

**IAS GOOGLE MARCH 2026**

## INDEX

### ECONOMIC DEVELOPMENTS

- [16th FC Recommendations](#)
- [Bharat-VISTAAR](#)
- [Grain ATMs in Bihar](#)
- [The New Income Tax Act, 2025](#)
- [Biopharma Shakti Initiative](#)
- [Minimum Alternate Tax \(MAT\)](#)
- [India and the United States sign Landmark Trade Agreement](#)
- [National Statistics Office \(NSO\) to conduct Survey on Migration across India](#)
- [Miniratna Category-I status to Yantra India Limited](#)
- [Union Budget Announces Measures to Position India as a Global Hub for Medical Tourism](#)
- [Self-Help Entrepreneur Mart \(SHE-Mart\)](#)
- [U.S. Tariffs on Indian Exports Reduced to 18%](#)
- [Advance Pricing Agreement](#)
- [Atal Innovation Mission Hosts AIM SUMVAAD](#)
- [Transforming PACS into Multipurpose Rural Growth Engines](#)
- [Project Vault](#)
- [VOPPA Order, 2025](#)
- [16th FC gives recommendations for strengthening local bodies](#)
- [Union Budget pushes Elderly Care in India](#)
- [Anthropic AI Workplace Suite](#)
- [PM-Virasat Ka Samvardhan](#)
- [India's first cooperative-based taxi service - Bharat Taxi](#)
- [India Joins BRICS Centre for Industrial Competencies](#)
- [Research, Development, and Innovation \(RDI\) Fund Launched](#)
- [Union Budget 2026-27 Announces Establishment of Chemical Parks](#)

- [Forest Devolution Formula Revamp](#)
- [Foundation Ceremony of Amaravati Quantum Valley Held](#)
- [United States-India Interim Trade Agreement](#)
- [RBI Proposes Compensation for Digital Fraud Victims](#)
- [Revised Corporate Average Fuel Efficiency \(CAFE\) Draft](#)
- [National Self-Reliance in Pulses Mission](#)
- [India Semiconductor Mission \(ISM\) 2.0](#)
- [Integrated Farming Models for Small Farmers](#)
- [SATYA Portal](#)
- [Collateral-Free Loans to MSMEs](#)
- [B-READY Assessment](#)
- [UK Sign Social Security Agreement for Temporary Employees](#)
- [Deep Tech Startups](#)
- [Accelerating Electricity Demand Growth](#)
- [Scenarios Towards Viksit Bharat and Net Zero](#)
- [Industrial Relations Code \(Amendment\) Bill, 2026](#)
- [Ayushman Sahakar Scheme](#)
- [NITI Aayog Initiative on MSME Scheme Convergence](#)
- [PAIMANA Web Portal](#)
- [Taxpayer Base Expansion in India](#)
- [Corruption Perceptions Index \(CPI\) 2025](#)
- [Technology Services – Reimagination Ahead Roadmap](#)
- [Consumer Price Index \(CPI\) Base 2024=100](#)
- [RBI Draft Guidelines for Loan Recovery Agents](#)
- [40 Years of APEDA](#)
- [Science-Based Targets Initiative \(SBTi\)](#)
- [Fertiliser Sector Regulation in India](#)
- [Aerospace Manufacturing in India](#)
- [SHANTI Act & Nuclear Liability Debate](#)
- [National Call of BIRAC-RDI Fund announced under RDI Initiative](#)
- [Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi Yojana](#)

- [UNEP FI Launched Impact Centre for Holistic Impact Management](#)
- [Report on Digital Payments after 10 years of UPI Launch](#)
- [PM RAHAT Scheme](#)
- [Startup India Fund of Funds 2.0](#)
- [Union Cabinet Approves Urban Challenge Fund \(UCF\) Scheme](#)
- [Need to reform Global Trading System: WTO Chief](#)
- [CBDC-Based Digital Food Currency](#)
- [India's first Twin Tube Underwater Tunnel Project](#)
- [India-AI Impact Summit 2026](#)
- [IndiaAI Mission 2.0](#)
- [Front-of-Package Labelling](#)
- [Systemic Institutional Failure in Urban Governance](#)
- [AI-Preneurs of India](#)
- [India's Drone Ecosystem](#)
- [India-UK Offshore Wind Taskforce](#)
- [America-India Connect Subsea Cable Initiative](#)
- [Sahakar Taxi Cooperative Limited](#)
- [Merchandise Trade Indices](#)
- [RBI Notifies Amended External Commercial Borrowing \(ECB\) Framework](#)
- [Rebalancing Copyright in the Age of Artificial Intelligence](#)
- [Shalimar Wheat](#)
- [RuPay-BHIM UPI Incentives Driving India's Payment Transformation](#)
- [India Signs MoU with the World Food Programme \(WFP\)](#)
- [Salem Sago \(Javvarisi\)](#)
- [VoicERA Launched on BHASHINI National Infrastructure](#)
- [Exercise Vajra Ghaat](#)
- [NITI Aayog releases a policy report on Revitalising Apprenticeship Ecosystem](#)
- [Export Promotion Mission](#)
- [India-Brazil Increases Bilateral Trade Target to \\$30 Billion](#)
- [India's First Namoo Bharat Regional Rapid Transit System \(RRTS\)](#)
- [AI Emerging as a foundational driver of Inclusive Rural Development](#)

- [India and France amends Double Taxation Avoidance Convention \(DTAC\)](#)
- [Meta Challenges CCI Penalty over WhatsApp Data-Sharing Policy](#)
- [Semiconductor Manufacturing Unit in Uttar Pradesh](#)
- [Access Pass for Fishing in India's Exclusive Economic Zone \(EEZ\)](#)
- [India's E-Commerce Expansion](#)
- [National Monetisation Pipeline 2.0 \(NMP 2.0\)](#)
- [PM Surya Ghar Muft Bijli Yojana](#)
- [India-GCC Free Trade Agreement \(FTA\)](#)
- [Evolving Architecture of Contemporary Trade Agreements](#)
- [India's Rising Dependence on Imported Crude Oil](#)
- [Blockchain-based Digital Governance](#)
- [The UN Launches Road Safety Financing Project in Four States of India](#)
- [75th Anniversary of Employees' State Insurance Corporation](#)
- [MoPNG Directs Nationwide Sale of E20 Ethanol-Blended Petrol](#)
- [Understanding Large Language Models \(LLMs\)](#)
- [U.S. Imposes 125.87% Preliminary Countervailing Duty on Indian Solar Imports](#)
- [Imports under Trade Deals are Threatening Domestic Apple Producers](#)
- [RoDTEP Scheme](#)
- [MSME Ministry Upgrades NSIC to Schedule 'A' Category CPSE](#)
- [ASTraM: Actionable Intelligence for Sustainable Traffic Management](#)
- [New GDP Series \(Base Year FY23\)](#)
- [President Trump Imposes 15% Global Import Surcharge under Trade Act, 1974](#)

## CONSTITUTION, POLITY AND GOVERNANCE

- [SC Prohibits the Use of Stem Cell Therapy for Autism Spectrum Disorder](#)
- [Motion of Thanks to President's Address](#)
- [Frozen Embryo Donation](#)
- [Sabhasaar Initiative](#)
- [NDMA Released India's First Guideline for Disaster Victim Identification](#)

- [Central Board of Film Certification \(CBFC\)](#)
- [Supreme Court Directive on Appointment of DGPs](#)
- [Tripartite Agreement for creation of the Frontier Nagaland Territorial Authority](#)
- [Administrative Scorecards for Union Secretaries](#)
- [Indian Pharmacopoeia Commission](#)
- [Form 7 Controversy](#)
- [Protocols for Singing Vande Mataram](#)
- [Regulation of AI Content in India](#)
- [Food Adulteration in India](#)
- [Rashtriya Karmayogi Large Scale Jan Seva Programme](#)
- [New MoD Guidelines for Armed Forces Publications](#)
- [Petroleum and Natural Gas Regulatory Board](#)
- [Privilege Notice](#)
- [Spirit of 'Nagrikdevo Bhava'](#)
- [Complaints Against Judges in India](#)
- [Regulating Refurbished Medical Devices in India](#)
- [MHA to Introduce New Law for Regulating IPS Deputation in CAPFs](#)
- [Indian Scientific Service \(ISS\) for Expert-led Policymaking](#)
- [Section 44\(3\) of the Digital Personal Data Protection \(DPDP\) Act, 2023](#)
- [Towards a Structural Reset of Indian Federalism](#)
- [The Parliamentary Committees break](#)
- [Supreme Court to Revisit Sabarimala Temple Entry Case](#)
- [Internet Governance Internship & Capacity Building Scheme](#)
- [The Vibrant Villages Programme-II \(VVP-II\)](#)
- [23rd Foundation Day of National Commission for Scheduled Tribes](#)
- [SANKALP scheme](#)
- [SC's directions on the Solid Waste Management \(SWM\) Rules 2026](#)
- [India Recorded a Fourfold Increase in Organ Transplants](#)
- [New Delhi Declaration – AI Impact Summit 2026](#)
- [20th anniversary of the Maritime Labour Convention, 2006](#)
- [Prahaar Anti Terror Policy](#)

- [Union Cabinet approves renaming Kerala as Keralam](#)
- [Five OTT Platforms were Blocked for Streaming Obscene Content](#)
- [Lok Sabha Speaker Constitutes Parliamentary Friendship Groups](#)
- [AI transforming India's legal ecosystem showcased at India AI Impact Summit 2026](#)
- [Aircraft Accident Investigation Bureau \(AAIB\)](#)
- [Supreme Court Bans NCERT Textbook for Contempt of Court](#)
- [Eastern Nagaland Autonomy](#)
- [RailTech Policy & Portal and e-Railway Claims Tribunal \(e-RCT\) Launched](#)
- [National Commission for Women marks its 34th Foundation Day](#)

## INTERNATIONAL RELATIONS AND SECURITY

- [Third Edition of Future Warfare Course](#)
- [Al-Jawf Region](#)
- [2nd India-Arab Foreign Ministers' Meeting Adopted Delhi Declaration 2026](#)
- [Power Gap Index](#)
- [Solid Fuel Ducted Ramjet \(SFDR\) Technology](#)
- [India-Tanzania 4th Joint Defence Cooperation Committee Meeting](#)
- [Seychelles](#)
- [Military exercises in news](#)
- [FORGE Initiative](#)
- [PM Modi's Official Visit to Malaysia](#)
- [Chabahar Port](#)
- [Network Readiness Index \(NRI\) 2025](#)
- [India-Malaysia IMPACT Framework](#)
- [India and Seychelles Adopted the Joint Vision for SESEL](#)
- [India-Greece Joint Declaration of Intent for Defence-Industrial Cooperation](#)
- [Global CyberPeace Summit 2026](#)
- [World Defence Show 2026](#)
- [SCALP Long-Range Missiles](#)

- [Boeing P-8I Aircraft](#)
- [Exercise Vayushakti-26](#)
- [Dornier 228 Aircraft](#)
- [Tangkhul Hui and Kombai to be added to Assam Rifles dog squad](#)
- [Bangladesh Nationalist Party \(BNP\) Secures Victory in Parliamentary Election](#)
- [Rafale Jet](#)
- [Air-Ship Based High-Altitude Pseudo Satellite \(AS-HAPS\)](#)
- [AFR Became the First Indian Private Satellite to Perform "In-Orbit Snooping"](#)
- [UAE-India Corridor](#)
- [United Nations Fellowship Training Programme on SALW Control](#)
- [6th Generation Aero Engines](#)
- [India-France Ties Upgraded to a Special Global Strategic Partnership](#)
- [India's First Private Sector Helicopter Final Assembly Line \(FAL\) in Karnataka](#)
- [India-France Defence Cooperation Gets 10-Year Extension](#)
- [Khorramshahr-4 Ballistic Missile](#)
- [G7 Summit 2026](#)
- [Republic of Ireland](#)
- [Iran temporarily shut parts of the Strait of Hormuz](#)
- [MILAN 2026 Naval exercise](#)
- [Operation Chivalrous Knight 3](#)
- [Pax Silica initiative](#)
- [INS Krishna](#)
- [Indian Ocean Naval Symposium \(IONS\)](#)
- [The International Energy Agency \(IEA\)](#)
- [U.S. Supreme Court Struck Down President Trump's Global Tariffs](#)
- [India Joins Board of Peace as an Observer](#)
- [Sayyad-3G Missile](#)
- [INS Anjadip](#)
- [2 Joint Military Exercises](#)
- [The Chagos Islands](#)
- [Speaker of the Knesset Medal](#)

- [Exercise Agni Varsha](#)
- [Diplomatic Reset in India-Canada Relations](#)
- [India-Israel Elevated Bilateral Ties to Special Strategic Partnership](#)
- [Jeju Island](#)
- [Fissile Material Cut-off Treaty \(FMCT\)](#)
- [The Druzhba Oil Pipeline](#)

## SOCIETY AND SOCIAL JUSTICE

- [Divyangjan Kaushal Yojana and Divyang Sahara Yojana](#)
- [Waste-pickers enumeration under NAMASTE scheme](#)
- [Infertility and Mental Health in India](#)
- [9th Edition of Pariksha Pe Charcha](#)
- [50 Years of the Bonded Labour System \(Abolition\) Act, 1976](#)
- [Vidyanjali Programme](#)
- [Prime Minister Approves Major Schemes for Women, Youth and Vulnerable Citizens](#)

## GEOGRAPHY, ENVIRONMENT, BIODIVERSITY AND DISASTER MANAGEMENT

- [India Added Two More Ramsar Sites](#)
- [Union Budget Push for CCUS Technology](#)
- [Waste-to-Energy Technology](#)
- [NeophyteID App Launched to Identify Invasive Alien Plants](#)
- ['Volcán de Fuego' Volcano Erupts in Guatemala](#)
- [AP Failed to Comply with Compensatory Afforestation for Subansiri LHE Project](#)
- [Maharashtra Grants Clearance for an Iron Mine in a Critical Wildlife Corridor](#)
- [Peacocks in Manali](#)
- [Turtle Trails](#)
- [Dholpur-Karauli Tiger Reserve](#)

- [Karimpuzha Wildlife Sanctuary](#)
- [Marudhamalai Murugan Temple Elephants](#)
- [Mount Aconcagua](#)
- [Govt forms expert groups to upgrade Project Tiger scheme](#)
- [Kyasanur Forest Disease](#)
- [Rat-Hole Mining in Meghalaya](#)
- [Sharda River Corridor Project](#)
- [Lyriothemis keralensis Dragonfly](#)
- [Mangrove clam \(Geloina erosa\)](#)
- [Dragon Hole](#)
- [Dolphin Census in Odisha](#)
- [Disruption of bear hibernation cycles](#)
- [Orobanche Threat to Mustard Crops](#)
- [Dal Lake](#)
- [Davos Compact on Antimicrobial Resistance \(AMR\) 2025](#)
- [Lion-Tailed Macaque Population Rising in Human Landscapes](#)
- [The Sangtam Community](#)
- [Bio-based Chemicals and Enzymes](#)
- [Synchronised Terrestrial Bird Census in Tamil Nadu](#)
- [Loggerhead Turtles](#)
- [Lepidocampa sikkimensis](#)
- [NGT Clears Great Nicobar Island Project](#)
- [Cheetah Gamini in Kuno National Park Gave Birth to Three New Cubs](#)
- [Bee Corridor](#)
- [Ravi River](#)
- [Beat the Heat Programme](#)
- [Kerala Declares Tidal Flooding as State-Specific Disaster](#)
- [Alpheus madhusoodanai Shrimp](#)
- [Hornbill Restaurants in Chhattisgarh](#)
- [AI-for-Energy mission](#)
- [Thriving Coral Reef Discovery in Lakshadweep](#)

- [Forest Fires in Northeast India](#)
- [Nandhaur Wildlife Sanctuary](#)
- [Takeshima/Dokdo Islands](#)
- [Vaan Island](#)
- [Ferruginous Pochard \(\*Aythya nyroca\*\)](#)
- [Baglihar Hydropower Project](#)
- [Galapagos giant tortoise reintroduction](#)
- [Soybean Festival in Nagaland](#)
- [Contarinia icardiflores](#)
- [Him-CONNECT in the World Sustainable Development Summit](#)
- [World Sustainable Development Summit \(WSDS\) 2026](#)
- [Congo Lakes - Mai Ndombe and Tumba](#)
- [Carbon Capture and Utilisation \(CCU\) Technologies](#)
- [Restoring Indigenous Fish Stocks in River Ganga through Scientific River Ranching](#)
- [Ocean salinity can amplify the intensity of El Nino](#)
- [International Climate Initiative \(IKI\)](#)
- [Unpackaging the Illusion of Safe Bottled Water](#)
- [Asymmetry in National Green Tribunal Adjudication](#)
- [Impatiens nagorum](#)
- [Smew \(\*Mergellus albellus\*\)](#)

## SCIENCE AND TECHNOLOGY

- [Solar Cycle](#)
- [Moltbook Platform](#)
- [Single-unit solar energy capture and storage device](#)
- [Comet C/2025 K1 \(ATLAS\)](#)
- [India's First Evidence-Based Guidelines on Lung Cancer Treatment Released](#)
- [The International Space Station \(ISS\)](#)
- [Sodium-ion battery technology](#)

- [Avian Influenza \(H5N1 Bird Flu\)](#)
- [Advancement in CAR-T Cell Therapy](#)
- [DNA-Based Solution to Data Crisis](#)
- [Moon's Mons Mouton](#)
- [India's Battery Strategy](#)
- [Site in Mons Mouton Selected for Chandrayaan-4 Landing](#)
- [India's Nuclear Energy Strategy](#)
- [India is Set to Get Two New Telescopes](#)
- [Novel Oral Polio Vaccine Type 2 \(nOPV2\)](#)
- [National Biobank for Lysosomal Storage Disorders \(LSDs\)](#)
- [Inside-Out Planetary System Discovered Around LHS 1903](#)
- [Study Reveals Potential Pathway for Osteoporosis Prevention](#)
- [Graphics Processing Unit \(GPU\)](#)
- [Gaganyaan Drogue Parachute](#)
- [Tetanus and Diphtheria \(Td\) Vaccine](#)
- [Satellite Phone](#)
- [The Linear No-Threshold \(LNT\) Model](#)
- [Tetrodotoxin \(TTX\) Neurotoxin](#)
- [Zimbabwe Rolls Out Lenacapavir for HIV Prevention](#)
- [Laser Interferometer Gravitational Wave Observatory \(LIGO-India\)](#)
- [Indian scientists observed shock waves triggered by CME Coronal Mass Ejection](#)
- [SUJVIKA Portal](#)

## HISTORY, HERITAGE AND CULTURE

- [Devnimori Relics of Lord Buddha](#)
- [Serengsia Battle](#)
- [Neolithic Artefacts Found at Tekkalakote in Karnataka](#)
- [Tamil Brahmi Inscriptions in Egypt](#)
- [Maharshi Dayanand Saraswati](#)
- [100 Years of Ol Chiki Script](#)

- [80th Anniversary of the 1946 Royal Indian Navy Revolt](#)
- [Bharrana site](#)
- [Chhatrapati Shivaji Maharaj Jayanti](#)
- [Ramakrishna Paramahansa \(1836 - 1886\)](#)
- [Parbati Giri](#)
- [2025 UNESCO Asia-Pacific Awards for Cultural Heritage Conservation](#)
- [President Unveils Bust of C. Rajagopalachari at Rashtrapati Bhavan](#)
- [Tulip Festival 2026](#)
- [Chandrashekhar Azad](#)

#### FACTS FOR PRELIMS

- [Grammy Awards 2026](#)
- [India's First Musical Path](#)
- [Seva Teerth and Kartavya Bhavan](#)
- [India's First 'Cow Culture' Museum in Mathura](#)
- [SAHI and BODH Initiatives Launched at India AI Impact Summit 2026](#)
- [Tulbul Navigation Barrage Project](#)
- [Sarvam AI Launched India's First Large-Scale Foundational LLMs](#)
- ['MANAV' Vision for Artificial Intelligence](#)
- [BAFTA Awards 2026](#)
- [Winter Olympics 2026](#)

## ECONOMIC DEVELOPMENTS

### 16th FC Recommendations

- The **16th Finance Commission** retained **41% tax devolution share for States** while pushing outcome-linked spending and stricter fiscal discipline.

#### Key Recommendations by the 16th Finance Commission

- **Vertical Devolution:** States' share in the divisible tax pool retained at 41%.
- **Transparency Push:** Annual disclosure of net tax proceeds certified by **CAG under Article 279**.
- **Output-Based Spending:** Centrally Sponsored Schemes linked to real-time measurable outcomes.
- **Fiscal Reform Push**
- **Scheme Rationalisation:** High-powered committee to review and close inefficient schemes.
- **Fiscal Discipline:** States' fiscal deficit capped at 3% of GSDP; **Union target 3.5% of GDP**.
- **Off-Budget Borrowings:** States advised to discontinue hidden borrowings & bring them on-budget.
- **Subsidy Rationalisation:** Rising subsidy burden flagged as fiscally unsound, with borrowing for transfers discouraged and sunset clauses recommended to curb long-term strain.
- **PSU Reforms:** States urged to evaluate PSU performance, with inactive enterprises recommended for immediate closure to reduce recurring fiscal pressure.

#### Horizontal Devolution Impact

- **Southern Share Rise:** All five southern States saw higher devolution shares, Andhra Pradesh (4.217%), Karnataka (4.131%), Kerala (2.382%), Tamil Nadu (4.097%) and Telangana (2.174%).
- **North Share Dip:** Uttar Pradesh's share fell to 17.619% and Bihar's to 9.948%, despite remaining top recipients due to population base.

#### Major Policy Shifts

- **GDP Criterion Added:** Replaced the tax effort indicator to reward efficiency and fiscal performance.
- **Revenue Deficit Grants Dropped:** No revenue deficit or state-specific grants during the award period.
- **Performance Grants:** Local body funds split into basic and performance-linked components.

**Revised Horizontal Devolution Formula:**

Criterion	15th FC (2021-26)	16th FC (2026-31)
Per Capita Income Distance	45%	42.5%
Population	15%	17.5%
Demographic Performance	12.5%	10%
Area	15%	10%
Forest Cover	10%	10%
Contribution to GDP (New)	-	10%
Tax and Fiscal Efforts	2.5%	-

### Local Body & Disaster Funding

- **Funding:** ₹7.91 lakh crore for local bodies (FY27–FY31), disaster corpus of ₹2.04 lakh crore for States, along with a real-time disaster data platform.
- **Property Tax Reform:** GIS-based digital systems for better assessment and collection.
- **New Disasters Added:** Heatwaves and lightning to the notified national disaster list.

### Finance Commission (FC)

- The Finance Commission (FC) is a constitutional body constituted by the President under **Article 280** of the Constitution.
- Quasi-Judicial body constituted every 5th year or at a time as the President deems necessary.
- It consists of a **chairman and 4 other members** to be appointed by **the President**. They are eligible for re-appointment.
- 

### Bharat-VISTAAR

- Union Budget 2026-27 proposed to launch 'Bharat-VISTAAR' for Agricultural Development,
- Bharat VISTAAR (**Virtually Integrated System to Access Agricultural Resources**) will be a multilingual AI (Artificial Intelligence) tool that will integrate the **AgriStack portals** and the ICAR package on agricultural practices with AI systems.
- **AgriStack** has been envisaged as a **Digital Public Infrastructure (DPI)** for Agriculture, based on India's Digital Ecosystem Architecture (InDEA) 2.0.

### About Bharat-VISTAAR

- VISTAAR is an open, interoperable, and federated public network dedicated to agricultural information and advisory services.
- A **decentralized repository**, it will facilitate the discovery & fulfillment of verified agriculture content, best practices, and agri-skilling across diverse private and public provider platforms.
- **Potential Significance:**
- Enhancing farm productivity through data-driven and timely interventions.

- Improving farmer decision-making at every stage (input, crop production, market etc.) by providing accurate, localized insights, best practices and data services.
- Reducing market risks via customized, crop- and region-specific advisory support.
- Supporting Government in real-time monitoring, improved delivery of agriculture extension services, and targeted intervention.

## Grain ATMs in Bihar

- Bihar approved pilot installation of automated “**Grain ATMs**” (**Annapurti**) in Patna to modernise Public Distribution System (PDS) delivery.

### About Grain ATMs (Annapurti)

- **Institutional Collaboration:** Technology developed by the World Food Programme in partnership with the Food Corporation of India and State governments.
- **Nodal Agency:** Bihar Food and Consumer Protection Department manages rollout.
- **Cost Sharing:** Maintenance and security funded jointly by the Centre and States
- **Space Provision:** State governments allocate physical space for machines.

### Key Features

- **Automated Machines:** Dispense wheat and rice directly to beneficiaries like banking ATMs.
- **High Capacity:** Can release up to 50 kg of grain within five minutes, improving service speed.
- **24×7 Operation:** Machines can function round-the-clock, including through solar power.
- **Database Linked:** Connected to the PDS database using internet-enabled systems.

### Working Mechanism

- **Card-Based Access:** Beneficiary swipes ration/ATM card linked to the National Food Security Programme.
- **Aadhaar Authentication:** Biometric verification ensures rightful beneficiary access.
- **Quantity Selection:** User selects grain type and approved quantity.
- **Digital Update:** PDS records automatically updated with printed transaction slip.

## The New Income Tax Act, 2025

- The Union Budget 2026–27 announced that the Income Tax Act, 2025 will come into force from April 1, 2026, replacing India's six-decade-old income tax law.

### The New Income Tax Act, 2025:

#### Implementation Timeline:

- **Effective Date:** The Income Tax Act, 2025, will officially come into effect from April 1, 2026.
- **Record Completion:** The comprehensive review of the old 1961 Act was completed in record time following its announcement in July 2024.

#### Simplification and Ease of Compliance:

- **User-Friendly Design:** The government is redesigning tax forms and rules to be simple enough for ordinary citizens to comply with without needing professional help.
- **Acquaintance Period:** Simplified rules and forms will be notified shortly to give taxpayers sufficient time to understand the new requirements.

#### Staggered Filing Deadlines:

- The new Act introduces different due dates for filing returns based on the category of the taxpayer:
- **ITR 1 and ITR 2:** Individuals will continue to have a filing deadline of July 31.
- **Non-Audit Business/Trusts:** The due date for these entities has been extended to August 31.

#### Extended Revision Window:

- **Filing Revised Returns:** Taxpayers now have more time to correct mistakes. The deadline to file a revised or belated return is extended from December 31 to March 31 of the following year.
- **Nominal Fee:** A fee of ₹1,000 or ₹5,000 (depending on whether income is above or below ₹5 lakh) will apply for revisions made after December 31.

#### Updated Return Scope:

- **Post-Reassessment Filing:** Taxpayers can now update their returns even after reassessment proceedings have started, by paying an additional 10% tax rate over the applicable year's rate.

#### Penalty and Prosecution Rationalization:

- **Integrated Proceedings:** Assessment and penalty proceedings will be finalized together through

a common order to reduce litigation and multiple proceedings.

- **Decriminalization:** Technical defaults, such as failure to produce books of account or get accounts audited, have been decriminalized and converted into fees.
- **Reduced Punishment:** Maximum imprisonment for most offences is reduced to 2 years (down from 7 years), and courts are empowered to convert these into fines.

#### Special Disclosure Scheme (FAST DS):

- **Foreign Asset Disclosure:** A one-time 6-month window called the **Foreign Assets of Small Taxpayers Disclosure Scheme (FAST DS) 2026** is introduced for individuals like students and relocated NRIs.
- **Immunity:** Taxpayers can disclose overseas assets/income (under ₹1 crore or ₹5 crore, depending on the category) and gain immunity from prosecution by paying specified taxes or fees.

#### Biopharma Shakti Initiative

- The Union Budget 2026–27 announced a ₹10,000 crore allocation for the Biopharma Shakti initiative to strengthen India's biopharmaceutical ecosystem.

#### Biopharma Shakti Initiative:

##### Biopharma SHAKTI (The Flagship Initiative):

- **SHAKTI** stands for Strategy for Healthcare Advancement through Knowledge, Technology, and Innovation.
- **Outlay:** The government has proposed an allocation of ₹10,000 crore over the next 5 years.
- **Focus Areas:** The initiative targets non-communicable diseases like cancer, diabetes, and autoimmune disorders by focusing on the domestic production of biologics and biosimilars.

##### Infrastructure:

- Establishment of 3 new National Institutes of Pharmaceutical Education and Research (NIPER) and upgrading 7 existing ones.
- Creation of a network of over 1,000 accredited India Clinical Trials sites.
- Strengthening the Central Drugs Standard Control Organisation (CDSCO) with a dedicated scientific review cadre to meet global approval timeframes.

##### Bio-Manufacturing and Related Support:

- **Chemical and Pharma Hubs:** The budget proposes 3 dedicated Chemical Parks using a cluster-based plug-and-play model to reduce import dependency in the broader life sciences and chemical sectors.
- **Agricultural Biotechnology:** The launch of Bharat-VISTAAR, a multilingual AI tool, integrates the ICAR package on agricultural practices with AI to improve bio-resource management on farms.
- **Biogas Blended CNG:** To support the circular bioeconomy, the entire value of biogas is excluded while calculating the Central Excise duty on biogas blended CNG.

#### **Support for Traditional Knowledge (AYUSH):**

- **Evidence-Based Research:** Upgrading the WHO Global Traditional Medicine Centre in Jamnagar to bolster evidence-based research and awareness for traditional medicine.
- **Ayurvedic Exports:** Initiatives to scale the export of quality Ayurvedic products to meet growing global demand, which benefits both farmers and processing youth.

### **Minimum Alternate Tax (MAT)**

- **Union Budget 2026-27 proposed making Minimum Alternate Tax (MAT) a final tax and reducing its rate from 15% to 14%.**
- It also proposed to provide exemption from MAT to all non-residents who pay tax on presumptive basis.

#### **About MAT**

- It is a tax that requires a company to pay a minimum amount of its book profit when its normal income-tax liability is minimal or zero.
- A company is required to pay higher of either MAT or corporate tax.
- Legal basis - it is levied under Income Tax Act 1961.
- **Applicable:** To both domestic and foreign companies.

### **India and the United States sign Landmark Trade Agreement**

#### **The Trade Agreement**

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

### Significance of the deal

- **Economic Significance:** Provides increased opportunities for farmers, MSMEs, entrepreneurs, and skilled workers to Make, Design and Innovate in India for the world.
- It will help India get technology from the US.
- **Strategic Reset in Bilateral Relations:** The deal ends a phase of tariff-led escalations and upholds momentum and trust in India–US strategic and economic engagement.
- **Geopolitical implications:** It strengthens India's position in the global supply chain, potentially countering China's dominant position in global trade and manufacturing.
- **Macroeconomic Stability:** The deal potentially helps stabilise capital flows, supports the rupee, and improves investor confidence amid global uncertainty.

### About India-US trade

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

### National Statistics Office (NSO) to conduct Survey on Migration across India

- Survey to be conducted during July 2026 to June 2027 would capture detailed information on extent/nature of migration, rural–urban and inter-state movement, key reasons, etc.

### Recent Trends on Migration in India

- Overall migration rate stood at 28.8% with sharp gender differences in patterns (Periodic Labour Force Survey (PLFS) 2020-21).
- Migration rate was estimated at **10.7%** among males and 47.9% among females.

### Key Reasons for Migration

- **Gender Specific:** Marriage accounted for the predominant cause among females (86.8%) while employment (labour market opportunities) accounted for the major reason among males (22.8%).
- **Pull Factor:** Driven primarily by the presence of job opportunities and the prospect of a better life. E.g., Case of Rural-to-Urban Migration.
- Nearly one in four rural Indians (26.8%) was a migrant in 2020-21. (Economic Survey 2025-26).
- **Push Factors:** Person tend to leave their native place due to lack of job opportunities, low wages or salaries, unfavourable environmental conditions and natural calamities, etc.

### Key Measures to taken to address challenges

- **Rural Development Initiatives:** Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM); Viksit Bharat- Guarantee for Rozgar and Aajeevika Mission (Gramin) Act, 2025 strengthening rural employment, etc.
- **Urban Resilience Initiatives:** Atal Mission for Rejuvenation and Urban Transformation (AMRUT); Smart Cities; Implementation of Transit-oriented Development (ToD), etc.
- **Workers' Welfare:** Key Schemes like Pradhan Mantri Shram Yogi Maan-Dhan Yojana (PMSYM); Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY); One Nation One Ration Card (ONORC) scheme for robust safety net for migrants, etc.

### Miniratna Category-I status to Yantra India Limited

- Raksha Mantri Shri Rajnath Singh approved the grant of Miniratna Category-I status to Yantra India Limited (YIL).

### What is Miniratna status?

- Miniratna is a classification given to profit-making Central Public Sector Enterprises (CPSEs) to grant them enhanced financial and operational autonomy, short of Navratna/Maharatna levels, so

they can operate more efficiently and competitively.

**Historical background:**

- Introduced in October 1997 by the Government of India.
- **Objective:** To decentralise decision-making and empower efficient CPSEs (other than Navratnas) through delegated financial powers.

**Types of Miniratna CPSEs:**

- **Miniratna Category-I – Higher autonomy**
- **Miniratna Category-II – Moderate autonomy**

**Eligibility criteria for Miniratna status**

**Common conditions (for both Category-I & II)**

- Continuous profit in the last 3 years
- Positive net worth
- No default in repayment of Government loans/interest
- No dependence on budgetary support or Government guarantees
- Board to be restructured with at least three non-official (independent) Directors

**Additional criteria:**

Category-I:

- Pre-tax profit of ₹30 crore or more in at least one of the last three years

Category-II:

- Profit in all last three years (no minimum profit threshold specified)
- Key features & delegated powers (Category-I focus)

**Capital expenditure:**

- Power to incur capex up to ₹500 crore or net worth (whichever is less) without Government approval.
- Covers new projects, modernisation, and purchase of equipment.

**Joint ventures & subsidiaries:**

- Same financial limits as capital expenditure.
- Enables faster expansion and collaboration.

**Mergers & acquisitions:**

- Permitted if aligned with growth plan and core business.
- Investments abroad require CCEA to be kept informed.

**Human Resource Development (HRD):**

- Boards can design and implement HR policies, training, VRS, CRS.
- Powers can be further delegated for appointments, postings, transfers below Board level.

**Foreign travel:**

- CEOs can approve emergency foreign tours up to 5 days for functional directors (with intimation).

**Technology & strategic alliances:**

- Boards can enter technology JVs, strategic alliances, and acquire know-how, subject to Government guidelines.

**Union Budget Announces Measures to Position India as a Global Hub for Medical Tourism**

- Union Budget 2026-27 announced measures to position India as a global hub for medical tourism, biopharmaceutical manufacturing and Ayurvedic drugs

**Healthcare and Pharma Announcements in Union Budget 2026-27**

- **Medical Hubs:** The government will establish five Regional Medical Hubs under a Public-Private Partnership (PPP) model to integrate allopathic and traditional medicine.
- **Biopharma Mission:** A new scheme titled 'Biopharma SHAKTI' is launched with an outlay of ₹10,000 crore to boost domestic production of biologics and biosimilars.
- **Infrastructure Expansion:** Three new All India Institute of Ayurveda will be set up, along with the upgradation of Ayush pharmacies and drug testing labs.
- **Research Network:** A network of over 1,000 accredited clinical trial sites will be created to make India a preferred global destination for drug research.
- **Regulatory Reform:** The CDSCO will be strengthened with a dedicated scientific review cadre to align Indian approval timelines with global standards.
- **Skill Development:** Three new National Institutes of Pharmaceutical Education and Research (NIPERs) will be established to create a high-skilled workforce for the biopharma sector.

### Strategic Impact of the Measures

- **Value Shift:** The focus on 'Biopharma SHAKTI' marks a strategic shift from low-cost generic drug manufacturing to high-value complex biologics and innovation.
- **Brand Differentiation:** Integrating Ayush centres into Regional Medical Hubs creates a unique "Holistic Health" brand that combines modern surgery with traditional wellness.
- **Employment Generation:** The establishment of integrated healthcare hubs will create high-quality jobs for doctors, nurses, researchers, and allied health professionals.
- **Import Reduction:** Domestic manufacturing of biosimilars will significantly reduce India's reliance on costly imports for critical therapies like cancer treatment.
- **Global Credibility:** The accreditation of 1,000+ clinical trial sites address global concerns about data integrity and reliability in Indian clinical trials.
- **Agrarian Boost:** The promotion of Ayurveda exports directly benefits farmers cultivating medicinal herbs and plants.

### Self-Help Entrepreneur Mart (SHE-Mart)

- The Union Budget 2026-27 announced a new platform for women entrepreneurs called SHE-Mart—'self-help entrepreneur' Mart.
- SHE-Marts are designed as **community-owned outlets** within cluster federations to market products made by women entrepreneurs from self-help groups (SHGs).
- The platform aims to enhance branding, visibility, and market access while reducing dependence on intermediaries for sustainable income.
- The initiative establishes permanent retail outlets for SHG products, promoting women's self-reliance and economic independence.
- The proposal builds on the '**Lakhpati Didi**' programme, shifting the focus from micro-credit-based livelihood generation to women-owned enterprises.

### About Lakhpati Didi Programme

- The programme was launched in 2023 to empower rural women in SHGs to achieve a sustainable annual household income of at least ₹1 lakh.
- It is implemented by the Ministry of Rural Development under the **Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM)**.
- **Lakhpati Didi Definition:** A SHG member who earns at least ₹1 lakh per annum over at least four

agricultural seasons or business cycles.

- **Skill Development:** Women are trained in high-value skills like drone operation, LED manufacturing, plumbing, tailoring, and organic farming.
- **National Target:** The government aims to create at least 3 crores 'Lakhpati Didis'.
- **Key Achievement:** Over 2.5 crore women have achieved the status across the country.

## U.S. Tariffs on Indian Exports Reduced to 18%

- U.S. President Donald Trump announced a landmark agreement to reduce the effective tariff on Indian exports to 18%.

### About the Agreement

- **Penalty Rollback:** The agreement specifically removes the 25% 'punitive duty' the US previously imposed to penalise India's purchase of Russian crude oil.
- **Energy Pivot:** India has reportedly agreed to halt imports of Russian oil and purchase over \$500 billion in US energy, technology, and agricultural products.
- **Reciprocal Reductions:** As part of the deal, India has committed to reducing its tariffs and non-tariff barriers on US goods, with some sectors aiming for "zero tariff" status.

### Significance of the Trade Deal

- **Regional Competitiveness:** The 18% rate provides a vital edge to compete against regional rivals like China (34%), Vietnam (20%), and Pakistan (19%) in the US market.
- **Labour-Intensive Trade:** The tariff cut offers immediate relief to rejuvenate MSME-heavy industries like Textiles, Gems & Jewellery, and Seafood, which struggled under the 50% regime.
- **Energy Security:** By shifting from Russian Ural crude to US oil and LNG, India is reconfiguring its long-term energy supply chain to align with Western strategic interests.
- **Diplomatic De-Escalation:** The agreement marks the end of a "trade war" phase to restore the "Mega Partnership" (MAGA + MIGA) and ensure stability in bilateral ties.
- **Supply-Chain Realignment:** It reinforces the 'China Plus One' strategy to establish India as a trusted trade partner within the US-led economic sphere.

## Advance Pricing Agreement

- Union Budget rationalises Advance Pricing Agreement (APA) rules etc., indicating a more investor-friendly tax regime.

### **Key Changes for IT sector**

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

### **Atal Innovation Mission Hosts AIM SUMVAAD**

- Context (PIB): The Atal Innovation Mission (AIM) organised AIM SUMVAAD, its annual incubator conclave in New Delhi.

#### **AIM SUMVAAD**

- It serves as a national platform to align policy intent, institutional capacity, and partnerships to build a high-quality incubation ecosystem.
- The conclave brought together over 100 incubators, industry leaders, and senior government officials.
- It marked the launch of the National Incubator Assessment Framework, a digital repository for benchmarking incubator performance across India.
- It celebrated establishing 100+ incubators supporting 5,000+ startups and creating over 50,000 jobs.

#### **About Atal Innovation Mission (AIM)**

- NITI Aayog launched the Atal Innovation Mission (AIM) in 2016 as India's flagship initiative to

promote an ecosystem of innovation and entrepreneurship.

- **Objective:** To create a culture of innovation at all levels—schools, universities, industries, and MSMEs.
- **AIM 2.0:** The government launched it in 2024 to expand infrastructure, address ecosystem gaps, and extend the initiative until 2028.

### Key Pillars & Initiatives

- **ATLs:** Atal Tinkering Labs are dedicated workspaces in schools (Grades 6–12) to teach STEM concepts.
- **AICs:** Atal Incubation Centres are established in universities and corporates to provide infrastructure, mentorship, and funding to startups.
- **ACICs:** Atal Community Innovation Centres focus on underserved areas to promote local innovation.
- **ANIC:** Atal New India Challenges provides grants of up to ₹1 crore to startups for commercialising solutions to national problems.
- **ARISE-ANIC:** It promotes research and innovation in MSMEs in collaboration with central ministries.
- **LIPI:** The Language Inclusive Program for Innovation builds ecosystems across all 22 scheduled languages to break the English-language barrier.

## Transforming Primary Agricultural Credit Societies (PACS) into Multipurpose Rural Growth Engines

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

### About PACS

- PACS are the grass-root level institutions of the short-term co-operative credit structure and it acts as a last-mile link between borrowers and higher financing institutions such as Scheduled Commercial Banks and RBI/NABARD.
- **Status:** PACS sanctioned: 79,630, New PACS registered: 32,802, PACS digitised: 61,478

### Regulation:

- **Multi State PACS:** Entry 44 of Union List of the Constitution and are centrally administered by Central Registrar of Cooperative Societies (CRCS) under provisions of **Multi-State Co-operative Societies Act, 2002**.
- **Single State PACS:** Entry 32 of State List of the Constitution and are administered by the concerned State Registrar of Cooperative Societies (RCS) under respective State Cooperative Societies Act.

#### **Potential & Significance of PACS**

- **Agriculture:** Enhanced infrastructure and post-harvest support through the World's Largest Decentralized Grain Storage Plan (which establishes godowns and custom hiring centres).
- **Dairy Sector:** Enhance milk procurement by 50% over 5 years through registration of >21,000 new Dairy Cooperative Societies.
- **Fisheries sector:** Improve market linkages and value addition through converting 1,000 fisheries cooperative societies into Fish Farmer Producer Organisations (FFPOs).

#### **Initiatives taken for PACS Promotion**

- **PACS Computerization Project:** Computerization of PACS under a common ERP-based national software.
- **National Cooperation Policy (NCP) 2025:** Membership expansion and leadership roles for women and weaker sections.
- **Adoption of Model Bye-laws:** Enabling PACS to function as multipurpose service centres (PM Kisan Samridhi Kendras, Common Service Centres, warehousing, custom hiring centres, primary processing).

