding surpasses the previous 51,200-year-old record for a wild pig painting discovered in **Leang Karampuang cave** in South Sulawesi, Indonesia.
- **Human Timeline:** The discovery supports the “long chronology” theory, suggesting modern humans reached Sahul before 65,000 years ago.
- Sahul was a Pleistocene landmass linking Australia, New Guinea, Tasmania, and the Aru Islands.
- **Cognitive Insight:** The deliberate modification of hand shape indicates that early Southeast Asian humans possessed complex symbolic thinking far earlier than previously established.

Karpoori Thakur

- PM Narendra Modi paid tributes to Karpoori Thakur on his birth anniversary.
- Karpoori Thakur was born on January 24, 1924, in Karpoori Gram, Bihar.
- He was a socialist leader and former CM of Bihar, popularly known as “**Jan Nayak**”.
- He actively participated in India’s freedom struggle, including the **Quit India Movement of 1942**.
- **Major Reform:** He introduced the “**Karpoori Thakur Formula**”, a layered reservation system for government jobs and educational institutions.
- The formula allocates **26% reservation; 12% for OBCs, 8% for Extremely Backward Classes (EBCs), 3% for women, and 3% for Economically Weaker Sections (EWS)**.
- **Social Measures:** He enforced a total prohibition of alcohol in Bihar, waived school fees, strengthened Panchayati Raj, and prioritised farmers’ welfare.
- **National Honour:** He was posthumously awarded the Bharat Ratna in 2024 for advancing social justice.

The President of India paid tribute to Veer Surendra Sai on birth anniversary

Veer Surendra Sai (1809-1884)

- Born in village of Rajpur-Khinda near Sambalpur town (Odisha) in Chauhan royal family.
- Prominent freedom fighter and tribal leader from Odisha

- **Contributions**
- He began fighting against British dominance at age 18 in 1827.
- Organised a guerrilla-style rebellion involving tribal communities such as **Binjhal, Gond etc.**
- After death of ruler of **Sambalpur**, British applied ***Doctrine of Lapse*** and annexed **Sambalpur in 1849**, denying Surendra Sai his legitimate claim.
- During the **Sepoy Mutiny of 1857**, Sai returned to Sambalpur and relaunched the rebellion against British.
- Many tribal Zamindars (Landlords) and **Gauntias (local leaders)** rallied to his cause.
- **Values: Patriotism ,Courage and valour**

Granth Kutir

- President Droupadi Murmu inaugurated Granth Kutir at **Rashtrapati Bhavan**.
- The scripture library aims to preserve India's literary heritage across its 11 classical languages.
- It houses about 2,300 books and 50 rare manuscripts written on palm leaf, bark, cloth, and paper.
- It explicitly replaces colonial-era texts with curated works rooted in indigenous knowledge systems.
- The initiative promotes unity in diversity and raises citizen awareness of India's civilisational traditions.

Classical Language

- These are ancient languages with independent traditions and rich literary histories influencing later literary and philosophical works.
- The recognition of a classical language is based on criteria set by a **Linguistic Experts Committee**.
- **India recognises 11 classical languages:** Tamil (2004), Sanskrit (2005), Kannada (2008), Telugu (2008), Malayalam (2013), and Odia (2014); five more were added in 2024: **Marathi, Pali, Prakrit, Assamese, and Bengali..**

2,000-year-old labyrinth revealing India's role in ancient global trade

- Archaeologists have uncovered a 2,000-year-old circular stone labyrinth in Maharashtra's Solapur district, the largest of its kind in India.

What it is?

- The find is a **massive circular stone labyrinth** constructed using carefully laid concentric stone circuits.
- It is dated to nearly 2,000 years ago and linked to the **Satavahana dynasty (1st-3rd century CE)**.

Discovered at:

- Located in the Boramani grasslands, Solapur district, Maharashtra.
- The semi-arid grassland ecosystem limited excavation, aiding long-term preservation of the structure.