#### **Inclusive Governance:**

- Mandatory representation of women and SC/ST members in cooperative boards under Multi-State Cooperative Societies (Amendment) Act, 2023.
- Inclusion of SHGs, small & marginal farmers and tribal communities.

### **Project Vault**

- The United States has launched Project Vault, a \$12 billion critical minerals stockpiling initiative, announced by Donald Trump to protect American industries from global supply disruptions.

### What is Project Vault?

- Project Vault is a public–private stockpiling programme designed to purchase, store, and manage critical minerals and rare earth elements required for strategic civilian and defence industries in the United States, similar in concept to the Strategic Petroleum Reserve.

### Launched by:

- US Government, announced by Donald Trump
- Funded through a mix of private capital and the US Export–Import Bank

### Aim:

- To secure uninterrupted access to critical minerals during global supply shocks.
- To reduce strategic dependence on China, which dominates mineral processing.
- To strengthen national security, advanced manufacturing, and clean energy supply chains.

### Key features:

- **Minerals covered:** Rare earths and critical minerals such as cobalt, gallium, and other strategic metals
- **Advance purchase commitments:** Companies commit upfront to buy minerals later at fixed inventory prices.

### Stockpile access model:

- Firms can withdraw minerals if they replace equivalent quantities
- Full access allowed during major supply disruptions
- Price stabilisation mechanism: Mandatory repurchase at the same price to reduce market volatility.
- Private-sector execution: Commodity traders (e.g., Mercuria, Traxys) handle sourcing and storage.
- Industry participation: Companies like GM, Boeing, Google, **Stellantis** are already onboard.

### Significance:

- **Strategic autonomy:** Reduces US vulnerability to geopolitical coercion and export controls.
- **Industrial resilience:** Protects automotive, aerospace, defence, EV, and tech sectors.
- **National security:** Ensures availability of minerals critical for jet engines, batteries, missiles, and electronics.
- **Market stability:** Dampens extreme price swings in rare earth markets.

## VOPPA Order, 2025

- Government issues show-cause notices to edible oil firms over VOPPA non-compliance.

### About VOPPA Order, 2025 (amendment to VOPAA Order, 2011)

- It stands for **Vegetable Oil Products**, Production and Availability (Regulation) Amendment Order, 2025 passed.
- **Enactment:** under Essential Commodities Act, 1955 and incorporates Collection of Statistics Act, 2008.
- **Aim:** regulate production and ensure availability of vegetable oil products in India.

### Characteristics of New Order

- **Mandatory registration:** All edible oil manufacturers, processors, blenders and re-packers must register on the National Single Window System (NSWS) and the VOPPA portal.
- **Monthly returns:** Compulsory reporting of production, stocks, imports, sales and availability.
- **Coverage:** Applies to crude, refined, blended oils, vanaspati and margarine.

## 16th Finance Commission (FC) gives recommendations for strengthening local bodies

- It has recommended a total grant of ~₹7.9 Lakh crore to India's rural and urban local bodies for the next five years (FY 2026-27 to 2030-31) with other important recommendations.

### Challenges in Local Body Financing

- **Structural Revenue Gaps:** E.g., Property tax collections are low due to incomplete and inaccurate property records, low coverage, undervaluation of properties etc.
- **Overdependence on Union/State Govt.:** E.g., Panchayats' reliance on Grants (over 90% of their revenues)
- **Limited Access to Debt and Capital Markets:** Municipal borrowings in India are estimated at less than 0.05% of GDP.
- **Other: Underdeveloped Bond Market;** Data Gaps and Accounting Issues; Delays in Constitution of State Finance Commissions (SFCs) etc.

### Recommendations by 16th Finance Commission

- **Property database:** States should develop a citizen friendly GIS based property tax IT system.
- **Rural-Urban Split:** The aggregate grant to be divided in a 60:40 ratio between RLBs and ULBs.
- **Urbanisation Premium:** An allocation of ₹10,000 crore is designated to incentivize merger of peri-urban villages into adjoining larger ULBs (with population > 1 lakh).
- **Constitutional Amendment:** Removing constitutional requirement (Articles 280(3) (bb) and (c)) that binds Central FC to make recommendations "on the basis of" SFC recommendations.
- **Best Practices:** NITI Aayog recommended to study SFC functioning and publish a compendium of good practices for States.

### Sources of Local Body Financing

- **Own Tax Revenue:** Under Article 243X of the Constitution.
- **Non-Tax Revenue:** Includes licensing fees, fees for granting permits, etc.
- **Inter-governmental Transfers:** FC Grants, State transfers, Scheme specific transfers.
- **Borrowings:** Municipal Bonds, General Obligation Bonds, etc.
- **Financing:** Pulled financing for small ULBs, Land Monetization etc.

### Union Budget pushes Elderly Care in India

- Union Budget 2026-27 announced a plan to train 1.5 lakh caregivers in one year through programmes aligned with the **National Skills Qualifications Framework (NSQF)** to strengthen India's geriatric (elderly care) and long-term care workforce.

### Need for Strengthening Elderly Care

- **Elderly Population:** Senior citizens (aged 60+) currently comprise over 10% of the population (about 104 million) and are projected to reach 19.5% (319 million) by 2050.
- **Health Implications:** 75% of the elderly have one or more chronic diseases and medical expenses are more than double for this population segment.

- **Rural Concentration:** Approximately 71% of the elderly population resides in rural areas, which often lack medical infrastructure.
- **Erosion of Social Support:** Diminishing traditional family support, low awareness of legal rights, domestic abuse etc.
- **Inadequate Financial Security:** Vulnerability to financial fraud, financial dependence (78% without any pension cover), low Insurance Coverage (only 18%) etc.
- **Digital Divide:** High levels of digital illiteracy exist, with approximately 85.8% of the elderly being digitally illiterate.

#### Government Initiatives

- **Policy and Legal Frameworks:** The Maintenance and Welfare of Parents and Senior Citizens Act, 2007, National Policy on Older Persons (NPOP).
- **Health Initiatives:** National Programme for the Health Care of the Elderly, Ayushman Bharat, Vayo Mitra.
- **Social and Economic Support:** Atal Vayo Abhyudaya Yojana, Rashtriya Vayoshri Yojana (RVY), Elder Line (14567), Seniorcare Ageing Growth Engine (SAGE) initiative, SACRED Portal (for re-employment) etc.

#### Way Forward for Strengthening Elderly Care

- **Health Empowerment:** Comprehensive Care Packages, Home-based Care, Workforce Training, Adult Immunization
- **Social Inclusion:** One-Stop Portal, Community Support, Elder for elderly model to reduce isolation
- **Economic Security:** Silver Economy (products and services for elderly), development of comprehensive geriatric health insurance, Facilitate re-employment opportunities.
- **Digital Inclusion:** Digital literacy campaigns, discounts on digital devices and broadband, development of user-friendly technology.

#### Anthropic AI Workplace Suite

- Global tech stocks fell sharply after Anthropic launched a new AI-powered workplace automation suite, triggering fears that AI could replace core software and IT services rather than merely augment them.

### **Anthropic AI Workplace Suite: What it is?**

- Anthropic's AI workplace suite is a set of AI agent-based automation tools that can directly perform complex office and enterprise tasks—bypassing conventional software platforms and human workflows.
- Developed by: Anthropic, creators of the **Claude AI model**.

### **Aim:**

- To automate end-to-end white-collar workflows (legal, sales, compliance, analytics, operations) using autonomous AI agents, reducing dependence on traditional **Software-as-a-Service (SaaS)** platforms and human intermediaries.

### **Key features:**

- **Claude Cwork agents & plug-ins:** 11 new AI plug-ins that can execute tasks such as contract review, NDA analysis, compliance monitoring, sales tracking, and data analysis.
- **Platform bypass capability:** AI agents can directly perform tasks earlier dependent on tools like CRM, ITSM, and workflow software—without needing interfaces such as Salesforce or ServiceNow.
- **Autonomous execution:** Moves beyond assistive AI to action-taking AI, capable of decision-making and workflow completion.

### **SaaSpocalypse: What it is?**

- SaaSpocalypse is a term coined by analysts (notably Jefferies) to describe a potential existential crisis for Software-as-a-Service (SaaS) companies, where AI agents may replace entire software layers and service models.

### **Key features:**

- **Disintermediation of software firms:** AI agents perform tasks directly, reducing the need for multiple enterprise software subscriptions.
- **Threat to IT services outsourcing:** Impacts countries like India whose IT sector depends on services such as data processing, compliance, customer support, and enterprise operations.
- **Market re-rating:** Sharp valuation corrections in global tech stocks as investors reassess long-term revenue models.

### PM-Virasat Ka Samvardhan (PM VIKAS)

- **Source (PIB):** The Union Budget 2026-27 has allocated fresh funding to the PM-Virasat Ka Samvardhan (PM VIKAS) scheme.
- PM VIKAS is a **Central Sector Scheme**, officially launched in 2025, for the skill development and upliftment of minority communities.
- **Nodal Ministry:** The scheme is implemented by the Ministry of Minority Affairs through the Skill India Mission framework.
- **Key Components:** It comprises four components – Skilling, Entrepreneurship, Education, and Infrastructure Development.
- **Scheme Convergence:** It subsumes five schemes – **Seekho Aur Kamao, USTTAD, Hamari Dharohar, Nai Roshni and Nai Manzil.**
- **Target Groups:** The scheme covers six notified minority communities: Muslims, Christians, Sikhs, Buddhists, Jains, and Parsis.
- **Inclusion Mandate:** A minimum of 33% reservation for women in skilling components and 3% for Persons with Disabilities (PwDs) across all scheme activities.
- **Financial Linkages:** The scheme facilitates credit access by linking beneficiaries with loan programmes of the National Minorities Development and Finance Corporation (NMDFC).
- **Key Goal:** To train approximately 1.51 lakh beneficiaries across States and Union Territories.

### India's first cooperative-based taxi service – Bharat Taxi

- India's first cooperative-based taxi service 'Bharat Taxi' is being formally launched by Union Minister in New Delhi.
- The launch marks a major push to cooperative-led, driver-owned mobility, aligned with the vision of Sahkar se Samridhi.

#### **Bharat Taxi: What it is?**

- Bharat Taxi is India's first cooperative-sector, driver-owned ride-hailing platform, designed as an indigenous alternative to aggregator-based models like Ola and Uber, with drivers (Sarathis) as owners and stakeholders.

**Organisation(s) involved:**

- Ministry of Cooperation – policy guidance
- Sahkar Taxi Cooperative Limited – operating entity
- Registered under the Multi-State Cooperative Societies Act, 2002
- Established on June 6, 2025
- Aim: To promote inclusive, citizen-centric mobility by empowering drivers through cooperative ownership, ensuring fair income distribution, social security, and freedom from exploitative commission-based platforms.

**Key features:**

- **Driver-owned model:** Guided by the principle Sarathi hi Malik—drivers are shareholders and decision-makers.
- **Zero-commission & surge-free pricing:** Entire fare initially goes to drivers; profits are redistributed within the cooperative.
- **Strong social security:** ₹5 lakh accident insurance, ₹5 lakh family health insurance, retirement savings, and emergency support.
- **Women empowerment initiatives:** Sarathi Didi and Bike Didi, with 150+ women drivers onboard.
- **Digital & safety integration:** Multilingual app, transparent fares, real-time tracking, verified ride data, and police integration.
- **Non-exclusive model:** Drivers can work simultaneously on other platforms.
- **Significance**
- **Strengthens cooperative movement:** Extends cooperatives into the digital platform economy.
- **Improves driver welfare:** Enhances income security, dignity of labour, and long-term financial stability.
- **Indigenous mobility alternative:** Reduces dependence on foreign-funded aggregators and aligns with Atmanirbhar Bharat.

**India Joins BRICS Centre for Industrial Competencies**

- India has joined the BRICS Centre for Industrial Competencies (BCIC) to provide integrated support to manufacturing firms and MSMEs across BRICS countries.

- The **National Productivity Council** has been designated as India's nodal centre to lead engagement with BCIC.

#### **What is the BRICS Centre for Industrial Competencies (BCIC)?**

- The BRICS Centre for Industrial Competencies (BCIC) is a multilateral, public-private platform that supports manufacturing companies and MSMEs in adopting advanced manufacturing, digital technologies, and sustainable practices across BRICS and BRICS Plus countries.
- **Established in: 2024-25**
- Launched at the headquarters of United Nations Industrial Development Organization (UNIDO).
- Supported under the BRICS Partnership on New Industrial Revolution (PartNIR).
- **Aim:** To enhance industrial competitiveness, productivity, and digital transformation of manufacturing enterprises and MSMEs across the BRICS region through cooperation, innovation, and capacity building.

#### **Key functions:**

- **Digital & Industry 4.0 support:** Helps manufacturers adopt advanced technologies and transition into Factories of the Future.
- **Partnership facilitation:** Connects firms with technology providers, research institutions, and business partners across BRICS.
- **Market intelligence & advisory:** Provides guidance on market access, scaling operations, sustainability, and access to finance.
- **Capacity building:** Promotes productivity enhancement, skill development, and industrial modernisation.

#### **Significance:**

- **Boost to Indian manufacturing & MSMEs:** Enables Indian firms to integrate into BRICS value chains and access new markets.
- **Supports Make in India & Atmanirbhar Bharat:** Encourages productivity, innovation, and global competitiveness.

### **Research, Development, and Innovation (RDI) Fund Launched**

- **The Technology Development Board (TDB)** officially launched the first open call for the

Research, Development, and Innovation (RDI) Fund.

- **Rolling Application:** Project proposals are accepted 24/7, 365 days a year through the TDB RDI Portal to ensure continuous innovation support.
- **Operational Role:** The TDB serves as a Second-Level Fund Manager (SLFM), deploying a designated portion of the total RDI corpus.
- **Technology Development Board (TDB)** is a **statutory body** under the **Department of Science & Technology (DST)**, mandated to commercialise indigenous research.

### About Research, Development and Innovation (RDI) Fund

- **Legal Status:** The RDI Fund operates as a Special Purpose Fund (SPF) under the **Anusandhan National Research Foundation (ANRF) Act, 2023**.
- **Financial Corpus:** A corpus of ₹1 lakh crore is allocated for deployment over a 5 to 6-year horizon.
- **Primary Objective:** It aims to facilitate the transition from academic research to industrial application by catalysing private investment.
- **Nodal Authority:** The Department of Science & Technology (DST) serves as the implementing agency.
- **Target Stage:** Projects at Technology Readiness Level (TRL) 4 and above are prioritised for scaling and commercialisation rather than for basic research.
- **Fund Management:** A two-tiered mechanism separates high-level policy and capital allocation (Tier 1) from project-level evaluation and disbursement (Tier 2).
- **Primary Custodianship:** The Special Purpose Fund (SPF) under ANRF manages the corpus and policy framework.
- **Intermediary Distribution:** Funds are channelled through Second-Level Fund Managers (SLFMs), such as AIFs, NBFCs, TDB, and BIRAC.
- **Concessional Financing:** Support is provided through equity infusions or collateral-free long-term concessional loans; grants are strictly excluded to ensure commercial accountability.
- **Cost Sharing:** Up to 50% of the assessed project cost is financed by the fund, with a matching contribution required from the private sector.
- **Strategic Sectors:** Investments are prioritised in “sunrise sectors” like deep-tech, quantum computing, clean energy, and AI.
- **Deep-Tech Focus:** A significant portion of the corpus will serve as a ‘Fund of Funds’ to support deep-tech startups with long gestation periods.

## Union Budget 2026-27 Announces Establishment of Chemical Parks

- The Union Budget 2026-27 introduces a new scheme to help States establish three dedicated Chemical Parks.
- **Financial Allocation:** Rs 600 crore has been allocated in the Budget Estimates (BE) to support the establishment of these parks.
- **Selection Mechanism:** The parks will be established through a challenge-based mechanism, requiring States to compete for the projects.

### About Chemical Parks

- **Definition:** A Chemical Park is a specialised industrial zone built on the “Cluster Model” to support the entire chemical value chain.
- **Cluster Framework:** These parks use a “Cluster-based Plug-and-Play” model, similar to Bulk Drug Parks, to provide ready-to-use land and infrastructure.
- **Production Integration:** Co-location of feedstock suppliers and downstream units enables seamless backward and forward integration.
- **Shared Infrastructure:** Common facilities like Common Effluent Treatment Plants (CETPs), solvent recovery units, and distillation plants reduce compliance costs for individual industries.
- **Assured Utilities:** Centralised infrastructure such as power, steam, and demineralised water significantly reduces setup timelines and CAPEX.
- **Regulatory Efficiency:** Unified park-level clearances (Environment/Fire) aim to reduce Time to Market for industrial projects.

### Significance of the Chemical Parks

- **Strategic Autonomy:** Domestic production of Key Starting Materials (KSMs) and intermediates reduces dependence on volatile global supply chains.
- **Economies of Scale:** Shared utilities and logistics lower the production costs, making Indian exports globally competitive.
- **Circular Economy:** Integrated clusters facilitate waste-to-wealth models where the by-product of one unit becomes feedstock for another.
- **MSME Integration:** Plug-and-play facilities enable MSMEs to enter high-value chains without incurring prohibitive land acquisition costs.
- **Environmental Sustainability:** Centralised waste management ensures stricter adherence to

environmental norms compared to scattered industrial units.

### Challenges Associated with Chemical Parks

- **Compliance Burden:** Meeting stringent **Zero Liquid Discharge (ZLD) norms** increases operational costs, especially for smaller industrial units.
- **Domino Risks:** Concentrating hazardous units heightens the risk of a Domino Effect, in which a single incident triggers a cluster-wide disaster.
- **Infrastructure Pressure:** Large clusters require a continuous supply of demineralised water and power, placing significant strain on local resources.
- **Land Acquisition:** Securing large, contiguous land parcels with necessary safety buffers remains a major barrier for project implementation.
- **Operational Expertise:** Smaller clusters often lack specialised technical experts needed to maintain complex shared facilities.

### India's Chemical Sector

- **Global Standing:** India is the world's sixth-largest chemical producer and the third-largest in Asia (after China and Japan).
- **Economic Contribution:** The sector contributes approximately 7% to the GDP and accounts for 8.1% of manufacturing Gross Value Added (GVA).
- **Production Volume:** Domestic production reached 58,617 thousand metric tonnes in FY25, with a CAGR of 2.8% since 2016.
- **Regional Hubs:** Major industrial clusters are concentrated in Gujarat, Maharashtra, Odisha, Andhra Pradesh, and Tamil Nadu.

## Forest Devolution Formula Revamp

- The Sixteenth Finance Commission has significantly revised the forest cover criterion under the horizontal tax devolution formula to better reflect ecological realities.

### Key Changes Introduced in Forest Devolution

- **Open Forests Included:** For the first time, open forests are counted under the forest cover criterion, expanding the scope beyond only dense and moderately dense forests.
- **Density-Based Weights:** Forest cover is now differentiated by density levels, ensuring varied

ecological values are reflected in devolution calculations.

- **Incentives for Forest Expansion:** States that actively increase forest and tree cover, including through restoration of open forest areas, are financially rewarded through higher tax devolution shares.
- **Support for Fragile Regions:** The revised approach accounts for higher conservation costs in hilly and forest-rich states, promoting sustainable ecological management.
- **Disaster Linkage:** Forest fires have now been formally included as one of the hazards in the Disaster Risk Index, strengthening the connection between ecological vulnerability and fiscal devolution.

#### Differences from the Previous Forest Formula

- **Coverage Scope:** The earlier formula considered mainly dense and moderately dense forests, which together formed about 70–75% of recorded forest cover, excluding nearly 25–30% open forests.
- **Weight Structure:** Previously, the entire 10% forest devolution weight was applied uniformly without accounting for forest density variations.
- **Incentive Impact:** The earlier system largely rewarded existing forest stock, offering limited fiscal motivation for restoring degraded and open forest areas.

#### Constitutional Safeguards for Indian Forests

- **Article 48A:** The Directive Principles of State Policy guide the State to protect and improve the environment and safeguard forests and wildlife.
- **Article 51A(g):** Outlines a fundamental duty of every citizen to protect and improve the natural environment, including forests, lakes, rivers, and wildlife, and to have compassion for living creatures.
- **Concurrent List:** The 42nd Amendment Act, 1976, transferred forests to the Concurrent List (Seventh Schedule), allowing both the Centre and States to legislate on forest management.

#### Legal and Judicial Safeguards for Indian Forests

- **Forest (Conservation) Act 1980:** Requires central approval and mandates compensatory afforestation when diverting forest land for non-forest purposes.
- **Forest Rights Act 2006:** Recognises the rights of forest-dwelling communities and requires Gram Sabha consent before any diversion of forest land.
- **Environment (Protection) Act 1986:** Acts as an umbrella law mandating Environmental

Clearance for large projects through Environmental Impact Assessment (EIA).

- **T.N. Godavarman Case (1996):** Expanded the definition of 'forest' to include legally recorded forests and those meeting the dictionary definition.

## Foundation Ceremony of Amaravati Quantum Valley Held

- Amaravati is being developed as a major hub for quantum research and innovation, under **National Quantum Mission**.

### About National Quantum Mission (NQM)

- Image showing Domains of Four Thematic Hubs
- **Aim:** To seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT).
- Quantum Technology uses qubits as the basic unit of information instead of binary bits (0 and 1).
- **Budget Allocation:** ~₹6,000 crore (2023-24 to 2030-31)

### Objectives

- Developing intermediate-scale quantum computers: With 20-50 physical qubits within 3 years, scaling up to 1,000 qubits within 8 years.
- **Quantum Communications:** Satellite-based secure communications over 2,000 km and inter-city Quantum Key Distribution (QKD) networks.
- **Advanced Sensing & Metrology:** Creating high-sensitivity magnetometers and atomic clocks for precision navigation.
- **Synthesizing next-gen materials:** Like superconductors and topological materials for fabricating qubits.

### Significance of NQM

- **Strategic and security Necessity:** Facilitate unhackable quantum encryption and QKD to protect defense, banking, and digital infrastructure.
- **Global Standing:** Positions India among a select group of elite nations with dedicated quantum missions.
- **Sectoral Transformation**
- **Healthcare:** Enable precision radiation therapies, faster drug discovery, and personalized

medicine.

- **Economy:** Expected to drive job creation, support startups, and boost India's space economy.

## United States–India Interim Trade Agreement

- India and the United States have announced a framework for a United States–India Interim Trade Agreement, marking a major breakthrough in reciprocal market access and tariff realignments.

### United States–India Interim Trade Agreement:

- The U.S.–India Interim Trade Agreement is a temporary, outcome-oriented trade framework designed to deliver early harvest commitments on tariffs, market access, and non-tariff barriers, while negotiations continue for a full-fledged **Bilateral Trade Agreement (BTA)**.
- **Aim:**
  - To establish reciprocal and balanced trade based on mutual interests.
  - To expand market access for goods, agriculture, technology, and energy.
  - To enhance supply-chain resilience and economic security.
  - To pave the way for a comprehensive BTA with durable trade rules.

### Key Features of the Interim Trade Agreement:

- **Tariff Liberalisation by India:** India will eliminate or reduce tariffs on U.S. industrial goods and a wide range of agricultural products, including ethanol by-products (DDGs), oilseeds, fruits, nuts, wine, and spirits.
- **Reciprocal Tariff Framework by the U.S.:** The U.S. will apply a reciprocal tariff rate of 18% initially on select Indian exports, with a pathway to tariff removal on priority sectors such as generic pharmaceuticals, gems & jewellery, and aircraft parts upon successful conclusion.
- **Relief from National Security Tariffs:** Removal of U.S. Section 232 tariffs on Indian aircraft parts, steel, aluminium-linked items, and preferential tariff-rate quotas for automotive components.
- **Rules of Origin:** Jointly agreed rules to ensure that trade benefits accrue primarily to India and the U.S., preventing third-country circumvention.
- **Non-Tariff Barrier (NTB) Reforms:** India commits to easing long-standing barriers in medical devices, ICT goods, and agricultural imports, including import licensing and standards recognition.
- **Standards & Conformity Cooperation:** Both sides will align technical regulations, testing, and conformity assessment procedures to improve ease of doing business.

- **Digital Trade Commitments:** Agreement to address discriminatory digital trade practices and establish a pathway for ambitious digital trade rules under the BTA.
- **Supply Chain & Economic Security Alignment:** Cooperation on export controls, investment screening, and countering non-market policies of third countries.
- **Strategic Purchases & Technology Trade:** India plans to purchase USD 500 billion worth of U.S. energy, aircraft, critical minerals, and technology (including GPUs for data centres) over five years.

### RBI Proposes Compensation for Digital Fraud Victims

- The Reserve Bank of India has proposed a compensation framework for victims of small-value digital frauds up to ₹25,000.
- **Target Scope:** It specifically targets fraud below ₹50,000, which accounts for approximately 65% of all digital fraud cases.
- **Compensation Quantum:** Victims are eligible for compensation of up to ₹25,000 or 85% of the loss, whichever is lower.
- **Frequency Cap:** The scheme offers a one-time relief per customer to discourage habitual negligence.
- **Eligibility Criteria:** Unlike previous rules, it covers inadvertent credential sharing (negligence), provided the transaction was not mala fide.
- **Funding Mechanism:** Payouts will be sourced from the Depositor Education and Awareness (DEA) Fund, which currently holds a surplus of ~₹85,000 crore.
- **Liability Sharing:** The model enforces a “skin in the game” approach to distribute the financial burden
- **Customers:** Absorb 15% of the loss (deductible) to ensure continued vigilance.
- **Banks:** Contribute a proposed share (~15%) to incentivise robust security protocols.
- **RBI:** Covers the residual balance (~70%) via the DEA Fund, subject to the ₹25,000 cap.

#### About Depositor Education and Awareness (DEA) Fund

- **Statutory Basis:** RBI established the DEA Fund in 2014 under Section 26A of the Banking Regulation Act, 1949.
- **Corpus Source:** Banks must transfer the credit balance of any account remaining inoperative or unclaimed for 10 years or more to this fund.
- **Claimant Rights:** The transfer to the DEA Fund does not extinguish the depositor's right to

reclaim their funds with applicable interest.

- **Interest Accrual:** RBI pays interest on these unclaimed amounts, which banks must pass on to the depositor upon final settlement.
- **Utilisation Scope:** Fund primarily supports depositor awareness programmes and is proposed to fund compensation for small-value digital frauds.
- **Discovery Mechanism:** RBI launched the centralised UDGAM portal to enable public search of unclaimed deposits across participating banks.

### Revised Corporate Average Fuel Efficiency (CAFE) Draft

- India removed the proposed fuel-efficiency concession for small cars in the revised Corporate Average Fuel Efficiency (CAFE) draft, tightening emission norms from April 2027.

#### About Corporate Average Fuel Efficiency (CAFE)

- CAFE specifies average fuel efficiency targets for all passenger vehicles sold by a manufacturer.
- The norms aim to decrease India's oil imports and lower carbon emissions while promoting the use of electric, hybrid, and flex-fuel vehicles.
- Applicable to M1 passenger cars, which have up to nine seats and weigh no more than 3,500 Kg.
- The Bureau of Energy Efficiency (BEE) enforces compliance under the Energy Conservation Act, 2001, and it was first notified in 2017.
- Manufacturers can earn, trade, or carry forward CAFE credits to meet emission targets.

#### CAFE-III Norms

- It will be applied from FY28 to FY32, replacing the current CAFE-II norms.
- It uses the new formula  $0.002 \times (W - 1170) + c$ , where the constant  $c$  decreases every year (FY28: 3.7264 → FY32: 3.0139), making targets tighter.

#### Changes Made in the New Draft

- **Small-Car Exemption Removed:** The proposed fuel-efficiency relaxation for petrol cars weighing  $\leq 909$  kg was withdrawn to prevent firm-specific advantages and ensure uniform compliance pressure.
- **Weight Bias Curbed:** The revised draft reduces over-compensation linked to vehicle weight, narrowing the gap in permissible emission targets between light and heavy vehicle fleets.

- **Steeper Reduction Path:** Emission norms now follow a significantly sharper decline trajectory, compelling manufacturers to deliver real-world efficiency gains rather than paper compliance.

## National Self-Reliance in Pulses Mission

- **Context (PIB):** A nationwide Self-Reliance in Pulses Mission was launched from the Food Legumes Research Centre (FLRP), Madhya Pradesh, under the chairmanship of the Union Agriculture Minister.

### Core Features of the Pulses Mission

- **Seed-to-Market Focus:** Mission adopts an end-to-end value chain approach covering seed research, on-farm practices, assured procurement, processing, and organised market access.
- **Cluster Model:** Pulses cultivation is organised in geographically contiguous clusters to enable collective input supply, common agronomy practices and direct linkage with processors and markets.
- **Seed Reforms:** Seed release and distribution are decentralised to states and farmer networks, ensuring location-specific varieties and faster dissemination.
- **Research-Farmer Linkage:** The FLRP campus integrates ICAR-ICARDA research directly with farmers, enabling rapid adoption of high-yielding and disease-resistant pulse varieties.
- **Value Addition Orientation:** Mission explicitly shifts focus from raw pulses to protein-rich value-added products, encouraging local processing and branding.

### Key Challenges Faced

- **Declining Acreage:** Area under pulses fell from 29.3 million ha (2016-17) to ~27.4 million ha (2023-24).
- **Low Productivity:** Average pulses yield in India remains around 850-900 kg/ha, far below the global average of 1,200-1,300 kg/ha, reflecting rain-fed dependence and input gaps (FAO).
- **Import Dependence:** India imported ~2.8-3 million tonnes of pulses annually (2022-24), exposing domestic markets to global price volatility and forex outflows (DGFT data).
- **Price Volatility:** In bumper harvest years, market prices of chana and tur often fall 20-30% below MSP, discouraging farmers despite official price support.
- **Processing Deficit:** Less than 10% of pulse production is processed near farm gates, forcing long-distance transport and reducing farmers' share in consumer prices.

### Roadmap for Pulses Self-Reliance

- **Pulse Mills Expansion:** Establish 1,000 pulse mills nationwide with up to ₹25 lakh subsidy per unit, enabling decentralised processing, reduced transport costs and local employment creation.
- **Farmer Incentives:** Farmers in identified clusters will receive quality seed kits and ₹10,000 per hectare assistance for model farming to encourage pulses acreage and technology adoption.
- **Productivity Enhancement:** Focused R&D on chickpea, lentil, pigeon pea, urad and moong through early-maturing and disease-resistant varieties to raise yields and reduce climate risk.
- **Centre-State Coordination:** States will prepare crop- and region-specific pulses roadmaps aligned with agro-climatic needs, strengthening cooperative federalism in agriculture.

### Current Status of Pulses in India

- **Global Position:** India is the world's largest producer, importer and consumer of pulses, accounting for ~24–25% of global production, ~27% of consumption, and ~13–15% of global imports.
- **Foodgrain Share:** Pulses occupy ~20% of India's total foodgrain area but contribute only ~7–9% of total foodgrain output, reflecting persistent yield gaps.
- **Seasonal Pattern:** Pulses are grown in both Kharif and Rabi seasons, with Rabi pulses contributing around 60–62% of total production, led by gram and lentil.
- **Import Surge:** India's pulse imports in FY25 are estimated at ~6.5–6.8 million tonnes, the highest level in nearly a decade, driven by domestic supply tightness.
- **Yellow Pea Dependence:** Yellow pea imports crossed ~2.0 million tonnes in FY25, accounting for about 30–32% of total pulse imports, as duty-free access and price arbitrage encouraged inflows.

### India Semiconductor Mission (ISM) 2.0

- The Union Budget 2026-27 officially launched India Semiconductor Mission (ISM) 2.0, building on the first phase of ISM to make India a global semiconductor hub.
- ISM 2.0 shifts India's strategy from building physical fabrication assets to developing a comprehensive high-value ecosystem.
- **Objective:** To achieve 70–75% self-sufficiency in domestic chip requirements by 2029 through locally designed and manufactured chips.
- **Expanded Scope:** The new phase focuses on the upstream supply chain, including semiconductor equipment, specialised materials, and component manufacturing.

- **IP Creation:** A major pillar is the creation of “**Full-Stack Indian IP**” to own the intellectual property of chip designs rather than manufacturing foreign designs.
- **R&D Upgrade:** The Semiconductor Laboratory (SCL), Mohali, is being transformed into a future-ready R&D hub with an indigenous facility for domestic prototyping.
- **Skill Development:** It emphasises skilling initiatives through the Chips to Startup (C2S) programme and industry partnerships.

#### **About India Semiconductor Mission (ISM)**

- ISM was launched in 2021 as an independent business division of the **Digital India Corporation**, under the Ministry of Electronics & Information Technology (MeitY).
- **Financial Assistance:** It provides fiscal support of 50% of the project cost across all eligible semiconductor manufacturing categories.
- **Design Incentives:** The **Design Linked Incentive (DLI)** offers up to 50% reimbursement of eligible expenditure for domestic design projects.
- **Key Achievement:** ISM has enabled 10 major projects across six states, with a cumulative investment of around ₹1.60 lakh crore.

### **Integrated Farming Models for Small Farmers**

- Union Agriculture Minister urged Agri-scientists to develop integrated farming models while interacting with scientists at the Indian Institute of Horticultural Research near Bengaluru.
- **Integrated Farming Models (IFMs):** A farm-system approach that combines crops, livestock, fisheries, poultry & horticulture on the same holding to maximise income, resilience & resource efficiency.

#### **How Integrated Farming Models Can Help Small Farmers?**

- **Higher Farm Income:** Integrated farming systems raise net farm income by 30–60% compared to monocropping through diversified outputs (ICAR field studies).
- **Risk Reduction:** Farmers adopting mixed crop–livestock systems experience ~20–25% lower income variability during droughts and price shocks (NITI Aayog assessments).
- **Employment Generation:** Integrated farms generate 250–350 person-days/ha/year, compared to 120–150 days under cereal monocropping, improving family labour use (ICAR).
- **Cost Efficiency:** Recycling of manure and residues cuts chemical fertiliser and feed costs by 15–

25%, improving profit margins (FAO–ICAR joint studies).

- **Nutritional Security:** Households practising integrated farming show 15–20% higher dietary diversity, improving protein and micronutrient intake (NFHS-linked rural nutrition studies).

### Challenges Faced

- **Credit Constraints:** Nearly 45% of smallholders face difficulty accessing formal credit for allied activities.
- **Initial Investment Needs:** Integrated models require 20–30% higher upfront capital than single-crop systems, deterring adoption by marginal farmers.
- **Institutional Coordination:** Fragmented schemes across crops, livestock and fisheries delay convergence benefits; only ~30% of districts show effective scheme convergence.

### Way Forward

- **Cluster Scaling:** Promote agro-climatic, location-specific IFM clusters with common infrastructure and advisory; E.g., National Mission for Sustainable Agriculture – Rainfed Area Development (RAD).
- **Flexible Financing:** Enable states to fund customised IFM assets (sheds, ponds, fodder units, pack-houses) through flexible grants; E.g., Rashtriya Krishi Vikas Yojana.
- **Nutrient Cycling:** Strengthen organic nutrient loops linking livestock and crops to cut input costs and improve soil health; E.g., **Paramparagat Krishi Vikas Yojana**.
- **Lab-to-Land:** Compress technology transfer timelines by deploying scientists directly in villages for adaptive trials and demos; E.g., **Viksit Krishi Sankalp Abhiyan**.

### SATYA Portal

- The Ministry of State for Electronics and Information Technology (MeitY) inaugurated the STQC Lab Automation Portal, 'SATYA', in New Delhi.
- **STQC:** The Standardisation Testing and Quality Certification Directorate is an attached office of MeitY, ensuring the quality, security, and reliability of electronic and IT products nationwide.
- **Objective:** The portal is designed to modernise and digitise the quality assurance services offered by the STQC Directorate.
- **Development:** The platform was developed in partnership with the Centre for Development of Advanced Computing (C-DAC).

- **Key Features:** The portal enables a fully digital workflow for certification and testing, automates laboratory processes, and includes a dedicated Ticketing System for faster grievance resolution.
- **Significance:** The initiative advances citizen-centric governance, aligning with Digital India, Minimum Government – Maximum Governance, and Ease of Doing Business.

### Collateral-Free Loans to MSMEs

- The RBI proposed raising the ceiling for collateral-free bank loans to MSMEs, alongside measures to permit bank lending to REITs under safeguards.

#### About Collateral-Free Loan Change

- **Limit Raised:** The collateral-free loan ceiling for MSMEs has been doubled from ₹10 lakh to ₹20 lakh, significantly widening formal credit access for small firms without asset security.
- **Cash-Flow Lending:** Banks are encouraged to rely more on cash-flow and business viability assessments rather than fixed-asset collateral, improving credit inclusion.
- **Regulatory Alignment:** The move complements priority sector lending norms and works alongside credit-guarantee frameworks to de-risk bank lending to MSMEs.

#### Other Measure Announced

- **REIT Lending Permitted:** Banks are allowed to lend to Real Estate Investment Trusts (REITs), opening a regulated credit channel to income-generating commercial real estate assets.
- **Prudential Safeguards:** Such exposures will be governed by risk weights, exposure caps, and due diligence norms to prevent concentration and systemic risks.

#### Significance for MSMEs

- **Credit Gap Reduction:** MSMEs face an estimated ₹20–25 lakh crore credit gap, largely due to collateral constraints; higher limits directly address this bottleneck.
- **Informal Finance Dependence:** Over 40–45% of micro enterprises rely on informal lenders; collateral-free limits help shift borrowing to formal banks at lower costs.
- **Employment Impact:** MSMEs employ ~11 crore people; easier credit supports payroll stability and incremental hiring during expansion phases.

#### Status of MSMEs in India

- **Scale:** India has ~6.3 crore MSMEs, with ~99% classified as micro enterprises (Udyam data).
- **Economic Role:** Contribute ~30% to GDP and ~45% to manufacturing output.
- **Exports:** Account for ~43–45% of merchandise exports, critical for trade competitiveness.

## B-READY Assessment

- The inclusion of India in the Business Ready (B-READY) 2026 assessment has renewed attention on India's business reform trajectory.

### What is B-READY?

- World Bank Group's Business Ready (B-READY) is a global benchmarking exercise designed to assess the business and investment climate across economies. It replaces the earlier Doing Business Report with a more transparent, comprehensive, and modern methodology.
- **Launched In:** Following the discontinuation of the World Bank's Doing Business Report (DBR) Report in 2020, the World Bank launched the B-Ready Assessment in 2024.

### Organisation Involved:

- Developed and administered by the World Bank Group (WBG)
- Data collected through expert consultations and firm-level surveys (World Bank Enterprise Surveys – WBES)

### Aim of B-READY:

- To provide a quantitative and evidence-based assessment of the business environment.
- To evaluate how regulations and public services support private sector development.
- To promote inclusive, sustainable, and digitally enabled economic growth.

### Three Pillars of B-READY

#### Pillar I – Regulatory Framework

- Assesses rules and regulations governing business entry, operation, and closure.
- Focuses on statutory laws (de jure framework).

#### Pillar II – Public Services

- Evaluates government-provided infrastructure and institutional support.
- Includes digital systems, licensing authorities, dispute resolution bodies, etc.

### Pillar III – Operational Efficiency

- Measures ease of compliance and real-world implementation (de facto).
- Captures nationwide firm-level experiences through surveys.

### Key Features of B-READY:

- **Lifecycle-Based Assessment Framework:** Evaluates businesses across ten topics covering the complete firm lifecycle—entry, operation/expansion, and exit—ensuring a holistic understanding of regulatory and market conditions.
- **Three-Pillar Structure for Comprehensive Evaluation:** Built on Regulatory Framework, Public Services, and Operational Efficiency, integrating legal provisions (de jure) with real-world implementation (de facto) through firm surveys.
- **Integration of Cross-Cutting Themes:** Embeds Digital Adoption, Environmental Sustainability, and Gender Inclusion across all topics—making it aligned with modern economic governance priorities.
- **Dual Data Collection Methodology:** Combines expert consultations (laws and regulations) with firm-level surveys (World Bank Enterprise Surveys) to ensure both statutory accuracy and ground-level realism.
- **Annual, Transparent Global Benchmarking:** Conducted by the World Bank Group and published annually, it replaces the earlier Doing Business Report with improved methodology, transparency, and broader institutional coverage.

## UK Sign Social Security Agreement for Temporary Employees

- India and the United Kingdom have signed a **Social Security Agreement (SSA)** to prevent double social security contributions for employees on short-term assignments.

### What is this Agreement about?

- India and the United Kingdom have signed a reciprocal Social Security Agreement, also referred to as a **Double Contributions Convention (DCC)**, to eliminate the burden of dual social security payments for employees temporarily working in each other's territory.
- The agreement allows employees on assignments of up to 36 months to continue contributing to their home country's social security system, thereby avoiding double payments.
- **Nations Involved: India and United Kingdom**

**Aim:**

- Prevents employees and employers from paying contributions in both countries simultaneously.
- Supports short-term overseas assignments in sectors such as IT, finance, consulting, and engineering.
- Forms part of commitments made under the Comprehensive Economic and Trade Agreement signed in July 2025.
- Reduces cost burdens on firms sending skilled professionals abroad.

**Key Features:**

- **Coverage for Temporary Assignments (Up to 36 Months):** Employees remain covered under their home country's social security system during temporary postings.
- **Certificate of Coverage (CoC) Mechanism:** Workers can obtain a CoC through the Employees' Provident Fund Organisation to certify exemption from host-country contributions.
- **Reciprocal Application:** Applies equally to Indian employees in the UK and UK employees in India.
- **Prevention of Social Security Record Fragmentation:** Ensures continuity in pension and benefit records.
- **Implementation Linked to Trade Deal:** The agreement will enter into force alongside the India-UK CETA, expected in the first half of the year.

**Significance:**

- India's strength in IT and professional services benefits from smoother mobility of skilled workers.
- Supports the broader India-UK trade architecture, projected to significantly enhance bilateral trade.
- Avoids duplicative employer contributions, improving global competitiveness.

## Deep Tech Startups

- The Department for Promotion of Industry and Internal Trade (DPIIT) issued a notification to officially define a distinct category for 'Deep Tech Start-ups'.
- It defines Deep Tech Start-ups as entities that develop solutions based on new scientific knowledge, with high R&D expenditure, **long gestation periods**, and **novel Intellectual Property (IP)**.

- **Tenure Extension:** The recognition period has been doubled from 10 to 20 years to accommodate long gestation cycles.
- **Financial Threshold:** The annual turnover limit is set at ₹300 crore, higher than the ₹200 crore limit for general start-ups.
- **Capital Usage:** The notification prohibits them from investing funds in speculative assets like real estate or luxury goods unless directly related to core R&D.
- **Funding Mechanism:** The Anusandhan National Research Foundation (ANRF) manages the ₹1 lakh crore RDI Fund for investing in emerging technology.
- **Significance:** The recognition structurally de-risks the sector by aligning regulatory timelines with the “science-to-market” lifecycle, thereby encouraging a long-term flow of capital.

## Accelerating Electricity Demand Growth

- The International Energy Agency report projects the fastest sustained growth in global electricity demand through 2030, driven by data centres, EVs and cooling.

### Key Highlights of the Report

- Global Projections
- **Growth Pace:** Electricity demand to grow at ~3.6% annually (2026–2030), adding ~1,100 TWh per year.
- **Consumption Level:** Global use expected to reach ~33,600 TWh by 2030.
- **Structural Shift:** Electricity demand outpaced GDP growth in 2024, a first outside crises in three decades, marking a new “Age of Electricity.”

### Regional Dynamics

- **Emerging Economies:** Account for ~80% of additional demand through 2030.
- **China:** Adds ~2,600 TWh by 2030, roughly equal to the EU's current total consumption.

### India Snapshot

- **Demand Growth:** ~6.4% per year through 2030; among the fastest globally.
- **Cooling Impact:** Air-conditioning to contribute >20% of India's demand growth (2026–2030).
- **Peak Load:** National peak demand rose ~54% since 2017 to ~250 GW in 2024.

### International Energy Agency (IEA)

- **Establishment:** The IEA was established in 1974 by member countries of the **OECD** to help industrialised nations respond to the 1973-1974 oil crisis.
- **Focus Areas:** Energy security, economic development, and environmental awareness.
- **Headquarters:** Paris, France.
- **Members:** The IEA comprises 32 member countries, 13 association countries (including India), and 4 accession countries. A nation must be a member of the OECD to become a member of the IEA.
- **Major Publications:** World Energy Outlook Report, India Energy Outlook Report, World Energy Investment Report, Annual Energy Efficiency Market Report, Energy Technology Perspectives.

### Scenarios Towards Viksit Bharat and Net Zero

- NITI Aayog's "**Scenarios Towards Viksit Bharat & Net Zero study**" highlights that India can simultaneously achieve developed-economy status by 2047 and net-zero emissions by 2070.

### Core Strategy for Viksit Bharat and Net-Zero

#### Viksit Bharat @ 2047

- **High Growth Requirement:** Sustained real GDP growth of ~7-8% is essential to transition into a high-income, developed economy status by 2047.
- **Infrastructure Expansion Window:** Nearly 85% of India's 2047 infrastructure is yet to be built, offering a rare opportunity for efficient, low-carbon urbanisation.
- **Demographic Dividend Use:** Productive absorption of India's large working-age population remains critical to income expansion, productivity, and fiscal stability.

#### Net-Zero Emissions @ 2070

- **Electrification Backbone:** Deep electrification across sectors is the single largest driver of long-term emissions reduction under the net-zero pathway.
- **Massive Investment Need:** Achieving net-zero requires about \$22.7 trillion, implying one of the world's largest long-term climate capital mobilisation efforts.
- **Energy System Transformation:** Scaling renewables to 6,500-7,000 GW fundamentally reshapes India's power mix, storage needs, and grid architecture.

### Key Challenges Faced by India

- **Critical Minerals Dependence:** Clean energy technologies could increase India's lithium demand by over 40 times by 2040, exposing the economy to import concentration risks.
- **Supply Chain Vulnerability:** Global processing of critical minerals remains highly concentrated, with China controlling ~60–70% of refining capacity for several energy-transition minerals.
- **Insufficient Climate Investment:** Current climate investment flows of ~\$135 billion annually remain far below levels required for long-term decarbonisation and infrastructure expansion.
- **Rising Energy Demand:** India's electricity demand is projected to grow at ~6–7% annually this decade, driven by cooling, industrial expansion, and digital infrastructure growth.
- **Financial System Constraints:** India's corporate bond market (~16% of GDP) and household financialisation (~60%) remain too shallow for the required capital mobilisation scale.

### Macroeconomic and Social Implications

- **Investment-Led Rebalancing:** Growth structure gradually shifts from consumption-driven patterns toward capital-intensive, technology-led and infrastructure-heavy development pathways.
- **Structural Adjustment Pressures:** Fossil-fuel-linked sectors employ millions; coal mining alone supports ~12 million livelihoods, raising transition-related reskilling challenges.
- **Energy Security Risks:** Coal continues to supply ~70% of India's electricity generation, limiting the pace of decarbonisation without risking supply instability.
- **Climate Risk Exposure:** Climate shocks already affect growth drivers, and **agriculture employs ~45% of the workforce**, yet remains highly climate-sensitive.
- **Equity and Affordability:** Energy costs disproportionately impact lower-income groups, with households accounting for ~25–30% of electricity demand growth.

### NITI Aayog's Strategic Policy Directions

- **Demand Moderation:** Institutionalise **Mission LiFE-driven** behavioural shifts to control long-term energy demand growth; E.g., efficiency standards & lifestyle nudges.
- **Electrification Push:** Accelerate electrification across transport and industry to structurally reduce fossil fuel dependence; E.g., EV adoption & industrial electrification.
- **Green Finance Institution:** Establish a dedicated national green finance institution to mobilise, aggregate and de-risk large-scale transition capital.
- **Renewable Expansion:** Scale solar, wind and storage capacity while strengthening grid and transmission networks; E.g., battery energy storage & pumped hydro balancing systems.

- **Domestic Market Deepening:** Expand corporate bond markets and accelerate financialisation of household savings to mobilise stable long-term capital for climate and infrastructure investment
- **International Finance Mobilisation:** Deepen integration with global capital markets to bridge the ~\$6.5 trillion financing gap through concessional climate finance flows.

### Industrial Relations Code (Amendment) Bill, 2026

- Industrial Relations Code (Amendment) Bill, 2026 was introduced in Lok Sabha to remove interpretational doubt on repeal & savings to prevent future legal complications.
- Industrial Relations Code, 2020 brought the **Trade Unions Act, 1926**, the Industrial Employment (Standing Orders) Act, 1946 and **the Industrial Disputes Act, 1947** under one unified framework.

#### Key Amendments in the Code

- **Repeal Clarification:** Makes it explicit that repeal of the three legacy laws happens by the operation of Section 104 itself, not through any executive “repeal power” route.
- **Savings Continuity:** Reinforces that past rights, liabilities, penalties, notifications and ongoing proceedings continue seamlessly, so transition does not disrupt industrial adjudication.
- **Legal Certainty Shield:** Tightens drafting so misconceived challenges (delegation/ultra vires arguments) don't derail the Code's continuity logic later.

#### Why the Amendment Became Necessary?

- **High Litigation Load:** India's courts carry ~54 million pending cases, so even a narrow interpretational dispute can snowball into years of avoidable litigation over continuity.
- **Continuity Risk:** Labour disputes often run for long durations; any doubt on “which law applies” can trigger preliminary objections and adjournments before merits are heard.
- **Compliance Scale:** MSME registrations on the national dashboard show ~7.7 crore enterprises, meaning small ambiguities can multiply into massive compliance uncertainty at scale.

#### Significance of the Amendment

- **Regulatory Predictability:** Clear repeal mechanics stabilise the legal base for employers, unions and labour offices, reducing “first-principles” disputes during implementation.
- **Faster Dispute Handling:** With continuity clarified, tribunals/courts are less likely to waste time on preliminary jurisdiction-and-applicability fights.

- **Reform Credibility:** Shows course-correction to protect the labour-code architecture from technical derailment, improving trust among investors and organised labour alike.
- **Potential Concerns**
- **Drafting Optics:** A clarificatory amendment so soon can be read as an initial drafting vulnerability, inviting a more “technical challenge” mindset in future.
- **Residual Ambiguities:** Even with Section 104 clarified, other transition questions like rules, subordinate legislation, and forum shifts can still generate disputes.
- **Change Fatigue:** Repeated small amendments can create a perception of moving goalposts, especially for MSMEs already coping with multi-layer compliance.

## Ayushman Sahakar Scheme

- The Union Minister for Home and Cooperation, provided an update in the Rajya Sabha regarding the implementation and funding framework of the Ayushman Sahakar Scheme.

### Ayushman Sahakar Scheme:

- Ayushman Sahakar is a dedicated scheme of the **National Cooperative Development Corporation (NCDC)** to provide financial assistance to cooperative societies for establishing and expanding healthcare infrastructure across India.
- **Launched in: 2020 (Notified by NCDC in alignment with National Health Policy 2017)**
- **Ministry: Implemented by NCDC**
- Under the administrative control of the **Ministry of Cooperation**

### Aim:

- To promote affordable, holistic, and community-owned healthcare through cooperative societies.
- To strengthen AYUSH and digital health participation in line with India's public health objectives.

### Key Features

- **Eligible Institutions:** Any Cooperative Society registered under **State or Multi-State Cooperative Societies Act** with healthcare provisions in its bye-laws is eligible.
- **Comprehensive Coverage:** Supports infrastructure, modernization, AYUSH services, digital health, telemedicine, insurance, and working capital for diverse healthcare facilities.
- **Flexible Financial Assistance:** Provides term/investment loans up to 8 years (with 1-2 year

moratorium) based on actual project requirements.

- **Women Incentive:** Offers 1% interest rebate to women-majority cooperatives, subject to timely repayment compliance.
- **Structured Funding & Security:** Funding through State or direct NCDC route (up to 90% loan) with defined collateral/guarantee mechanisms.

**Significance:**

- **Strengthens Cooperative Federalism:** Promotes decentralized healthcare delivery through grassroots cooperative institutions.
- **Community Ownership in Health:** Encourages participatory governance and accountability in service delivery.
- **Boost to AYUSH Sector:** Enhances infrastructure for traditional systems of medicine, aligning with India's integrative healthcare model.

### **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.

### PAIMANA Web Portal

- The Ministry of Statistics and Programme Implementation has shared updated data in Lok Sabha on the PAIMANA Web Portal, which monitors central infrastructure projects worth ₹150 crore and above.

#### PAIMANA Web Portal:

- PAIMANA (Project Assessment Infrastructure Monitoring and Analytics for Nation-Building) is a web-based monitoring system developed to track ongoing **Central Sector Infrastructure Projects** costing ₹150 crore and above.
- It replaces the earlier OCMS-2006 (Online Computerized Monitoring System).

#### Organisation Involved:

- Developed and managed by the Ministry of Statistics and Programme Implementation (MoSPI).
- Integrated with the Department for Promotion of Industry and Internal Trade (DPIIT) **Integrated Project Monitoring Portal (IPMP)** through APIs.

#### Key Features

- **One Data One Entry Principle:** Automatic data flow from IPMP to PAIMANA via APIs, reducing duplication.
- **Covers High-Value Projects:** Tracks projects costing ₹150 crore and above across 17 Ministries.
- **Real-Time Monitoring:** Ministries and implementing agencies update progress digitally.
- **Reduced Manual Entry:** Around 60% of projects in major sectors (Roads, Petroleum, Coal) auto-updated.

## Taxpayer Base Expansion in India

- Income Tax data show sustained growth in India's direct taxpayer base over the last decade.

### Taxpayer Base Trends

- Base Expansion:** Total taxpayers increased from 5.26 crore (AY 2013–14) to 12.13 crore (AY 2024–25).
- Growth Pace:** Taxpayer base recorded a CAGR of ~7.89%, indicating structural compliance growth.
- Individual Dominance:** Individual taxpayers rose from 4.96 crore → 11.61 crore, growing at 8% CAGR.
- Pandemic Dip:** AY 2020–21 saw ~9% contraction, reflecting COVID-linked economic disruptions.
- Non-Individual Growth:** Expanded from 0.29 crore → 0.48 crore, with steady ~5% CAGR.
- Efficiency Gain:** Cost of collecting direct taxes declined sharply from 1.36% (FY 2000–01) to 0.41% (FY 2024–25, provisional).

### Drivers of Taxpayer Base Expansion

- Digital Filing Systems:** Expansion of online return filing reduced compliance costs & widened accessibility. E.g. Income Tax e-Filing Portal enables paperless submissions & faster processing.
- Prefilled Returns:** Auto-population of taxpayer data using TDS and financial transaction records improved accuracy and encouraged voluntary compliance.
- Faceless Assessments:** Elimination of physical interface reduced discretion & strengthened taxpayer confidence in assessment processes. E.g., Faceless Assessment Scheme & Faceless Appeal mechanisms.
- Economic Formalisation:** Growth of digitised transactions & tax-linked systems increased traceability of income and broadened tax participation. E.g., GST regime, & UPI-driven digital economy expansion.

## Corruption Perceptions Index (CPI) 2025

- Transparency International has released the 2025 Corruption Perceptions Index (CPI).
- The CPI is the leading global metric for measuring perceived public-sector corruption.

- It evaluates 182 countries and territories on a scale from 0 (highly corrupt) to 100 (very clean).
- The index aggregates data from 13 external sources and surveys by institutions such as World Bank.

### Key Highlights of CPI 2025

- **Global Average:** The global average score fell to a historic low of 42, with over two-thirds of assessed nations scoring below 50.
- **Top Performers:** Denmark (89) retained the top spot for the eighth consecutive year, followed by Finland (88) and Singapore (84).
- **Bottom Performers:** South Sudan and Somalia tied for the lowest rank, making them the most corrupt countries globally.
- **Global Trend:** Established democracies such as the United States, the United Kingdom, and Canada recorded declines in scores to historic lows due to weakened institutional checks.
- **Regional Stagnation:** The Asia-Pacific region showed stagnation in anti-corruption efforts and rising public dissatisfaction with unaccountable leadership.
- **India's Position:** India improved its ranking by five positions to 91, though its score remains below average at 39.
- **Key Concerns:** The report flagged high risks for journalists reporting on corruption in India, along with persistent bureaucratic opacity and weak oversight.

### Technology Services – Reimagination Ahead Roadmap

- NITI Aayog's Frontier Tech Hub has released a 10-year roadmap titled Technology Services – Reimagination Ahead to scale India's B tech services sector to – 850B by 2035.

#### What is It?

- The roadmap is a strategic 10-year blueprint prepared by the **NITI Frontier Tech Hub**, aimed at transforming India's technology services sector from a labour-arbitrage model to an AI-native, IP-led, and platform-driven ecosystem.

#### It envisions:

- Scaling the sector from billion to – 850 billion by 2035
- Moving from back-office outsourcing to global AI system architecture leadership

- Strengthening India's position in next-generation digital infrastructure and AI services
- The roadmap highlights AI as a structural inflection point, shifting value creation toward outcome-oriented services and proprietary innovation.

#### **Five Priority Growth Levers Identified**

- **Agentic AI:** Focus on autonomous AI systems capable of decision-making and task execution across industries.
- **Software & Products:** Transition from service-only exports to IP-driven software products and SaaS platforms.
- **Digital Infrastructure:** Strengthening cloud, data centres, semiconductor ecosystems, and AI compute capacity.
- **Innovation-led Engineering:** Scaling high-value R&D, chip design, embedded systems, and deep-tech engineering services.
- **India-for-India Solutions:** Building AI solutions tailored for domestic needs (governance, healthcare, agriculture), which can later scale globally.

### **Consumer Price Index (CPI) Base 2024=100**

- MoSPI has released the first CPI (Base 2024=100) press note on 12 Feb 2026, reporting Jan 2026 retail inflation at 2.75%.

#### **Consumer Price Index (CPI):**

- Consumer Price Index (CPI) measures the change in retail prices of a fixed basket of goods and services consumed by households, and is India's headline retail inflation indicator (YoY % change in CPI).
- **Published by:** Ministry of Statistics & Programme Implementation (MoSPI) through NSO (National Statistical Office). Price collection is done by **the Field Operations Division (NSO)**.

#### **Base year:**

- New base: 2024 = 100
- Earlier base: 2012 = 100
- **Weights source:** Household Consumption Expenditure Survey (HCES) 2023–24.

**Methods used:**

- **Jevons index (at item level):** For each item, MoSPI compares prices in many markets and takes an average based on percentage change (ratio), so one very high/low price doesn't distort too much.
- **Young / Modified Laspeyres (for bigger groups):** After finding price changes for many items, it adds them up using fixed spending weights (how much households typically spend on each item). So, items you spend more on (like food/rent) influence CPI more than items you rarely buy.
- **Combined CPI (India total):** India's final CPI is made by mixing Rural CPI and Urban CPI in proportion to their share in total consumption (weights). So if rural consumption weight is higher, rural CPI influences the all-India CPI more (and vice-versa).

**Key features of CPI 2024 series**

- **New international system (12 categories instead of 6):** Earlier, prices were grouped into 6 big categories. Now they are divided into 12 clearer categories, like health, transport, education, communication, etc.
- **More items included (358 instead of 299):** The price basket now covers more products and services people actually use today, so inflation reflects real life better.
- **More focus on services:** Earlier, services (like education, transport, OTT, healthcare) were fewer. Now more services are included, because people spend more on services today than before.
- **Detailed data every month:** Now inflation data is available not just for India overall, but also for each state, and separately for rural and urban areas, every month.
- **Modern price collection (using tablets):** Earlier, data was written on paper. Now officers use tablets (digital devices) to collect prices.
- **Online prices included:** Since many people shop online now, prices from online platforms (like OTT subscriptions or flight tickets) are also included.
- **Official government data used for some services:** For things like rail fares, postal charges, petrol, diesel, LPG, official government price data is used directly to ensure accuracy.
- The new series introduces rural house rent for the first time, significantly improving the coverage of rural housing consumption.

**RBI Draft Guidelines for Loan Recovery Agents**

- The Reserve Bank of India (RBI) has issued comprehensive draft guidelines to strictly regulate the

conduct of bank employees and loan recovery agents.

- **Scope:** The directions apply to all Commercial Banks (including RRBs and Small Finance Banks) and are proposed to take effect from July 1, 2026.

#### Key Highlights of the Draft Guidelines

- **Civil Conduct:** Bank employees and agents must interact strictly in a civil manner; it prohibits harsh recovery practices like abusive language or threats.
- **Contact Restrictions:** Recovery calls and visits are restricted to the 8:00 AM to 7:00 PM window; agents are prohibited from calling during occasions such as bereavement or weddings.
- **Authorisation Protocols:** Banks must notify borrowers in writing before assigning an agent, who must carry an authorisation letter and an ID card during visits.
- **Agent Certification:** Recovery agents must complete ethical debt collection training and obtain certification from the Indian Institute of Banking and Finance (IIBF).
- **Privacy Protection:** Agents should respect the borrower's Right to Privacy by communicating only with the borrower or the guarantor, and not with family or colleagues.
- **Grievance Redressal:** Recovery cases can be forwarded by the banks to an agent only after resolving pending grievances of the borrower.
- **Incentive Reform:** Banks are to ensure that their incentive structures do not induce or encourage unethical recovery practices.

### 40 Years of Agricultural and Processed Food Products Export Development Authority (APEDA)

- Union Minister extended greetings to the Agricultural and Processed Food Products Export Development Authority (APEDA) on its 40th establishment day.

#### Agricultural and Processed Food Products Export Development Authority (APEDA):

- APEDA is a **statutory** export promotion authority established under the **APEDA Act, 1985** (Act 2 of 1986) to promote the export of agricultural and processed food products from India. It replaced the **Processed Food Export Promotion Council (PFEPCC)**.

#### Established In

- **Act passed:** December 1985

- **Came into effect:** 13 February 1986
- **Administrative Ministry:** Functions under the Ministry of Commerce & Industry, Government of India.

#### Key Functions of APEDA

- **Export Promotion & Market Development:** Provides financial assistance, market intelligence, and global branding support to boost agri-exports.
- **Registration of Exporters (RCMC):** Registers exporters of scheduled products and ensures compliance with export norms.
- **Quality Standards & Certification:** Fixes export standards and monitors quality, including inspection of meat and processed products.
- **Packaging & Value Addition Support:** Promotes improved packaging, labeling, and value-added processing to enhance global competitiveness.
- **National Programme for Organic Production (NPOP):** Acts as Secretariat for certification and regulation of organic exports.
- **Data Collection & Trade Statistics:** Collects and publishes export data to support policy formulation and trade planning.
- **Monitoring Imports of Sugar:** Entrusted with oversight of sugar imports.
- **Wide Product Coverage:** Includes fruits, vegetables, basmati rice, meat, dairy, cereals, honey, guar gum, floriculture, herbal plants, cashew, beverages, and more.

#### Significance of APEDA

- **Boost to Agricultural Exports:** India's agricultural exports have crossed \$50 billion in recent years, with APEDA playing a pivotal facilitative role.
- **Farmer Income Enhancement:** By opening new international markets, APEDA strengthens rural livelihoods and aligns with the goal of doubling farmers' income.

#### Science-Based Targets Initiative (SBTi)

- The climate action organisation, the Science Based Targets Initiative (SBTi), seeks to expand its presence in India's private sector.
- **About SBTi:** SBTi defines and promotes best practices for emissions reduction and for net-zero targets aligned with Paris Agreement, for businesses and financial institutions.
- **Partnership:** Founded in 2015 as a joint initiative of CDP, the United Nations Global Compact,

World Resources Institute (WRI), and WWF, it is now an independent UK charity.

- **Core Objective:** It aims to mobilise the private sector for urgent climate action by independently assessing and validating corporate emissions targets.
- **Mitigation Hierarchy:** The initiative requires companies to adhere to a strict hierarchy that prioritises deep emission cuts over carbon offsetting.
- **Near-Term Targets:** Participating companies must set initial 5- to 10-year goals to reduce their carbon footprint rapidly.
- **Net-Zero Standard:** To formally claim “Net-Zero,” a company must reduce its absolute emissions by at least 90% by 2050.
- **Residual Neutralisation:** Only the final residual emissions (approximately 10%) can be neutralised through permanent carbon removal technologies.
- **Assessment Criteria:** To receive validation, companies must account for their carbon footprint across three specific scopes – direct emissions, purchased energy, and value chain emissions.
- **Corporate Advantage:** Commitment to SBTi targets enhances brand reputation among global investors and future-proofs operations against upcoming climate regulations.
- **Global Adoption:** Over 11,000 companies and financial institutions are engaged with SBTi, representing nearly 40% of global market capitalisation and approximately 30% of GHG emissions.
- **Indian Context:** While India leads emerging economies in engagement, fewer than 500 Indian companies are committed or validated.

## Fertiliser Sector Regulation in India

- Uttar Pradesh Govt.'s recent ban on the sale of **non-subsidised speciality nutrients** by authorised fertiliser dealers has sparked a debate about India's fertiliser regulatory regime.

### Current Regulatory Framework

- **Statutory Pricing:** The Central Government exercises absolute control by legally fixing the pan-India MRP of urea at ₹242 per 45 kg bag (exclusive of neem-coating charges and taxes).
- **Administrative Oversight:** Under the Nutrient-Based Subsidy (NBS), the government enforces “Reasonableness of MRP” guidelines on Phosphatic and Potassic (P&K) fertilisers to ensure affordability.
- **Logistical Command:** The Fertiliser Movement Control Order 1973 empowers the Department of Fertilisers (DoF) to determine rail “rake” destinations and state-wise equitable supply plans.

- **Branding Uniformity:** The Pradhan Mantri Bhartiya Jan Urvarak Pariyojana (PMBJP) mandates a single brand name, "Bharat", for all subsidised fertilisers.
- **Digital Accountability:** The Direct Benefit Transfer (DBT) system releases 100% subsidy to companies only after Aadhaar-authenticated sales through Point of Sale (PoS) devices.
- **Market Restrictions:** Recent directives in Uttar Pradesh prohibit authorised urea suppliers from selling non-subsidised speciality nutrients to prevent the forced "tagging" of premium products.

### Arguments in Favour of Fertiliser Controls

- **Inflation Insulation:** Fixed urea pricing shields the domestic cost of cultivation and the MSP regime from global volatility in natural gas and phosphoric acid prices.
- **Equitable Distribution:** Centralised "rake" allocation ensures adequate supply in remote or logistically unviable districts that a purely profit-driven market might underserve.
- **Ant-Tagging Safeguard:** Regulatory restrictions on "tied-in" sales protect marginal farmers from the coercive bundling of essential urea with high-margin, non-subsidised nutrients.
- **Leakage Reduction:** Aadhaar-linked PoS verification curbs the diversion of agricultural urea to industrial sectors such as plywood, resins, and synthetic milk.
- **Quality Standardisation:** Uniform "Bharat" branding and stringent central oversight reduce the proliferation of spurious or sub-standard fertiliser mixtures in local markets.

### Arguments Against Fertiliser Controls

- **Nutrient Imbalance:** The disproportionate urea subsidy has skewed the national **N:P:K ratio to 11:4:1 against the ideal 4:2:1**, accelerating soil fatigue and degrading long-term fertility.
- **Innovation Suppression:** State-level prohibitions on stocking unsubsidised speciality nutrients at subsidised fertiliser outlets discourage private R&D in precision farming tools like water-soluble NPKs.
- **Brand Dilution:** The "Bharat" brand mandate converts differentiated products into generic commodities, removing the incentive for firms to invest in extension services or localised soil testing.
- **Regulatory Uncertainty:** Sudden, retrospective prohibitions on legally approved non-subsidised products signal unpredictability and deter private investment.
- **Liquidity Crunch:** The post-sale subsidy reimbursement model ties up working capital for extended periods, making firm solvency dependent on government disbursement cycles.

### Way Forward

- **NBS Integration:** Gradually transition urea into the Nutrient-Based Subsidy (NBS) framework to correct nitrogen bias and restore balanced fertilisation.
- **DBT 2.0 Reform:** Shift from “post-sale company subsidy” to direct-to-farmer bank transfers to enable market-based pricing while preserving purchasing power.
- **Precision-Linked Subsidy:** Integrate **Soil Health Card** data with the PoS system to discourage wasteful over-application.
- **Nano & Green Shift:** Scale up Green Ammonia and Nano-fertilisers to reduce the fiscal burden of LNG imports and the logistical “rake” costs of bulk urea.
- **Speciality Liberalisation:** De-link non-subsidised speciality nutrients from the restrictive Essential Commodities Act to foster precision-farming innovation.

## Aerospace Manufacturing in India

- Despite record growth and strategic opportunities, a significant engineering skills gap could hinder India's aerospace manufacturing ambitions.

### India's Aerospace Manufacturing Landscape

- **Market Position:** India is the world's third-largest aviation market, with a domestic requirement of ~3,300 new aircraft by 2044.
- **Component Manufacturing:** The market for aerospace parts manufacturing in India is expected to reach \$21.5 billion by 2030.
- **MRO Sector:** The Maintenance, Repair, and Overhaul (MRO) sector is projected to be a \$4 billion industry by 2031, transitioning from a service-import model to a domestic service hub.
- **Private Assembly:** The Tata-Airbus consortium established India's first private Final Assembly Line (FAL) in Vadodara to manufacture 40 C-295 aircraft.

### Govt. Initiatives for Aerospace Manufacturing

- **Indigenisation List:** The Ministry of Defence issued five Positive Indigenisation Lists, comprising over 5,000 items, to embargo imports and ensure a domestic market.
- **Infrastructure Support:** Two dedicated Defence Industrial Corridors in Uttar Pradesh and Tamil Nadu offer subsidised land and “plug-and-play” infrastructure for aviation units.
- **Fiscal Incentives:** The Centre reduced the GST rate on MRO services from 18% to 5% and aligned place-of-supply rules to make Indian MROs globally competitive.

- **Investment Policy:** The government now permits up to 74% FDI in defence manufacturing under the automatic route to encourage foreign OEMs to set up manufacturing units.
- **Digital Interface:** The **SRIJAN Portal** lists aviation items previously imported by Defence PSUs, helping private industries identify parts for reverse engineering.
- **Procurement Norms:** The Defence Acquisition Procedure (DAP) and Public Procurement orders mandate domestic manufacturing clauses in major procurements.

## SHANTI Act & Nuclear Liability Debate

- SHANTI Act, passed in Winter Session, opens nuclear sector to private participation and modifies liability provisions under **Civil Liability for Nuclear Damage Act (CLNDA)**.
- Liability dilution combined with private entry may disproportionately favour corporate profitability over systemic risk allocation.

### Key Features of the SHANTI Act

- **Private Sector Entry:** Ends the Union government's exclusive control by permitting private entities to operate nuclear power plants, marking a major policy shift.
- **Supplier Indemnity:** Channels liability primarily to operators by removing the "right of recourse," preventing operators from suing suppliers for defective equipment.
- **Liability Caps:** Operator liability capped between ₹100 crore – ₹3,000 crore, while total accident liability capped at 300 million SDR (~₹3,900 crore).
- **Clause 46 Omission:** Omission of Clause 46 of the Civil Liability for Nuclear Damage Act (CLNDA), 2010 removes victims' ability to seek remedies under other civil or criminal laws.
- **Regulatory Framework:** The Act provides a legislative basis for the Atomic Energy Regulatory Board (AERB) but links member selection to a committee constituted by the Atomic Energy Commission.

### Liability & Safety Concerns:

#### Supplier Indemnity Debate

- **Design Defect Evidence:** Major nuclear accidents globally have been linked to design flaws. E.g. Fukushima (containment weakness), Chernobyl (reactor instability), Three Mile Island (control room failures).
- **Safety Incentive Distortion:** Supplier indemnity weakens accountability pressures that normally

enforce stringent quality assurance and engineering safeguards.

- **Risk Transfer Mechanism:** Liability burden effectively shifts from suppliers → operators → state/victims, diluting the polluter-pays principle.

#### Liability Cap vs Potential Damage

- **Scale Mismatch:** SHANTI Act caps total liability at ~₹3,900 crore, while Fukushima damages are estimated at ~₹46 lakh crore.
- **Compensation Deficit:** Even the Convention on Supplementary Compensation (CSC) pools are unlikely to cover >1% of catastrophic loss scenarios.
- **Absolute Liability Dilution:** Indemnification for “grave natural disasters” softens India’s traditionally strict hazardous industry liability framework.

#### Way Forward

- **Liability Rebalancing:** Restore calibrated supplier accountability to preserve safety incentives. E.g., Hybrid liability frameworks used in select OECD nuclear regimes.
- **Regulatory Independence:** Strengthen AERB autonomy to avoid regulatory capture risks. E.g., Independent nuclear regulators in the US (NRC) & France (ASN).
- **Safety Investment Mandate:** Enforce stricter plant resilience and multi-hazard disaster preparedness requirements for nuclear installations. E.g., Post-Fukushima global safety upgrades.

#### Atomic Energy Regulatory Board (AERB)

- **Establishment:** Constituted in 1983 under the Atomic Energy Act 1962, to oversee nuclear safety.
- **Licensing Function:** Grants approvals for the operation and decommissioning of nuclear installations.
- **Institutional Position:** Functions under the Department of Atomic Energy (DAE).

#### Atomic Energy Commission (AEC)

- **Establishment:** Set up in 1948 to direct India’s nuclear policy and programme development.
- **Policy Authority:** Responsible for strategic planning, research and nuclear energy governance.
- **Administrative Control:** Exercises oversight over institutions like BARC, NPCIL, and AERB.
- **Chairmanship:** Headed by the Secretary, Department of Atomic Energy (DAE).

## National Call of BIRAC-RDI Fund announced under RDI Initiative

- First National Call of ₹2,000 Crore BIRAC-RDI Fund was announced under ₹1 Lakh Crore Research, Development, and Innovation (RDI) Initiative to boost Biotech Sector.

### About BIRAC-RDI Fund

- Overview: Launched in November 2025 under the **Anusandhan National Research Foundation (ANRF)**, anchored by the Department of Science & Technology (DST).

### Key Features & Focus Areas:

- **Aim:** To bridge the gap between laboratory research and industrial-scale manufacturing ("Lab-to-Industry").
- It supports technologies Technology Readiness Level (TRL) 4 and above through a mix of equity, convertible instruments, and long-term debt.
- **Fund Manager:** The Biotechnology Industry Research Assistance Council (BIRAC)
- **Sectors:** It complements the BioE3 Policy and targets next-generation products in Biopharma, Bio-industrial manufacturing, Bioenergy, etc.

### About RDI (Research, Development, and Innovation) Scheme

- Under the aegis of the Department of Science and Technology (DST), Government of India, and the Anusandhan National Research Foundation (ANRF).
- **Financial Outlay:** ₹1 lakh crore over six years, including ₹20,000 crore in FY 2025-26.

### Objectives:

- Encouraging Private Sector Involvement: in cutting-edge research and innovation.
- Promoting Strategic Technologies such as deep tech, biotech, AI, etc.
- Fostering Self-Reliance and Economic Security.
- **India's Bioeconomy Sector**
- India's bioeconomy has grown from \$10 billion in 2014 to \$165.7 billion in 2024, with a target of \$300 billion by 2030.

**Key Initiatives:**

- **BioE3 Policy (Biotechnology for Economy, Environment, and Employment):** Aims to transform India into a global biotech powerhouse by fostering high-performance biomanufacturing.
- **National Biopharma Mission (NBM):** To boost India's capabilities in biopharmaceuticals, vaccines, biosimilars, medical devices, and diagnostics by fostering industry- academia collaboration
- **Biotech-KISAN (Biotech-Krishi Innovation Science Application Network):** Scientist-farmer partnership programme to empower farmers through agricultural innovation and scientific interventions.

**Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi (PM-DAKSH) Yojana**

- Data released in Lok Sabha revealed that less than half of the students trained under PM-DAKSH scheme between 2021 and 2024 were placed.
- Institutes must provide employment to 70% of trainees from Short Term Training Courses, or forfeit 30% of the training cost per candidate.

**About PM DAKSH (2020-21)**

- **Type:** Central Sector Scheme
- **Aim:** To provide free of cost skills through quality institutions so that candidates from its target group can find employment.
- **Target group:** SC, OBC, Economically Weaker Sections (EWS), and De-notified Tribes Safai Karamcharis including waste pickers, Transgenders.

**Eligibility**

- **Age Criterion:** 18-45 years
- **OBC and EWS:** Annual income family below Rs.3 lakh.
- Note: It has been merged with the Pradhan Mantri Kaushal Vikas Yojana of Ministry of Skill Development and Entrepreneurship.

**UNEP FI Launched Impact Centre for Holistic Impact Management**

- The UNEP Finance Initiative (UNEP FI) launched the Impact Centre to consolidate its “SDGs & Impact” workstream into a single, dedicated centre of expertise.
- **Strategic Role:** The centre serves as a centralised hub to help financial institutions align with sustainability standards.
- UNEP FI is a Geneva-based global partnership established in 1992 between UNEP and the private financial sector to integrate sustainability into financial market practices.

### About UNEP FI Impact Centre

- The UNEP FI Impact Centre provides financial institutions with standardised tools and methodologies to assess the environmental, social, and economic impacts of their lending and investment activities.
- **Core Objective:** It mainstreams holistic impact management to align private capital with the SDGs and the Paris Agreement.
- The Impact Centre operates through five primary workstreams –
- **Impact Methodology:** Global framework for portfolio-level sustainability impact assessment.
- **Interoperability:** Alignment of tools with global reporting standards like EU ESRS, IFRS, etc.
- **Implementation Support:** Assistance and capacity-building workshops for member institutions.
- **Advisory Services:** Integration of impact management into core business operations.
- **Consensus Building:** Harmonisation of global practices through the Impact Management Platform.
- Centre manages a suite of resources designed for practical use by financial practitioners
- **Impact Protocol:** Step-by-step guide to analyse and manage portfolio sustainability impacts.
- **Impact Radar:** Classification of themes across environmental, social, & economic pillars.
- **Impact Mappings:** Databases linking economic activities to their specific sustainability footprints.
- **Portfolio Analysis Tools:** Digital tools to identify portfolio impact concentrations.
- **Indicator Library:** A repository of metrics for target-setting and performance tracking.

### Report on Digital Payments after 10 years of UPI Launch

- Department for Financial Services, Ministry of Finance has released Report titled “Socio-Economic Impact Analysis of Incentive Scheme for Promotion of RuPay Debit Card and low-value BHIM-UPI Transactions (P2M)”.

### Key Highlights of the Report

- **Dominance of UPI:** UPI is the most preferred transaction mode (57%), surpassing cash (38%).
- **Global Leadership:** India accounts for approximately half of the world's instant payment transactions (49%).
- **Merchant Integration:** UPI adoption among merchants stands at 94%, driven by faster transactions and improved record-keeping.
- **Economic Impact:** UPI contributed an estimated \$16.2 billion to India's GDP in 2022 through cost savings and efficiency.
- **International Expansion:** UPI and RuPay are expanding internationally, with UPI live in eight countries, including the **UAE, Singapore, Bhutan, Nepal, Sri Lanka, France, Qatar and Mauritius.**

### Recommendations

- **Expand Merchant Acceptance:** Extend support for QR and soundbox deployment in Tier 3-6 and subsidize POS terminals.
- **Offline Capability:** Scale UPI Lite and 123Pay to serve low-bandwidth zones effectively.
- **Financial Inclusion and Sustainability:** Integrate UPI with Direct Benefit Transfer (DBT) programs for government subsidies.
- Launch digital literacy programs targeting female entrepreneurs in rural areas.
- **Other:** Deploy AI-driven anomaly detection and real-time alerts to prevent fraud; Enable scheduled payments for recurring bills in education, healthcare; etc.

### Challenges

- **Network and Infrastructure Issue:** Poor network and internet access remains a primary issue.
- **Cyber Threats:** Fear of data theft, online financial frauds etc.
- **Lack of Digital Literacy:** E.g. Advanced features like UPI Lite, 123Pay, and AutoPay have lower adoption.

### PM RAHAT Scheme

- The Government has launched PM RAHAT (Road Accident Victim Hospitalization and Assured Treatment) to provide cashless treatment up to ₹1.5 lakh for road accident victims during the Golden Hour.

#### PM RAHAT Scheme:

- PM RAHAT is a national cashless emergency treatment scheme providing financial coverage up to ₹1.5 lakh per road accident victim for 7 days from the date of accident, with a focus on timely Golden Hour intervention.

#### Organisations involved:

- **Ministry of Road Transport and Highways (MoRTH):** Policy oversight; integration via Electronic Detailed Accident Report (eDAR) platform.
- **National Health Authority (NHA):** Claims processing through Transaction Management System (TMS 2.0).

#### Aim:

- To ensure no life is lost due to lack of immediate medical assistance after road accidents.
- To strengthen India's structured emergency response ecosystem.
- To provide financial certainty to hospitals, encouraging uninterrupted treatment.

#### Key features

- **Cashless Coverage:** Up to ₹1.5 lakh per victim for 7 days from accident date.
- **Golden Hour Focus:** Integration with 112 helpline for rapid hospital access.
- **Stabilization Window:** 24 hours (non-life-threatening) and 48 hours (life-threatening cases).
- **Digital Integration:** Seamless linkage between eDAR (MoRTH) and TMS 2.0 (NHA) for end-to-end claim management.
- **Police Authentication:** Mandatory confirmation within 24–48 hours to ensure accountability.
- **Funding Mechanism:** Through Motor Vehicle Accident Fund (MVAFF), insured cases via insurance contributions, uninsured/Hit & Run via budgetary support.
- **Time-bound Payment:** Claims approved by State Health Authorities paid within 10 days.
- **Grievance Redressal:** District-level oversight by Road Safety Committee chaired by District Collector/DM.

#### Significance:-

- Addresses India's high road accident fatality burden, where nearly 50% of deaths are preventable with timely treatment.
- Strengthens the Good Samaritan (Rah-Veer) ecosystem by enabling immediate hospital coordination.

- Enhances digital governance in healthcare and road safety through integrated platforms.

## Startup India Fund of Funds 2.0

- The Union Cabinet has approved the Startup India Fund of Funds 2.0 (FoF 2.0) with a ₹10,000 crore corpus to mobilise venture capital for India's startup ecosystem.

### Startup India Fund of Funds 2.0:

- Startup India FoF 2.0 is a ₹10,000 crore government-backed fund designed to mobilise long-term domestic capital by investing in **Alternative Investment Funds (AIFs)**, which in turn invest in startups.

### Established in:

- Approved in 2026 by the Union Cabinet.
- Launched under the broader Startup India initiative.
- Builds on the earlier Fund of Funds for Startups (FFS 1.0) launched in 2016.

### Aim:

- To accelerate the next phase of India's startup growth.
- To strengthen the domestic venture capital ecosystem.
- To support innovation-led, technology-driven entrepreneurship.
- To reduce early-stage funding gaps and high-risk capital constraints.

### Key Features:

- **₹10,000 crore Corpus:** Dedicated government-backed capital to catalyse venture funding.
- **Targeted Segmented Funding:** Focus on deep-tech and innovative manufacturing sectors.
- **Support to Early-Growth Startups:** Reduces early-stage failures due to capital shortages.
- **Pan-India Investment Reach:** Encourages funding beyond major metro cities.
- **High-Risk Capital Gap Bridging:** Channels funds to priority and strategic sectors.
- **Strengthening Domestic VC Base:** Supports especially smaller AIFs to deepen local capital markets.
- **FoF Model Structure:** Invests in SEBI-registered AIFs rather than directly in startups.

### Significance:

- Builds on FFS 1.0, which committed ₹10,000 crore to 145 AIFs investing ₹25,500+ crore in 1,370+ startups.

- Promotes deep-tech capabilities in AI, robotics, biotech, clean-tech and advanced manufacturing.
- Enhances India's economic resilience and innovation competitiveness.

## Union Cabinet Approves Urban Challenge Fund (UCF) Scheme

- The Union Cabinet approved the Urban Challenge Fund (UCF) to transform the financing ecosystem of urban infrastructure in India.

### About Urban Challenge Fund (UCF)

- The Urban Challenge Fund (UCF) is a ₹1 lakh crore **Centrally Sponsored Scheme** designed to institutionalise market-linked financing for urban development.
- **Core Objective:** It aims to transition cities from grant dependence to fiscal self-sufficiency through market-linked infrastructure development.
- **Nodal Ministry:** The Ministry of Housing and Urban Affairs (MoHUA) is responsible for overall policy formulation and funding.
- **Monitoring Mechanism:** A dedicated Project Management Unit (PMU) under MoHUA tracks fund disbursements and reform milestones via a unified digital portal.
- **Budget Link:** The fund operationalises the Union Budget 2025-26 announcement to develop "Cities as Growth Hubs" through a challenge mode.
- **Outcome Focus:** Funding is strictly contingent on reaching reform milestones and third-party verification of outcomes, not just construction targets.
- **Timeline:** The scheme operates from FY 2025-26 to FY 2030-31, with a project implementation window extendable until FY 2033-34.
- **Selection Process:** Projects are selected through a competitive "Challenge Mode" based on their financial viability and the city's reform readiness.