Key features

- **Size:** Approximately 50 feet × 50 feet, making it the largest circular labyrinth in India.
- **Design:** Comprises 15 concentric stone circuits, the highest number recorded so far in Indian circular labyrinths.
- **Form:** Circular layout, distinct from the larger but square labyrinth found at Gedimedu, Tamil Nadu.
- **Setting:** Situated in open grasslands, not within settlements, temples, or forts.

Connections within India

- Similar, smaller labyrinths have been found in Sangli, Satara, and Kolhapur, indicating a regional network across western Maharashtra.
- Their alignment suggests links between inland Deccan routes and western coastal ports such as those used in Roman trade.
- Maharashtra's location made it a trade conduit between interior production centres and Arabian Sea ports.

Significance

- The circular motif resembles labyrinth designs on **ancient Roman coins from Crete**, many of which have been found in Indian trade hubs.
- Likely served as navigational or symbolic signposts for merchants transporting spices, textiles, and precious stones.
- Reinforces Maharashtra's role as a key crossroads in ancient global commerce.

Lakkundi Excavation

- The paintings mainly depict Hindu deities, especially Bala Krishna, Shri Ram, and Puranic scenes.
- Recent excavations at Lakkundi in Karnataka have unearthed **Neolithic-era** artefacts, strengthening the State's push to include Lakkundi in **UNESCO's World Heritage Site list**.

Lakkundi Excavation : What it is?

- An Archaeological Survey of India (ASI)-supervised excavation at the **Kote Veerabhadreshwar (Veerabhadraswamy) Temple**, aimed at uncovering buried structures and cultural layers to support heritage conservation and UNESCO nomination.
- **Located in:**
- Lakkundi village, Gadag district, Karnataka, about 12 km from Gadag town; historically known as Lokkigundi.

History of the place:

- A major economic, religious and cultural centre from the 10th–13th centuries.
- Flourished under the **Kalyana Chalukyas** and later the **Hoysalas**; famous as the “village of a hundred wells and temples”.
- Associated with **Queen Attimabbe (11th century)**, noted Jain patron and philanthropist.
- Home to Hindu temples, Jain basadis, stepwells, and later even a Muslim dargah, reflecting religious pluralism.
- Known for the “Lakkundi school” of **Chalukyan temple** architecture.

Discoveries made at Lakkundi

- **Neolithic artefacts:** broken grey clay pot, stone axe, cowrie shells, cross-shaped pedestal.
- **Early historic-medieval finds:** stone pedestal carved with a Jina figure, inscriptions, buried temple remains.
- Confirms continuous human occupation from prehistoric to early medieval periods.
- **Significance:**
- Pushes Lakkundi's history far beyond the medieval period, adding prehistoric depth to its heritage value.
- Strengthens Karnataka's case for UNESCO World Heritage nomination of a group of monuments at Lakkundi.

Buddhist Diamond Triangle Joins UNESCO World Heritage Tentative List

- UNESCO World Heritage Centre has officially added Odisha's famed Buddhist Diamond Triangle—comprising Lalitgiri, Udayagiri, and Ratnagiri—to India's Tentative List for World Heritage Sites.

What is the Buddhist Diamond Triangle?

- The Diamond Triangle is a serial cultural nomination of three interconnected monastic complexes located in the Jajpur and Cuttack districts of Odisha. These sites are unique because they document 1,500 years of continuous history, showcasing the transition of Buddhism through three major schools:
 - Theravada (Hinayana)
 - Mahayana
 - Vajrayana (Esoteric Buddhism)

1. Lalitgiri: The Ancient Spiritual Hub

- Located in the Cuttack district, Lalitgiri is the oldest site in the triangle, dating back to the 2nd–3rd Century BCE.
- **Key Discovery:** A massive stupa containing sacred relic caskets made of gold, silver, and stone—believed by many to be the relics of Lord Buddha himself.
- **Architectural Marvel:** Home to an east-facing apsidal chaityagriha, the first of its kind discovered in Odisha.
- **Historical Significance:** Inscriptions of "Sri Chandraditya Vihara" prove it was a highly organized center of learning for over a millennium.

2. Udayagiri: The Sunrise Hill of Monasteries

- Udayagiri, the largest complex in the group, flourished between the 1st and 13th Century CE.
- **Advanced Architecture:** Features a unique double-storeyed monastery and the Madhavapura Mahavihara.
- **Artistic Grandeur:** The site is famous for its colossal images of Avalokiteswara and the Pancha Dhyani Buddhas, representing the peak of Mahayana artistic complexity.

3. Ratnagiri: The Epicentre of Vajrayana Buddhism

- Often compared to Nalanda, Ratnagiri is a powerhouse of Vajrayana (Tantric) Buddhism.
- **Vajrayana Iconography:** The site boasts an incredible collection of sculptures including Tara, Vajrapani, and Jambhala.

- **Female Patronage:** Evidence suggests significant support from female devotees, notably Queen Karpurashri.
- **Architectural Syncretism:** Its stupas blend Buddhist motifs with Brahmanical architectural styles, creating a unique aesthetic found nowhere else in the world.

Sufi Poet Bulleh Shah

- Recently, a shrine dedicated to the **17th-century Sufi poet Bulleh Shah** in Mussoorie, Uttarakhand, was vandalised.
- Bulleh Shah (1680–1757) was a prominent Punjabi Sufi poet associated with the **Qadiriyya Silsila**.
- He adopted a highly individualistic and non-conformist approach, emphasising Tariqat (esoteric practice) over the orthodox Shariat.
- **Poetic Form:** He used the Kafi style, a musical form of poetry widely sung in qawwalis and folk music.
- **Philosophy:** His work combined Sufi mysticism with Hindu Vedanta, emphasising Wahdat-al-Wujud or the unity of existence.
- **Secular Humanism:** He advocated universal love (ishq) and compassion, transcending caste, creed, religion, and gender divisions.
- **Social Reformer:** He challenged the social hierarchy by accepting **Shah Inayat Qadiri**, a lower-caste farmer, as his spiritual guide.
- **Religious Critique:** He openly criticised ritualism and fundamentalism among Mullahs and Brahmins, emphasising inner spiritual realisation.
- **Major Works:** Kafian, Barah Maha, Siharfi, and Athwara are foundational to Punjabi Sufi literature.

78th Death Anniversary of Mahatma Gandhi

- **Martyrs' Day**, observed on January 30, commemorates the assassination of the Father of the Nation, Mahatma Gandhi.
- The day is also known as **Sarvodaya Day**, reflecting Gandhi's vision of uplifting all sections of society.
- March 23 is also observed as Martyrs' Day or Shaheed Diwas to honour Bhagat Singh, Rajguru, and Sukhdev, who were executed in Lahore Jail in 1931.

About Mahatma Gandhi

- Mohandas Karamchand Gandhi was born on October 2, 1869, in Porbandar, Gujarat; he studied law in London (1888–1891).
- Philosophical Pillars: Ahimsa (Non-violence), Satya (Truth), Asteya (Non-stealing), Aparigraha (Non-possession), and Sarvodaya (Welfare of All).
- South Africa Phase (1893–1914): He developed Satyagraha (non-violent protest) to fight racial discrimination; formed the Natal Indian Congress (1894), established Phoenix Settlement & Tolstoy Farm.
- Return to India: He returned on January 9, 1915 (Pravasi Bharatiya Divas) and toured India at the advice of his political mentor, Gopal Krishna Gokhale.
- Early Satyagrahas: Champaran (1917), first civil disobedience (for indigo farmers); Ahmedabad Mill Strike (1918), first hunger strike; Kheda (1918), first non-cooperation (for revenue remission in famine).
- Mass Movements: Non-Cooperation Movement in 1920 (first nationwide mass movement), Dandi March in 1930 (Salt Satyagraha), the Quit India Movement in 1942 with the slogan "Do or Die".
- Bestowed Titles: He was called "Mahatma" by Rabindranath Tagore and hailed as the "Father of the Nation" by Subhas Chandra Bose.
- Literary Works: He authored Hind Swaraj and The Story of My Experiments with Truth (autobiography) and edited the journals Indian Opinion, Navajivan, Young India and Harijan.
- Assassination: Gandhi was assassinated on January 30, 1948, by Nathuram Godse.