### Financing Mechanism

- **Central Grant:** The Central Government provides up to 25% of the project cost as catalytic assistance.
- **Market Mobilisation:** Urban Local Bodies (ULBs) must mobilise 50% through non-budgetary sources such as Municipal Bonds or commercial loans.
- **State Share:** The remaining 25% is contributed by the State Government or generated through the ULB's internal revenue.

### Eligibility Criteria

- **Population:** The fund covers all cities with a population of 10 lakh or more based on 2025 estimates.
- **Strategic Cities:** It includes all State and Union Territory capitals and major industrial cities with a population above 1 lakh.
- **Financial Health:** Participating ULBs must possess audited financial statements for the last three years.
- **Creditworthiness:** Cities must maintain a credit rating of 'BBB-' or higher to access the market-linked financing component.

### Credit Repayment Guarantee Scheme

- **Component Corpus:** A ₹5,000 crore corpus has been set aside to improve the creditworthiness of Hilly, North-Eastern, and smaller ULBs with populations under 1 lakh.
- **Graded Guarantee:** The Centre guarantees up to ₹7 crore or 70% of the loan amount (whichever is lower) for first-time borrowers; for subsequent loans, the guarantee is 50% or ₹7 crore.
- **Market Entry:** It aims to de-risk lending, enabling smaller municipalities to access formal credit markets for projects with a minimum cost of ₹20 crore initially and ₹28 crore thereafter.

### Key Verticals

- **Strategic Mandate:** The fund channels investments into three priority verticals to ensure sustainable urban growth and financial viability.
- **Growth Hubs:** Development of economic corridors and nodes to enhance regional competitiveness and urban mobility.
- **Creative Redevelopment:** Revitalisation of central business districts and heritage cores through climate-resilient brownfield regeneration.
- **Water Sanitation:** Financing of Bankable infrastructure projects for water supply, sewerage, stormwater, and solid waste remediation.

### Need to reform Global Trading System: WTO Chief

- While reforms should keep pace with geopolitical tensions and rapid technological change, WTO chief urged the importance of multilateral cooperation to avoid chaos.

### Key Issues faced by Global Trading System

- **Dispute Resolution:** World Trade Organization's **Appellate Body**, keystone of organization's two-tier dispute settlement mechanism has been immobilized since December 2019,
- **Unresolved Issues with WTO:** Several crucial issues remained unresolved including trade on agricultural goods, subsidies, and conditions of application of **Special and Differential (S&D) treatment** to large emerging economies, stalled of **Doha Development Agenda, etc.**
- **Geopolitical Shifts and Protectionist Patterns:** E.g., USA's reciprocal tariff, escalating tariff war, emphasis on bilateral trade agreements.
- **Other :** New set of concepts on data privacy, cross-border data flows, and taxation of digital services, climate change, Supply Chain Vulnerabilities etc.

### Ways to Strengthen Global Trading System

- Reaffirm multilateralism as foundation of global trade: Acknowledging its historical including trade liberalization under WTO.
- Responsible use of plurilateral agreements: Where consensus of all WTO members is not feasible along with upholding multilateral systems.
- Recognize new Anthropocene context: Aligning industrial policies/international trade with commitments to combat climate change; greater interoperability in digital sphere, etc.
- Restore a fully functioning dispute settlement system: Offering dispute resolution in a timely and efficient manner.

#### World Trade Organization (WTO)

- **Genesis:** 1995 post Marrakesh Agreement.
- Successor to General Agreement on Tariffs and Trade (GATT).
- 1986-94 Uruguay Round negotiations led to its creation.
- **Members:** 166 including India.
- **Headquarters:** Geneva, Switzerland.
- **Decisions:** Based on consensus.

- The Government of India launched a CBDC-based Digital Food Currency pilot in Gujarat for the Public Distribution System (PDS).
- It is a programmable digital coupon within India's Central Bank Digital Currency (e-Rupee) framework.
- **Regulator:** The Reserve Bank of India (RBI) regulates and issues the Digital Rupee (₹) for coupons.
- **Implementing Agency:** The Ministry of Consumer Affairs, Food and Public Distribution coordinates execution with the National Payments Corporation of India (NPCI) and State Governments.
- These coupons are "locked" for exclusive use at authorised Fair Price Shops (FPS) and cannot be converted into cash or used for non-essential purchases.
- The system credits coupons directly to beneficiaries' mobile wallets to ensure that they are used exclusively for foodgrains.
- **Transaction Method:** Beneficiaries claim entitlements by scanning a merchant's QR code at the FPS.
- **Validity:** The coupons typically have a fixed timeframe (e.g., 30 days) to prevent unspent subsidy accumulation and to identify inactive accounts.
- **Key Benefits:** The model eliminates dependency on unreliable biometric e-POS machines and enables real-time digital tracking to prevent foodgrain diversion.

*India's CBDC is a sovereign digital form of fiat money; it is legal tender issued by the RBI and exchangeable at par (one-to-one) with physical currency.*

### India's first Twin Tube Underwater Tunnel Project

- The Cabinet Committee on Economic Affairs (CCEA) has approved the construction of the **Gohpur-Numaligarh road-cum-rail tunnel**.
- This is India's first underwater twin-tube road-cum-rail tunnel and the second of its kind globally.
- It connects Gohpur (North Bank) & Numaligarh (South Bank) in Assam under the Brahmaputra River.
- **Development:** The project is being implemented by the Ministry of Road Transport & Highways (MoRTH) in collaboration with the Ministry of Railways.

- **Dimensions:** The entire project spans 33.7 km, featuring a 15.79 km twin-tube tunnel located directly beneath the riverbed.
- **Design:** It is a twin-tube tunnel design; each tube carries a 2-lane road (total 4 lanes), with provision for railway infrastructure in one tube.
- **Route Integration:** The corridor integrates National Highway 15 and National Highway 715, connecting the Rangia-Murkongselek rail line (North) with the Furkating-Mariani line (South).
- **Technology:** The construction employs Tunnel Boring Machines (TBM) to withstand high siltation and water flow.
- **Significance:** It marks a milestone under the Act East Policy, enhancing multi-modal connectivity and providing an all-weather corridor for rapid troop movement in the sensitive border region.

### India-AI Impact Summit 2026

- The India-AI Impact Summit 2026 is underway at Bharat Mandapam, New Delhi.
- This event represents the first global AI summit in the Global South, positioning India as a voice for developing nations in shaping AI norms.
- It is being organised by the Ministry of Electronics and Information Technology (MeitY).
- **Participation:** The summit brings together over 100 countries, including over 20 Heads of State, 60 Ministers, and global technology leaders.
- **Objective:** To advance an impact-oriented, people-centric approach to Artificial Intelligence, emphasising measurable social and economic outcomes.
- **Guiding Principles:** It is structured around “Three Sutras”—**People, Planet, and Progress**—which set the ethical boundaries for AI deployment.
- **Thematic Pillars:** ‘Seven Chakras’ or working groups focus on areas like Human Capital, Safe & Trusted AI, Democratizing AI Resources, and AI for Social Good.
- **Significance:** It marks a significant transition from a “Safety-First” model to an “Impact-First” approach, positioning AI as a public good to bridge the digital divide

### IndiaAI Mission 2.0

- The Union Minister for Electronics and IT announced the upcoming IndiaAI Mission 2.0 during the India AI Impact Summit.

- This second phase of the IndiaAI Mission aims to scale up Research & Development (R&D), innovation, and the diffusion of AI across sectors.
- **Compute Capacity:** The government plans to procure an additional 20,000 GPUs to strengthen the “common compute” infrastructure for startups and researchers.
- **MSME Support:** The mission aims to package AI into ready-to-use solutions for small businesses, modelled after UPI.
- **Research Focus:** It will focus on deep-tech R&D, indigenous innovation and application layers.

### IndiaAI Mission

- It is a national initiative launched by the Ministry of Electronics & Information Technology (MeitY) in 2024 to build a robust AI ecosystem by democratising access to computing power.
- **Nodal Agency:** It is implemented by the ‘IndiaAI’ Independent Business Division (IBD) of the Digital India Corporation.

### Seven Key Pillars of the Mission

1. **Compute Capacity:** Building scalable infrastructure with over 10,000 GPUs through public-private partnerships.
2. **Innovation Centre:** The IndiaAI Innovation Centre for developing indigenous Large Multimodal Models (LMMs) and domain-specific foundational models.
3. **Datasets Platform:** **AIKosh** for providing a unified access point to high-quality, non-personal datasets.
4. **Application Development:** Creating impactful AI solutions for critical sectors like healthcare, agriculture, and governance.
5. **FutureSkills:** Expanding AI courses and setting up Data and AI Labs in Tier 2 and Tier 3 cities.
6. **Startup Financing:** Providing streamlined access to risk capital and funding for deep-tech AI startups to support futuristic projects.
7. **Ethical AI:** Developing governance frameworks and guidelines to ensure safe, trusted AI deployment.

### Front-of-Package Labelling

- The Supreme Court pushes for front-of-package (FOP) labels to help consumers make healthier food choices.

- Front-of-package (FOP) labelling is a public health intervention that provides simplified, easily visible nutritional information on packaged foods, highlighting high levels of sugar, salt, and saturated fat.

### **Supreme Court Intervention and Regulatory Push**

- **FOP Directive:** Supreme Court orders the Food Safety and Standards Authority of India (FSSAI) to implement front-of-package warnings and respond within four weeks for urgent consumer protection.
- **Regulatory Oversight:** In 2025, SC formed an FSSAI expert committee for labelling reforms; by 2026, progress was inadequate, highlighting the Court's dissatisfaction with delays.

### **Rising Dietary Risks**

- **Health Imperative:** India faces rising diet-related diseases; 101 million diabetics, 136 million prediabetics, 35.5% hypertension, 39.5% abdominal obesity, 24% high cholesterol (ICMR-INDIAB, 2023).
- **Diet Link:** Excess sugar, salt, and saturated fat consumption drives non-communicable diseases.
- **Consumer Empowerment:** Front-of-package labelling enables informed food choices.
- **Disease Prevention:** Proper labelling can reduce morbidity and mortality from diet-related conditions.

### **Impact on Consumers and Industry**

- **Informed Consumer Choice:** Simplified labels allow consumers to quickly identify unhealthy foods.
- **Consumer Empowerment:** Helps reduce the prevalence of NCDs through informed dietary decisions.
- **Corporate Accountability:** Encourages manufacturers to reformulate products to meet healthier nutritional standards.

## **Systemic Institutional Failure in Urban Governance**

- The recent death of Yuvraj Mehta in Greater Noida goes beyond a mere accident, highlighting systemic failures in India's urban governance.

### **Urban Infrastructure Landscape**

- **Road Safety:** Ministry of Road Transport and Highways (MoRTH) attributes over 2,000 deaths

annually to poor engineering, often misclassified as driver negligence.

- **Economic Impact:** Poor road safety and infrastructure failures cost the Indian economy about 3.14% of GDP annually.
- **Capacity Deficit:** Municipal corporations face staff vacancies of 35% to 41%, creating critical shortages of engineers and safety inspectors.
- **Planning Gaps:** NITI Aayog notes that nearly 65% of India's urban settlements lack statutory master plans due to governance classification issues.
- **Legal Challenges:** Conviction rates under Section 304A remain historically low as the law struggles to pin liability on systemic institutional failure.

### Key Reasons Behind Systemic Failure

- **Demographic Overload:** Rapid migration drives population growth beyond infrastructure capacity, forcing cities to operate at 200-300% of their designed capacity.
- **Institutional Fragmentation:** Governance is fragmented across multiple agencies (PWD, Jal Board, Police), creating jurisdictional silos that hinder unified accountability.
- **Legal Immunity:** Agencies often evade liability for operational negligence by invoking the colonial doctrine of **Sovereign Immunity**, leaving victims uncompensated.
- **Constitutional Gaps:** The 74th Amendment remains unimplemented in spirit, as states have failed to fully devolve "Funds, Functions, and Functionaries" to local bodies.
- **Regulatory Failure:** A nexus between contractors and officials often results in the approval of substandard projects without mandatory safety audits.
- **Ethical Erosion:** A "normalisation of negligence" prioritises procedural paperwork over the moral imperative to save lives in crises.
- **Disaster Management:** The approach is reactive, with insufficient investment in preventive audits or resilience infrastructure until tragedies occur.

### Structural Reform Pathways

- **Counter-Magnet Cities:** Develop Tier-2 and Tier-3 cities (e.g., Patna and Lucknow) to ease migration pressure on overcrowded metros.
- **Legal Reform:** Enact a "Civil Liability Act" to make government agencies financially accountable, removing the sovereign immunity shield.
- **Unified Governance:** Establish a Unified Metropolitan Transport Authority (UMTA) to eliminate

inter-agency coordination failures.

- **Quality Assurance:** Institutionalise independent third-party safety audits for all infrastructure projects, aligned with ISO 39001 standards.
- **Capacity Building:** Equip urban police stations with basic disaster-response kits (e.g., drones, cutters) to enable immediate action.
- **Participatory Governance:** Legally empower Resident Welfare Associations (RWAs) to conduct social audits of local hazards.

## AI-Preneurs of India

- The **Atal Innovation Mission (AIM)** under NITI Aayog launched **AI-Preneurs** of India at the India AI Impact Summit 2026.

### What is AI-Preneurs of India?

- AI-Preneurs of India is a flagship coffee table book that documents the journeys of 45 pioneering AI startups solving real-world problems.
- It is the 7th edition of AIM's Innovations For You series and showcases India's growing deep-tech and AI startup ecosystem.

### Aim of the Initiative:

- **Showcase purpose-driven AI innovation:** Highlight startups building AI solutions aligned with national development goals and real societal needs.
- **Position India as a responsible global AI contributor:** Promote inclusive, ethical, and impact-oriented AI entrepreneurship on the global stage.

### Key Features:

- **Founder-First Storytelling:** Captures the journeys, challenges, and motivations of entrepreneurs, moving beyond pure technological narratives.
- **Sectoral Diversity:** Features AI applications across 30+ sectors, reflecting the breadth of India's innovation landscape.
- **Nationwide Representation:** Showcases startups nurtured through Atal Incubation Centres across multiple states, beyond metro hubs.
- **Purpose-Led Innovation:** Emphasizes AI solutions solving real-world issues in healthcare, sustainability, education, and governance.

- **Policy-Ecosystem Linkage:** Demonstrates synergy between public incubation platforms and private AI innovators.

**Significance:**

- **Advances AI for social good:** Reinforces India's commitment to using AI as a tool for inclusive development.
- **Strengthens innovation infrastructure credibility:** Highlights the role of AIM in building a robust, mission-driven startup ecosystem.

## India's Drone Ecosystem

- India has transitioned from pilot drone projects to a regulated drone ecosystem with 38,500+ registered drones Unique Identification Number (UIN).
- The expanding drone ecosystem is reshaping public service delivery, infrastructure management, agriculture, and national security.

### Transformation of Public Service Delivery through Drone Technologies

- **Agriculture & Livelihoods: Namo Drone Didi Scheme (2023)** provides drones to Women SHGs to generate sustainable rural livelihoods.
- **Land Mapping: SVAMITVA Scheme (2020)** uses drones for rural abadi surveys to resolve land disputes and enable property cards, improving access to institutional credit.
- **Highway Monitoring:** NHAI mandates monthly drone-video mapping of highway projects for progress tracking, digital reporting, discrepancy checks, and use as evidence in dispute resolution.
- **Disaster Management:** E.g., North East Centre for Technology Application and Reach (NECTAR) drones provide real-time aerial visuals during floods and landslides, aiding rapid assessment, coordinated rescue, and emergency response.
- **Railway Surveillance:** Ministry of Railways deploys UAVs for inspection of tracks, bridges, and hard-to-reach infrastructure, improving maintenance efficiency and safety.
- **Defence Applications:** Drones enable border surveillance, intelligence gathering and precision strikes; integrated with radar and air-defence networks, they enhance rapid threat detection and protection of critical infrastructure (e.g., Operation Sindoor).

## DIFFERENT TYPES OF DRONES



### Surveillance and Reconnaissance Drones (ISR Drones):

These drones are primarily used for intelligence, surveillance, and reconnaissance purposes.

#### India currently has:

##### TAPAS-BH-201

(Tactical Advanced Platform for Aerial Surveillance)  
 Rustom (developed by DRDO)  
 Heron (Israel)



### Armed/Combat Drones (UCAVs):

Unmanned combat aerial vehicles (UCAVs) are capable of launching missiles or dropping bombs.

#### India has:

##### DRDO's Ghatak

(under development)  
 Heron TP (from Israel)



### Loitering Munitions:

These drones are designed to loiter over a target area and strike when a target is identified.

#### India has:

**Nagastra** (made by Solar Industries and ZMotion)  
**Warmate** (Polish origin)



### Swarm Drones:

Multiple drones operate in coordination to overwhelm enemy defenses, DRDO and private firms are working on swarm drone technology.

## Accelerating Drone Adoption in India

- **Drone Rules, 2021** and Drone (Amendment) Rules 2022 & 2023: It has significantly liberalised India's drone ecosystem.
- E.g., Nearly 90% of Indian airspace was declared a Green Zone for drone operations, allowing flights up to **400 feet**.
- **Production Linked Incentive (PLI)**: PLI scheme for drones and drone components has an approved outlay of ₹120 crore.
- **GST Rationalisation**: GST on drones reduced to 5%, replacing earlier 18% and 28% slabs.
- **Digital Sky, 2018 and eGCA**: The regulatory services such as drone registration, remote pilot certification, Type certification and RPTO authorisation has been migrated from Digital Sky platform to eGCA.
- Ecosystem Development and Capacity Building through Flagship Programmes: E.g., National Innovation Challenge for Drone Application and Research (NIDAR) engages students and researchers.

## India-UK Offshore Wind Taskforce

- India and the United Kingdom launched the India-UK Offshore Wind Taskforce under Vision 2035 to accelerate cooperation in offshore wind energy development.

### **India-UK Offshore Wind Taskforce: What it is?**

- The India-UK Offshore Wind Taskforce is a bilateral cooperation platform launched under the Fourth India-UK Energy Dialogue to strengthen collaboration in offshore wind energy.
- It brings together policy makers, industry stakeholders, and technical experts to guide the development of India's emerging offshore wind sector using UK expertise and Indian market scale.

### **Aim / Objectives:**

- Accelerate offshore wind deployment through strategic India-UK cooperation.
- Develop a robust offshore wind ecosystem including policy, infrastructure, and financing frameworks.
- Promote long-term energy security and industrial competitiveness under Vision 2035.

### **Key Features:**

- **Strategic Leadership Platform:** Provides coordinated guidance for India's nascent offshore wind sector.

### **Three Priority Pillars:**

1. Ecosystem planning & market design (seabed leasing, revenue certainty).
2. Infrastructure & supply chains (ports, manufacturing, marine logistics).
3. Financing & risk mitigation (blended finance, institutional capital mobilisation).

- **Identified Offshore Zones:** Initial development planned off Gujarat and Tamil Nadu coasts.
- **Government Support:** Viability Gap Funding (VGF) scheme of ₹7,453 crore to support early projects.
- **Energy Transition Linkage:** Supports National Green Hydrogen Mission through renewable coastal power supply.

## **America-India Connect Subsea Cable Initiative**

- Google CEO Sundar Pichai announced the billion "**America-India Connect**" initiative at the India AI Impact Summit in New Delhi, aiming to bridge the AI divide by linking India directly to the US and the Southern Hemisphere via advanced subsea cables.

### **America-India Connect Subsea Cable Initiative:**

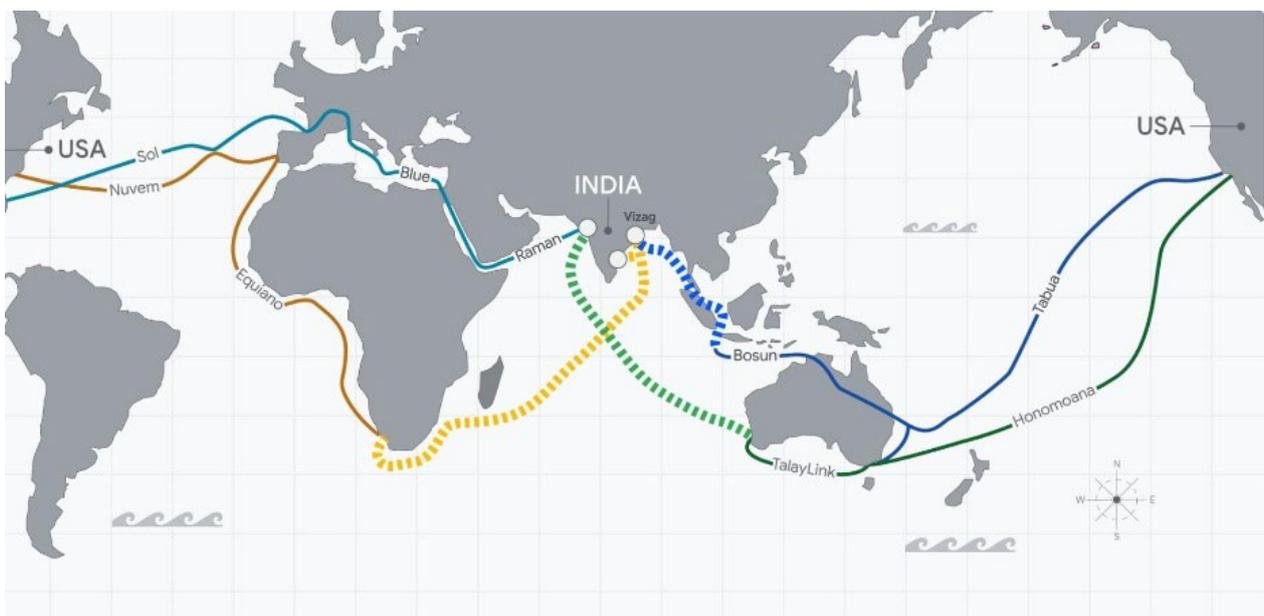
- A massive collaborative digital infrastructure project that anchors Google's five-year, billion

investment in India. It involves the construction of multiple international subsea cables and a new subsea gateway on India's east coast to provide high-speed, resilient connectivity for AI and cloud workloads.

- **Announced By:** Google during the India AI Impact Summit 2026.

**Aim:**

- To democratize AI access and prevent a digital divide from becoming an AI divide.
- To increase the reach, reliability, and resilience of digital connectivity across four continents.
- To establish India as a global AI hub by providing the low-latency infrastructure required for frontier AI models.



**Key Features:**

- **New Subsea Gateway:** Establishment of India's first major international subsea gateway in Visakhapatnam (Vizag), providing geographic diversity from existing landings in Mumbai and Chennai.
- **Three New Subsea Paths:** Direct routes connecting India to Singapore, South Africa, and Australia.
- **Four Strategic Fiber Routes:** New paths linking the US East/West coasts to India via Africa and the South Pacific.
- **West Coast Connectivity:** A direct fiber-optic path between Mumbai and Western Australia.
- **AIIMS Partnership:** Parallel announcement of a collaboration with AIIMS to develop AI tools that

help patients input symptoms and generate preliminary reports to assist doctors.

- **Skilling Integration:** Collaboration with Karmayogi Bharat to provide AI-enabled training to 20 million public servants across 800+ districts.
- **Significance**
- For a nation of 1.4 billion people, adding Vizag as a gateway ensures that India's digital backbone remains functional even if traditional route face outages.
- By turning ancient maritime merchant routes into modern digital trade routes, the initiative deepens the economic bond between the US and India.

### Sahakar Taxi Cooperative Limited

- Union Home and Cooperation Minister formally launched 'Bharat Taxi', India's first cooperative-based taxi service, aimed at transforming the unorganised taxi sector into an ownership-driven model for drivers.

#### Sahakar Taxi Cooperative Limited:

- Sahakar Taxi Cooperative Limited is a multi-state cooperative society registered under the **Multi-State Cooperative Societies Act, 2002**. It is the body responsible for operating the Bharat Taxi platform.
- Unlike traditional corporate aggregators, it is owned and governed by the drivers themselves, who are referred to as '**Sarathis**'.
- Established In: June 6, 2025.
- **Promoted By:** Leading cooperative institutions including NCD, IFFCO, GCMF (Amul), KRIBHCO, NAFED, NABARD, NDDDB, and NCEL.

#### Aim and Objectives

- **Empowerment:** To shift the unorganised taxi sector into an ownership-rights model where the driver is the Malik (owner).
- **Economic Freedom:** To eliminate high middleman commissions (often 20-30%) and ensure 100% of the fare (minus a nominal daily access fee) goes directly to the Sarathi.
- **Women's Safety:** To provide safe, affordable, and dignified travel for women through the 'Sarathi Didi' initiative.
- **Social Security:** To provide gig workers with access to health insurance, pensions, and

government welfare schemes.

### How the Model Works?

- **Ownership via Shares:** Drivers become members of the cooperative by purchasing shares (as low as ₹500). This entitles them to a share in the profits and a vote in the board's decision-making.
- **Zero-Commission Model:** The platform does not take a percentage of every ride. Instead, it operates on a transparent, flat daily access fee (approx. ₹30 for cabs and ₹18 for autos).
- **Direct Payment:** Fare payments are transferred automatically and immediately into the Sarathi's bank account.
- **Democratic Governance:** Two representatives chosen by the Sarathis sit on the Board of Directors to look after the interests of the community.

### Key Features

- **Sarathi Didi:** A dedicated in-app window allowing women passengers to book rides specifically with female drivers (Sarathi Didis) on two-wheelers.
- **No Surge Pricing:** Provides transparent and fixed pricing for passengers, even during peak hours.
- **Integrated Services:** Includes two-wheelers, three-wheelers, and four-wheeler taxis on a single platform.
- **Social Safety Net:** Integrated with the e-Shram portal, giving drivers access to Pradhan Mantri Jan Arogya Yojana (free treatment up to ₹5 lakh) and other gig-worker benefits.
- **Significance:**
  - By offering an alternative to the Western commission-based model, it forces private competitors to reduce their fees to remain competitive.
  - Within three years, the service is planned to expand across India, from Kashmir to Kanyakumari.

## Merchandise Trade Indices

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

### About Merchandise Trade Indices

- **Compiled and published:** By the Directorate General of Commercial Intelligence and Statistics (DGCI&S), under the Ministry of Commerce & Industry.

- **Purpose:** Measure changes in the unit values (prices) and quantities of India's exports and imports over time.
- **Base Year Revision:** From FY 2012-13 to FY 2022-23
- **Indices Compiled:** Various indices are compiled across multiple classifications, like Export Unit Value Index, Import Unit Value Index, Terms of Trade, etc.
- **Terms of Trade includes**
  - Net Terms of Trade/ commodity Terms of Trade: Ratio of export prices to import prices.
  - Gross Terms of Trade: Ratio of physical quantity of import to physical quantity of export.
  - Income Terms of Trade: Net Terms of Trade multiplied by quantity of export.

### **RBI Notifies Amended External Commercial Borrowing (ECB) Framework**

- The RBI notified the Foreign Exchange Management (Borrowing and Lending) (First Amendment) Regulations, 2026, to liberalise the external commercial borrowing (ECB) framework.

#### **About ECB Framework**

- ECBs are commercial loans raised by eligible resident entities from recognised non-resident entities.
- **Objective:** To provide Indian industries with access to cheaper foreign capital for capacity expansion and infrastructure development.
- **Legal Basis:** ECBs are governed by the Foreign Exchange Management Act (FEMA), 1999, and regulated by the Reserve Bank of India.
- **Currency Options:** Borrowers can raise funds in any freely convertible Foreign Currency (FCY) or in Indian Rupees (INR).
- **Entry Routes:** It provides two access channels: the Automatic Route (no RBI approval required) and the Approval Route (RBI approval mandatory).

#### **Key Changes in the ECB Framework**

- **Borrowing Limits:** The annual automatic borrowing limit was increased from USD 750 million to USD 1 billion, or 300% of net worth, to meet larger industrial capital needs.
- **Interest Rates:** The RBI replaced the prescriptive 'All-in-Cost Ceiling' with market-determined interest rates to ensure access to capital.
- **Maturity Period:** The tiered maturity structure was replaced with a Unified Minimum Average

Maturity Period (MAMP) of three years to simplify compliance.

- **Exception:** Manufacturing firms can now raise up to USD 150 million, with a maturity of one to three years, to support working capital.
- **Eligible Borrowers:** The list was expanded to include any entity registered under a Central or State Act to democratize access to foreign capital.
- **On-Lending:** RBI-regulated entities are now authorised to on-lend ECB proceeds to individuals, excluding real estate business, to boost credit flow.
- **Acquisition Usage:** Proceeds can now be used to acquire management control of other entities to enable inorganic growth.
- **Operational Ease:** The requirement to maintain a specific current account with the designated Authorised Dealer (AD) bank has been removed.

## Rebalancing Copyright in the Age of Artificial Intelligence

- India's hosting of the AI Impact Summit 2026 reignited debate on rigid copyright laws affecting access, innovation and digital technologies.

### India's Current Copyright Framework

- **Statutory Framework: The Copyright Act, 1957**, defines, regulates and enforces copyright in original literary, artistic, musical and dramatic works, as well as cinematograph films and sound recordings.
- **Protection Tenure:** The Act grants exclusive rights to reproduce, distribute, communicate and adapt the work for the lifetime of the author plus 60 years thereafter.
- **Fair Dealing:** Section 52 enumerates specific and limited uses of copyrighted material without permission, e.g., research, criticism, review, reporting of current events, etc.
- **Digital Integration:** The Copyright (Amendment) Act, 2012, exempted temporary digital reproductions created during browsing, caching or hyperlinking from being treated as infringement.
- **Global Compliance:** India adheres to the **Berne Convention**, which mandates automatic copyright protection upon creation, without formal registration.

### Challenges with India's Copyright Governance

- **Knowledge Barriers:** Long posthumous protection keeps works out of the public domain for decades, limiting affordable access and reuse.

- **Technological Rigidity:** Section 52 follows a closed-list exception model that limits judicial flexibility in emerging digital and machine-learning contexts.
- **Social Exclusion:** Strong injunctive relief and high litigation costs deter the development and distribution of assistive technologies, including formats such as DAISY, for persons with disabilities.
- **Regulatory Lag:** The Copyright Act, 1957, does not clearly address algorithmic data processing, leaving artificial intelligence training in legal uncertainty.
- **Economic Burden:** Strict enforcement of reproduction and distribution rights leads to high licensing costs for educational institutions.

### Way Forward

- **Statutory Modernisation:** Introduce a Text and Data Mining (TDM) exception to permit AI training and data mining without constituting infringement.
- **Safe Harbour:** Establish statutory protection for public and government-curated datasets to shield open-access developers from infringement claims.
- **Progressive Flexibility:** Adopt an open-ended fair use doctrine to allow courts to address new digital and artificial intelligence uses.
- **Dispute Reform:** Create specialised tribunals or fast-track mechanisms to resolve copyright disputes involving AI technologies.
- **Global Leadership:** Leverage international platforms like AI Impact Summit to advocate balanced global copyright standards that protect innovation and the public domain.

### Marrakesh Treaty

- The Marrakesh Treaty was adopted in 2013 under the auspices of the **World Intellectual Property Organisation (WIPO)** to mandate copyright exceptions for persons with visual impairments.
- **Format Conversion:** Authorised entities can convert published works into accessible formats (like DAISY) without the prior consent of copyright holders.
- **Cross-Border Transfer:** The Treaty permits the export and import of accessible-format copies between member states for distribution to eligible beneficiaries.
- **Indian Ratification:** India became the first country to ratify the Treaty in 2014, strengthening access to education for persons with visual impairments.

## Shalimar Wheat

- Scientists at Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST-K) have developed two new early-maturing wheat varieties to support the rice-wheat cropping system in Kashmir.

### About Shalimar Wheat:

- Shalimar Wheat refers to newly developed early-maturing wheat varieties bred by SKUAST-K through conventional breeding techniques to suit Kashmir's climatic conditions.
- They are designed specifically to fit into the rice-wheat cropping system, allowing timely wheat harvest before paddy transplantation.

### Variety Names:

- Shalimar Wheat-4 (SW-4) – matures by the last week of May
- Shalimar Wheat-3 (SW-3) – matures by the first week of June

### Key Features:

- **Early maturity:** Developed to mature earlier than traditional varieties, enabling timely field preparation for rice cultivation.
- **Suitable for Kashmir climate:** Adapted to mid-altitude regions up to about 1,850 m, unlike earlier varieties sourced from subtropical regions.
- **Rice-wheat rotation compatibility:** Ensures smooth crop sequencing by preventing delays in paddy transplantation.
- **Disease resistance:** Shows resistance to **yellow rust**, a major fungal disease affecting wheat in Kashmir.
- **High productivity potential:** SW-3 offers productivity up to 38 quintals per hectare, balancing yield with early maturity.
- **Nutritional enhancement (Biofortification):** SW-3 contains higher iron and zinc (>40 ppm) and around 12% protein, improving nutritional value.
- **Developed through conventional breeding:** Created using cross-breeding, pedigree selection and multi-year field testing over nearly a decade.

### Significance:

- Strengthens food security by stabilizing the rice-wheat cropping system in Kashmir.

- Helps farmers avoid delays in paddy cultivation due to late wheat harvest.

### **RuPay-BHIM UPI Incentives Driving India's Payment Transformation**

- The Department of Financial Services released an impact analysis showing that the RuPay-BHIM UPI incentive scheme accelerated the digital transition and economic formalisation.
- Incentive Scheme for RuPay Debit Cards and Low-Value **BHIM-UPI P2M Payments**
- This **Central Sector Scheme** was launched in December 2021 to promote low-value digital transactions under the **Zero-MDR regime**.
- **Administrative Oversight:** The Department of Financial Services (DFS) of the Ministry of Finance currently administers the scheme.
- **Nodal Agency:** The National Payments Corporation of India (NPCI) is the nodal agency responsible for calculating incentive claims and conducting transaction data due-diligence
- **Primary Objective:** The scheme subsidises transaction costs for banks to sustain the Zero-MDR regime for domestic payment platforms.
- **Eligible Coverage:** RuPay Debit Card transactions and low-value BHIM-UPI person-to-merchant (P2M) payments up to ₹2,000 are covered under the scheme.
- **UPI Incentives:** Acquiring banks receive an incentive of 0.15% of the transaction value for eligible BHIM-UPI P2M transactions made specifically to small merchants.
- **RuPay Incentives:** Incentives are 0.40% (capped at ₹100) for standard transactions and 0.15% (capped at ₹6) for specific "Industry Programmes" such as fuel and insurance.
- **Performance Benchmarks:** Acquiring banks must maintain technical decline rates below 0.75% and ensure system uptime of at least 99.5% to qualify for the final 20% disbursement.
- **Incentive Transmission:** The incentive is distributed among the acquiring bank, the issuing bank, the PSP bank, and the Third-Party Application Providers (TPAPs).

#### **Impact of RuPay-BHIM UPI Incentives**

- **Transaction Growth:** The incentive scheme triggered an 11-fold surge in digital transaction volumes. UPI now accounts for 80% of all digital payments in India.
- **Consumer Preference:** UPI surpassed cash as the preferred payment mode for 57% of users. Adoption is highest at 66% among users aged 18-25.
- **Merchant Adoption:** The Zero-MDR (Merchant Discount Rate) policy achieved 94% adoption among small vendors, with 57% reporting an increase in sales.
- **Systemic Trust:** About 90% of users report high trust in digital payment systems, with 65%

performing multiple transactions daily.

- **Strategic Pivot:** RuPay debit card usage increased at physical PoS terminals and e-commerce. UPI Lite gained priority for micro-payments and micro-credit integration.

### India Signs MoU with the World Food Programme (WFP)

- Food Corporation of India (FCI) and the World Food Programme (WFP) signed an MoU to support global humanitarian efforts against hunger.
- Under the MoU, FCI will supply 2 lakh MT of rice (with up to 25% broken grain) to WFP over five years.
- **Significance:** The partnership reinforces India's role as a trusted food supplier and advances its commitment to global food security.

#### About World Food Programme (WFP)

- The WFP is an international organisation within the United Nations (UN) that provides food assistance.
- It was established in 1961 through a joint initiative of the Food and Agriculture Organisation (FAO) and the United Nations General Assembly (UNGA).
- WFP is the largest global humanitarian organisation, headquartered in **Rome, Italy**.
- Its principal objective is to eliminate hunger & malnutrition to achieve **SDG 2 (Zero Hunger) by 2030**.
- The organisation provides emergency food assistance to displaced and vulnerable populations in conflict- and disaster-affected regions.
- **Flagship Reports:** It contributes to assessments, such as the Global Report on Food Crises (GRFC).
- **Governance:** A 36-member Executive Board provides intergovernmental oversight and policy direction for its programmes.
- **Global Recognition:** It received the Nobel Peace Prize in 2020 for combating hunger and preventing starvation as a weapon of war.

#### About Food Corporation of India

- The FCI is a statutory body established under the **Food Corporation Act, 1964**, and operates under the Ministry of Consumer Affairs, Food and Public Distribution.
- **Primary Mandate:** It ensures national food security by maintaining sufficient operational and buffer stock of food grains.

- **Procurement:** It procures wheat, paddy, & coarse grains at MSP to shield farmers from price volatility.
- **Public Distribution:** FCI supplies food grains to states for distribution under NFSA and PMGKAY.

### Salem Sago (Javvarisi)

- APEDA facilitated the first direct export consignment of GI-tagged Salem Sago from Tamil Nadu to Canada, marking a major milestone for producer-led exports.
- **About Salem Sago (Javvarisi):**
- Salem Sago (Javvarisi) is a starch-based food product made from **tapioca roots (cassava)**, where wet starch is processed into small pearl-like granules.
- It is widely consumed as a staple and is also used in multiple industries such as food processing, textiles, pharmaceuticals and construction.
- **Origin:**
- Originates from Salem district, Tamil Nadu, known as the "Land of Sago".
- The region has favourable conditions such as high tapioca yield, abundant sunshine and established processing units.
- Over 80% of India's sago production comes from the Salem region and nearby belts like Erode, Namakkal and Dharmapuri.
- **GI Tag:**
- Geographical Indication (GI) tag granted in March 2023.
- GI registration obtained by The Salem Starch and Sago Manufacturers' Service Industrial Co-operative Society Ltd (SAGOSERVE) under the Government of Tamil Nadu.
- **Key Characteristics:**
- **Tapioca-based product:** Produced from starch extracted from tapioca roots containing about 30–35% starch.
- **High regional productivity:** Tapioca yield in Salem reaches 25–30 tonnes/ha, among the highest globally.
- **Distinct physical traits:** Small granules generally ranging between 2–4.5 mm in size with low calorific value (~310 kcal/100 g).
- **Efficient processing:** Around 1 kg of sago can be produced from about 5 kg of tapioca tubers.
- **Multi-sector usage:** Used in food, paper, textile, cosmetic, pharmaceutical, construction and alcohol industries.
- **Significance:**

- Enhances export opportunities for GI-certified Indian agri products.
- Improves price realisation and income for farmers, including tribal communities involved in tapioca cultivation.

### **VoicERA Launched on BHASHINI National Infrastructure**

- The Ministry of Electronics and Information Technology (MeitY) launched VoicERA on the BHASHINI National Language Infrastructure during the India AI Impact Summit 2026.

#### **About VoicERA**

- VoicERA is an open-source, end-to-end Voice AI stack. It serves as a national execution layer for delivering population-scale, multilingual services.
- The platform was developed by the Digital India BHASHINI Division (DIBD) of the Digital India Corporation (DIC), in collaboration with the EkStep Foundation, IIIT Bengaluru, and AI4Bharat.
- It is designed as a digital public good to prevent vendor lock-in and promote seamless integration across innovation ecosystems.
- **Key Technologies:** It integrates **Automatic Speech Recognition (ASR)**, **Neural Text-to-Speech (TTS)**, and **Large Language Models (LLMs)**.
- **Deployment Flexibility:** The stack supports both cloud deployments and on-premises installations.
- **Significance:** It democratises digital governance by enabling low-literate citizens to access government services through voice commands.

#### **About BHASHINI**

- The Bhasha Interface for India (BHASHINI) is an AI-powered language translation platform.
- It was launched in 2022 by MeitY as part of the **National Language Translation Mission (NLTM)**.
- The initiative aims to eliminate linguistic barriers and ensure digital inclusion for all citizens.
- BHASHINI operates as a **Digital Public Infrastructure (DPI)** and uses Natural Language Processing (NLP) to deliver scalable language services.
- It supports all 22 Scheduled Languages and is expanding into tribal and low-resource languages.
- It has successfully integrated with national portals, including e-Shram, e-Gram Swaraj, and the digital systems of the Indian Judiciary.

## Exercise Vajra Ghaat

- The Southern Command of the Indian Army conducted Exercise Vajra Ghaat at the Pokhran Field Firing Range, Rajasthan.
- The drill validated Tactics, Techniques and Procedures (TTPs) to enhance survivability and operational effectiveness in harsh desert environments.
- It demonstrated the K9 Vajra artillery system's combat power and battlefield suitability.

### About K9 Vajra

- K9 Vajra is a tracked, **self-propelled howitzer**. It is the **indigenous version of South Korea's K9 Thunder** artillery platform.
- **Indigenous Production:** Larsen & Toubro manufactures the system under the Make in India initiative through a technology transfer with Hanwha Defence.
- **Terrain Mobility:** It uses a tracked platform that ensures high cross-country mobility and effective deployment on sandy desert terrain.
- **Tactical Capability:** The system has a "shoot-and-scoot" feature, enabling quick relocation after firing to avoid enemy counter-bombardment.
- **Firepower Strength:** It delivers artillery strikes up to 40 km and fires three rounds in 15 seconds through automated fire control.
- **Ammunition Compatibility:** The system supports both Indian and North Atlantic Treaty Organisation (NATO) ammunition.

## NITI Aayog releases a policy report on Revitalising Apprenticeship Ecosystem

- The report provides critical insights, and outlines actionable recommendations to strengthen the apprenticeship system as a cornerstone of India's skilling and employment strategy.
- Apprenticeships are formal vocational education and training schemes that combine learning in education or training institutions with substantial work-based learning in companies.

### Key Highlights of Report

- **Current Status:** 51,133 Active Establishments under NAPS (FY 2024-25), and active engagements under NAP grew 27-fold from 2018-19 rising to 9.85 lakh in FY 2024-25.
- Completion rates declined to 25.47% with a high dropout rate of 35.46%.

### Key Challenges

- **Policy & Structural Gaps:** Multiplicity of schemes, low stipend levels, and lack of standardised certification reduce effectiveness.
- **Regional & Industry Disparities:** Underutilisation in **BIMARU** and North Eastern States; low MSME participation due to compliance and ROI concerns.
- **Aspirant-Level Barriers:** Low women participation (~20%), weak career counselling, and social bias favouring academic pathways.

### Recommendations

- **Policy and Systemic Reforms:** Establish National Apprenticeship Mission, consolidate apprenticeship portals, seamless mobility between education and skilling pathways.
- **Structure and Governance:** Introduction of **Apprenticeship Engagement Index** to benchmark performance, accelerating upgradation of Industry 4.0 aligned ITIs.
- **Industry-facing reforms:** Deepening MSME participation through cluster-based consortia, promoting a **Startup Apprenticeship Programme (SAP)** etc.
- **Apprentice level support:** Improving stipend adequacy, expanding insurance and social security coverage, enable international mobility.

### Policy Framework

- **Apprentices Act, 1961:** Provides statutory backing for apprenticeship training and defines employer obligations.
- **National Apprenticeship Promotion Scheme (NAPS) & National Apprenticeship Training Scheme (NATS):** Incentivizes employers to engage apprentices and enhances industry academia collaboration.
- **National Education Policy 2020:** Promotes vocational-academic convergence and the principle of "earning while learning."

### Export Promotion Mission

- Union Commerce and Industry Minister launched seven new interventions under the Export Promotion Mission (EPM) to strengthen MSME exports and global competitiveness.

### About Export Promotion Mission:

- The Export Promotion Mission (EPM) is a flagship initiative of the **Department of Commerce** aimed at empowering Micro, Small and Medium Enterprises (MSMEs) to participate effectively in global trade.
- It adopts a holistic ecosystem approach by combining financial assistance, trade facilitation and export infrastructure support to boost India's exports.
- **Implementing Agencies:** The Mission is implemented by the Department of Commerce.

**Aim:**

- To enhance global market access and export competitiveness of Indian MSMEs.
- To reduce structural barriers such as high cost of capital, logistics disadvantages and compliance challenges.
- To promote inclusive, broad-based export growth aligned with India's global trade ambitions.

**Key Features:**

- **Dual framework – Niryat Protsahan & Niryat Disha:** Combines financial enablers with trade ecosystem support under a digitally monitored system.
- **Trade Finance Support:** Includes export factoring, e-commerce credit facilities, interest subvention (2.75%) and credit guarantees for MSMEs.
- **Compliance & Certification Support (TRACE):** Partial reimbursement for testing, inspection and certification to meet international standards.
- **Logistics & Overseas Warehousing (FLOW & LIFT):** Support for overseas warehousing, e-commerce export hubs and freight cost reimbursement.
- **Trade Intelligence & Capacity Building (INSIGHT):** Strengthens district-level export hubs and market intelligence systems.
- **MSME-focused Financial Assistance:** Credit support up to ₹5 crore, interest subvention, and guarantee coverage for digital exporters.
- **Market Integration:** Supports initiatives like Bharat Mart in Dubai to connect exporters with GCC, Africa and European markets.

**Significance:**

- Strengthens MSMEs as drivers of India's export-led growth.
- Improves access to global markets through FTAs and trade facilitation.

**India-Brazil Increases Bilateral Trade Target to \$30 Billion**

- PM Modi and Brazilian President Lula da Silva met on the sidelines of the AI Impact Summit in New Delhi to elevate strategic ties against rising global trade protectionism.

#### Key Outcomes of the Meeting

- **Trade Target:** India and Brazil set a bilateral trade target of \$30 billion by 2030, doubling the current \$15 billion in trade.
- **Aviation Facility:** Brazilian aviation firm Embraer, in partnership with Adani Defence & Aerospace, will set up an assembly line and an MRO facility in India for its E175 regional jets.
- T Mazagon Dock Shipbuilders, the Indian Navy, and the Brazilian Navy signed a tripartite agreement to exchange technical data about the shared fleet of Scorpene-class submarines.
- **Regulator MoU:** India's CDSCO and Brazil's ANVISA signed an MoU to increase affordable Indian generic medicine supply to Brazil.

#### About Critical Mineral Pact

- **Supply Diversification:** India signed a critical minerals MoU with Brazil to diversify the supply of rare earths, lithium, graphite, niobium, and nickel for its steel, defence, and EV sectors.
- **Resource Leverage:** Brazil holds 94% of global **niobium reserves**, is the world's second-largest iron ore producer, and has major manganese and rare earth deposits.
- **Steel Supply:** A dedicated steel-sector MoU will channel Brazilian iron ore, manganese, and nickel to help India achieve a 300 MT steel production target by 2030.
- **Upstream Access:** The mineral pact allows Indian firms to acquire mining assets, develop processing hubs, and conduct joint geoscientific exploration in Brazil.
- **Battery Security:** It seeks to secure a long-term supply of lithium and graphite to insulate India's electric vehicle ecosystem from global price volatility.

#### Overview of India-Brazil Trade Relations

- **Trade Scale:** Brazil is India's largest trading partner in Latin America, with bilateral trade crossing \$15 billion for the first time in 2025.
- **Trade Basket:** India exports refined petroleum, agrochemicals, and pharmaceuticals, while importing crude petroleum, raw sugar, and soybean oil.
- **Mercosur Expansion:** Both countries are negotiating the expansion of the **India-Mercosur PTA (2004)** to remove agricultural non-tariff barriers and open South American markets to Indian exporters.

- **MSME Access:** A recently signed bilateral agreement on postal services and digital trade aims to streamline cross-border logistics for Indian MSMEs entering the Brazilian market.

### India's First Namoo Bharat Regional Rapid Transit System (RRTS)

- PM Narendra Modi has inaugurated India's first Namoo Bharat Regional Rapid Transit System (RRTS).
- It is an 82 km high-speed, high-frequency rail corridor connecting Delhi, Ghaziabad, and Meerut.
- **Implementing Agency:** The National Capital Region Transport Corporation (NCRTC)—a joint venture of the Centre and the States of Delhi, Haryana, Rajasthan, and UP.
- **Speed:** The corridor has a design speed of 180 kmph and an operational speed of 160 kmph, reducing commute time to under an hour.
- **Technology:** It uses an advanced radio signalling system enabling real-time train control, closer headways, and better passenger safety without traditional signals.
- **Multimodal Integration:** It physically links to Indian Railways, local metros, and interstate bus terminals at hubs like Sarai Kale Khan.
- **Interoperability:** The design allows trains from different corridors (e.g., Alwar to Meerut) to share the same tracks without requiring passenger transfers.
- **Operational Distinction:** Unlike intra-city metros, the RRTS serves longer-distance regional commutes (up to 100 km) with significantly fewer stops.
- **Significance:** The project promotes polycentric development, reduces annual CO2 emissions by nearly 2.5 lakh tonnes, and advances 'Nari Shakti' by employing women as the majority of operators.

### Artificial Intelligence (AI), Emerging as a foundational driver of Inclusive Rural Development

- India's dual framework on AI combining national strategy for inclusive growth with robust governance architecture, is particularly suitable for rural and socially sensitive contexts.

#### How AI helps in Inclusive Rural Development?

- **Detecting Underserved Villages:** By analysing healthcare, education, and sanitation deficits using **Mission Antyodaya** data.
- **Predictive Future Planning:** Forecasts future development needs based on population growth and economic activity.
- **Fulfilling Infrastructure Needs:** Identifies villages lacking proper roads using Pradhan Mantri Gram Sadak Yojana (PMGSY), etc.

#### **Key Initiatives Promoting AI for Inclusive Rural Development**

- **Decentralised Rural e-governance:** Through tools like **SabhaSaar**, AI-enabled tool that generates minutes of Gram Sabha and Panchayat meetings, digital platforms like **eGram Swaraj** and **Gram Manchitra**, etc.
- **Infrastructure Monitoring:** **BhuPRAHARI** platform for monitoring assets created; Digital Shram Setu Mission dealing with informal sector.
- **Sectoral Analysis:**
- **Agriculture and Food Security:** Kisan e-Mitra, a virtual assistant providing information on government schemes; National Pest Surveillance System, Crop Health Monitoring, Precision Faming, etc.
- **Education:** NCERT's DIKSHA platform; Youth for Unnati and Vikas with AI (YUVAI) for building foundational socio-technical/AI skills among grades 8-12.
- **Healthcare:** State-led AI innovations like Madhya Pradesh's Suman Sakhi WhatsApp Chatbot for rural women, delivers maternal/newborn health information, etc.

#### **Societal Benefits through Multilingual Governance:**

- **BHASHINI:** AI-enabled language platform offering translation, speech-to-text, and voice-based interfaces across more than 36 Indian languages.
- **BharatGen:** India's first government-funded, sovereign, multilingual, and multimodal Large Language Model.
- **Adi Vaani:** Addressing communication barriers faced by tribal communities.

### **India and France amends Double Taxation Avoidance Convention (DTAC)**

- India and France signed a Protocol to amend the Double Taxation Avoidance Convention (DTAC), which was originally signed in 1992.
- DTAC is the formal/legal name used for some **Double Tax Avoidance Agreements (DTAAs)**.

- DTAA is an agreement signed between two countries to prevent individuals or businesses from being subject to double taxation on their income.

#### Key Amendments

- Removed the **Most-Favoured-Nation (MFN)** clause to eliminate ambiguity in treaty benefits.
- Incorporation of Base erosion and profit shifting (BEPS) Multilateral Instrument (MLI) Provisions to prevent profit shifting.

#### About the Most-Favoured-Nation (MFN)

- It is a fundamental principle of the World Trade Organization (WTO).
- It ensures that countries do not discriminate between their trading partners.
- If a WTO member grants favourable trading terms like lower tariffs to one country, it must extend the same benefits to all other WTO members.

#### About the BEPS Multilateral Instrument (MLI)

- An international treaty that enables countries to modify existing bilateral tax treaties without renegotiating them individually.
- The BEPS MLI entered into force in 2018, and its provisions entered into effect in 2019.

#### Objectives:

- Implements tax treaty measures developed under the **OECD/G20 BEPS Project**.
- Helps prevent **Base Erosion and Profit Shifting**.
- BEPS are tax avoidance strategies used by MNCs to shift profits to low or no-tax jurisdictions by exploiting gaps in tax rules, reducing overall corporate tax liability.

### Meta Challenges CCI Penalty over WhatsApp Data-Sharing Policy

- India's digital competition regime is under scrutiny as WhatsApp challenges before the Supreme Court the ₹213.14 crore penalty imposed by the Competition Commission of India.

#### About CCI-WhatsApp Data Sharing Dispute

- **Policy Update:** WhatsApp's 2021 privacy policy compelled users to share data with Meta on a take-it-or-leave-it basis, without an opt-out option.
- **CCI Penalty:** The Competition Commission of India (CCI) imposed a ₹213.14 crore penalty on Meta

in 2024 for abusing its dominant position in India's digital messaging market.

- **Ad-Data Ban:** It simultaneously directed WhatsApp to cease sharing user data with all Meta group entities for advertising purposes for five years.
- **Meta's Defence:** Meta argued that data sharing was essential for service improvement. It also claimed privacy matters fall exclusively under data protection law, not competition law.
- **NCLAT Reversal:** The National Company Law Appellate Tribunal (NCLAT) in 2025 upheld the ₹213.14 crore penalty but overturned the five-year ban on cross-platform data sharing.
- **SC Observation:** The Supreme Court characterised WhatsApp's consent mechanism as an exploitative agreement between a "lion and a lamb."

### India's Digital Competition Framework

- Competition law prohibits monopolistic conduct, cartelisation, and abuse of a dominant position to protect market contestability and consumer welfare.
- **Legal Foundation:** The Competition Act, 2002, governs India's competition regulation through a reactive, ex-post framework – intervening only after market harm occurs.
- **Merger Threshold: The Competition (Amendment) Act, 2023** mandates prior CCI approval for acquisitions exceeding ₹2,000 crore to prevent "killer acquisitions" of nascent startups.
- **Digital Bill:** The proposed Digital Competition Bill aims to pre-regulate "Systemically Significant Digital Enterprises" (SSDEs) to curb predatory pricing and data monopolisation.
- **New Division:** The CCI has recently established a dedicated Digital Markets Division to investigate and monitor digital intermediaries.
- **DPDP Supplement:** The DPDP Act, 2023, serves as a supplementary regulatory pillar. It restricts data fiduciaries from cross-utilising harvested data without explicit user consent.

### About Competition Commission of India (CCI)

- The CCI is a statutory body established in 2003 under **the Competition Act, 2002**. It functions under the **Ministry of Corporate Affairs (MCA)**.
- **Core Mandate:** It is mandated to eliminate anti-competitive practices, promote market contestability, and protect consumer interests across India.
- **Composition:** The Commission has a chairperson and between two to six other members, all appointed by the Central Government.
- **Quasi-Judicial Powers:** It can penalise antitrust violations, regulate corporate combinations (mergers and acquisitions), and mandate behavioural remedies against dominant market players.
- **Appellate Mechanism:** Appeals against the Commission's orders lie before the National Company

Law Appellate Tribunal (NCLAT).

- **Extraterritorial Reach:** The CCI can investigate foreign entities whose conduct causes an Appreciable Adverse Effect on Competition (AAEC) within Indian markets.

### Semiconductor Manufacturing Unit in Uttar Pradesh

- PM Modi virtually laid the foundation stone for India Chip Pvt Ltd., a semiconductor unit in Jewar, Uttar Pradesh.
- The project is a joint venture between India's HCL Group and Taiwan's Foxconn. It marks North India's first major semiconductor unit.
- It is an Outsourced Semiconductor Assembly and Test (OSAT) plant that packages and tests silicon wafers to produce finished chips, specifically Display Driver Integrated Circuits (DDICs).
- The unit is expected to become operational by 2028 and produce around 36 million chips per month.
- **Significance:** The facility strengthens technological self-reliance, advances the Viksit Bharat vision, and positions India as a trusted hub for advanced electronics manufacturing.

### Landscape of India's Semiconductor Industry

- India's semiconductor market, valued at \$52 billion in 2024-25, is projected to exceed \$100 billion by 2030 and create 1 million jobs by 2026.
- The nation **currently imports 90-95% of its semiconductor requirements**, but upcoming facilities aim to meet 70-75% of domestic demand by 2029.
- The Union Budget 2026-27 has launched the India Semiconductor Mission (ISM 2.0) to build a high-value ecosystem for indigenous chip design.

### Access Pass for Fishing in India's Exclusive Economic Zone (EEZ)

- The Ministry of Fisheries, Animal Husbandry and Dairying launched the national Access Pass for fishing in India's Exclusive Economic Zone (EEZ).
- The initiative aims to shift Indian fishing from nearshore to sustainable deep-sea operations, unlocking high-value resources like tuna.
- Sustainable Harnessing of Fisheries in the EEZ Rules 2025 establishes a legal framework for using marine fisheries resources in India's EEZ.

- The pass mandate applies only to mechanised vessels and large motorised crafts. Traditional, non-motorised crafts are exempt to protect artisanal fishers' livelihoods.
- It operates on the **zero-fee ReALCRaft platform**, which is integrated with the MPEDA to ensure end-to-end traceability for global markets.

#### About Exclusive Economic Zone (EEZ)

- **The 1982 UNCLOS defines an EEZ** as a zone extending **200 nautical miles from a coast baseline** where a nation has the right to explore and exploit natural resources.
- India has the world's 18th largest EEZ, covering approximately **2.4 million sq. km**; the Andaman, Nicobar, and Lakshadweep island chains account for 49% of this maritime area.
- India exercises jurisdiction over its EEZ under the Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act of 1976.

#### India's E-Commerce Expansion

- India's e-commerce market, currently valued at **approximately \$120–140 billion**, is projected to reach \$280–300 billion by 2030, reflecting sustained structural growth.
- Despite rapid expansion, online commerce still accounts for only **7–8% of total consumer spending**, signalling significant untapped potential.

#### Changing Landscape of the E-Commerce Sector in India

- **Digital Consumer Expansion:** India currently hosts nearly 300 million online shoppers, projected to reach approximately 440 million by 2030, reflecting sustained digital adoption.
- **Rural Market Deepening:** Around 30% of India's online shoppers now originate from rural regions, signalling structural diffusion of digital consumption.
- **Online–Offline Coexistence:** Offline retail continues to remain resilient, recording an estimated 13–14% annual growth even amid rapid e-commerce expansion.
- **Emerging Commerce Models:** Quick commerce has registered 100%+ CAGR, while chat commerce segments are registered ~40–45% CAGR, reshaping impulse-based consumption patterns.
- **Gendered Dimensions:** Consumer surveys indicate notable behavioural shifts, with nearly two-thirds of women shoppers reporting feeling safer shopping online.

#### Significance of India's E-Commerce Growth

- **Consumption Formalisation:** E-commerce expansion strengthens transaction traceability, with

India's digital payments ecosystem processing over 100+ billion UPI transactions annually.

- **Consumer Inclusion:** With nearly 300 million online shoppers expected to rise to about 440 million by 2030, digital commerce is driving broader participation.
- **Business Ecosystem Implications:** The time required for online brands to achieve ₹100 crore annual revenue has declined from 11 years to about 7 years, signalling improved logistics efficiency.

### Challenges Faced

- **Digital Divide:** Internet penetration in India stands near 55–60%, with rural connectivity gaps and digital literacy disparities constraining inclusive growth.
- **Logistics & Last-Mile Costs:** India's logistics costs remain at roughly 7.97% of its GDP, affecting delivery efficiency and profitability for e-commerce firms.
- **Data Privacy & Consumer Trust:** With India generating over 20% of global data traffic, rising cybersecurity incidents intensify concerns around consumer data protection.

### Way Forward

- **Infrastructure Strengthening:** Expand rural broadband and multi-modal logistics integration to reduce delivery inefficiencies. E.g., **BharatNet expansion** and **Gati Shakti logistics** integration.
- **Regulatory Certainty:** Ensure predictable policy frameworks covering data protection and consumer safeguards. E.g., Implementation of the **Digital Personal Data Protection Rules, 2025**.
- **MSME Integration:** Promote digital onboarding and logistics support for small sellers entering online marketplaces. E.g., Open Network for Digital Commerce ecosystem participation.

## National Monetisation Pipeline 2.0 (NMP 2.0)

- Union Finance Minister has launched the National Monetisation Pipeline 2.0 (NMP 2.0) to accelerate infrastructure financing through asset monetisation.

### About National Monetisation Pipeline 2.0 (NMP 2.0):

- NMP 2.0 is the second phase of India's national asset monetisation programme that provides a medium-term roadmap for monetising operational public infrastructure assets.
- It focuses on unlocking value from **existing brownfield assets** to generate resources for new infrastructure creation and capital expenditure.

**Ministry / Implementing Agency:**

- Developed by **NITI Aayog** in consultation with infrastructure line ministries.
- Implemented under the guidance of the Ministry of Finance and monitored by the **Core Group of Secretaries on Asset Monetisation (CGAM)**.

**Aim:**

- To recycle public assets and mobilise funds for fresh infrastructure development without increasing fiscal burden.
- To provide visibility and investment opportunities for private sector participation in infrastructure.

**Key Features:**

- **Total Monetisation Potential:** ₹16.72 lakh crore for FY 2026–2030, including ₹5.8 lakh crore private investment.
- **Guidance Framework:** Structured as a methodology and roadmap document for ministries and investors.
- **Multiple Monetisation Models:** PPP concessions, InvITs, securitisation of cash flows, strategic auctions, and partial divestments.
- **Revenue Allocation Mechanism:** Proceeds flow to Consolidated Fund of India, PSUs, State Consolidated Funds, or direct private investments.
- **Sector-Wide Coverage:** Includes highways, railways, power, ports, coal, mining, telecom, aviation, tourism and urban infrastructure.
- **Process Standardisation:** Emphasis on simplification and time-bound execution based on lessons from NMP 1.0.
- **Monitoring Mechanism:** Continuous oversight by empowered inter-ministerial group led by Cabinet Secretary.

**Top 5 Sectoral Shares (FY 2026–30):**

1. Highways, MMLPs & Ropeways – 26% (₹4.42 lakh crore)
2. Power Sector – 17% (₹2.76 lakh crore)
3. Railways – 16% (₹2.62 lakh crore)
4. Ports – 16% (₹2.63 lakh crore)
5. Coal – 13% (₹2.16 lakh crore)

**Significance:**

- Promotes asset recycling, enabling reinvestment into new infrastructure projects.
- Reduces dependence on direct budgetary expenditure for CAPEX.
- Strengthens PPP ecosystem and attracts long-term private investment.

### PM Surya Ghar Muft Bijli Yojana

- Context (PIB): PM Modi recently stated that 30 lakh households have adopted rooftop solar under the PM Surya Ghar Muft Bijli Yojana.
- PM Surya Ghar Muft Bijli Yojana is a **central sector scheme** launched in 2024 to promote rooftop solar (RTS) installations across India. It is recognised as the world's largest RTS scheme.
- **Nodal Authority:** Ministry of New and Renewable Energy (MNRE) oversees the programme.
- **Key Target:** To provide up to 300 units of free electricity per month to 1 crore households through rooftop solar panel installations.
- **Significance:** The initiative accelerates India's renewable energy transition to meet India's climate goals, including 500 GW of non-fossil fuel capacity by 2030 and Net Zero by 2070.

### India-GCC Free Trade Agreement (FTA)

- India and the Gulf Cooperation Council (GCC) signed a Joint Statement formally launching negotiations for the India-GCC Free Trade Agreement (FTA).

**India-GCC Free Trade Agreement (FTA):**

- The India-GCC FTA is a proposed comprehensive trade agreement between India and the Gulf Cooperation Council (**Saudi Arabia, UAE, Qatar, Kuwait, Oman, and Bahrain**).
- It aims to establish a structured framework to enhance bilateral trade, investment flows, and economic integration through reduced trade barriers and improved market access.

**Key Features:**

- **Formal Launch of Negotiations:** Joint Statement signed in February 2026, marking the beginning of structured negotiations for a broad-based trade pact.
- **Comprehensive Economic Coverage:** Expected to include trade in goods, services, investment

facilitation, and regulatory cooperation for smoother business operations.

- **Major Trade Partnership:** GCC is India's largest trading partner bloc, with bilateral trade of **USD 178.56 billion (FY 2024–25)**, accounting for over **15%** of India's global trade.
- **Sectoral Complementarity:** India exports engineering goods, textiles, rice, gems & jewellery, while importing crude oil, LNG, petrochemicals and precious metals from GCC nations.
- **Investment and Diaspora Linkages:** GCC nations are major investors in India (over USD 31 billion FDI) and host nearly 10 million Indians, strengthening economic and social ties.

## Evolving Architecture of Contemporary Trade Agreements

- Recent trade agreements signed by the United States under the "Agreements on Reciprocal Trade (ART)" framework signal a structural shift in global trade governance.
- **Reciprocal Tariffs Policy:** A trade policy matching import duties with export tariffs to counter trade imbalances, reduce deficits, pressure foreign governments to lower tariffs, and secure market access.

### Multilateral Trade Foundation

- **Non-Discrimination Principle:** Multilateral trading system, anchored in GATT and the WTO, institutionalised the Most-Favoured-Nation (MFN) rule, ensuring equal tariff treatment across member states.
- **Institutional Architecture:** The WTO (1995) expanded trade governance beyond goods into services (GATS) & intellectual property (TRIPS) while introducing a rules-based dispute settlement mechanism.
- **Developing Country Agency:** WTO's one-country-one-vote structure provides smaller economies with bargaining space despite asymmetries in economic power.

### Preferential Trade Agreements (PTAs)

- **MFN Exception Logic:** Article XXIV of GATT permits FTAs and Customs Unions as controlled deviations from non-discrimination norms.
- **Coverage Discipline:** FTAs must cover "substantially all trade," ensuring such arrangements function as trade-expansion mechanisms rather than protectionist tools.
- **WTO-Plus Expansion:** Modern FTAs increasingly incorporate labour, environmental, and investment provisions beyond WTO disciplines.
- **Transparency:** Mandatory WTO notification allows affected countries to scrutinise PTA

provisions.

### **Erosion of Multilateral Norms in Agreements on Reciprocal Trade (ARTs)**

- **Legal Ambiguity:** ARTs operate outside Article XXIV of GATT disciplines, weakening their institutional linkage with WTO oversight and established multilateral compliance frameworks.
- **Asymmetric Reciprocity:** ART structures frequently combine tariff pressure by dominant economies with expectations of accelerated market access concessions from partner countries.
- **Strategic Conditionalities:** Several ART provisions embed policy-linked obligations connecting trade concessions with national security or economic safeguard measures.
- **Data Governance Concerns:** Digital trade clauses restricting customs duties on electronic transmissions may constrain regulatory autonomy.

### **Implications of Agreements on Reciprocal Trade**

- **Rule Fragmentation:** The rise of ARTs contributes to the diversification of global trade-agreement typologies, complicating coherence within the rules-based multilateral trading system.
- **Multilateral Erosion Risk:** Parallel bilateral frameworks weaken WTO centrality, increasing the likelihood of power-driven trade arrangements replacing consensus-based governance structures.
- **Power Asymmetry Expansion:** Smaller economies face heightened vulnerability as trade negotiations increasingly reflect geopolitical leverage rather than efficiency-driven economic integration logic.
- **Regulatory Spillover Effects:** One-sided or WTO-plus obligations embedded within ARTs may reshape domestic policy flexibility across tariffs, digital trade, and industrial regulation.
- **Predictability Challenges:** Increased heterogeneity of trade frameworks reduces global trade stability, complicating long-term investment decisions and supply-chain risk assessments.

## **India's Rising Dependence on Imported Crude Oil**

- India's crude oil import dependency crossed **88.5% during FY26 (April-January)**, reflecting widening divergence between domestic demand growth and stagnant domestic production.

### **Crude Oil**

- Crude oil is a naturally occurring, unrefined fossil fuel composed mainly of hydrocarbons.
- It is formed from the remains of ancient marine organisms subjected to heat and pressure over millions of years.

### Drivers of Rising Import Dependence

- **Demand Expansion:** India remains a major growth centre of global oil demand due to rising transport, industry, aviation and petrochemical use.
- **Stagnant Domestic Production:** Domestic crude oil production continues to remain subdued, with output declining marginally to about 23.5 million tonnes in FY26 (April–January).
- **Refinery Capacity Dynamics:** India has about 258 MMTPA refining capacity, with utilisation often above 100%, reflecting strong downstream demand and complex refining capability.

### Overview of the Crude Oil Sector in India

- **Import Dependence:** India imports ~85-89% of its crude oil requirements.
- **Global Ranking:** India is the 3rd largest oil consumer (and major importer).
- **Refining Strength:** India is a net exporter of petroleum products (e.g., diesel, petrol).
- **Top Suppliers:** Russia (the largest supplier in recent years), Iraq, Saudi Arabia, UAE, USA.
- **Key Hubs:** Jamnagar (Gujarat) houses the world's largest refining complex.

### Structural & Economic Implications

- **External Sector Vulnerability:** Elevated crude import dependency exceeding 88% significantly amplifies India's exposure to global oil price volatility and exchange-rate fluctuations.
- **Trade Deficit Intensification:** Crude oil consistently constitutes nearly 25–30% of India's total merchandise import bill, exerting persistent pressure on the current account deficit (CAD).
- **Inflationary Transmission Risks:** Fuel and energy components carry a weight of roughly 6.8% in CPI & over 13% in WPI, allowing crude price shocks to propagate across the broader price system.

### Way Forward

- **Domestic Exploration Push:** Accelerating upstream investments to enhance domestic production resilience. E.g., Expansion of Open Acreage Licensing Policy (OALP) rounds.
- **Energy Diversification Strategy:** Scaling alternative fuels & renewable integration to reduce long-term hydrocarbon dependency. E.g., National Green Hydrogen Mission & EV ecosystem incentives.
- **Demand-Side Efficiency:** Strengthening fuel efficiency norms and modal shifts in transport lowers structural petroleum intensity. E.g., Corporate Average Fuel Efficiency (CAFÉ) standards & rail electrification.

## Blockchain-based Digital Governance

- **MeitY** and **C-DAC** launched '**Blockchain India Challenge**' to encourage Indian startups to pitch & pilot cutting-edge Blockchain-based digital governance solutions.
- Blockchain is a **decentralized**, distributed ledger technology that ensures tamper-proof, transparent, and auditable record-keeping.
- It operates on principles of immutability, consensus, and cryptographic security, making data manipulation virtually impossible.

### Role of Blockchain in Governance

- **Certificates and Document:** To address fraudulent documents and delays, NIC developed 'Certificate Chain' for secure storage and retrieval of records.
- **Logistics:** E.g. Karnataka's Aushada system tracks medicine movement from manufacturer to hospitals, including quality checks.
- Patients can verify manufacturer, expiry, and quality, reducing spurious drugs and increasing transparency.
- **Judiciary:** E.g. Inter-Operable Criminal Justice System (ICJS) integrates criminal justice ecosystem on a unified digital platform for case records, evidence, and documents.
- **Property:** E.g. 'Blockchain-powered Property Management System' records all property transactions verifying ownership, rights, and liabilities, reducing litigation and speeding dispute resolution.
- **Other:** Additional Proof of Concepts are being developed for Remote Voting, GST monitoring, Blood Banks, and the Public Distribution System (PDS).

### Other Key Blockchain Initiatives by Government

- **National Blockchain Framework (NBF):** Developed by MeitY, it provides a unified architecture for deploying blockchain solutions for public service delivery, with components like Vishvasya stack, NBFLite, and Praamaanik.
- **Centre of Excellence in Blockchain Technology (CoE):** Established to offer blockchain-as-a-service (BaaS) infrastructure for government departments.
- **Land Records Management:** States like Andhra Pradesh, Telangana, and Maharashtra have piloted blockchain for land title registration.

## The UN Launches Road Safety Financing Project in Four States of India

- **Project:** Sustainable Financing for Road Safety in India: A Collaborative Approach
- **Funding:** UN Road Safety Fund.
- **Technical support:** WHO, UNICEF, and the UNESCAP.
- **States:** Rajasthan, Kerala, Tamil Nadu, and Assam.
- **Focus Area:** Building national and sub-national capacities for the effective implementation of road safety action plans.
- On reducing road fatalities and serious injuries that lead to disabilities.
- Road Safety Scenario in India (As per the latest Road Accidents in India data (MoRTH))
- ~1.68 lakh fatalities were reported in 2022-23.
- Majority of victims: 18-45 years age group.
- Largest share: Two-wheelers
- Leading cause: Over-speeding.
- India loses around 3% of GDP annually due to road crashes.

#### **Road Safety Initiatives by the Government**

- **Motor Vehicles Amendment Act, 2019:** enhancing governance, accountability, and penalties for traffic violations.
- **National Road Safety Strategy 2018-2030:** Sets a framework targeting a 50% reduction in road fatalities by 2030.
- **Integrated Road Accident Database (IRAD):** A unified crash data management system, launched by MoRTH and MHA.
- **State Support Programme for Strengthening Road Safety:** A centrally sponsored 6-year programme implemented in 14 high-fatalities states backed by ₹7,270 crore from the World Bank, ADB, and the Government of India.

#### **About the UN Road Safety Fund (UNRSF)**

- Established in 2018 to mobilise financing for road safety in low- and middle-income countries.
- Supports evidence-based policy, legislation, and capacity-building projects.
- Works with governments, civil society, and private sector partners.
- **Other Global effort: Declaration of Marrakesh**
- Adopted at the 4th Global Ministerial Conference on Road Safety (2025).
- Calls for political commitment, sustainable financing, and safe-system approach.

## 75th Anniversary of Employees' State Insurance Corporation (ESIC)

- The Employees' State Insurance Corporation (ESIC) has commenced its 75th Foundation Year celebrations, marking seven decades of social security service to workers in India.

### Employees' State Insurance Corporation (ESIC):

- ESIC is a **statutory social security body** under the Ministry of Labour & Employment, Government of India.
- It manages the ESI Scheme, which provides comprehensive medical care and financial protection to employees against sickness, maternity, disablement, and death due to employment injury.

### Established In:

- **Act:** The Employees' State Insurance Act was promulgated in 1948.
- **Inauguration:** The scheme was officially launched on February 24, 1952 (celebrated annually as ESIC Foundation Day).

### History:

- **Genesis:** The first document on social insurance in India was the **Report on Health Insurance (1944)** by Prof. B.P. Adarkar, who was known as Chhota Beveridge.
- **Launch:** Inaugurated in Kanpur and Delhi by then PM Pandit Jawaharlal Nehru, who was the first honorary insured person of the scheme.
- **Leadership:** Dr. C.L. Katial served as the first Director General of ESIC.

### Key Functions:

- **Medical Benefit:** Provides full medical care (from primary to tertiary) to insured persons and their families.
- **Sickness & Maternity Benefit:** Cash compensation for loss of wages during periods of certified sickness or pregnancy.
- **Disablement Benefit:** Monthly pension for permanent disability arising out of employment injury.
- **Dependents' Benefit:** Financial support to the dependents of an insured person who dies due to employment-related injury or occupational disease.
- **Preventive Care:** Newly introduced annual health check-ups for workers aged 40 years and above under the new Labour Codes.

**Significance:**

- It acts as a cornerstone of India's social protection architecture, preventing poverty by protecting the family's breadwinners.
- Through MoUs with NHA (convergence with Ayushman Bharat) and NABL (quality standards), it is modernizing healthcare delivery.

**MoPNG Directs Nationwide Sale of E20 Ethanol-Blended Petrol**

- Ministry of Petroleum and Natural Gas (MoPNG) has directed oil marketing companies to sell petrol blended with up to **20% ethanol (E20)** from April 1, 2026.
- **Legal Basis:** The directive was issued under the **Essential Commodities Act, 1955**, in conjunction with the Motor Spirit and High-Speed Diesel Order, 2005.
- **Fuel Standard:** E20 petrol must meet Bureau of Indian Standards (BIS) specifications, with a minimum **Research Octane Number (RON) of 95**.
- **Exceptions:** Central Government may grant exemptions for specific regions and for limited periods under special circumstances.
- **Objective:** The mandate aims to standardise high-octane fuel across all States and Union Territories for modern engine requirements and environmental goals.
- **Revised Deadline:** The 2022 amendment to the National Policy on Biofuels 2018 advanced the 20% ethanol blending target deadline **from 2030 to Ethanol Supply Year (ESY) 2025-26**.

**About Research Octane Number (RON)**

- RON is a standardised measure of a fuel's ability to **resist engine knocking (premature detonation)**. A higher RON indicates **greater resistance to pre-ignition**.
- **Ethanol RON:** Ethanol possesses a naturally high-octane value of **approximately 108 RON**, well above the mandated 95 RON threshold for E20.
- **Engine Protection:** A minimum 95 RON standard protects modern high-compression engines from long-term mechanical damage and improves combustion efficiency.

**Significance of the Directive**

- **Energy Security:** The mandate advances the Ethanol Blended Petrol (EBP) Programme to reduce India's crude oil import bill by an estimated ₹40,000 crore annually.
- **Agricultural Growth:** The policy creates a guaranteed, high-volume market for ethanol derived from sugarcane and surplus food grains.

- **Climate Commitments:** The adoption of E20 fuel reduces tailpipe carbon monoxide emissions, advancing India's 'Panchamrit' goal of net-zero emissions by 2070.
- **Circular Bioeconomy:** This transition promotes a circular bioeconomy by incentivising the conversion of agricultural waste and damaged food grains into sustainable fuel.

## Understanding Large Language Models (LLMs)

- Bengaluru-based startup **Sarvam AI** recently launched two indigenous Large Language Models (35B and 105B parameters) at the AI Impact Summit 2026, marking a major milestone for India's Sovereign AI ambitions.

### Understanding Large Language Models (LLMs):

- A **Large Language Model (LLM)** is a type of Artificial Intelligence trained on vast amounts of text data to understand, generate, and manipulate human language.
- They are large because they contain billions of parameters—internal variables that the model learns during training to make predictions.

### How it Works?

- **Breaking text into tokens:** An LLM doesn't read whole words like humans; it splits text into tokens (word pieces/characters) so it can represent rare words, names, spellings, and grammar patterns efficiently.
- **The Transformer "map":** Tokens get turned into vectors (embeddings) in a high-dimensional space, where semantic + syntactic similarity makes tokens closer helping the model generalize meaning.
- **Self-attention mechanism:** For each token, the model assigns attention weights to other tokens to decide what matters most, letting it link references, handle long dependencies, and resolve ambiguity (like what "it" points to).
- **Predicting the next token:** The model outputs a probability distribution over possible next tokens; generation is choosing tokens step-by-step, which is why it can sound fluent without knowing like a person.
- **Layers of refinement:** Many stacked transformer layers progressively build richer representations—lower layers catch form/grammar, higher layers capture relationships, intent, and reasoning patterns—then a final layer converts that into the next-token prediction.

### Principles Behind Training

- **Pre-training:** The model is fed petabytes of raw data (books, websites, code) and tasked with predicting the next word in a sequence. This helps it learn grammar, facts, and reasoning.
- **Fine-Tuning:** The model is further trained on narrower, high-quality datasets to perform specific tasks, like medical diagnosis or legal drafting.
- **RLHF (Reinforcement Learning from Human Feedback):** Human testers rank the model's responses, teaching it to be more helpful, accurate, and safe.
- **Compute Intensity:** Training requires massive clusters of GPUs (Graphics Processing Units) and high electricity consumption, often costing millions of dollars.

### Key Features

- **Generative Capability:** Can create original text, code, poems, and summaries.
- **In-context Learning:** Can follow instructions or replicate a style based on a few examples provided in a prompt.
- **Multilingualism:** Can translate and understand multiple languages, though performance varies based on the training data.
- **Zero-shot Reasoning:** Ability to solve problems it has never explicitly been trained for by using general logic.

## U.S. Imposes 125.87% Preliminary Countervailing Duty on Indian Solar Imports

- U.S. Department of Commerce imposed a preliminary **countervailing duty (CVD)** of 125.87% on Indian solar cells and modules, following an investigation into unfair trade practices.
- **Subsidy Allegation:** The U.S. alleges that Indian exporters benefit from 'Actionable Subsidies', which allow them to undercut U.S. domestic producers on price.
- **Hidden Subsidy:** The duties also target 'Cross-Border Input Subsidies,' where subsidised Chinese inputs allegedly give Indian manufacturers artificially lower production costs.
- **Circumvention Claim:** The investigation alleges that Chinese manufacturers are relocating assembly to India to bypass direct trade barriers on Chinese goods.
- **Duty Calculation:** The duty was calculated using the 'Facts Available' provision under Article 12.7 of the **WTO SCM Agreement**, after Indian firms failed to provide the required data.
- **Adverse Inferences:** The provision allows the investigating country to apply 'Adverse Inferences' to set maximum duty rates when exporting firms fail to fully cooperate.
- Under the WTO SCM Agreement, an **actionable or "yellow light" subsidy** is a government

financial contribution that is permitted but can be challenged if it harms another country's trade interests.

- A countervailing duty (CVD) is a trade tariff imposed to offset the cost advantage that imported goods gain from government subsidies in their country of origin.

### Key Subsidy Schemes Under Investigation

- **AAP:** Advance Authorisation Programme (AAP) allows duty-free import of raw materials specifically for use in exported goods.
- **EPCG:** Export Promotion of Capital Goods (EPCG) scheme allows manufacturers to import factory machinery at 0% duty, subject to a specific export obligation.
- **DBK:** Duty Drawback (DBK) Programme refunds customs and excise duties paid on inputs used in the manufacture of export goods.
- **PLI:** Production-Linked Incentive (PLI) Scheme provides direct cash transfers to eligible manufacturers based on their incremental sales and domestic value addition.
- **RoDTEP:** Remission of Duties and Taxes on Exported Products (RoDTEP) refunds embedded duties and taxes that are not otherwise credited to exporters.
- **State Subsidies:** State-level industrial subsidies include the provision of land at below-market rates and subsidised electricity and water.

### India's Solar Export to the U.S.

- **Export Growth:** India's solar module exports to the U.S. rose ninefold, from \$83.86 million in 2022 to \$792.6 million in 2024.
- **Export Dependence:** U.S. accounted for over 90-95% of India's total solar module exports from FY 2023 to FY 2025.
- **Market Share:** India's share of the U.S. solar market rose from 3% in 2022 to 11% in 2024-25. Vietnam leads at 36%.

### Imports under Trade Deals are Threatening Domestic Apple Producers

- Recent US and EU tariff concessions on apple imports jeopardise the livelihoods of seven lakh J&K farming families.
- **US Duty Cut:** Under the recent India-US deal, import duties on US apples fell from 50% to 25%. An ₹80/kg minimum price floor has been set to cushion domestic growers.

- **EU Quota Regime:** The India-EU Free Trade Agreement caps EU apple import duties at 20% for 50,000 tonnes annually. This quota doubles to 1,00,000 tonnes over a decade.

### **Vulnerabilities of Domestic Apple Cultivators**

- **Productivity Gap:** Indian orchards yield 7-8 tonnes per hectare, far below 40-70 tonnes in technologically advanced Western farms.
- **Fragmented Holdings:** Most J&K orchards, averaging 0.40 hectares, are too small for mechanised harvesting or AI-based precision horticulture.
- **Import Undercutting:** Off-season imports depress domestic apple prices, compounded by inadequate cold-chain infrastructure that forces farmers into distress sales.
- **Quality Deficit:** Though India introduced globally preferred varieties like **Gala**, local produce has yet to match import-grade standards in yield, colour, and taste.

### **Apple Cultivation in India**

- **Global Rank:** India is the *world's fifth-largest apple producer*, with annual output around 2.5 million metric tonnes.
- **Regional Concentration:** Jammu & Kashmir contributes 70% of India's total apple production, followed by Himachal Pradesh (20%) and Uttarakhand.
- **Climatic Requisites:** A temperate climate with winters below 7°C and summers of 21-24°C is optimal for apple cultivation.
- **Soil Preferences:** Well-drained, deep loamy soils with a slightly acidic pH of 5.5-6.5 are ideal; waterlogged or heavy clay soils are unsuitable.
- **Altitude:** Commercial cultivation thrives in Himalayan regions at 1,500-2,700 metres above sea level.
- **Yield Deficit:** Indian apple yields average 6-8 tonnes per hectare, far below the global standard of 40-60 tonnes per hectare.

### **RoDTEP Scheme**

- Ministry of Commerce and Industry (MoCI) has reduced duty benefits under the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme by 50% with immediate effect.