The Living Root Bridges

- India officially submitted the nomination dossier for **Meghalaya's living root bridges**, titled **Jingkieng Jri / Lyu Chrai Cultural Landscape**, to UNESCO for the 2026-27 World Heritage evaluation cycle.

The Living Root Bridges:

- The Living Root Bridges, locally known as **Jingkieng Jri**, are extraordinary pedestrian bridges handcrafted from the aerial roots of living trees.
- Unlike steel or concrete bridges, these structures are grown over decades and become stronger as the tree matures, embodying the ultimate form of sustainable bio-engineering.

Location:

- **State:** Meghalaya, India.
- **Region:** Primarily concentrated in the East Khasi Hills and West Jaintia Hills
- **Villages:** Notable sites include **Nongriat** (home to the famous Double-Decker bridge), Rewai, and **Mawlynnong**.

History & Origin:

- **Tribal Heritage:** Created by the indigenous Khasi and Jaintia
- **Ancient Tradition:** Due to a lack of written scripts before the 19th century, their exact age is unknown, but oral legends suggest some bridges are over 500 years old.
- **Evolution:** The practice emerged as a survival strategy to cross monsoon-swollen rivers in the world's wettest region (Mawsynram/Cherrapunji), where wooden structures would simply rot away.

Key Features & Construction Process

- **The Species:** The bridges are primarily grown from the *Ficus elastica* (Indian Rubber Tree), known for its robust and flexible aerial root system.
- **Guided Growth:**
- **Planting:** Trees are planted on opposite banks of a river.
- **Scaffolding:** Young roots are guided through hollowed-out Areca palm trunks or bamboo structures to grow across the stream.
- **Entwining:** Over time, the roots are manually twisted and merged (anastomosis) to form a solid walkway.
- **Strengthening:** Stones are often placed between the roots to create a flat path. A bridge takes 10 to 15 years to become functional but can last for centuries.

Significance:

- These bridges are carbon-sequestering, self-repairing, and can withstand the extreme floods and storms of the Meghalayan plateau that would destroy modern infrastructure.
- The nomination recognizes the **Mei Ramew (Mother Earth)** philosophy, showcasing a harmonious relationship between humans and the ecosystem.
- As the world seeks nature-based solutions to climate change, the Living Root Bridges serve as a global blueprint for regenerative architecture.

Nebra Sky Disc

- A 3,800-year-old Bronze Age artefact from Germany is being recognised as the world's oldest known astronomical mapping tool.
- **Astronomical Mapping Tool:** A digital system that charts and tracks celestial objects across the sky to study their position, motion, and the structure of the universe.

About Nebra Sky Disc

- Origin: Bronze Age artefact discovered on Mittelberg Hill, Germany, dated around 1800–1600 BCE.
- Material: Made of bronze with carefully inlaid gold symbols representing celestial bodies.
- Cosmic Depictions: Shows crescent moon, sun or full moon, and 32 stars including the Pleiades cluster.
- Purpose: Likely used as an early sky map or seasonal calendar for agriculture and rituals.
- **Pleiades Cluster:** A young open star cluster in the **Taurus constellation**, about 440 light-years away, visible to the naked eye and containing several hundred hot blue stars.