### **About Remission of Duties and Taxes on Exported Products (RoDTEP) Scheme**

- The Ministry of Commerce and Industry (MoCI) launched the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme in 2021.
- Policy Shift: It replaced the Merchandise Exports from India Scheme (MEIS), whose flat export subsidies were deemed trade-distorting under WTO norms.
- **Core Principle:** The scheme is built on the international trade principle that 'taxes and duties should not be exported'. This ensures that Indian goods reach foreign markets at their true production costs.
- **WTO Compliance:** Unlike the **subsidy-based MEIS**, RoDTEP operates on a remission model. It **refunds embedded taxes** based on the notified average rates.
- **Dual Administration:** The Directorate General of Foreign Trade (DGFT) under MoCI notifies eligible items and rates. The Department of Revenue under the Ministry of Finance disburses the rebates.
- **E-Scrip:** The government issues benefits as transferable e-scrips through the ICEGATE portal. Exporters can use these to pay Basic Customs Duty or sell them in the open market.

### MSME Ministry Upgrades NSIC to Schedule 'A' Category CPSE

- The Ministry of MSME has upgraded the National Small Industries Corporation (NSIC) from a **Schedule 'B'** to a **Schedule 'A'** Central Public Sector Enterprise (CPSE), recognizing its consistent Excellent performance.

#### What are Category CPSE?

- Central Public Sector Enterprises (CPSEs) are companies where the direct holding of the Central Government is 51% or more.
- To streamline management and salary structures, the Department of Public Enterprises (DPE) classifies these entities into four distinct schedules: A, B, C, and D.

#### Governing Act & Authority:

- **Governing Act:** Most CPSEs are incorporated under the **Companies Act, 2013** (or previous versions like the 1956 Act) or created as Statutory Corporations through specific Acts of Parliament.
- **Administrative Authority:** The Department of Public Enterprises (DPE), under the Ministry of Finance, is the nodal agency for categorization and policy formulation.

### History:

- The categorization system was introduced in 1965 following recommendations from the 'Committee on Top Posts.'
- It was designed to create a hierarchy based on the size of operations and strategic importance, primarily to determine the pay scales and seniority of Board-level executives (CMD, Directors).

### The Four Categories:

1. Schedule A: The highest tier, comprising large-sized enterprises with significant national and strategic importance.
2. Schedule B: Mid-sized enterprises.
3. Schedule C: Smaller enterprises or those with niche operations.
4. Schedule D: The smallest tier, often used for initial categorization of new CPSEs.

### Key Features of Categorization:

- **Quantitative Parameters:** Evaluation is based on the last five years of performance in terms of investment, capital employed, net sales, profit before tax, and number of employees.
- **Qualitative Factors:** Factors include national importance, complexity of problems, level of technology, and prospects for expansion.
- **Governance Structure:** Higher schedules (like 'A') typically allow for a more robust board structure and higher-ranking executive positions.
- **Salary Links:** The schedule directly determines the Industrial Dearness Allowance (IDA) pay scales for the Chairman, Managing Director, and other Board members.

### Significance of the Upgrade:

- Moving to Schedule 'A' grants the organization greater financial and operational powers, reducing the need for frequent ministerial approvals for large projects.
- reflects the entity's comparative advantage and potential to become a global player.

### ASTraM: Actionable Intelligence for Sustainable Traffic Management

- Former Dutch Prime Minister Dick Schoof recently visited the Bengaluru Traffic Management Centre to study the ASTraM system, an AI-driven platform that has gained international interest for its ability to predict and manage urban traffic congestion.

### About ASTraM:

- ASTraM is an advanced AI-based big data platform designed for macro-level traffic management.
- Unlike traditional GPS applications that only show current traffic, ASTraM acts as a smart traffic engine that provides holistic, real-time situational awareness to city authorities.

### Developed By:

- The system was developed through a collaborative effort between the Bengaluru Traffic Police and Arcadis, a prominent Dutch design and consultancy firm.

### Aim:

- The primary objective of ASTraM is to transform traffic policing from a reactive model (responding to complaints) to a proactive, data-driven model.
- It aims to reduce congestion, improve road safety, and streamline incident reporting through automated intelligence.

### How it Works?

- The platform functions by pooling massive amounts of data from various streams:
- **Data Integration:** It ingests live feeds from CCTV cameras, Automatic Number Plate Recognition (ANPR) systems, and open data sources.
- **Analysis:** The AI engine processes this data to identify patterns in both recurring (daily bottlenecks) and non-recurring (accidents/protests) congestion.
- **Communication:** The system batches detected issues and sends automated alerts to relevant traffic officers at 15-minute intervals, ensuring localized intervention.

### Key Features:

- **Situational Awareness:** Provides a bird's-eye view of the city's traffic health on a centralized dashboard.
- **Predictive Analytics:** Monitors trends to forecast potential traffic chokeholds before they paralyze the roads.
- **Incident Reporting Bot:** Uses automated tools (BOTs) to log and report accidents or road obstructions quickly.
- **Event Management:** Helps police prepare for large-scale events like processions or public unrest by simulating traffic impacts.
- **Dashboard Analytics:** Offers deep-dive data for long-term urban planning and infrastructure adjustments.

### Significance:

- Consolidates multiple media formats into one actionable picture, far outperforming manual monitoring or social media complaints.

- By providing more localized and accurate data than general mapping apps, it helps prevent accidents caused by human or GPS errors.

### **New GDP Series (Base Year FY23)**

- The Ministry of Statistics and Programme Implementation (MoSPI) has officially overhauled India's national accounts, shifting the GDP base year from **2011-12 to 2022-23** and introducing significant methodological shifts to improve accuracy.

#### **About New GDP Series (Base Year FY23):**

- The GDP base year is a standard reference point used by economists to calculate Real GDP.
- By using prices from a specific stable year (now 2022-23), the effect of inflation is removed, allowing the government to measure the actual increase in production and output of the economy.

#### **New Base Year:**

- Current: 2011-12
- **Revised: 2022-23 (FY23)**
- **Frequency:** India periodically updates this to align with the International System of National Accounts (SNA).

#### **Aim:**

- The primary goal is to improve accuracy by reflecting modern consumption patterns, the rise of the digital economy, and updated industrial technologies that were not prevalent in 2011.
- It seeks to align Indian national accounts with global statistical standards.

#### **Key Changes in the New GDP Series:**

1. **Advanced Inflation Adjustment (Deflation)**
  - **Granular Deflators:** The number of price indicators has tripled (from ~180 to ~600), utilizing specific CPI and WPI components to ensure real output isn't distorted by broad price averages.
  - **Double Deflation:** In a major technical shift for manufacturing and agriculture, inputs and outputs are now deflated separately.
  - This prevents profit fluctuations caused by raw material costs from being miscounted as actual production growth.
  - **Targeted Indices:** The use of composite economy-wide indices has been replaced by sector-specific and unit-value indices, tailoring the measurement to the unique price movements of

specific industries.

## 2. Enhanced Household & Informal Sector Capture

- **From Proxies to Actuals:** Instead of using old survey data to guess current activity, the series now uses annual level estimates from the Annual Survey of Unincorporated Sector Enterprise (ASUSE) and the Periodic Labour Force Survey (PLFS).
- **Capturing the Gig Economy:** New data codes specifically track the contribution of platform workers (e.g., delivery partners and aggregator drivers).

## 3. Integration of Big Data & Administrative Datasets

- **GST & Digital Footprints:** GST data is now a primary tool for cross-validating corporate growth and allocating economic activity across states.
- **Sectoral Tracking:** The series incorporates **e-Vahan** data for a precise count of road transport services and the Public Finance Management System (PFMS) for real-time tracking of government spending.

## 4. Structural Consistency & Accuracy

- **SUT Integration:** The Supply and Use Tables (SUT) framework is now used to bridge the gap between Production-side and Expenditure-side GDP, significantly reducing statistical discrepancies.
- **Refined Consumption (PFCE):** Private Final Consumption Expenditure is now estimated using a triangulated approach (Surveys + Commodity Flow + Production data) and follows the latest global COICOP 2018 standards.
- **Smoothing Quarterly Jumps:** By adopting the **Proportional Denton method**, the NSO has eliminated the step problem—the artificial spikes often seen in quarterly reports—ensuring a smoother, more realistic short-term growth trend.

### Implications:

- The GDP will now accurately account for newer sectors, such as digital services and gig-economy activities, which were underrepresented in the 2011 series.
- Double deflation will provide a more realistic picture of Value Added in factories by isolating profit margins from actual production volume.

### President Trump Imposes 15% Global Import Surcharge under Trade Act, 1974

- Following the US Supreme Court's invalidation of IEEPA tariffs, President Trump invoked the Trade Act of 1974 to impose a temporary 15% global import surcharge.

### About New Global Tariff

- **Implementation:** Effective 24 February 2026, a 15% ad valorem tariff will be imposed globally under Section 122 of the Trade Act of 1974.
- **Ad Valorem:** An ad valorem tariff is a trade tax calculated as a fixed percentage of an imported good's estimated value, not its weight or physical quantity.
- **Strategic Exemptions:** Critical minerals, agricultural goods, pharmaceuticals, and select vehicles are exempt to shield domestic supply chains from sudden import-driven inflation.
- **Uniform Baseline:** Unlike country-specific rates under IEEPA, the new directive imposes a flat, non-discriminatory surcharge on imports from all trading nations.
- **India Impact:** Indian exporters will now face a flat 15% tariff, a reduction from the 18% reciprocal rate previously set under IEEPA.
- **Section 122 (US Trade Act, 1974):** An emergency power letting the US President impose temporary import surcharges (up to 15%) and/or quotas to address a severe balance-of-payments problem or sharp dollar decline, with measures expiring after 150 days unless Congress extends them.

## CONSTITUTION, POLITY AND GOVERNANCE

### SC Prohibits the Use of Stem Cell Therapy for Autism Spectrum Disorder

- Supreme Court has strictly prohibited the use of stem cell therapy as a routine clinical treatment for Autism Spectrum Disorder (ASD).
- **Medical Status:** The court affirmed the National Medical Commission's stance to classify the therapy for autism as an experimental procedure rather than an established standard of care.
- **Liability:** Medical practitioners offering this therapy as a commercial service are now liable for professional misconduct and medical malpractice.
- **Consent Validity:** The court ruled that "informed consent" obtained from parents is legally invalid because the treatment lacks proven scientific efficacy and safety.
- **Permissible Scope:** The administration of stem cells is permitted only when conducted within the strict framework of approved and monitored clinical trials.

### About Stem Cell Therapy

- **Biological Nature:** Stem cells are undifferentiated biological cells capable of differentiating into specialised tissues and of self-renewing through division.
- **Therapeutic Function:** Regenerative medicine utilises these viable cells to repair, replace, or regenerate dysfunctional tissues in the body.
- **Harvesting Sources:** Therapeutic cells are derived from three main sources: adult tissues (such as bone marrow), early-stage embryos (embryonic stem cells), and umbilical cord blood.
- **Induced Pluripotent Stem Cells (iPSCs):** Scientists can reprogram adult somatic cells into an embryonic-like state to create “man-made” stem cells, bypassing the ethical concerns of using embryos

### Transplant Types: Therapies are categorised into –

1. **Autologous Transplant:** In this mode of therapy, the patient serves as their own donor, minimising the risk of immune rejection.
  2. **Allogeneic Transplant:** This method involves harvesting stem cells from a matched healthy donor, which carries a higher risk of Graft-versus-Host Disease (GvHD).
- **Administration:** Clinical delivery is performed through various methods, including Intravenous (IV) infusion, Intrathecal (spinal fluid) injection, or direct site injection.

### Regulation of Stem Cell Therapy in India

- **Legal Status:** Under the **New Drugs and Clinical Trial Rules, 2019**, stem cell-derived products are classified as “New Drugs” and require clinical trials before public use.
- **Approving Body:** The **Central Drugs Standard Control Organisation (CDSCO)** is the primary authority for approving clinical trials and granting market authorisation.
- **Internal Compliance:** Every research institution is required to establish an Institutional Committee for Stem Cell Research (IC-SCR) to ensure mandatory oversight.
- **Research Framework:** The National Guidelines for Stem Cell Research, 2017 (ICMR & DBT), categorise research into Permissible, Restricted, and Prohibited levels to regulate conduct.
- **Approved Treatments:** Hematopoietic Stem Cell Transplantation (HSCT) for blood cancers is the primary established standard of care.
- Limited market authorisation has also been granted to specific stem cell products, e.g., **Stempeucel for Critical Limb Ischemia/Buerger's Disease**.
- **Banned Activities:** India strictly prohibits research on human germline gene therapy, reproductive cloning, and the growth of embryos in vitro beyond 14 days.

- **Restricted Projects:** Research involving the creation of human embryos (IVF) specifically for deriving stem cells requires strict approval from the **National Apex Committee**.
- **Investigational Use:** All other applications (e.g., for autism, cerebral palsy, or anti-ageing) are classified as “experimental” to limit use to monitored clinical trials.
- **Marketing Ban:** The Drugs and Magic Remedies Act, 1954, strictly prohibits advertising unproven stem cell “miracle cures” to protect the public from exploitation.

### **Motion of Thanks to President's Address**

- Both Houses of Parliament took up discussion on the Motion of Thanks to the President's Address delivered by Droupadi Murmu at the start of the **Budget Session**.

#### **Motion of Thanks to President's Address:**

- The Motion of Thanks is a formal resolution moved in both Houses of Parliament to express gratitude to the President for the Special Address delivered to a joint sitting of Parliament at the beginning of each year and after a general election.
- It provides Parliament an opportunity to debate, critique, and assess the policies and programmes of the Government outlined in the Address.

#### **Origin and background:**

- The practice flows from the Westminster parliamentary tradition, adapted to India's constitutional framework.
- The President's Address itself is the statement of the Government's policy, drafted by the Council of Ministers and approved by the Cabinet.
- Discussion on the Address takes place only through the Motion of Thanks, not directly on the Address.

#### **Constitutional provisions:**

- **Article 86(1):** Empowers the President to address either House or both Houses of Parliament assembled together.
- **Article 87(1):** Mandates a Special Address by the President
  - At the commencement of the first session after a general election, and
  - At the commencement of the first session of every year.

- **Article 87(2):** Requires Parliament to make rules for discussion on matters referred to in the President's Address, which is done through the Motion of Thanks.

**Key features of the Motion of Thanks:**

- Moved and seconded by members selected by the Government (through the Ministry of Parliamentary Affairs).
- **Wide scope of discussion:** Members can raise any national or international issue, including matters not mentioned in the Address.
- **Amendments allowed:**
- Opposition members may move amendments expressing regret that the Address omitted or inadequately covered certain issues.

**Prime Minister's reply:**

- The debate concludes with a reply by the Prime Minister, after which amendments are voted upon.
- **Voting:**
- The Motion is put to vote; if amendments are adopted, the Motion is passed in amended form.
- The Motion of Thanks to the President's Address has been adopted with amendments by the Rajya Sabha only five times in India's parliamentary history — 1980, 1989, 2001, 2015 and 2016.
- In contrast, no amendment to the Motion of Thanks has ever been carried in the Lok Sabha.
- **Significance:**
- **Parliamentary accountability:** Enables Parliament to hold the Executive accountable for its policies and priorities.
- **Policy debate:** Acts as the first major debate of the year, setting the tone for the Budget Session.
- **Opposition's platform:** Provides space to formally criticise government policies through constitutional means.

## Frozen Embryo Donation

- Delhi HC has issued notice on a PIL challenging provisions of the Assisted Reproductive Technology (Regulation) Act, 2021 that mandate destruction of unused frozen embryos.
- **Frozen Embryo Donation:** A regulated process where surplus cryopreserved embryos from IVF treatments are voluntarily transferred to another infertile couple to achieve pregnancy.

### Existing Legal Framework for Frozen Embryo Under the ART Act, 2021

- **Permitted Donations:** The Act allows regulated altruistic donation of sperm and eggs, enabling donor-assisted IVF and even double-donor IVF procedures under strict medical oversight.
- **Non-Genetic Parenthood Recognition:** It legally accepts situations where children born through donor sperm and donor eggs have no genetic link to the commissioning parents.
- **Storage Time Limit:** Surplus embryos generated during IVF cycles can be cryopreserved for a maximum duration of 10 years as per Section 28(2).
- **Restricted End Use of Embryos:** After the storage period, unused embryos must either be donated for scientific research or be compulsorily allowed to perish.
- **Clinic Preservation Rules:** IVF clinics are legally bound to retain frozen embryos only for the original couple and are prohibited from transferring them to others.
- **Consent-Based Limitations:** Prescribed consent forms do not include embryo donation as an option, effectively closing the pathway for reproductive transfer.

### Issues Raised

#### Core Legal Contradiction

- **Fresh vs Frozen Embryo Disparity:** The ART Act allows transfer of fresh donor embryos to infertile couples but prohibits the use of biologically identical frozen embryos for reproductive purposes.
- **Inconsistent Recognition:** While donor-assisted IVF without genetic linkage is legally accepted, embryo donation is blocked despite involving the same principle.

#### Constitutional Contradiction

- **Article 14 Violation:** The distinction between permitted fresh embryos and prohibited frozen embryos lacks rational classification and nexus with the law's objective.
- **Article 21 Infringement:** Denial of embryo donation restricts reproductive autonomy, privacy and dignity within assisted reproductive choices.

### Need for Frozen Embryo Donation

- **Infertility Burden:** India has around 27–30 million infertile couples, making expanded assisted reproductive options crucial for public health.
- **IVF Financial Strain:** A single IVF cycle costs roughly ₹1.5–3 lakh, and many couples require 2–3 cycles, pushing treatment beyond reach for middle-income families.
- **Existing Medical Resources:** Thousands of embryos remain cryopreserved annually, with clinics

reporting 30–40% surplus embryos after successful IVF cycles.

- **Shortening Parenthood Delays:** Traditional adoption often takes 2–5 years due to procedural backlogs, while embryo donation can enable quicker family formation.
- **Improving Success Rates:** Frozen embryo transfers show 35–50% pregnancy success rates, comparable to fresh IVF procedures in modern clinics.

## Sabhasaar Initiative

- SabhaSaar Initiative is in the news as over 1.11 lakh Gram Panchayats have adopted this AI-enabled tool for automated Gram Sabha meeting summarisation as of January 2026.

### Sabhasaar Initiative:

- SabhaSaar is an AI-powered voice-to-text and meeting summarisation platform designed to automatically generate structured **Minutes of Meetings (MoM)** from Gram Sabha and Panchayat meeting recordings.
- **Launched in: 14 August 2025**
- **Organisations involved:**
  - Ministry of Panchayati Raj – Nodal implementing ministry
  - IndiaAI Mission under Ministry of Electronics and Information Technology – AI & cloud infrastructure

### Aim:

- To strengthen participatory democracy, transparency, and efficiency in local self-government by digitising and standardising Gram Sabha documentation.

### Key features:

- **AI & NLP-based transcription:** Converts audio/video discussions into structured minutes, capturing decisions, action points, and deliberations.
- **Multilingual support:** Integrated with Bhashini; currently supports 13 Indian languages, with plans for expansion.
- **Secure data governance:** Operates entirely within government infrastructure, compliant with the Digital Personal Data Protection (DPDP) Act, 2025.
- **Governance analytics:** Tracks meeting type, frequency, attendance, resolutions, and follow-up actions.

**Significance:**

- **Boosts grassroots governance:** Reduces manual workload, allowing Panchayat officials to focus on service delivery.
- **Enhances transparency & accountability:** Standardised, verifiable meeting records improve public trust.
- **Digital empowerment of Panchayats:** Aligns with Digital India and AI-for-Governance objectives, especially in rural areas.

**NDMA Released India's First Guideline for Disaster Victim Identification**

- The National Disaster Management Authority (NDMA) released India's first-ever Standard Operating Procedure (SOP) and Guidelines for Disaster Victim Identification (DVI).
- **Commemorative Release:** The guidelines were released on the 25th anniversary of the 2001 Bhuj earthquake to standardise responses to Mass Fatality Incidents (MFIs).
- **Scientific Alignment:** The framework replaces ad hoc body disposal with a scientific DVI protocol aligned with Interpol standards.
- NDMA is India's apex statutory body for disaster management, under the **Ministry of Home Affairs, established by the Disaster Management Act, 2005.**

**Key Guidelines for Disaster Victim Identification (DVI)**

- **Identification Workflow:** The identification process follows a mandatory four-stage workflow:
- **Systematic Recovery:** Organised retrieval of remains to prevent commingling or loss of evidence.
- **Post-Mortem (PM) Data:** Gathering biometric data like DNA and fingerprints from the deceased.
- **Ante-Mortem (AM) Data:** Collecting medical records and personal details from the victims' families.
- **Reconciliation:** Scientifically matching PM and AM data to establish positive identification before releasing the remains.
- **Humanitarian Focus:** The guidelines emphasise Humanitarian Forensics, treating the dignified management of the dead as a fundamental human right.
- **Psychosocial Support:** Psychosocial support for families is integrated into the official protocol to minimise trauma during the waiting period.
- **Dental Registry:** It proposes creating a National Dental Data Registry, since dental evidence is often the main surviving identifier in high-impact disasters.
- **Forensic Archaeology:** Forensic Archaeology is recognised as a standard method for the

systematic recovery of buried remains.

- **Specialised Teams:** States are mandated to establish DVI Teams comprising police, pathologists, and archaeologists to ensure coordinated action.
- **Disposal Mandate:** Mass burials or unscientific disposal of unidentified bodies are prohibited to preserve the possibility of identification.

### Central Board of Film Certification (CBFC)

- **Source (PIB):** The Central Board of Film Certification (CBFC) reduced the feature film certification time to 18 working days, from the statutory 48 working days limit.
- The CBFC is a **statutory body** established under **the Cinematograph Act, 1952**, and operates under the **Ministry of Information and Broadcasting**.
- **Mandate:** It regulates the public exhibition of films, requiring a certificate for legal screenings in cinemas or on television.
- **Structure:** The board **comprises the Chairperson and 12 to 25 members** appointed by the Central Government for a **three-year term**.
- **Institutional Presence:** It is headquartered in Mumbai and operates through nine regional offices, supported by Advisory Panels.
- **Constitutional Basis:** Certification is governed by the Cinematograph Act, reflecting “reasonable restrictions” under Article 19(2) of the Constitution.
- **Appellate Mechanism:** The Film Certification Appellate Tribunal (FCAT) was abolished in 2021, requiring filmmakers to approach the High Courts for grievances.

### Supreme Court Directive on Appointment of DGPs

- The Supreme Court directed the UPSC to take action against State governments that delay the appointment of Directors General of Police (DGPs).

#### Key Directives of the Court

- **Contempt Authorisation:** The Court authorised the UPSC to initiate contempt of court proceedings if States fail to submit timely proposals for these appointments.
- **Direct Communication:** The UPSC is now empowered to write directly to defaulting State Governments, demanding proposals for regular DGP appointments.

- **Ad hoc Prohibition:** The SC strongly condemned the practice of appointing “Acting” or ad hoc DGPs, noting that it violates the 2006 Prakash Singh judgment.
- The **Prakash Singh Case** is a landmark Supreme Court verdict that issued seven binding directives to insulate the police from political interference.

### About Appointment of DGPs

- The appointment of a State DGP is a joint process between State governments and the UPSC, governed by Supreme Court directives.
- **Proposal Submission:** States must submit a list of eligible IPS officers to the UPSC at least three months before the incumbent retires.
- **Empanelment Committee:** A committee, chaired by the UPSC Chairman, evaluates the candidates.
- The committee includes the Union Home Secretary, the State's Chief Secretary, the outgoing State DGP, and one head of a Central Armed Police Force (CAPF) nominated by the MHA.
- **Final Selection:** The UPSC selects a panel of three officers based on seniority and merit, from which the State must appoint the permanent DGP.
- **Eligibility:** Candidates must be of Additional Director General (ADG) rank with 25 years of service, at least 6 months of residual tenure and at least 10 years of experience in critical areas like law and order.
- **Tenure Security:** The appointed DGP must have a fixed tenure of at least 2 years, irrespective of their date of superannuation.

### Tripartite Agreement for creation of the Frontier Nagaland Territorial Authority (FNTA)

- A tripartite agreement was signed between the Centre, the Nagaland government, and the **Eastern Nagaland People's Organisation (ENPO)** to create the Frontier Nagaland Territorial Authority (FNTA), granting enhanced autonomy to six eastern districts of Nagaland.

### About Tripartite Agreement for creation of the Frontier Nagaland Territorial Authority (FNTA):

- The agreement provides for the establishment of the Frontier Nagaland Territorial Authority (FNTA) — an autonomous territorial governance structure for six districts of eastern Nagaland, with substantial devolution of administrative and developmental powers while remaining within the state of Nagaland.

**Parties involved:**

- Government of India
- Government of Nagaland
- Eastern Nagaland People's Organisation (ENPO) — apex body representing eight recognised Naga tribes.
- **Districts covered:** Tuensang, Mon, Kiphire, Longleng, Noklak, and Shamator

**Aim of the agreement:**

- To address long-standing political, economic, and developmental grievances of Eastern Nagaland.
- To ensure equitable development, local decision-making, and financial autonomy.
- To strengthen peace and stability in the North-East region.

**Key features:**

- **Creation of FNTA:** A new territorial authority with administrative autonomy for six districts.
- **Devolution of powers:** Transfer of authority over 46 subjects to FNTA.
- **Financial autonomy:**
  - Development outlay to be shared proportionate to population and area
  - Fixed annual allocation from the Centre.
  - Initial establishment expenditure to be borne by the Union Ministry of Home Affairs.

**Administrative structure:**

- FNTA to have a mini-Secretariat.
- Headed by an Additional Chief Secretary / Principal Secretary-level officer.
- **Constitutional safeguard:** The agreement does not dilute Article 371(A) of the Constitution, which protects Naga customary laws, land, and resources.
- **Democratic resolution:** Outcome of prolonged dialogue, negotiations, and confidence-building since 2021-22.

**Significance**

- **Inclusive federalism:** Demonstrates flexible autonomy arrangements within the Indian Constitution.
- **Peace-building:** Reduces risk of political radicalisation and separatist demands in Eastern Nagaland.

- **Development push:** Enables faster infrastructure creation, better resource utilisation, and targeted welfare delivery.

### Administrative Scorecards for Union Secretaries

- The Cabinet Secretariat introduced 'administrative scorecards' for the first time to assess the performance and efficiency of Union Secretaries.
- **Objective:** To eliminate administrative delays and enhance accountability, in line with the "Minimum Government, Maximum Governance" vision.
- **Assessment Framework:** The system measures performance on a 100-mark scale across parameters like file disposal, scheme expenditure, and grievance redressal.
- **Weighted Metric:** The Secretariat assigns the highest weightage (20%) to file disposal to ensure prompt decision-making within departments.
- **Negative Marking:** The framework incorporates negative marks for lapses such as excessive foreign visit expenditure and delayed payments to MSMEs.
- **Discretionary Marks:** The Cabinet Secretary may award discretionary marks for exceptional contributions or innovative work beyond routine duties.
- **Benchmarking:** This mechanism enables departments to compare current performance with historical data and with other ministries.
- **Significance:** The reform shifts qualitative reporting to quantitative measures, moving bureaucracy towards performance-based management.

### Indian Pharmacopoeia Commission

- The Indian Pharmacopoeia Commission (IPC) signed three Memoranda of Understanding (MoUs) to enhance medicine safety, quality and healthcare professional capacity.
- A pharmacopoeia is an official, legally binding compendium of quality standards that ensure the identity, purity, and strength of medicines within a jurisdiction.

#### About Indian Pharmacopoeia Commission (IPC)

- IPC is an autonomous institution, established in 2005 (operational since 2009), under the Ministry of Health and Family Welfare. It is headquartered in Ghaziabad, Uttar Pradesh.
- Its primary function is to set standards for all drugs manufactured, sold, and consumed in India to

ensure quality, safety, and efficacy.

- **Legal Authority:** The standards prescribed by IPC are legally binding under the **Second Schedule of the Drugs and Cosmetics Act, 1940.**
- **Key Publications:** The Indian Pharmacopoeia (IP), the official book of standards for drugs, and the National Formulary of India (NFI), a manual promoting the rational use of medicines.
- **Pharmacovigilance:** IPC serves as the National Coordination Centre (NCC) for the **Pharmacovigilance Programme of India (PvPI)** to monitor Adverse Drug Reactions (ADRs).
- **Materiovigilance:** It serves as the NCC for the Materiovigilance Programme of India (MvPI) to monitor the safety of medical devices.
- **Global Recognition:** The commission is designated as a WHO Collaborating Centre for Pharmacovigilance within Public Health Programmes.

## Form 7 Controversy

- Form 7 has become controversial during the ongoing Special Intensive Revision (SIR) of electoral rolls after allegations of bulk, fraudulent deletion requests targeting eligible voters.

### About Form 7:

- Form 7 is a statutory form used to object to the inclusion of a name (one's own or another person's) in the electoral roll on specified grounds such as death, duplication, shifting of residence, ineligibility by age or citizenship, or misrepresentation.

### Legal basis:

- Governed by the Election Commission of India
- Prescribed under **Registration of Electors Rules, 1960**, framed under the Representation of the People Act, 1950
- As per Section 13(2), objections must be filed in Form 7 by a person whose name is already on the electoral roll
- Booth Level Agents (BLAs) are also permitted to file objections

### Aim:

- To maintain the accuracy and integrity of electoral rolls.
- To remove ineligible, duplicate, shifted or deceased voters.
- To prevent electoral fraud and ensure free and fair elections.

### How it works?

- Any registered elector of the constituency (including Booth Level Agents) can file Form 7.
- Objection can be raised against another voter or for self-deletion.
- On receipt, the Booth Level Officer (BLO) conducts physical verification (multiple visits if required).
- The concerned voter is issued a notice and hearing by the Electoral Registration Officer (ERO).
- Appeals against ERO's decision lie with the District Magistrate within 15 days.
- Filing a false declaration is punishable under Section 32 of the RP Act, 1950.

### Key features

- **Expanded scope (2022 amendment):** Any voter in a constituency (not just same booth) can object
- **Mandatory verification:** Especially if an applicant files more than five objections
- **Grounds-based deletion:** Death, absent/shifted, duplicate entry, underage, non-citizenship
- **Due process safeguards:** Physical verification, notices, hearings, and appeal mechanism
- **Legal deterrence:** False claims attract imprisonment up to one year or fine or both

### Issues / concerns

- Alleged coordinated submissions seeking mass deletions.
- Reports of voters denying having filed Form 7 despite signed forms.
- About 6.5 crore names removed as 'ASD' (Absent, Shifted, Dead/Duplicate), with high numbers in Uttar Pradesh, Tamil Nadu, and Gujarat.

## Protocols for Singing Vande Mataram

- The Ministry of Home Affairs (MHA) issued the first formal protocols for singing the National Song Vande Mataram, especially when played with the National Anthem.

### Key Guidelines Notified

- **Order of Performance:** When the National Song and National Anthem are rendered together, Vande Mataram must be sung or played first, ensuring uniform ceremonial protocol.
- **Complete Version Mandate:** The officially approved six-stanza version shall be performed at

specified formal and ceremonial state functions.

- **Standing Protocol:** The audience must stand in attention as a mark of respect whenever the official version is sung or played.
- **Film Exception:** Standing is not required when featured within newsreels or documentaries.

### About Vande Mataram

- **Composition:** Bankim Chandra Chattopadhyay wrote the poem in 1875. He later included it in his **1882 Bengali novel Anandamath**, published in the magazine **Bangadarshan**.
- **Structure:** The poem has six stanzas; the first two use Sanskrit and the latter ones use Bengali.
- **Meaning:** The title means "I praise thee, Mother", symbolising devotion to the motherland
- **Debut:** Tagore first sang Vande Mataram publicly at the Congress Session in Calcutta, **1896**, presided over by **M. Rahmathulla Sayani**.
- **Pre-Independence Adoption:** The first two stanzas were adopted as the National Song (1937) by the Congress Working Committee.
- **Post-Independence Status:** Officially designated as the **National Song by Dr Rajendra Prasad** in the Constituent Assembly (24 Jan 1950).
- **Constitutional Position:** Not explicitly mentioned in the Constitution; Article 51A(a) mandates respect for the National Anthem, not the National Song.

## Regulation of AI Content in India

- The Union Government notified **amendments to the IT (Intermediary Guidelines & Digital Media Ethics Code) Rules, 2021**, mandating **labelling of AI-generated content**.

### Key Amendments Notified

- **Mandatory AI Labelling:** Photorealistic AI-generated or synthetically generated content must carry a prominent disclosure, preventing users from mistaking it as real.
- **Compressed Takedown Timelines:** Platforms must remove court/government-flagged unlawful content within 3 hours and non-consensual deepfakes within 2 hours, reduced from 24–36 hours.
- **User Disclosure Duty:** Platforms must seek self-declaration from users on whether content is AI-generated, failing which platforms must label or remove it.
- **Narrowed AI Definition:** Routine edits and quality-enhancing AI tools (e.g., camera touch-ups) are excluded from the definition of synthetically generated content.

### Rationale Behind the Amendment

- **Prevent Viral Harm:** Unlawful and deepfake content often goes viral within minutes; studies show over 60% of harmful content reaches peak circulation within 6 hours.
- **Protect Dignity and Privacy:** India has seen a sharp rise in non-consensual intimate imagery (NCII) cases; NCRB data shows cybercrime cases rose by over 31% between 2022–2023.
- **Platform Responsibility:** With India having over 850 million internet users, intermediaries are now expected to exercise higher due diligence proportional to their technological capacity.
- **Ethical AI Governance:** Aligns with OECD AI Principles and G20 AI Safety Guidelines to promote responsible AI deployment in India.

### Concerns and Challenges

- **Operational Feasibility:** A 2–3 hour takedown window may be difficult where illegality is ambiguous, especially when law-enforcement notices lack detailed reasoning.
- **Over-Censorship Risk:** Fear of penalties and loss of safe harbour may push platforms towards precautionary takedowns, chilling legitimate speech and satire.
- **Safe Harbour Uncertainty:** Non-compliance can trigger loss of intermediary immunity, exposing platforms to criminal and civil liability for user-generated content.
- **Compliance Burden:** Smaller platforms and start-ups may lack real-time AI detection tools and moderation staff, creating uneven regulatory impact.

### Way Forward

- **Clearer Illegality Tests:** Issue standardised, content-specific guidelines to identify unlawful and deepfake material; E.g., predefined indicators for NCII, impersonation and election-related misinformation.
- **Graded Timelines:** Introduce risk-based takedown timelines instead of a uniform window; E.g., immediate removal for NCII, extended review for context-dependent speech.
- **Independent Oversight:** Establish an independent appellate or review mechanism to address wrongful takedowns; E.g., a digital content ombudsman with time-bound decisions.
- **Tech Enablement:** Support platforms through shared AI detection tools, hash databases and government-backed infrastructure; E.g., a national deepfake detection and verification facility.

## Food Adulteration in India

- **Source (PIB):** The Union Minister of State for Health tabled a written reply in the Rajya Sabha, outlining measures taken to prevent food adulteration.

### About Food Adulteration

- Food adulteration involves the intentional or incidental degradation of food quality by adding inferior substances (adulterants) or removing essential nutrients.
- **Vulnerable Sectors:** The dairy sector remains a primary target for adulterants such as water, urea and caustic soda, along with spices and edible oils.
- **Adverse Impacts:** Long-term consumption causes organ failure, cancer (from dyes like **Metanil Yellow**), and cardiac issues; it damages India's reputation in the global export market.

### Legal Framework to Prevent Food Adulteration

- **Primary Legislation:** The Food Safety and Standards Act, 2006, mandates strict regulations for the manufacturing and storage of food items; it establishes the FSSAI as the regulatory body.
- **Criminal Liability:** The Bharatiya Nyaya Sanhita (BNS), 2023, outlines the criminal framework for the sale of noxious or adulterated food under Sections 274 and 275.
- **Consumer Rights:** The Consumer Protection Act (CPA), 2019, empowers the CCPA to impose penalties for misleading advertisements and for unsafe food products.
- **FSSAI:** The Food Safety and Standards Authority of India is the apex statutory body under the Ministry of Health & Family Welfare, to protect public health by regulating the food supply chain.
- **CCPA:** The Central Consumer Protection Authority is the regulatory arm of the Ministry of Consumer Affairs, responsible for protecting consumers' rights and preventing their violations.

### Key Government Initiatives & Measures

- **Eat Right India:** It operates as a flagship movement to transform the food ecosystem, ensuring food is safe, healthy, and sustainable.
- **DART:** The Detect Adulteration with Rapid Test is a manual released by FSSAI that enables households to identify common adulterants.
- **FSW:** Food Safety on Wheels deploys mobile testing labs to conduct surveillance in remote areas; there are currently 305 FSWs across States and UTs.
- **RUCO:** The Repurpose Used Cooking Oil initiative collects used oil to produce biodiesel, preventing it from re-entering the food chain.

- **SFSI:** The State Food Safety Index ranks states based on their performance in food safety.
- **Lab Infrastructure:** The FSSAI has notified 246 NABL-accredited labs and 24 Referral Food Laboratories for the analysis of food samples for adulteration.

### Rashtriya Karmayogi Large Scale Jan Seva Programme

- The Rashtriya Karmayogi Large Scale Jan Seva Programme (Phase-II) concluded under the Ministry of Personnel, Public Grievances and Pensions.
- It is a national behavioural transformation initiative by the **Capacity Building Commission (CBC)**, conducted under the broader umbrella of Mission Karmayogi.
- **Objective:** To instil '**Seva Bhav**' and '**Svadharm**' among officials, shifting from a "rule-based" to a "**role-based**" and "**purpose-driven**" approach.
- **Implementation:** Phase I (Jan 2025) covered officials in Delhi NCR, while Phase II (Apr 2025–Feb 2026) expanded nationwide to organisations under Central Ministries.
- **Scale:** It has successfully trained approximately 10.5 lakh government servants nationwide.
- **Significance:** This high-impact initiative improves the quality of service delivery, enhances responsiveness, and accelerates the vision for Viksit Bharat 2047.

#### About Mission Karmayogi

- Mission Karmayogi, officially known as the National Programme for Civil Services Capacity Building, was launched in 2020 to create a future-ready workforce.
- **Objective:** To make civil servants more creative, proactive, innovative, and technology-enabled to deliver citizen-centric governance.
- **Digital Infrastructure:** The mission utilises the iGOT Karmayogi platform to enable officials to learn "anytime, anywhere, on any device".
- **Competency Framework:** It employs the 'Framework of Roles, Activities, and Competencies (FRAC)' to map specific roles to required competencies.
- **Institutional Structure:** Includes the PM's Public Human Resources Council (apex body), CBC (executive body), Karmayogi Bharat SPV (manages the iGOT platform), and a Coordination Unit.
- **Key Achievements:** The iGOT Karmayogi platform currently hosts over 1.49 crore registered users and over 7.26 crore course completions.
- **Key Achievements:** The **iGOT Karmayogi** platform currently hosts over 1.49 crore registered users and over 7.26 crore course completions.

## New MoD Guidelines for Armed Forces Publications

- The Ministry of Defence (MoD) is creating new guidelines for book publications by armed forces personnel, incorporating provisions of the **Official Secrets Act (OSA), 1923**.
- The move follows controversy over former **Army Chief M. M. Naravane's** unpublished memoir, which discloses sensitive military information.

### About Official Secrets Act (OSA), 1923

- The Act is a colonial-era legislation originally enacted to suppress nationalist newspapers and dissent.
- It traces back to the **Indian Official Secrets Act of 1889**, which was strengthened in 1904 under Lord Curzon and consolidated in 1923.
- **Objective:** To protect India's sovereignty, defence, and intelligence infrastructure by penalising espionage and unauthorised possession of classified information.
- **Scope:** The Act applies to all Indian citizens, including government officials, whether within or outside India, and holds company executives liable.

### Key Legal Provisions of the Act

- **Espionage Offence:** Section 3 criminalises approaching prohibited places or collecting information useful to an enemy (up to 14 years' imprisonment).
- Prohibited Places include restricted areas like defence establishments, arsenals, and notified infrastructure (e.g., specific railway stations or ports).
- **Evidence Standard:** Section 4 treats communication with a foreign agent as evidence of prejudicial action towards the State; one is presumed to have communicated if they have their name or address.
- **Wrongful Communication:** Section 5 punishes unauthorised sharing or retention of official codes and documents (up to 3 years).
- **Harbouring Spies:** Section 10 penalises knowingly sheltering anyone who commits an espionage offence under Section 3.
- **Search Powers:** Section 11 empowers a Magistrate to issue search warrants based on reasonable grounds of suspicion of an offence.
- **Cognizable Nature:** Section 12 allows the police to arrest without a warrant for most offences.

## Petroleum and Natural Gas Regulatory Board (PNGRB)

- The Petroleum and Natural Gas Regulatory Board (PNGRB) has approved new guidelines for the injection of Compressed Biogas (CBG) into Natural Gas Pipeline (NGPL) and City Gas Distribution (CGD) networks.

### **Petroleum and Natural Gas Regulatory Board (PNGRB):**

- PNGRB is a **statutory regulatory body** responsible for regulating the downstream petroleum and natural gas sector in India.
- **Established In:** 2006 under the **Petroleum and Natural Gas Regulatory Board Act, 2006**
- **Headquarters:** New Delhi

### **Aim:**

- To protect consumer interests in petroleum and natural gas markets.
- To promote fair trade and competition among entities.
- To ensure uninterrupted and adequate supply of petroleum, petroleum products, and natural gas across the country.

### **Key Functions**

- **Regulatory Oversight:** Authorizes and regulates entities to build and operate pipelines, LNG terminals, and CGD networks.
- **Market & Consumer Protection:** Monitors prices, ensures fair competition, and prevents restrictive trade practices.
- **Access & Tariff Regulation:** Specifies pipeline access codes and regulates transportation rates for common/contract carriers.
- **Technical & Safety Standards:** Lays down technical standards, specifications, and safety norms for petroleum and gas infrastructure.
- **Data & Infrastructure Governance:** Maintains sectoral data bank and oversees infrastructure expansion for equitable distribution.
- **Significance of Recent Approval**
- **Mainstreams Green Gas:** Enables integration of domestically produced CBG into NGPL and CGD networks.
- **Enhances Energy Security:** Reduces dependence on imported LNG by promoting indigenous bio-gas production.

- **Boosts Project Viability:** Assured pipeline-based evacuation improves financing and investment prospects for CBG projects.

## Privilege Notice

- The Union Government has announced that it will move a Privilege Notice against Leader of Opposition for allegedly making baseless and misleading statements during the Budget discussion in the Lok Sabha.

### About Privilege Notice:

- A Privilege Notice is a formal complaint raised by a Member of Parliament (MP) alleging that a breach of privilege or contempt of the House has occurred.
- Parliamentary privilege refers to certain special rights and immunities enjoyed by Parliament and its members to ensure they can perform their duties without obstruction or intimidation
- If these rights are violated, it may amount to a breach of privilege and can be punished by the House.