FACTS FOR PRELIMS

Lohri

- President Droupadi Murmu extended greetings to citizens on the occasion of Lohri.
- Lohri is a popular winter harvest festival celebrated across North India, especially in Punjab, Haryana, and Himachal Pradesh.
- The festival celebrates the ripening of crops; it marks **the end of the winter solstice** and the **sun's northward journey**.
- **Ritual:** A large bonfire is lit at sunset, symbolising the sun, Agni, and the return of warmer days. People perform parikrama around the fire and offer traditional food to express gratitude for the harvest.
- **Cultural Expression:** Lohri highlights community bonding with folk music and dances like **Bhangra and Giddha**.

Donald Trump Receives 2025 Nobel Peace Prize Medal from Maria Machado

- U.S. President Donald Trump accepted the 2025 Nobel Peace Prize medal at the White House from María Corina Machado.
- The Venezuelan opposition leader handed over the physical gold medal as recognition of commitment to Venezuela's freedom.
- **Official Clarification:** The Norwegian Nobel Institute clarified that only the physical medal can change ownership, not the Nobel Peace Prize title itself.
- **Nobel Prize Rules**
- **Title Status:** Nobel Prize laureate status cannot be transferred, shared, revoked, or reassigned under any circumstances.
- **Final Decisions:** Decisions of Nobel Prize awarding bodies are final and cannot be appealed by individuals or institutions.
- **Revocation Rule:** Once announced, a Nobel Prize cannot be revoked, regardless of any future actions by the laureate.
- **Sharing Limit:** A Nobel Prize may be shared by a maximum of three individuals in one award year.
- **Peace Exception:** The Nobel Peace Prize can also be awarded to an organisation.
- **Posthumous Bar:** The prizes are not awarded if the recipient dies before the official announcement.
- **Lecture Duty:** Every Nobel laureate must deliver a public lecture related to the prize, usually within six months of receiving it.

Subhash Chandra Bose Aapda Prabandhan Puraskar 2026

- **Source (PIB):** The Subhash Chandra Bose Aapda Prabandhan Puraskar 2026 for the Institutional and Individual categories has been announced.
- **Institutional Category:** Sikkim State Disaster Management Authority (SSDMA) is selected for its community-centric disaster resilience model and preparedness practices.
- **Individual Category:** Lieutenant Colonel Seeta Ashok Shelke is awarded for leading humanitarian assistance and disaster relief (HADR) operations during the 2024 Wayanad landslides and floods.
- She supervised the 190-foot Bailey bridge construction at **Chooralmala** to restore connectivity.

More About the Award

- It is a national award instituted to recognise the exemplary service and contributions of individuals and institutions in the field of Disaster Management.

- The award is announced annually on January 23, the birth anniversary of Netaji Subhash Chandra Bose.
- The award is administered by the National Disaster Management Authority (NDMA), under the Ministry of Home Affairs.
- **Prize Details:** The institutional award includes a certificate and ₹51 lakh, while the individual award includes a certificate and ₹5 lakh.
- **Eligibility:** Only Indian nationals and institutions are eligible; self-nominations are allowed.

Graça Machel Wins Indira Gandhi Prize for Peace 2026

- Graça Machel, a globally respected humanitarian and women's rights advocate from Mozambique, has been selected for the **Indira Gandhi Prize for Peace, Disarmament and Development (2026)**.

What is the Indira Gandhi Prize for Peace, Disarmament and Development?

- The Indira Gandhi Prize for Peace, Disarmament and Development is an international award conferred annually on an individual or organisation for outstanding creative contributions to global peace, nuclear disarmament, equitable development, and human welfare.

When and why was the Prize instituted?

- **Year of institution:** 1985
- **Instituted by:** Government of India
- **Administered by:** Indira Gandhi Memorial Trust, New Delhi
- The Prize was created to commemorate the global vision and leadership of Indira Gandhi, particularly her commitment to peace, non-alignment, and justice in international relations.

What are the core objectives of the Indira Gandhi Prize?

- The Prize seeks to uphold and promote ideals consistently championed by Indira Gandhi, including:
 - International peace and nuclear disarmament, especially in a divided world order
 - Equitable global development with emphasis on South-South cooperation
 - Expansion of human freedom, dignity, and social justice
 - Use of science, technology, and knowledge for human welfare, not militarism

- These objectives align with India's post-colonial foreign policy ethos and leadership in the Non-Aligned Movement (NAM).

Who is eligible for the Prize?

Eligible candidates:

- Individuals or organisations

Eligibility conditions:

- No distinction of nationality, race, religion, or gender
- Only living persons may be nominated

Who can nominate?

- Parliamentarians
- Past awardees
- Jury members
- Reputed national or international organisations
- Legislators from UN member states

How is the Indira Gandhi Prize selected?

- **Selection authority:** International Jury
- Jury size: 5 to 9 members
- Decision method: Consensus
- Nature of decision: Final and binding
- The jury may choose to divide the prize or withhold it if no suitable candidate is found.

What does the award consist of?

- Prize money: ₹10 million (₹1 crore) or equivalent in foreign exchange

Components:

- Cash prize
- Formal citation
- Trophy made of **Haematite Jasper**, the stone used at Indira Gandhi's samadhi (Shakti Sthal), featuring a Jaipur miniature-style silver-rimmed portrait
- Funding source: Endowment provided by the Government of India to the Trust
- **Frequency:** Annual.

National Voters' Day 2026

- **Context (PIB):** The 16th National Voters' Day (NVD-2026) is being observed on January 25, 2026.
- The theme "My India, My Vote," with the tagline "Citizen at the Heart of Indian Democracy," highlights voters' central role in democracy.
- **Chief Guest:** President Droupadi Murmu will preside over the national-level function in New Delhi.

About National Voters' Day

- It is observed annually to mark the establishment of the Election Commission of India (ECI) in 1950.
- The Government of India first instituted the day in 2011 to address low youth voter enrolment.
- The Day aims to facilitate and maximise voter registration, especially among newly eligible voters.
- The day includes the conferment of National Awards for Best Electoral Practices and promotes SVEEP (Systematic Voters' Education and Electoral Participation), the ECI's voter awareness programme.
- ***The ECI is a permanent, autonomous constitutional body, established on January 25, 1950, to conduct and regulate elections in the country.***

The Padma Awards

- The Padma Awards 2026 were announced on the eve of Republic Day, with the President approving 131 awards across Padma Vibhushan, Padma Bhushan and Padma Shri categories.
- **The Padma Awards: What it is?**
- One of India's highest civilian honours, conferred to recognise distinguished and exceptional service involving an element of public service across diverse fields.
- **Established in: 1954 by the Government of India.**

History:

- Initially, two civilian awards were instituted in **1954**: Bharat Ratna and Padma Vibhushan.
- Padma Vibhushan originally had three classes, which were renamed in **1955** as:
- Padma Vibhushan
- Padma Bhushan
- Padma Shri
- Awards are announced annually on Republic Day, with brief interruptions during 1978-79 and

1993-97.

Categories & purpose:

- **Padma Vibhushan:** Exceptional and distinguished service
- **Padma Bhushan:** Distinguished service of a high order
- **Padma Shri:** Distinguished service in any field

Eligibility criteria:

- Open to all persons irrespective of race, gender, occupation or position.
- Government servants (including PSU employees) are generally not eligible, except doctors and scientists.
- Normally not conferred posthumously, but allowed in exceptional cases.
- A minimum gap of 5 years is required for a higher Padma category, unless relaxed in deserving cases.
- The award is for “excellence plus” — lifetime achievement with clear public service impact, not merely long service.

Fields recognised:

- Art (music, cinema, theatre, painting, sculpture, etc.)
- Social Work
- Public Affairs
- Science & Engineering
- Trade & Industry
- Medicine (including AYUSH systems)
- Literature & Education
- Civil Service
- Sports
- Others (culture, human rights, environment, wildlife conservation, etc.)