### Articles Associated:

- **Article 105** – Powers, privileges and immunities of Parliament and its Members (for Parliament).
- **Article 194** – Similar provisions for State Legislatures.
- **Article 122** – Courts cannot question the validity of parliamentary proceedings on grounds of procedural irregularity.
- **Article 105(2)** provides immunity to MPs for anything said or any vote given in Parliament.

### When Can a Privilege Notice Be Moved?

- A member is obstructed from performing parliamentary duties.
- There is misleading of the House by providing false information.
- There is defamation or attack on the dignity of Parliament or its members.
- There is publication of distorted or expunged proceedings.
- There is contempt of the House, i.e., any act that lowers its authority.
- The Speaker (Lok Sabha) or Chairman (Rajya Sabha) decides whether the matter should be admitted.
- **Powers of Parliament to Punish:**

- Each House has the power to punish for breach of privilege or contempt.

**Punishments may include:**

- Admonition (warning)
- Reprimand
- Imprisonment
- Suspension (for members)
- Expulsion (for members)
- These powers are considered essential to protect the authority and dignity of Parliament.
- **Procedure of a Privilege Notice:**
- A member submits a written notice to the Speaker/Chairman.
- The Presiding Officer decides whether it is admissible.

**If admitted, it may be:**

- Taken up in the House directly, or
- Referred to the Committee of Privileges for investigation.
- The Committee examines evidence and submits a report.
- The House debates and decides the punishment, if any.
- **Significance:**
- Protects the dignity and authority of Parliament.
- Ensures accountability of members for statements made inside the House.
- Maintains discipline and decorum in parliamentary debates.

### Spirit of 'Nagrikdevo Bhava'

- Prime Minister of India dedicated '**Seva Teerth**' to the nation, emphasizing the guiding principle of 'Nagrikdevo Bhava' (Citizen is God).
- The initiative symbolically reinforces the government's commitment to citizen-centric governance under the vision of India First.

**About Spirit of 'Nagrikdevo Bhava':**

- 'Nagrikdevo Bhava' translates to "May the citizen be treated as God", drawing inspiration from the ancient Indian ethos of **Atithi Devo Bhava**.

- It places the citizen at the center of governance, redefining public service as a sacred duty rather than mere administrative responsibility.

### Philosophical Foundation

- Rooted in Indian civilizational values, particularly the concept of Seva (selfless service) and Dharma (duty-bound conduct).
- Resonates with Gandhian philosophy of **Antyodaya**, which prioritizes the welfare of the last person.
- Aligns with the constitutional morality embedded in Articles 14 and 21, ensuring dignity and equality of every citizen.
- Reflects the ethical dimension of governance where public office is seen as a trust (Lok Seva).

### Significance

- **Citizen-Centric Governance:** Reinforces service delivery reforms like Digital India, Jan Dhan-Aadhaar-Mobile (JAM) trinity, and Direct Benefit Transfer.
- **Administrative Accountability:** Encourages transparency, responsiveness, and grievance redressal mechanisms.
- **Moral Legitimacy of State Power:** Shifts governance from authority-driven to service-driven administration.
- **Inclusive Development:** Supports the Viksit Bharat 2047 vision by ensuring that growth benefits every citizen.

## Complaints Against Judges in India

- The Union Law Minister informed the Lok Sabha that the office of the Chief Justice of India received 8,630 complaints against sitting judges between 2016 and 2025.

### Complaints Against Judges in India:

- Complaints against judges of the Supreme Court and High Courts relate to allegations of corruption, sexual misconduct, abuse of authority, or serious impropriety.

### Key Data & Facts (2016–2025)

- **Total Complaints:** 8,630 complaints received by the CJI's office.

### Year-wise Trends

- **Mechanism:** Complaints can also be routed through CPGRAMS and are forwarded to the CJI or respective High Court Chief Justices.
- **Legal Framework:** Removal of judges is governed by Articles 124(4) and 217 of the Constitution and the Judges (Inquiry) Act, 1968, requiring a special majority in Parliament.

### Significance

- **Judicial Accountability:** Rising complaints highlight the importance of maintaining public trust in the higher judiciary.
- **Transparency Gap:** Lack of publicly available data on action taken fuels concerns over opacity in the in-house procedure.
- **Institutional Credibility:** Ensuring ethical conduct is central to upholding judicial independence and rule of law.

## Regulating Refurbished Medical Devices in India

- The Ministry of Health and Family Welfare (MoHFW) has formed a committee to develop a "Policy on regulation of refurbished medical devices" to resolve ongoing policy conflicts.

### About Refurbished Medical Devices

- Refurbished medical devices are previously used equipment restored to the safety and performance specifications set by Original Equipment Manufacturers (OEMs).
- **Key Examples:** This category includes high-value capital-intensive technologies such as MRI scanners, CT scanners, PET-CT systems, and robotic surgery units.
- **Cost Efficiency:** These devices cost 50-60% less than new equipment, making advanced diagnostics financially feasible for hospitals in Tier-2 and Tier-3 cities.
- **Resource Optimisation:** Refurbishing extends the useful life of complex machinery, aligns with circular economy principles, and reduces electronic waste.

### Current Government Policy & Regulatory Framework

- India currently lacks a specific definition or a dedicated regulatory pathway for these devices under the **Medical Devices Rules (MDR), 2017**.
- **Import Law:** Imports are currently governed by the Hazardous and Other Wastes Rules, 2016,

administered by the Ministry of Environment (MoEFCC).

- **Conditional Approval:** The MoEFCC permits the import of 38 specific items, provided they have at least 7 years of residual life and a mandatory warranty.
- **Key Issue & Policy Debate**
- **Regulatory Conflict:** MoEFCC permits imports, but the Central Drugs Standard Control Organisation (CDSCO) blocks clearances due to safety gaps in the MDR framework.
- Arguments Supporting Regulated Imports
- **Healthcare Access:** Proponents argue that regulated imports lower capital costs, thereby improving diagnostic availability in underserved regions.
- **Global Practice:** The Medical Technology Association of India (MTAI) supports a calibrated framework aligned with international standards to avoid technological isolation.
- **Skill Development:** Refurbished equipment enables medical colleges to acquire advanced technology for training healthcare professionals at a lower cost.

#### Arguments Opposing Refurbished Imports

- **Safety Risks:** The Association of Indian Medical Device Industry (AiMeD) highlights risks related to unknown usage history and calibration inconsistencies.
- **Industry Impact:** Domestic manufacturers claim that cheaper imports undermine the objectives of the PLI scheme and the "Make in India" initiative.
- **Dumping Risk:** Industry groups warn that India could become a "dumping ground" for hazardous e-waste, citing strict import bans in China and Brazil.

### MHA to Introduce New Law for Regulating IPS Deputation in CAPFs

- The Ministry of Home Affairs (MHA) informed the Supreme Court that it is considering a new law to regulate IPS deputation to Central Armed Police Forces (CAPFs).
- **Judicial Compliance:** This proposal follows contempt petitions filed against the Centre, alleging non-compliance with judicial directives to reduce IPS quotas in CAPFs.
- **Deputation Quota:** Current recruitment rules reserve 50% of Inspector General (IG) and 20% of Deputy Inspector General (DIG) posts in CAPFs exclusively for IPS officers.
- **Glass Ceiling:** CAPF cadre officers argue that fixed IPS quotas restrict their upward mobility despite prolonged field service.
- **Career Disparity:** IPS officers typically reach senior ranks within 13-15 years, while CAPF officers

require nearly 20-25 years.

#### Prior Judicial Directives

- **OGAS Recognition:** In the **Harananda judgment (2019)**, the Supreme Court granted Organised Group 'A' Service (OGAS) status to CAPF officers to ensure financial parity.
- **Reduction Directive:** In the **Sanjay Prakash (2025) verdict**, the Court directed the Centre to progressively reduce IPS deputation posts up to the IG rank within two years.
- **Review Dismissal:** The Supreme Court dismissed the Centre's review petition in October 2025, upholding that operational requirements cannot justify denying legitimate career progression.

### Indian Scientific Service (ISS) for Expert-led Policymaking

- The increasing technical complexity in governance calls for a dedicated Indian Scientific Service (ISS) to ensure evidence-based, expert-led policymaking.

#### Current Framework of Scientific Services

- **Generalist Hegemony:** Scientific departments are predominantly headed by IAS officers, often creating a leadership gap in domains that require deep technical expertise.
- **Fragmented Recruitment:** Unlike the centralised Civil Services Examination, scientific recruitment remains decentralised across autonomous bodies like CSIR and ISRO.
- **Restrictive Conduct:** Government scientists are bound by the **CCS (Conduct) Rules 1964**, which prioritise administrative obedience over independent scientific inquiry.
- **Reactive Role:** The current system utilises scientific input primarily for crisis management rather than as a foundational component of long-term policy formulation.
- **Vertical Immobility:** Technical experts often encounter a "glass ceiling" in which administrative hierarchies prevent them from exercising final decision-making authority.

#### Arguments in Favour of Indian Scientific Service (ISS)

- **Regulatory Agility:** Scientific administrators are essential to draft dynamic regulations for "**black-box**" technologies (like AI and genomics) that currently outpace generalist understanding.
- **Diplomatic Leverage:** A specialised cadre would equip India to negotiate effectively in global forums on complex issues like climate finance and nuclear protocols.
- **Institutional Memory:** Unlike generalist administrators who face frequent transfers, a permanent

scientific cadre ensures sustained leadership for long-gestation R&D projects.

- **Innovation Culture:** Separate service rules would legitimise “risk-tolerant” financial norms, treating scientific failure as a step in innovation rather than a procedural error.
- **‘Lab to Land’:** An ISS cadre can serve as a professional interface to translate theoretical research into scalable public welfare schemes.

### Arguments Against Indian Scientific Service (ISS)

- **Administrative Siloisation:** Creating a separate scientific vertical may widen the coordination gap between technical experts and the executive administrators responsible for implementation.
- **Technocratic Tunnel-Vision:** A purely scientific approach may overlook the critical socio-economic nuances that generalist administrators are trained to manage.
- **Bureaucratic Proliferation:** A new All-India Service could increase fiscal burdens and add red tape without guaranteeing improved research output.
- **Research Dilution:** Formalising scientists within a civil service structure risks burdening them with administrative paperwork and detracting from their primary role as innovators.
- **Lateral Entry:** The existing ‘Lateral Entry’ mechanism offers a more flexible and cost-effective solution than creating a rigid, permanent cadre.

### Way Forward

- **Embedded Cadre:** Embed scientific officers directly within ministries to ensure technical feasibility meets administrative viability.
- **Statutory Integrity:** Enact service rules safeguarding “Scientific Integrity,” empowering experts to record dissent without administrative reprisal.
- **Unified Training:** Institutionalise a “Policy-Science Bridge” at LBSNAA to sensitise generalists to data and scientists to public administration.
- **Legislative Support:** Establish a specialised scientific unit attached to Parliament to provide technical briefs on science-heavy legislation.
- **Phased Rollout:** Pilot the service in high-stakes sectors like Public Health and Disaster Management before pan-India expansion.

### Section 44(3) of the Digital Personal Data Protection (DPDP) Act, 2023

- The Supreme Court referred a batch of petitions challenging Section 44(3) of the Digital Personal

Data Protection (DPDP) Act, 2023, to a larger Constitution Bench.

- **Regime Transformation:** Petitioners argue that Section 44(3) delivers a “body blow” to the RTI framework by converting a balanced transparency regime into a blanket exemption.

#### Key Features of Section 44(3) of DPDP Act 2023

- Section 44(3) of the Digital Personal Data Protection Act, 2023, amends Section 8(1)(j) of the RTI Act, 2005, granting statutory primacy to data privacy over the public’s right to information.
- **Absolute Exemption:** By removing all prior conditions, the amendment converts a conditional exemption into a blanket statutory bar on disclosure of personal information.
- **Public Interest:** Public Information Officers can no longer disclose personal data even when a demonstrably larger public interest is established.
- **Legislative Parity:** The proviso ensuring that information available to Parliament or State Legislatures must also be accessible to citizens has been deleted.
- **Public Nexus:** A connection to “public activity or interest” no longer serves as a legal justification for disclosure; the mere classification of data as “personal” is now sufficient for denial.
- **Privacy Threshold:** Removing the “unwarranted invasion of privacy” threshold makes rejecting personal-data requests the legal default for authorities.

#### Key Concerns with Section 44(3) of DPDP Act 2023

- **Institutional Shielding:** Public officials may invoke the “personal data” classification to deny access to asset declarations, educational degrees, or disciplinary records.
- **Adjudicatory Loss:** The amendment removes the discretion of Public Information Officers to balance larger public interest against individual privacy claims.
- **Rights Hierarchy:** In personal-data disputes, the Right to Privacy under Article 21 now carries greater statutory weight than the Right to Information under Article 19(1)(a).
- **Statutory Conflict:** The provision creates doctrinal tension with Section 8(2) of the RTI Act, which mandates disclosure when public interest outweighs protected interests.
- **Administrative Chilling:** Fear of high financial penalties under the DPDP Act for wrongful data processing discourages officials from exercising disclosure powers.

### Towards a Structural Reset of Indian Federalism

- Forged in Partition’s shadow, India’s federalism privileged centralisation; today, a mature

democracy demands balanced autonomy and cooperative governance.

### 1. Constitutional Framework of Federalism

- **Article 1:** Declares India as a "Union of States," ensuring indissoluble unity with constitutionally recognised States.
- **Division of Powers:** The Seventh Schedule distributes legislative authority into the Union List, the State List, and the Concurrent List.
- **Article 246:** Clearly demarcates legislative competence between Parliament and State Legislatures.
- **Article 254:** Establishes Union primacy in case of conflict on Concurrent List subjects.
- **Fiscal Federalism (Article 280):** Provides for a Finance Commission to recommend tax devolution between the Union and the States.
- **Basic Structure Doctrine:** Federalism recognised as part of the Constitution's Basic Structure in S.R. Bommai (1994).

### 2. Centralisation Trends

- **Historical Centralisation:** Power gained under necessity persists beyond crisis, limiting State autonomy. E.g., Single-party dominance after Independence reinforced central control over the States.
- **Political Evolution:** Coalition and regional parties enabled more balanced federal governance. E.g., Rise of regional parties in the 1990s improved State influence.
- **Persistent Overreach:** Centralisation hardened into a habitual practice despite strong national unity. E.g., Ministries in New Delhi duplicate State functions such as health and education.
- **Legislative Override:** Union uses laws and subordinate rules to override State priorities. E.g., Central overrides States in education policy reform.

### 3. Need to Restore Federal Balance

- **Fiscal Centralisation:** Growing reliance on cesses and surcharges reduces States' tax share. E.g., education and infrastructure cesses are excluded from the divisible pool under Article 270.
- **Scheme Rigidity:** Uniform CSS guidelines restrict regional flexibility. E.g., MGNREGA fund-use norms limiting drought-specific adaptations in Rajasthan.
- **Concurrent Encroachment:** Union laws increasingly dominate Concurrent subjects. E.g., NEP 2020 is influencing State curriculum and language policy decisions.
- **Executive Overreach:** Central agencies intervene in State domains, diluting accountability. E.g.,

expanded BSF jurisdiction in Punjab beyond the traditional 15 km limit.

- **State Innovation:** States drive policy breakthroughs through local experimentation. E.g., Tamil Nadu's Noon Meal Scheme is inspiring the national PM POSHAN programme.

## The Parliamentary Committees break

- Privileges Committee and the Ethics Committee, have not been constituted in the Lok Sabha (the lower house of India's Parliament) nearly two years.

### The Privileges Committee:

- The Privileges Committee is a specialized standing committee of the legislature (Parliament or State Assemblies) that acts as a quasi-judicial body.
- It is tasked with safeguarding the privileges—special rights and immunities—of the House and its members to ensure they can function without outside interference or fear.

### Origin:

- The concept is rooted in British Parliamentary conventions. Historically, these privileges were developed in medieval England to protect the House of Commons from the absolute power of the Monarch.

### Articles Associated:

- **Article 105:** Defines the powers, privileges, and immunities of the Parliament (Lok Sabha and Rajya Sabha) and its members.
- **Article 194:** Defines the same for State Legislatures (Assemblies and Councils) and their members.
- **Aim:** To investigate any action that casts reflections, insults, or obstructs the House, its committees, or its members, thereby protecting the dignity and authority of the legislative institution.

### Members

- **Lok Sabha:** 15 members nominated by the Speaker.
- **Rajya Sabha:** 10 members nominated by the Chairman.
- **State Legislatures:** Typically consists of 9 to 15 members (e.g., the Maharashtra Legislative Council committee currently has 9 members).

### Key Functions

- **Examination:** Investigates every question of breach of privilege referred to it by the House or the

Presiding Officer.

- **Evidence Collection:** Has the power to summon individuals (both members and outsiders), record statements, and demand relevant documents.
- **Determination:** Evaluates the facts to decide if a breach of privilege or contempt has occurred.
- **Recommendation:** Submits a report to the House recommending a specific course of action, which may include:
  - Admonition or Reprimand: A formal public scolding.
  - Imprisonment: For the duration of the House session (rare).
  - Suspension/Expulsion: If the offender is a member of the House.
- **Unconditional Apology:** Often, if the accused offers an apology, the committee recommends dropping the matter.

**Significance:**

- Ensures that lawmakers can speak and vote freely without being sued for defamation in court for their actions inside the House.
- Acts as a deterrent against libels or physical obstructions that might hinder the democratic process.

## Supreme Court to Revisit Sabarimala Temple Entry Case

- The Supreme Court has scheduled review petitions in the Sabarimala Temple Entry Case for April.
- The review will examine broader constitutional questions about judicial limits in religious matters.

### About Sabarimala Temple Entry Case

- The case arose from a centuries-old custom at the Sabarimala Temple in Kerala, which restricted the entry of women of “menstruating age” (10 to 50 years).
- In 2006, the Indian Young Lawyers Association (IYLA) filed a Public Interest Litigation (PIL) challenging the ban on women’s entry into the temple.
- **Supreme Court Verdict:** A five-judge Bench delivered a 4:1 majority verdict in 2018, striking down the practice as unconstitutional.
- **Rule Invalidated:** The Court struck down Rule 3(b) of the Kerala Hindu Places of Public Worship Rules, 1965, which had legally sanctioned gender-based exclusion.
- **Rights Violation:** The majority held that the prohibition violated Fundamental Rights under

Articles 14, Article 15, and Article 21 and infringed Article 25(1) (freedom of religion for all).

- **Denomination Status:** The judiciary ruled that Lord Ayyappa devotees do not constitute a separate “religious denomination” under Article 26.
- **Applied Doctrine:** The Court applied the “Essential Religious Practices” doctrine to conclude that excluding women is not a fundamental tenet of the Hindu religion.
- **Untouchability Debate:** One of the Judges cited Article 17, noting that the exclusion based on notions of purity and pollution resembled untouchability.
- **Judicial Dissent:** The dissenting judge cautioned against judicial intervention in religious matters unless practices constitute oppressive social evils.

### 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.

## The Vibrant Villages Programme–II (VVP-II)

- Union Home Minister launched the Vibrant Villages Programme–II (VVP-II) in Assam's Cachar district to promote comprehensive development of border villages.

**About The Vibrant Villages Programme–II (VVP-II):**

- The Vibrant Villages Programme–II (VVP-II) is a **Central Sector Scheme** focused on the comprehensive development of villages located in blocks abutting India's International Land Borders (ILBs) (excluding northern border areas already covered under VVP-I).

**Launched in:**

- Approved by the Central Government for implementation during FY 2024-25 to 2025-26, with financial support extending up to 2028-29.
- Officially launched in February 2026 at Nathanpur village, Cachar district, Assam.

**History:**

- **1986-87:** Border Area Development Programme (BADP) launched to fill infrastructure gaps in border regions.
- Over time, border villages continued to face migration, livelihood insecurity and development deficits.

- **2023:** Vibrant Villages Programme (VVP-I) launched for northern borders to reverse out-migration and strengthen strategic villages.
- **VVP-II:** Extended the model to other international land borders (Indo-Bangladesh, Indo-Nepal, Indo-Myanmar, Indo-Bhutan, Indo-Pakistan etc.) across 15 States and 2 UTs with area-specific strategies.

**Aim:**

- To address infrastructure gaps, improve living conditions and create sustainable livelihood opportunities in border villages.
- To integrate border populations with mainstream development and enable them to act as “eyes and ears” for border guarding forces.

**Key Features:**

- Central Sector Scheme with an outlay of ₹6,839 crore up to FY 2028-29.
- Implemented across 15 States and 2 Union Territories.
- **Saturation-based approach:** Ensures coverage of all eligible households under existing government schemes.
- **Convergence model:** Integrates multiple flagship schemes for efficient resource use.

**Focus on 4 core infrastructure themes:**

1. All-weather road connectivity (PMGSY-IV)
  2. Telecom connectivity (Digital Bharat Nidhi)
  3. Television connectivity (BIND scheme)
  4. Electrification (RDSS)
- Identification of 1,954 strategic villages for intensive development.
  - Livelihood promotion through tourism, SHGs, FPOs, skill development and financial inclusion.
  - Border-specific outreach activities to build trust between communities and border security forces.

**23rd Foundation Day of National Commission for Scheduled Tribes**

- The National Commission for Scheduled Tribes (NCST) celebrated its 23rd Foundation Day in New Delhi, highlighting its role in safeguarding tribal rights and promoting inclusive development.

### **About National Commission for Scheduled Tribes (NCST):**

- The National Commission for Scheduled Tribes (NCST) is a constitutional body established under **Article 338A** of the Constitution of India to protect, monitor and promote the rights and welfare of Scheduled Tribes (STs).
- It acts as a watchdog institution ensuring implementation of constitutional safeguards and addressing grievances related to tribal communities.

### **Established in:**

- Established in 2004 following the **Constitution (89th Amendment) Act, 2003**.
- It separated tribal affairs from the earlier combined commission for Scheduled Castes and Scheduled Tribes to ensure focused attention on tribal issues.

### **History:**

- 1978: Government set up a multi-member Commission for SCs & STs.
- 1992: Constitutional status granted through the 65th Constitutional Amendment, forming the National Commission for SCs & STs.
- 2003-04: 89th Constitutional Amendment bifurcated the body into:
  - National Commission for Scheduled Castes (NCSC)
  - National Commission for Scheduled Tribes (NCST)

### **NCST Members consists of:**

- Chairperson
- Vice-Chairperson
- Three Members
- All are appointed by the **President of India** and generally include persons with expertise in tribal administration, social justice and policy.

### **Key Functions:**

- **Monitoring safeguards:** Investigates and monitors constitutional and legal safeguards provided to Scheduled Tribes and evaluates their effectiveness.
- **Inquiry into complaints:** Examines complaints regarding deprivation of rights, land alienation, atrocities, or denial of benefits meant for tribal communities.
- **Advisory role in development planning:** Participates in policy formulation and advises governments on socio-economic development programmes for STs.
- **Reporting to the President:** Submits annual and special reports to the President regarding implementation of safeguards and policy recommendations.

- **Civil court powers:** While investigating cases, the Commission has powers similar to a civil court such as summoning individuals, calling documents, and recording evidence.
- **Policy consultation:** Union and State Governments are expected to consult the Commission on major policy matters affecting Scheduled Tribes.

## SANKALP scheme

- The **Public Accounts Committee (PAC)** criticised the government over the slow implementation of the SANKALP scheme, citing delays and weak monitoring mechanisms.

### About SANKALP scheme:

- SANKALP (Skill Acquisition and Knowledge Awareness for Livelihood Promotion) is a flagship skill development programme aimed at improving the quality and effectiveness of short-term skill training in India.
- It focuses on strengthening institutional capacity, industry linkage and inclusion of marginalized groups through systemic reforms.

### Launched in

- **Launched: 19 January 2018**
- Initially planned till March 2023, later extended.
- **Implementing Agency:**
- Ministry of Skill Development and Entrepreneurship (MSDE)
- Implemented with World Bank loan assistance and support from States and industry stakeholders.
- **Aim:**
- Improve quality and scale of skill training: To strengthen short-term skill development through better institutional frameworks and quality assurance mechanisms.
- Promote inclusive livelihood opportunities: To enhance participation of marginalized and disadvantaged groups through targeted skilling interventions.

### Key Features

- **Financial support:** The scheme has a total outlay of ₹4,455 crore, supported by World Bank funding to strengthen India's skill development infrastructure and reforms.
- **Institutional strengthening:** Focuses on improving capacity and coordination of skill institutions

at Central, State and District levels for better implementation.

- **Quality assurance:** Introduces standards and monitoring mechanisms to ensure training programmes meet industry-relevant quality benchmarks.
- **Industry linkage:** Promotes partnerships with industries so that training remains demand-driven and improves job placement opportunities.
- **Inclusion focus:** Targets participation of marginalized and disadvantaged groups to ensure equitable access to skill development programmes.
- **Performance monitoring:** Uses Results Framework and Disbursement Linked Indicators (DLIs) to track outcomes and link funding with performance.

### Supreme Court's (SC) directions on the Solid Waste Management (SWM) Rules 2026

- Comprehensive directions issued to enforce the upcoming SWM Rules 2026 (will come into effect on April 1, 2026).
- SC reiterated that the right to a clean and healthy environment is an intrinsic part of Article 21 of the Constitution.
- The Court noted that despite having 2000-year-old heritage sites, poor waste management and a lack of civic cleanliness severely discourage tourism in India.

#### Key Directions

- **Four-Stream Segregation:** Pollution Control Boards to expedite infrastructure for four-stream segregation – Wet, Dry, Sanitary and Special Care waste and immediate communication of rules to **Bulk Waste Generators (BWGs)**.
- **Role of Elected Representatives:** Councillors, Mayors, Corporators, or Ward Members are designated as the lead facilitators for source-segregation education and have a statutory duty to enrol every citizen in the implementation of SWM Rules, 2026.
- **Strict Enforcement and Penalties:** Failure to comply with the rules will no longer be treated as a mere administrative lapse. The Court established three tiers of enforcement:
  - Tier 1: Immediate imposition of fines for initial non-compliance by generators or local authorities.
  - Tier 2: Continued disregard will result in criminal prosecution under environmental laws.
  - Tier 3: Prosecution will extend to all responsible persons, including officials who neglect their oversight duties.
- **Legacy Waste:** A separate, time-bound action plan must be activated to address, treat, and remedy

legacy waste dumpsites.

- **Directions to be issued by MoEFCC under EP Act (1986):**
- Through District Collectors, conduct infrastructure audits of solid waste management.
- Every local body must declare an outer time limit for 100% compliance.

## India Recorded a Fourfold Increase in Organ Transplants

- **Source (PIB):** India has witnessed a fourfold increase in organ transplants, rising from under 5,000 procedures in 2013 to nearly 20,000 in 2025.
- **Donation Gap:** Despite this growth, India's deceased organ donor rate remains **below 1 per million**, far behind Spain's ~48 donors per million.

### Organ Donation and Transplantation Framework in India

- **Foundational Law:** The Transplantation of Human Organs and Tissues Act (THOTA), 1994, regulates organ removal and transplantation.
- **National Programme:** The National Organ Transplant Programme (NOTP) promotes deceased donation through a three-tier national, regional, and state network.
- **Consent Barrier:** India operates an opt-in system where explicit family approval is legally mandatory for deceased donation, regardless of prior individual pledges.
- **Digital Registry:** The Aadhaar-linked National Organ and Tissue Transplant Registry facilitates transparent, secure registration of donation pledges nationwide.
- **Eligibility Reforms:** Under the 2023 reforms, the upper age limit and the state domicile requirement for recipient registration were both removed.

### Organ Donation and Transplantation Landscape in India

- **Transplant Volume:** India ranks third globally (after the U.S. and China) in total organ transplants, with nearly 20,000 procedures in 2025.
- **Deceased Share:** Only 18% of transplants use deceased donor organs. India depends on living donors for the remaining 82%.
- **Regional Skew:** Of India's 1,128 deceased donors in 2024, the vast majority were from southern and western states. **Tamil Nadu has the highest share.**
- **Registration Surge:** Over 4.8 lakh citizens have registered their intent to donate organs after death since September 2023.

- **Surgical Leadership:** India leads the world in the number of hand transplants performed. It has achieved competence in complex heart, lung, and pancreas procedures.

#### **About National Organ and Tissue Transplant Organisation (NOTTO)**

- NOTTO is the apex body overseeing organ procurement and allocation, under the Directorate General of Health Services, **Ministry of Health & Family Welfare (MoHFW)**.
- **Core Mandate:** It coordinates procurement, equitable real-time allocation, and inter-state distribution of retrieved organs across India.
- **Organ Registry:** Its National Organ and Tissue Transplant Registry maintains waiting list data for all patients, ensuring transparency and patient traceability.
- **Biomaterial Centre:** NOTTO houses the National Biomaterial Centre, which supplies bone products, skin grafts, and corneas to address tissue shortages.

#### **New Delhi Declaration – AI Impact Summit 2026**

- The AI Impact Summit concluded in New Delhi with 89 countries and international organizations endorsing the New Delhi Declaration.
- This landmark agreement establishes a global framework for “AI for All,” focusing on equitable access, ethical governance, and social empowerment.
- **About New Delhi Declaration – AI Impact Summit 2026:**
- The New Delhi Declaration is a comprehensive, multi-nation consensus document aimed at governing the development and deployment of Artificial Intelligence.
- Grounded in the philosophy of “**Sarvajan Hitaya, Sarvajan Sukhaya**” (Welfare for all, Happiness for all), it serves as a non-binding roadmap for international AI cooperation.
- **Aim:** The declaration seeks to bridge the AI Divide by ensuring that foundational AI resources, such as computing power and data, are not concentrated in a few nations but are democratized for global economic growth and social good.

#### **Key Features of the Declaration:**

- **Seven Pillars (Chakras) Framework:** Built around seven pillars including democratizing AI resources, secure AI, human capital development, AI for science, and resilient AI systems.
- **Global Collaborative Platforms:** Launch of initiatives like Global AI Impact Commons, Trusted AI Commons, and **AI for Social Empowerment Platform** to enable shared learning and innovation.

### Global AI Impact Commons

- A voluntary global platform designed to help countries share and replicate successful AI solutions.
- It enables adoption and scaling of proven AI use-cases across regions to maximize development impact.



### Trusted AI Commons

- A voluntary, non-binding collaborative repository that brings together AI tools, benchmarks, technical resources, and best practices.
- It helps stakeholders build secure and trustworthy AI systems adaptable to different national contexts.
- **International Network of AI for Science Institutions**
- A voluntary collaborative network connecting scientific institutions worldwide to pool AI research infrastructure and expertise.
- Its objective is to accelerate scientific innovation through AI-enabled research collaboration across

countries.

- **Democratic Diffusion of AI Charter:** Promotes affordable access to foundational AI resources and supports locally relevant innovation ecosystems.
- **Focus on Trusted & Secure AI:** Encourages voluntary technical standards, benchmarks, and best practices for safe AI deployment.
- **Human Capital & Reskilling:** Introduces AI workforce development playbook and guiding principles for reskilling in an AI-driven economy.
- **Energy-efficient & Resilient AI:** Emphasizes sustainable AI infrastructure and efficient systems to reduce energy and resource pressures.
- **Multistakeholder & Sovereignty-based Approach:** Balances global cooperation with respect for national laws and policy frameworks.

**Significance:**

- **Global Governance Milestone:** Represents one of the largest multilateral consensuses on AI, with 89 countries aligning on shared AI principles.
- **India's Leadership in AI Diplomacy:** Positions India as a key voice shaping inclusive AI governance through the philosophy of Sarvajana Hitaya, Sarvajana Sukhaya.

## 20th anniversary of the Maritime Labour Convention, 2006

- The ILO and IMO marked the 20th anniversary of the Maritime Labour Convention (MLC), 2006, highlighting its role in improving seafarers' welfare and global shipping standards.

**What it is?**

- Often referred to as the **Seafarers' Bill of Rights, the MLC, 2006** is a comprehensive international treaty that establishes minimum requirements for almost every aspect of working and living conditions for seafarers.

**Established In:**

- The Convention was adopted on 23 February 2006 by the International Labour Conference in Geneva.

**Aim:**

- To create a single, coherent instrument embodying as many up-to-date standards of existing maritime labour Conventions as possible.
- To ensure that all seafarers, regardless of their nationality or the flag of the ship, have access to

decent working and living conditions.

- To level the playing field for responsible shipowners by preventing unfair competition from substandard ships

**Key Features of the Convention:**

- **Minimum Requirements for Seafarers:** Sets clear standards for minimum age, medical certification, and necessary training/qualifications for working on a ship.
- **Conditions of Employment:** Regulates seafarers' employment agreements, wages, hours of work and rest, and entitlement to leave and repatriation.
- **Accommodation and Recreational Facilities:** Mandates specific standards for on-board living conditions, including ventilation, heating, and lighting.
- **Health Protection and Medical Care:** Ensures seafarers have access to prompt and adequate medical care while on board and in port.
- **Social Security Protection:** Requires members to provide seafarers with social security protection matching that of land-based workers, covering areas like sickness and unemployment benefits.
- **Compliance and Enforcement:** Features a robust system of Flag State and Port State inspections to ensure ships meet the convention's requirements.

**Significance**

- **Improved Seafarers' Welfare:** Enhanced wages, working hours, safety, and living standards globally.
- **Fair Competition:** Prevents unfair advantage gained through poor labour conditions.

**Prahaar Anti Terror Policy**

- India has unveiled its first-ever comprehensive anti-terror policy, titled '**Prahaar**', formalising a proactive and intelligence-led counter-terror doctrine.

**About Prahaar Anti Terror Policy:**

- Prahaar is India's **first integrated national counter-terrorism policy and strategy**, designed as a doctrine-level framework for preventing, responding to and recovering from terrorism threats.
- It adopts a whole-of-government and whole-of-society approach, combining intelligence, law

enforcement, technology and international cooperation.

**Launched by:**

- Introduced by the Government of India as a national counter-terror strategy framework involving central and state security agencies.

**Aim:**

- To prevent and neutralize terrorism through proactive, intelligence-guided operations and coordinated institutional mechanisms.
- To disrupt terror ecosystems by targeting financing, recruitment, radicalisation, logistics and cyber networks.

**Key Features:**

- **Seven-Pillar Framework (PRAHAAR):** Prevention, Response, Aggregation of capacities, Human-rights-based processes, Attenuation of radicalisation, Aligning international cooperation, and Recovery.
- **Proactive Intelligence Model:** Focus on **pre-emptive disruption of terror networks** instead of reactive policing.
- **Technology-Centric Security:** Addresses threats from drones, encrypted messaging apps, dark web and crypto financing.
- **Uniform Counter-Terror Structure:** Standard procedures and coordinated mechanisms across central, state and district levels.
- **Counter-Radicalisation Strategy:** Graded police response combined with education, engagement and de-radicalisation programmes.
- **Global Collaboration:** Emphasis on extradition, intelligence sharing and alignment with UN anti-terror norms.
- **Human Rights Safeguards:** Ensures legal due process, redressal mechanisms and rule-of-law based action.

**Significance:**

- Marks a doctrinal shift from fragmented responses to a structured national counter-terror policy.
- Enhances India's preparedness against emerging hybrid threats combining terrorism, cyber warfare and organised crime.

## Union Cabinet approves renaming Kerala as Keralam

- The Union Cabinet has approved the proposal to rename the State of Kerala as Keralam, following resolutions passed by the Kerala Legislative Assembly in 2023 and 2024.

### About Union Cabinet approves renaming Kerala as Keralam:

- The Union Cabinet has approved the proposal to alter the official name of the State of Kerala to Keralam.
- The change seeks to replace the English-adopted constitutional term “Kerala” with the traditional Malayalam usage “Keralam.”
- After Cabinet approval, the **Kerala (Alteration of Name) Bill, 2026** will follow the constitutional process before becoming law.

### Articles associated:

- **Article 3 of the Constitution:** Empowers Parliament to form new states or alter areas, boundaries, or names of existing states.
- **Proviso to Article 3:**
  - A Bill altering a state’s name can be introduced only on the recommendation of **the President**.
  - The President must refer the Bill to the concerned State Legislature to seek its views.
- **First Schedule of the Constitution:** Contains the list and names of states and Union Territories; amendment required here for renaming.

### Procedure for renaming a state:

- **State Legislature Resolution:** Kerala Assembly passed resolutions requesting the name change.
- **Examination by Union Government:** Ministry of Home Affairs scrutinizes the proposal and consults relevant ministries/agencies.
- **Union Cabinet Approval:** Cabinet clears the proposal for legislative action.
- **President’s Reference:** President refers the Bill to the State Legislature for its opinion (Article 3 proviso).
- **Parliamentary Approval:** Bill introduced in Parliament after Presidential recommendation and passed by both Houses.
- **Notification & Amendment:** First Schedule amended; new name comes into legal effect.

### Reason for the change:

- The state is called “Keralam” in Malayalam, while the Constitution records it as “Kerala.”

- The demand reflects linguistic identity and the legacy of the Aikya Kerala movement, which sought unification of Malayalam-speaking regions.
- The Assembly argued that states formed on linguistic lines (1956) should reflect native linguistic nomenclature.

### Five OTT Platforms were Blocked for Streaming Obscene Content

- The Ministry of Information and Broadcasting (MoIB) blocked five OTT platforms for streaming content deemed obscene and vulgar.
- **Legal Basis:** The blocking was exercised under IT Rules, 2021 and **Section 69A of the IT Act, 2000**.
- Section 69A of the IT Act, 2000 empowers Central Government to block digital content in the interest of sovereignty, defence, security, or friendly relations with foreign states, or to preserve public order or prevent incitement to a cognizable offence. It does not explicitly mention 'obscene' or 'vulgar' content.

#### Obscenity Laws in India

- **Obscene Material:** Sections 294 of the **Bharatiya Nyaya Sanhita, 2023** penalise the sale, distribution, or public exhibition of obscene books, objects, or digital content.
- **Obscene Acts:** Section 296 penalises doing obscene acts or singing obscene songs in public places to the annoyance of others.
- **Electronic Obscenity:** Section 67 of the IT Act, 2000 punishes publication or transmission of obscene material in electronic form.
- **Explicit Content:** Sections 67A and 67B of the IT Act, 2000 prescribe stricter penalties for sexually explicit content and child sexual abuse material (CSAM), respectively.
- **IT Rules, 2021:** These rules mandate OTT platforms follow a Code of Ethics for their curated content. Intermediaries must perform due diligence or risk losing safe harbour protection.
- **Women's Depiction:** The Indecent Representation of Women Act, 1986, prohibits depictions of women in a derogatory manner that injures public morality.

#### Judicial Tests for Obscenity

- **Community Standards Test:** Established in **Aveek Sarkar (2014)**, the test evaluates content from the perspective of an average, reasonable person applying contemporary societal norms.

- **Holistic Assessment:** Under this test, a work is judged as a whole, including its artistic or social value, rather than isolated excerpts.
- **Vulgarity vs. Obscenity:** Courts have held that vulgarity alone does not constitute obscenity – content must arouse lustful thoughts or be sexually explicit in a prurient manner.
- **Proposed Amendment:** MIB has proposed amendments to IT Rules, 2021 to explicitly define “obscene digital content” on the lines of the Cable TV Programme Code.

### Lok Sabha Speaker Constitutes Parliamentary Friendship Groups

- The Lok Sabha Speaker constituted 64 Parliamentary Friendship Groups (PFGs) to strengthen inter-parliamentary cooperation.
- The newly formed groups include more than 700 Members of Parliament (MPs) from over 60 countries.
- **Objective:** To promote parliamentary diplomacy for continuous political, social, and cultural engagement between the Indian Parliament and foreign legislatures.
- **Framework:** The PFGs operate under the Indian Parliamentary Group (IPG); the Lok Sabha Speaker appoints the President of each Group.
- **Composition:** Each group comprises 11 sitting MPs from both the Lok Sabha and the Rajya Sabha, representing various political parties.
- **Significance:** The mechanism enhances India's soft power by facilitating candid legislative dialogue beyond traditional diplomatic channels.

#### About Indian Parliamentary Group (IPG)

- The IPG is an autonomous, non-statutory body, established in 1949 to foster inter-parliamentary relations worldwide.
- It serves as the official National Group of the Inter-Parliamentary Union (IPU) and the primary Indian branch of the Commonwealth Parliamentary Association (CPA).
- IPG membership is voluntary and open to all sitting MPs from both Houses; former MPs can join as Associate Members.
- Lok Sabha Speaker is its ex officio President, while the Deputy Speaker of the Lok Sabha and the Deputy Chairman of the Rajya Sabha serve as ex officio Vice-Presidents.

## AI transforming India's legal ecosystem showcased at India AI Impact Summit 2026

### Role of AI in Judiciary

- **Courtroom efficiency:** AI tools assist in voice to text conversion, smart scheduling, case prioritization etc. aiding reduce backlogs and delays.
- **E.g. ASR-SHRUTI** (voice-to-text dictation for orders and judgments)
- **Legal Research and Documentation:** Analyzing vast databases of legal precedents, identifying relevant statutes, and summarizing complex judgments.
- E.g. Supreme Court Portal for Assistance in Court Efficiency (**SUPACE**) or **Saransh** for judgement summaries
- **Language Accessibility:** AI-driven Multilingual Translation tools breaking the English-language barrier for litigants in regional languages and helps Democratization of Justice.
- E.g. SUVAS (Supreme Court Vidhik Anuvaad Software)
- **Predictive Analytics:** Can indicate likely case outcomes, encourage out-of-court settlements and reduce court burden.

### Challenges

- **Algorithmic Bias:** AI trained on historical data may reinforce biases related to caste, gender, or community.
- It can violate Articles 14 (Equality) and 21 (Right to Fair procedure)
- **"Black Box" Problem:** Opaque AI algorithms make it hard to understand logic behind outputs, undermining transparency.
- **Risk of "Hallucinations":** Generative AI can produce fictitious judgments posing risk to judicial integrity.
- **Security & Privacy:** Use of AI involves sensitive legal data, raising risks of cybersecurity breaches and misuse.
- **Others:** Judicial responsibility may be compromised by over-reliance on technology, digital divide.

### Initiatives for Integration of Technology in Judiciary

- **e-Courts Project Phase III: Central Sector Scheme** and Mission Mode Project to create a unified technology platform for the judiciary using emerging technology like AI.
- **Supreme Court AI Committee:** Chaired by a sitting SC judge oversees the

structured adoption and ethical governance of AI initiatives.

- **eSCR (Electronic Supreme Court Reports) portal:** Free, digital, and user-friendly service to search, read, and download SC judgments.

### Aircraft Accident Investigation Bureau (AAIB)

- The Aircraft Accident Investigation Bureau (AAIB) is investigating the crash of a Redbird Airways air ambulance in Jharkhand.
- The AAIB Investigators confirmed that the aircraft was not equipped with black boxes.

#### About Aircraft Accident Investigation Bureau (AAIB)

- The AAIB is an **independent statutory body**, established in 2012, to investigate aircraft accidents and serious incidents in Indian airspace.
- **Objective:** To identify systemic failures and prevent recurrence through safety recommendations.
- **Nodal Ministry:** AAIB functions under the Ministry of Civil Aviation.
- **Statutory Basis:** It is governed by the **Bharatiya Vayuyan Adhiniyam, 2024**, and operates under the **Aircraft (Investigation of Accidents and Incidents) Rules, 2017**, as amended in 2021.
- **International Obligation:** It aligns with Annex 13 of the Chicago Convention, under the International Civil Aviation Organisation (ICAO).
- ICAO is a specialised United Nations agency established in 1944 under the Chicago Convention (Convention on International Civil Aviation). India is a founding member of ICAO.
- **Punitive Limits:** Unlike the DGCA, the bureau lacks punitive powers and cannot suspend licences, ground airlines, or impose fines.

#### About Black Box

- A black box is an electronic flight recording system installed in commercial aircraft to facilitate post-accident investigations.
- It is orange in colour to ensure high visibility and is made of titanium or steel to withstand heat and high-impact conditions.
- **Components:** It comprises two recording devices: Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR).
- **FDR:** Continuously logs hundreds of technical flight parameters per second, including aircraft

altitude, airspeed, heading, and engine performance.

- **CVR:** Records the flight deck's audio environment, documenting pilot conversations, air traffic control communications, and ambient operational noises.
- **Regulatory Mandate:** Under DGCA Civil Aviation Requirements (CAR), these devices are mandatory for aircraft with a Maximum Take-Off Weight (MTOW) exceeding 5,700 kg.

### Supreme Court Bans NCERT Textbook for Contempt of Court

- Supreme Court ordered a blanket ban on a new Class 8 NCERT Social Science textbook over a section titled "**corruption in the judiciary.**"
- **Chapter Content:** The chapter included references to judicial corruption, case backlogs, and complaints against judges, along with a quote from an ex-CJI acknowledging systemic flaws.
- **Court's Finding:** A three-judge bench led by **CJI Surya Kant** described the chapter's inclusion as a "calculated move to undermine" the institution, amounting prima facie to criminal contempt.
- **Bench Order:** The bench ordered immediate seizure of all physical copies and removal of all digital versions. It issued show-cause notices to the NCERT Director and the Education Secretary.
- **Contempt Case:** The Court registered a suo motu case in this matter as a Criminal Contempt under Section 2(c) of the Contempt of Courts Act, 1971.
- **Constitutional Basis:** The Supreme Court exercised its inherent authority as a **Court of Record** under **Article 129** to punish for contempt.

#### Supreme Court's Rationale for the Ban

- **Basic Structure:** The textbook content directly undermines judicial independence, a core component of the Basic Structure Doctrine.
- **Impressionable Minds:** Young students must be protected from material that could distort their perception of the justice system.
- **Selective Framing:** The chapter's selective reference to corruption, while omitting the judiciary's role in upholding democracy, scandalises the institution.
- **Public Trust:** Such content constitutes interference with the administration of justice by eroding public trust in the judiciary.

#### About Contempt of Court

- Contempt of court refers to any act that disrespects the dignity, defies the authority, or obstructs

the administration of justice.

- **Constitutional Power:** The Supreme Court and the High Courts have the power to punish for contempt under Article 129 and Article 215 of the Constitution, respectively.
- **Classification:** Under the Contempt of Courts Act, 1971, contempt is classified into two types
- **Civil Contempt:** Wilful disobedience to any judgment or order of a court.
- **Criminal Contempt:** Acts or publications that scandalise, lower the authority of, or obstruct the administration of justice.

### Eastern Nagaland Autonomy

- Centre signed a tripartite agreement with the Government of Nagaland and the Eastern Nagaland Peoples' Organisation (ENPO) to establish the Frontier Nagaland Territorial Authority.
- Frontier Nagaland Territorial Authority (FNTA) grants enhanced administrative and financial autonomy to six eastern districts — **Kiphire, Longleng, Mon, Noklak, Shamator, and Tuensang.**

#### Background of the ENPO Demand

- **Separate Statehood Aspiration:** The ENPO consistently demanded the creation of a separate 'Frontier Nagaland' State, citing decades-long perceptions of administrative and developmental neglect.
- **Political Escalation:** ENPO called for a Lok Sabha election boycott (2024) to press the demand.
- **Core Grievance:** Perceived development gap (connectivity, services, institutions) vis-à-vis western Nagaland (widely reported in analyses).

#### Why did the Centre Accept the Autonomy Demand?

- **Strategic Frontier Stability:** Eastern Nagaland's proximity to the India–Myanmar border, marked by cross-border vulnerabilities, elevated the urgency of political accommodation.
- **Political Signalling Pressure:** The ENPO's Lok Sabha election boycott call (2024) underscored the depth of regional discontent and its potential implications for democratic legitimacy.
- **Insufficient Financial Packages:** Earlier confidence-building measures, including special packages, proved inadequate in addressing core political and autonomy-driven aspirations.

#### About Frontier Nagaland Territorial Authority (FNTA)

- **Devolutionary Autonomy Mechanism:** FNTA represents an institutional experiment in

asymmetric federal governance, granting autonomy without altering state boundaries.

- **Regional Administrative Decentralisation:** Establishment of a mini-secretariat framework aims to bring governance structures closer to remote tribal populations.
- **Legislative & Executive Jurisdiction:** The Authority exercises powers across 46 identified subjects, enabling context-specific policy responses in land use, development, and livelihoods.
- **Financial Resource Allocation:** Developmental outlays are structured around population and area-based metrics, with the Ministry of Home Affairs providing financial support for initial requirements.
- **Constitutional Safeguard Continuity:** FNTA operates without disturbing protections under **Article 371(A)**, preserving customary laws and traditional Naga institutional frameworks.

## RailTech Policy & Portal and e-Railway Claims Tribunal (e-RCT) Launched

- Ministry of Railways launched the RailTech Policy & Portal and the e-Railway Claims Tribunal (e-RCT) under the **"52 Reforms in 52 Weeks"** initiative.

### About RailTech Policy & Portal

- RailTech Policy framework aims to engage industry innovators to promote indigenous innovation within Indian Railways.
- It introduces a dedicated RailTech Portal to foster structured collaboration between the railways and the startup ecosystem.
- **Funding Mechanism:** The portal facilitates a grant-based funding model in which the government provides up to 50% of development costs for viable projects.
- **Administrative Efficiency:** The platform lowers entry barriers for small innovators by replacing complex legacy tenders with a unified submission process.
- **Focus Areas:** Priority is given to high-impact technologies like **AI-based Elephant Intrusion Detection Systems (EIDS)** and drone-based rail fracture detection.

### e-Railway Claims Tribunal (e-RCT)

- e-RCT is an AI-enabled platform that automates the litigation process for railway-related claims.
- The system integrates all 23 benches of the Railway Claims Tribunal into a unified national network.
- The platform enables transparent case processing, ensuring the timely delivery of justice to

claimants.

- **Accessibility:** It enables beneficiaries to file petitions and submit documents electronically from anywhere, removing the need for physical travel.

### **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 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

### Third Edition of Future Warfare Course

- **Source (PIB):** The 3rd edition of the tri-services Future Warfare Course is underway at the **Manekshaw Centre** in New Delhi.
- The programme is conducted by the Headquarters Integrated Defence Staff and the Centre for Joint Warfare Studies.
- **Objective:** To prepare the Indian Armed Forces for technology-driven, multi-domain warfare amid evolving doctrines and strategies.
- **Key Focus:** Exploration and demonstrations of emerging technologies, including AI, machine learning, hypersonics, robotics, and quantum computing.
- **Participants:** The Army, Navy, and Air Force, as well as representatives from the defence industry, including startups, MSMEs, DPSUs, and private-sector firms.
- **Rank-Agnostic Structure:** The course brings together officers across ranks to integrate tactical, technical, and strategic operational expertise.

### Al-Jawf Region

- **Al-Jawf's interior deserts saw snow for the first time on record.**

#### About Al-Jawf Region

- **Location:** Northern Saudi Arabia, one of the 13 administrative regions.
- It lies at the northern edge of the Al-Nafūd desert.
- **Historical Significance:** An ancient route for trade and pilgrims between the Arabian Peninsula, Levant, and Egypt.
- **Notable Feature:** Dawmat al-Jandal Lake lies north of the region, largest lake in Saudi Arabia.

### 2nd India-Arab Foreign Ministers' Meeting Adopted Delhi Declaration 2026

- The 2nd India-Arab Foreign Ministers' Meeting, held in New Delhi, adopted the Delhi Declaration

2026 to strengthen the strategic partnership between India and the Arab world.

- **Chairmanship:** India and the United Arab Emirates co-chaired the session, which saw participation from the Foreign Ministers of Arab States and the Secretary-General of the League of Arab States.

### Key Takeaways of Delhi Declaration 2026

- **Counter-Terrorism:** The Declaration marked a diplomatic milestone by explicitly condemning the Pahalgam terror attack; it adopted a zero-tolerance approach to combat cross-border terrorism.
- **Global Security:** The ministers committed to the UNSC-adopted "Algeria Guiding Principles" to combat terror financing via emerging technologies.
- **Maritime Initiative:** The Arab side introduced the **STREAM (Suez Canal-Red Sea Economic and Maritime Development Initiative)** to boost the blue economy and restore navigation safety.
- **Strategic Modernisation:** The partnership expanded into new frontiers, prioritising cooperation in Green Hydrogen, Digital Public Infrastructure (DPI), and Fintech.
- **Geopolitical Stance:** The forum reaffirmed its support for a sovereign Palestinian state based on the 1967 borders while welcoming the outcomes of the 2025 Sharm El-Sheikh Peace Summit.
- **Institutional Economy:** The launch of the India-Arab Chamber of Commerce, Industry, and Agriculture (IACCIA) institutionalises private-sector engagement to boost bilateral trade.
- **Institutional Mechanisms:** The roadmap establishes specific Working Groups for Space Cooperation, Tourism, and Counter-Terrorism; these bodies will hold their inaugural meetings in India in 2026-27.

### About the League of Arab States

- **Origin:** The League was established in Cairo, Egypt in **1945** to assert Arab independence and sovereignty against colonial powers.
- **Linguistic Identity:** It defines itself strictly by the Arabic language and culture; Regional powers like Iran, Turkey, and Pakistan are excluded because they do not speak Arabic as a primary language.
- **African Context:** Somalia, Djibouti, and Comoros are full members because of this linguistic rule, despite their geographic distance from the Arabian Peninsula.
- **Membership:** The League comprises 22 member states; Syria was fully readmitted in 2023 after a decade-long suspension.
- **Headquarters:** The permanent General Secretariat is headquartered in Cairo, Egypt.
- **Governance:** The Council of the League serves as the supreme decision-making body, with each

member state holding exactly one vote.

- **Security Framework:** The league operates under the Joint Defence and Economic Cooperation Treaty (1950), treating aggression against one member as aggression against all.
- **India's Status:** India holds Observer Status in the Arab League; the Indian Ambassador to Egypt serves as the Permanent Representative.

### Power Gap Index

- The Economic Survey 2025-2026 cited the Power Gap Index for the first time to highlight India's strategic standing.
- The Power Gap Index (PGI) is an analytical tool for evaluating a country's ability to convert resources into strategic influence. It is a secondary analysis based on the Lowy Institute Asia Power Index.
- The parent index evaluates 27 nations using 131 indicators categorised into eight thematic measures.
- The Indicators are divided into Resource-based measures (what a country has) and Influence-based measures (what a country does with those resources).
- PGI compares a nation's Comprehensive Power (achievement) with its Expected Power (potential) to identify performance gaps.
- **Score Interpretation:** A positive score indicates overperformance through diplomacy, while a negative score signifies underutilised potential.
- **India's Position:** India ranks third after the US & China but scores -4.0, indicating underperformance.

### Solid Fuel Ducted Ramjet (SFDR) Technology

- Defence Research and Development Organisation (DRDO) successfully demonstrated Solid Fuel Ducted Ramjet (SFDR) technology from Integrated Test Range, Chandipur.

#### Solid Fuel Ducted Ramjet (SFDR) Technology:

- SFDR is an air-breathing propulsion system for missiles that uses atmospheric oxygen for combustion and solid fuel burned in a controlled manner to provide sustained thrust at supersonic

speeds.

- Unlike conventional rockets, it maintains high energy throughout flight—especially in the terminal phase.
- **Developed by:** Defence Research and Development Organisation (DRDO)

#### How it works?

- **Initial acceleration:** A nozzle-less ground booster propels the missile to the required **Mach number**.
- **Ramjet takeover:** Once sufficient speed is reached, atmospheric air is ingested and compressed by forward motion (no rotating compressors).
- **Controlled combustion:** Solid fuel burns steadily inside the duct as air flows through, regulated by a fuel flow controller.
- **Sustained thrust:** Continuous thrust keeps the missile fast and manoeuvrable till impact.

#### Key features

- **Air-breathing propulsion:** Uses atmospheric oxygen instead of carrying an onboard oxidiser, allowing more space for fuel and extending missile range.
- **Sustained high-speed flight:** Unlike rocket motors that burn out quickly, SFDR provides continuous thrust, maintaining supersonic speed throughout flight.
- **High terminal energy:** Retains high velocity in the final phase, increasing impact force and the probability of successfully destroying fast, manoeuvring targets.
- **Greater manoeuvrability in end-game:** Continuous thrust enables sharp evasive turns near the target, making interception by enemy countermeasures difficult.
- **Reduced drag losses and improved range:** Optimised airflow and sustained propulsion minimise energy loss, allowing engagement at longer distances.
- **Indigenous combustion control at supersonic speeds:** Stable fuel-air combustion at high Mach numbers has been successfully mastered domestically, a major technological breakthrough.

#### Applications

- **Long-range air-to-air missiles (BVRAAMs):** Enables fighter aircraft to engage enemy jets from extended ranges while maintaining high kill effectiveness.
- **Air superiority and BVR combat advantage:** Allows pilots to strike first and disengage safely, shifting the balance in beyond-visual-range aerial warfare.
- **Indigenisation of advanced propulsion:** Reduces reliance on foreign missile technologies and

strengthens India's self-reliant defence ecosystem under Aatmanirbhar Bharat

## India-Tanzania 4th Joint Defence Cooperation Committee Meeting

- India and Tanzania held the 4th Joint Defence Cooperation Committee (JDCC) meeting in Zanzibar to strengthen bilateral security ties.

### Key Highlights of the Meeting

- **Air Force:** Both nations agreed to initiate cooperation between their Air Forces, expanding upon existing naval and army collaborations.
- **Emerging Technologies:** Discussions prioritised capacity building in advanced fields like Artificial Intelligence (AI), Cyber Security, and Electronic Warfare.
- **New Avenues:** The delegations identified military medicine as a new engagement area and explored deeper ties in counter-terrorism training.
- **Strategic Cooperation:** The meeting reviewed maritime security while seeking to enhance defence industry collaboration and service-to-service partnerships.

### India-Tanzania Bilateral Relations

- The relationship was elevated from traditional development aid to a strategic partnership in 2023.
- **SAGAR Vision: Tanzania** is a key partner in India's Security and Growth for All in the Region initiative, acting as a gateway to East and Central Africa.
- **Trade:** India is Tanzania's second-largest trading partner with USD 8.6 billion in bilateral trade in 2024-25; both countries trade in local currencies through Special Rupee Vostro Accounts (SRVA).
- **Investment:** India is among the top five investors in Tanzania, with about USD 4.08 billion in investments.
- **Defence:** A five-year defence roadmap (2023–2027) guides partnership; cooperation, includes joint EEZ surveillance and the India-Tanzania-Mozambique (IMT-TRILAT) exercise.
- **Development:** India established the first overseas IIT campus (IIT Madras Zanzibar) in 2023 and has extended over \$1.1 billion in Lines of Credit (LoCs) for large-scale water supply projects.

### About Tanzania

- Tanzania is the largest country in East Africa and shares borders with eight neighbouring

nations.

- **Borders:** Kenya and Uganda (North), Rwanda, Burundi, and DRC (West), and Zambia, Malawi, and Mozambique (South).
- **Major Lakes:** Contains parts of **Lake Victoria (largest in Africa)** and **Lake Tanganyika (deepest in Africa, and the second-deepest in the world)**.
- **Highest Peak:** Mount **Kilimanjaro**, a **dormant stratovolcano** and Africa's highest point.
- **Major Rivers:** The **Rufiji River** is the largest; the **Kagera River** is a major tributary of the Nile.
- **Strategic Ports:** Three deepwater ports—**Dar es Salaam** (commercial capital), Tanga, and Mtwara.

## Seychelles

- Patrick Herminie, President of Seychelles, will pay a state visit to India at the invitation of Prime Minister of India.
- **Seychelles:**
- Seychelles is a sovereign island country and archipelagic state comprising 115 islands, known for its high human development, blue economy focus, and strategic maritime location in the Indian Ocean.
- **Located in:**
- Western Indian Ocean, about 1,500 km east of mainland Africa
- Neighbours: Maldives, Mauritius, Madagascar, Comoros, Réunion (France)
- **Capital: Victoria (on Mahé Island)**

### Key geographical features:

- Archipelagic composition: 115 islands grouped into Inner (granitic) and Outer (coralline) islands.
- Granitic islands (Mahé, Praslin, La Digue): among the oldest oceanic granite formations in the world.
- Coral atolls and reef systems: support rich marine biodiversity and the blue economy.
- Exclusive Economic Zone (EEZ): ~1.35 million km<sup>2</sup>, one of the largest relative to country size.
- High marine conservation: commitment to protect 30% of marine waters through Marine Protected Areas.

## Military exercises in news

- India is conducting multiple high-profile military exercises in early 2026—including Exercise Khanjar, Exercise Agni Pariksha, and Exercise Vayu Shakti-2026—highlighting enhanced operational readiness, jointmanship, and defence diplomacy.

### Military exercises in news:

#### Exercise Khanjar:

- **Host / Location:** India | Missamari, Assam
- **Participants:**
  - Indian Army – Parachute Regiment (Special Forces)
  - **Kyrgyzstan** – ILBRIS Special Forces Brigade
- **Aim:** To enhance interoperability and operational synergy in counter-terrorism and special forces operations.
- **Key features:**
  - Annual bilateral exercise held alternately in India and Kyrgyzstan (13th edition).
  - Focus on urban warfare, mountain warfare, sniping, and complex building intervention.
  - Strengthens India–Central Asia defence cooperation and counter-terrorism collaboration.

#### Exercise Agni Pariksha:

- **Host / Location:** India | Sigar, Arunachal Pradesh
- **Participants:**
  - Indian Army
  - Indo-Tibetan Border Police (ITBP)
- **Aim:** To familiarise non-artillery personnel with artillery procedures and improve inter-force combat integration.
- **Key features:**
  - First-of-its-kind joint training exposing infantry and ITBP to artillery firing missions.
  - Breaks traditional role silos and enhances firepower coordination and joint operational trust.
  - Focused on future battlefield requirements and integrated combat capability.

#### Exercise Vayu Shakti-2026:

- **Host / Location:** India | Pokaran Field Firing Range, Rajasthan
- **Participants:**

- Indian Air Force (IAF) units from across the country
- **Aim:** To demonstrate IAF's air-power capability, operational strategy, and precision strike readiness.
- **Key features:**
- Largest day-to-night air-power exercise of the IAF.
- Participation of 120+ aircraft and helicopters, including Rafale, Su-30 MKI, Tejas, Mirage-2000, Apache, Chinook, and Dhruv.
- Execution of Offensive & Defensive Counter Air, SEAD, precision strikes, airborne command (AWACS), and Para-commando airdrops.
- Showcase of indigenous systems such as Akash air defence.

### FORGE Initiative

- India supported the Forum on Resource, Geostategic Engagement (FORGE) initiative at the inaugural **Critical Minerals Ministerial** in Washington, D.C.
- The Ministerial was hosted by the U.S., with delegations from over 50 countries, including India, to coordinate efforts to secure critical mineral supply chains.
- FORGE is launched as the official successor to the Mineral Security Partnership (MSP).
- It aims to secure and diversify global supply chains and reduce overreliance on single-source suppliers (notably China) for critical minerals.
- **MSP:** Launched in 2022, it is a strategic collaboration among 14 countries and the EU to accelerate the development of diverse, sustainable critical energy mineral supply chains.

### PM Modi's Official Visit to Malaysia

- PM Narendra Modi recently concluded a two-day official visit to Malaysia to further strengthen the India-Malaysia Comprehensive Strategic Partnership.

#### Key Outcomes of PM Modi's Visit to Malaysia

- **Defence and Security Cooperation**
- **Fleet Maintenance:** India and Malaysia established the Su-30 Forum to exchange technical data

and maintenance expertise for their joint Sukhoi-30 fleets.

- **Strategic Planning:** The Defence Cooperation Committee (MIDCOM) established the Strategic Affairs Working Group (SAWG) to oversee long-term defence planning.
- **Security Framework:** Both nations institutionalised the Malaysia-India Security Dialogue and signed a new MoU on Anti-Corruption to combat transnational crime and financial fraud.
- **Sensitive Cooperation:** An Exchange of Notes on National Security was finalised to formalise cooperation on sensitive matters.

### **Economy and Technology Partnership**

- **Digital Governance:** The Malaysia-India Digital Council (MIDC) framework was formalised to advance policy cooperation in AI, Fintech, and Digital Public Infrastructure (DPI).
- **Payment Integration:** India and Malaysia finalised the agreement to link UPI with Malaysia's PayNet to enable seamless cross-border payments for tourists and businesses.
- **Currency Settlement:** Both sides agreed to settle trade in local currencies (INR and Malaysian ringgit) to reduce dependence on foreign exchange.
- **Chip Collaboration:** An Exchange of Notes linked IIT-Madras with the Advanced Semiconductor Academy of Malaysia to integrate semiconductor supply chains.

### **Social, Cultural and Welfare Engagement**

- **Worker Security:** ESIC and PERKESO signed an agreement to legally guarantee social security benefits for Indian workers in Malaysia.
- **Cultural Studies:** Universiti Malaya established a permanent Thiruvalluvar Centre for Indian Studies to promote research on the Tamil language.
- **Creative Industry:** An Audio-Visual Co-Production Agreement allows joint film production with simplified regulatory and legal clearances.
- **Health Regulation:** An Exchange of Notes on Healthcare formalises cooperation in drug regulation and pharmacopoeia recognition.
- **Disaster Resilience:** A new MoU on Disaster Management was signed to facilitate the sharing of expertise in search-and-rescue operations.
- **Wildlife Conservation:** Malaysia ratified the Framework Agreement to become a founding member of the India-led International Big Cat Alliance (IBCA).

### **Overview of India-Malaysia Bilateral Relations**

- **Geostrategic Role:** Malaysia is a crucial "pivot state" in India's Act East Policy due to its location at

the strategic Strait of Malacca and South China Sea.

- **Partnership Status:** Bilateral relationship was elevated to a Comprehensive Strategic Partnership in 2024, reflecting deep political and security trust.
- **Trade Scale:** Bilateral trade reached \$19.5 billion in FY 2024-25, making Malaysia India's third-largest trading partner in ASEAN.
- **Trade Asymmetry:** The trade balance remains heavily in Malaysia's favour due to India's large imports of palm oil and electronics.
- **Export Basket:** Petroleum products, agricultural produce, organic chemicals, and aluminium.
- **Import Basket:** Palm oil, mineral fuels, and electrical machinery.
- **Defence Framework:** The Malaysia-India Defence Cooperation Committee (MIDCOM) serves as the apex body guiding defence engagements.
- **Joint Exercises:** The armed forces regularly conduct Harimau Shakti (Army), Samudra Laksamana (Navy), and Udar Shakti (Air Force).
- **Diaspora Bridge:** Malaysia hosts the world's second-largest Persons of Indian Origin (PIO) community (excluding NRIs) after the USA.
- **Strategic Convergence:** Both nations align on counter-terrorism, UNCLOS adherence in the Indo-Pacific, and Global South solidarity.
- **Friction Points:** Relations face occasional irritants over Zakir Naik's extradition, palm oil price volatility, and Malaysia's economic proximity to China.

## Chabahar Port

- The Government of India informed Parliament that it has fully paid its \$120 million commitment towards developing Iran's Chabahar Port.
- Chabahar Port is located at the mouth of the Gulf of Oman in Iran's Sistan-Balochistan province, near Pakistan's China-operated Gwadar Port.
- It is Iran's only oceanic and first deepwater port, offering direct access to global maritime trade routes.

**Port Terminals: It comprises two main terminals—**

- **Shahid Kalantari:** This terminal was developed in the 1980s to diversify Iran's trade routes away from the Strait of Hormuz.
- **Shahid Beheshti:** It is developed and operated by India Ports Global Limited (IPGL) to facilitate

trade with Afghanistan and Central Asia.

- **Connectivity:** The port serves as the maritime gateway for the INSTC and connects to the India-built Zaranj-Delaram Highway in Afghanistan, enabling access to Kabul and Mazar-e-Sharif.
- **India's Utility:** The port provides India with a secure, direct trade route to Iran, Afghanistan, and Central Asia, bypassing Pakistan.
- **Significance:** The port is considered a critical "Diamond" in India's Necklace of Diamonds strategy, directly countering China's "String of Pearls" influence (particularly Gwadar Port).

### Network Readiness Index (NRI) 2025

- The Network Readiness Index (NRI) 2025 report has been released by the Portulans Institute, an independent, non-profit research institute in Washington, DC.
- The report assesses the network-based readiness of 127 economies using 53 indicators across four pillars —Technology, People, Governance, and Impact.
- **Global Leaders:** The United States topped the list, followed by Finland and Singapore, highlighting their dominance in digital readiness.
- **India's Position:** India ranked 45th globally, improving by 4 positions from 2024. It ranked 1st in AI scientific publications, annual telecom investment, ICT services exports, and E-commerce legislation.
- **Income Benchmark:** The NRI 2025 report notes that India's network readiness exceeds income-level expectations, placing it second among lower-middle-income countries.
- **Key Drivers:** The report attributes India's rise to affordable mobile data, large-scale digital infrastructure projects like 5G rollout, and a thriving AI talent pool.

### India-Malaysia IMPACT Framework

- Prime Minister of India during his visit to Malaysia, articulated IMPACT as the guiding framework of India-Malaysia relations while addressing the Indian diaspora in Kuala Lumpur.
- **About India-Malaysia IMPACT Framework:**
- IMPACT stands for India-Malaysia Partnership for Advancing Collective Transformation, a strategic vision articulated to deepen bilateral cooperation by aligning economic growth, digital integration, cultural ties, and people-centric development.

**Aim:**

- To accelerate the pace and scale of bilateral cooperation.
- To deliver tangible benefits for citizens of both countries.
- To position India–Malaysia ties as a driver of Asia’s collective growth.

**Key Features:**

- **Economic & Technology Cooperation:** Over 100 Indian IT companies operate in Malaysia, generating employment and strengthening digital ecosystems.
- **Digital Connectivity:** Launch of UPI in Malaysia and collaboration through the Malaysia–India Digital Council, enhancing fintech and cross-border digital payments.
- **People-to-People & Diaspora Linkages:** Strong role of the Indian-origin community (second-largest globally), expansion of OCI eligibility up to 6th generation, scholarships, and cultural institutions like the Thiruvalluvar Chair/Centre.
- **Cultural & Civilisational Bonds:** Shared maritime heritage of the Indian Ocean, linguistic and cultural links (Tamil, Malay), and historical connections including INA legacy.
- **Strategic & Regional Outlook:** Partnership aligned with ASEAN centrality, Indo-Pacific stability, and shared commitment to inclusive growth.

**Significance:**

- **Strategic Depth:** Elevates India–Malaysia ties beyond transactional engagement to a values-based, future-oriented partnership.
- **Digital Diplomacy:** Positions India’s Digital Public Infrastructure (UPI) as a global public good.

## India and Seychelles Adopted the Joint Vision for SESEL

- India and Seychelles published a joint vision document titled “India-Seychelles Joint Vision for Sustainability, Economic Growth and Security through Enhanced Linkages” (SESEL)
- **Diplomatic Milestone:** The document was released during President Patrick Herminie of Seychelles’ visit to New Delhi, coinciding with the 50th anniversary of bilateral diplomatic relations.

**Key Highlights of India-Seychelles Joint Vision**

- **Vision SESEL:** The ‘SESEL’ Joint Vision outlined a comprehensive roadmap to align Seychelles’ development with India’s Vision MAHASAGAR.
- **Regional Security:** India welcomed Seychelles’ decision to join the **Colombo Security Conclave**

(CSC) as a full member to enhance maritime security coordination.

- **Global Coalitions:** Seychelles agreed to join the **Coalition for Disaster Resilient Infrastructure (CDRI)** to strengthen its climate adaptation and disaster response capabilities.
- **Development Finance:** India announced a new \$175 million economic package, including a \$50 million grant, to support social housing, e-mobility, and vocational training in Seychelles.
- **Institutional Capacity:** A Seychelles Hydrographic Unit (SHU) will be created with Indian assistance to improve blue economy mapping and maritime safety.
- **Pharmaceutical Access:** The Indian Pharmacopoeia (IP) standards were recognised for procuring affordable generic medicines in Seychelles.
- **Digital Cooperation:** Seychelles will adopt India's **Digital Public Infrastructure (DPI)** to facilitate digital payments and governance systems.

#### About India-Seychelles Relations

- **Strategic Location:** Seychelles is a central pillar of **India's SAGAR vision**, monitoring critical sea lines in the Mozambique Channel.
- **Economic Transition:** Bilateral trade remains modest at around \$100 million, with cooperation shifting toward the Blue Economy and sustainable fisheries.
- **Security Partnership:** India acts as a net security provider by gifting assets like patrol vessel PS Zoroaster and Coastal Surveillance Radar Systems.
- **Joint Exercise:** The biennial Lamitiye exercise strengthens cooperation in counter-piracy and counter-terrorism operations.
- **Infrastructure Aid:** India supports development by funding key public projects, including the new Police Headquarters and the Magistrates' Court.
- **Cultural Bridge:** The Indian-origin diaspora constitutes about 10% of the population and strengthens people-to-people ties.
- **Key Divergence:** The naval facility project on Assumption Island remains stalled due to local political and environmental opposition.

#### India-Greece Joint Declaration of Intent for Defence-Industrial Cooperation

- India and Greece signed a Joint Declaration of Intent to strengthen bilateral defence-industrial cooperation.
- **Strategic Roadmap:** Both nations agreed to formulate a five-year roadmap to align India's

'Aatmanirbhar Bharat' initiative with Greece's 'Agenda 2030' defence reforms.

- **Maritime Surveillance:** Greece will deploy a Liaison Officer to the Information Fusion Centre – Indian Ocean Region (IFC-IOR) in Gurugram.

#### Overview of India-Greece Bilateral Relations

- **Strategic Partnership:** The relationship was elevated to a 'Strategic Partnership' during Prime Minister Narendra Modi's visit to Greece in 2023.
- **Mediterranean Gateway:** Greece serves as India's primary gateway to Europe and the entry point for the India-Middle East-Europe Economic Corridor (IMEC).
- **Trade Volume:** Total bilateral trade reached \$1.4 billion in FY 2024-25, with a mutual target to double it by 2030; the trade balance is heavily skewed in India's favour.
- **Export Basket:** Aluminium products, electrical machinery, organic chemicals, marine products, etc.
- **Import Basket:** Mineral fuels (petroleum products), scrap aluminium, kiwi, olives, etc.
- **Military Cooperation:** In 2025, the Indian Navy and the Hellenic Navy held their maiden bilateral maritime exercise in the Mediterranean Sea.
- **Air Exercise:** The Indian Air Force also participates in the multinational air exercise 'INIOCHOS', hosted annually by the Hellenic Air Force.
- **Migration Agreement:** The Migration and Mobility Partnership Agreement (MMPA) regulates the legal migration of the skilled Indian workforce to Greece.
- **Sovereignty Support:** Greece supports India's stance on Kashmir and on permanent membership in the UNSC, while India supports Greece on the Cyprus issue.
- **Key Divergences:** Greece's participation in China's Belt and Road Initiative (BRI) and its NATO-aligned stance against Russia.

#### Global CyberPeace Summit 2026

- The Global CyberPeace Summit 2026 concluded in New Delhi ahead of Safer Internet Day (February 10).
- The Summit is a global multi-stakeholder conference organised by the non-profit CyberPeace.
- It established "Trust and Safety" as a central pillar of digital governance, expanding beyond cybersecurity to include digital resilience and misinformation.
- **Key Launches:** The Global Quantum Threat Alliance, an AI Scholarship by the EC Council, and a

Centre of Excellence (CoE) focused on Automotive Cybersecurity

- **Focus Areas:** It addressed the convergence of AI and cybersecurity, critical infrastructure protection, and a “Netizen Townhall” to include internet users in policy discussions.
- **Significance:** It shifted cybersecurity from a technical issue to a human-centric “cyber-peace” concern, emphasising the protection of vulnerable groups.
- Safer Internet Day is observed annually on the second Tuesday of February to promote safe and responsible use of digital technologies.

### World Defence Show 2026

- The third edition of the World Defence Show (WDS 2026) is taking place in Riyadh, Saudi Arabia.
- WDS is a biennial exhibition hosted by Saudi Arabia and organised by the **General Authority for Military Industries (GAMI)**.
- It serves as a primary global platform for showcasing advancements across the air, land, sea, space, and security domains.
- The 2026 theme, “**The Future of Defence Integration**”, emphasises collaboration across all five domains to address modern security issues.
- **Key Highlights:** The exhibition featured a naval security zone, an unmanned systems zone, and a future defence lab focused on AI, robotics, and quantum technologies.
- **India's Participation:** India inaugurated its first dedicated pavilion to showcase indigenous capabilities, including tanks, missiles, and radar systems.
- **Significance:** It aligns with Saudi Arabia's Vision 2030 target of localising 50% of defence spending and strengthens India-Saudi Arabia relations.

### SCALP Long-Range Missiles

- The Indian Air Force is finalising a €300 million deal with France to procure additional SCALP missiles for its Rafale fleet.
- **Cruise Missile:** The SCALP, also known as **Storm Shadow**, is a long-range, air-launched cruise missile jointly developed by France and the UK.
- **Target Profile:** It is designed for “fire-and-forget” deep-strike missions against stationary targets

like hardened bunkers and command centres.

- **Core Specifications:** The missile carries a 450 kg BROACH warhead, has an operational range of 560 km, and travels at high subsonic speeds (**Mach 0.8–0.95**).
- **BROACH: Bomb Royal Ordnance Augmented Charge** is a dual-stage, tandem warhead that first penetrates reinforced concrete or soil, then detonates inside for maximum damage.
- **Triple Guidance:** It uses a combination of Inertial Navigation, GPS, and Terrain Reference Navigation (TRN) to ensure high resilience to jamming.
- **Stealth Features:** The missile employs a low-observable airframe and flies at very low altitudes (terrain-hugging) to evade enemy radar detection.
- **Terminal Accuracy:** In the final phase, an Imaging Infrared (IIR) seeker matches the target view with stored images to ensure pinpoint accuracy.
- **Operational History:** India reportedly used SCALP missiles in Operation Sindoor to destroy terrorist headquarters in Pakistan.

## Boeing P-8I Aircraft

- India approved acquiring six additional Boeing P-8I reconnaissance and anti-submarine aircraft from the US, with final approval granted by the Defence Acquisition Council (DAC).
- **DAC:** Defence Acquisition Council is India's top authority for approving defence equipment purchases. It oversees timely procurement, budget utilisation, and policy decisions for all armed forces.

### Boeing P-8I Aircraft

- **Aircraft Role:** P-8I is a multi-role Long Range Maritime Reconnaissance Anti-Submarine Warfare (LRMR ASW) aircraft.
- **Manufacturer:** Built by Boeing, a leading US aerospace company.
- **Service User:** Operated by the Indian Navy for maritime security missions.
- **Platform Variant:** P-8I Poseidon is a customised version of the US Navy's P-8A Poseidon.
- **Fleet Upgrade:** Replaced the Indian Navy's ageing Tu-142 Tupolev aircraft.
- **Mission Profile:** Carries out ASW, anti-surface warfare, intelligence, surveillance, and maritime patrol.
- **Combat Systems:** Equipped with advanced sensors and weapons for detecting submarines, surface vessels and maritime threats.

- **Key Specifications:** Length 39.47 m, wingspan 37.64 m, max take-off weight 85,139 kg, operated by 9 crew members.

### Exercise Vayushakti-26

- The Indian Air Force (IAF) will conduct Exercise Vayushakti-26 at the Pokhran Air-to-Ground Range in Jaisalmer.
- Exercise Vayushakti is a major **triennial** firepower demonstration that showcases the IAF's integrated operational capabilities and precision-strike potential.
- The 2026 edition will specifically highlight the performance and effectiveness of modern weapon systems deployed during Operation Sindoor.
- It will be conducted within IAF's Integrated Air Command and Control System (IACCS) to monitor operations in a simulated wartime environment.
- The display will feature more than 100 aerial assets, including Rafale, LCA Tejas, and transport aircraft such as the C-295.
- It will demonstrate advanced weapon systems, including **Short Range Loitering Munitions (SRLM)**, Counter-Unmanned Aerial Systems (CUAS), and surface-to-air systems such as **Akash**.
- The drill includes day and night missions, humanitarian assistance and disaster relief (HADR) capabilities, Electronic Warfare (EW) systems, and drone swarms.
- It will showcase IAF's readiness as the "first, fastest, and fiercest" responder in modern combat.

### Dornier 228 Aircraft

- The Ministry of Defence has signed a ₹2,312 crore contract with Hindustan Aeronautics Limited (HAL) to procure eight Dornier 228 aircraft for the Indian Coast Guard.
- **Dornier 228:**
- The Dornier 228 is a twin-engine, turboprop Short Take-Off and Landing (STOL) utility aircraft designed for passenger, cargo, and special mission operations. It is widely used for maritime patrol, border surveillance, search and rescue, and transport roles.
- **Manufactured By:**
- Originally developed by Dornier GmbH (Germany) in the early 1980s.
- License-produced and currently manufactured in India by Hindustan Aeronautics Limited at its

Kanpur facility.

**Types / Variants:**

- Dornier 228-100 / 200: Early 15- and 19-seater variants.
- Dornier 228 NG (Next Generation): Upgraded version with glass cockpit and five-blade propellers.
- Hindustan-Dornier 228: Civilian and military variants produced by HAL.
- Maritime Patrol Version: Equipped with surveillance radar and mission systems.
- Business / Air Ambulance Variant: Modified for VIP and medical roles.

**Key Features**

- **Capacity:** Up to 19 passengers – Designed as a light commuter aircraft, it can carry 15–19 passengers or equivalent cargo loads efficiently.
- **Engine:** Twin Garrett TPE331 turboprop engines.
- Powered by two reliable turboprop engines known for durability, fuel efficiency, and high performance in varied climates.
- **STOL Capability:** Operates from short and unpaved runways
- Its special wing design allows take-off and landing on short, rough airstrips, ideal for remote and coastal regions.
- **High Endurance:** The standard Dornier 228 manufactured by HAL typically has a maximum endurance of approximately 5 to 6 hours.
- **Rectangular Fuselage:** Large side-loading doors for cargo flexibility.
- The box-shaped body and wide doors allow easy loading of cargo, stretchers, or mission equipment.
- **Advanced Avionics (NG Variant):** Glass cockpit, digital displays, autopilot options.
- Modern navigation systems improve situational awareness, safety, and enable single-pilot operations.
- **Maritime Equipment:** 360° surveillance radar, infrared sensors, real-time datalink.
- Equipped with specialized sensors for coastal surveillance, detecting vessels, and transmitting live data to ground stations.
- **Significance:**
- Enhances coastal surveillance, EEZ monitoring, and anti-smuggling operations for the Indian Coast Guard.
- Procurement under the Buy (Indian) category promotes indigenous defence manufacturing.
- Production generates employment and strengthens HAL's supply chain of ancillary industries.

## Tangkhul Hui and Kombai to be added to Assam Rifles dog squad

- Assam Rifles is planning to induct two indigenous dog breeds—**Tangkhul Hui (Manipur)** and **Kombai (Tamil Nadu)** into its dog squad, aiming to reduce dependence on foreign breeds over the long term.

### Assam Rifles dog squad:

- Assam Rifles (India's oldest paramilitary force) runs a dedicated Assam Rifles Dog Training Centre (ARDTC), Jorhat, where trained dogs support operations as:
- Trackers follow human or animal trails across difficult terrain during operations.
- Guard dogs provide security to camps, convoys, and border posts.
- Detection dogs assist in identifying hidden arms, explosives, or narcotics.

### About Tangkhul Hui (Haofa) breed:

- Tangkhul Hui (Haofa) is an indigenous working dog traditionally raised by the Tangkhul people in Ukhrul district (Manipur), historically used for hunting.
- The Tangkhul Hui breed has already been part of a pilot project since 2022, with six dogs already trained and deployed in narcotics detection.
- **Key characteristic:**
- Highly disease-resistant and known for strong stamina rather than speed.
- Intelligent, alert watchdog traditionally used for hunting, typically black with white markings.
- Exists in two size varieties and has a limited population, making it a rare indigenous breed.

### About Kombai breed (Polygar dog):

- Kombai is a strong, indigenous working dog from Tamil Nadu (Theni district; named after Kombai town), traditionally kept for guarding and protection and sometimes used for hunting.
- The Kombai breed has not been added yet; the first batch (2 males, 8 females) is scheduled for induction in April 2026. Full integration of both breeds is expected by March 2027.
- **Key characteristics:**
- Strong physical build: Broad, muscular and athletic body suited for demanding guard and working roles.
- Distinct appearance: Short, smooth coat (usually reddish-brown) with a characteristic black mask-like muzzle.
- Loyal and protective nature: Deeply attached to owners and highly defensive when sensing

threats.

- Traditional working role: Historically used for guarding property and occasionally for hunting large game.

## Bangladesh Nationalist Party (BNP) Secures Victory in Parliamentary Election

- The Bangladesh Nationalist Party (BNP), led by Tarique Rahman, secured a decisive victory in Bangladesh's 2026 General Elections.
- **Political Shift:** The Awami League, previously led by ousted Prime Minister Sheikh Hasina, remained barred from participating as its registration stayed suspended.
- **Referendum Outcome:** Held alongside the elections, a referendum on the "July Charter" received a "Yes" vote from approximately 70-73% of voters; proposed reforms include –
- Imposing a two-term limit for the Prime