Key features of the awards:

- Conferred by the President of India at ceremonial functions held at Rashtrapati Bhavan.
- Awardees receive a **Sanad (certificate)** and a medallion; the award **does not constitute a title and cannot be used as a prefix or suffix**.
- Total annual awards capped at 120, excluding posthumous and foreign/NRI/OCI awardees.
- Selection is based on recommendations of the **Padma Awards Committee**, constituted annually

by the Prime Minister and headed by the Cabinet Secretary.

- Public nominations, including self-nominations, are permitted, reinforcing transparency and inclusiveness.

Jeevan Raksha Padak Awards

- President of India has approved the conferment of the **Jeevan Raksha Padak Series of Awards-2025** to 30 individuals for acts of exceptional courage in saving lives.
- The awards include 6 Sarvottam, 6 Uttam, and 18 Jeevan Raksha Padaks, with six honours awarded posthumously.
- **Jeevan Raksha Padak Awards** : What it is?
- A civilian life-saving gallantry award series recognising meritorious acts of humane nature involving personal risk to save another person's life.
- **Established in:** 1961, as an offshoot of the **Ashoka Chakra** series of Gallantry Awards.

Categories

- **Sarvottam Jeevan Raksha Padak:** Conspicuous courage in saving life under very great danger to the rescuer.
- **Uttam Jeevan Raksha Padak:** Courage and promptitude under great danger to the rescuer.
- **Jeevan Raksha Padak:** Courage and promptitude involving grave bodily injury risk to the rescuer.

Eligibility:

- Open to persons of all genders and walks of life.
- Can be conferred posthumously.
- Acts considered include rescues during drowning, fires, accidents, electrocution, mine rescues and natural calamities.

Key features:

- Nominations are invited annually from States/UTs and Union Ministries.
- Recommendations are examined by the Jeevan Raksha Padak Awards Committee within two years of the act.
- Final approval is given by the Prime Minister and the President of India.
- Award consists of a medallion and certificate, along with a one-time monetary allowance:
- **Sarvottam:** ₹2 lakh
- **Uttam:** ₹1.5 lakh
- **Jeevan Raksha:** ₹1 lakh

- No additional service concessions (rail/airfare, etc.) are attached.

Significance:

- Encourages civic courage, altruism and humanitarian values in society.
- Formally recognises ordinary citizens performing extraordinary acts, strengthening the culture of compassion and public responsibility.

Mir Alam Tank

- Stranded engineers and workers were rescued from the Mir Alam Tank lake by the Hyderabad Disaster Management and Asset Protection Agency (HYDRAA).
- Mir Alam Tank is a historic reservoir in Hyderabad, Telangana, located south of the **Musi River**. It lies adjacent to Nehru Zoological Park.
- It was built in 1806 during the reign of **Nizam Asaf Jah III** and named after his prime minister, Mir Alam.
- It is regarded as the **world's first multi-arch dam**, featuring 21 semi-circular arches that efficiently distribute water pressure.
- The dam was designed by French engineer Michel Joachim Marie Raymond, or Monsieur Raymond.
- Mir Alam Lake was Hyderabad's main drinking water source for almost 125 years until Osman Sagar and Himayat Sagar reservoirs were built.

MY Bharat Portal

- The MY Bharat (Mera Yuva Bharat) portal has crossed the milestone of two crore registrations since its launch.
- MY Bharat is an autonomous digital platform for youth engagement and participation for individuals aged 15 to 29.
- It was launched in 2023 under the Ministry of Youth Affairs and Sports to transform "youth development" into "youth-led development"
- It integrates a digital portal and app with on-ground activities for experiential learning, volunteering, and professional growth.
- The platform serves as a centralised youth database, enabling targeted, evidence-based policy interventions in the youth sector.

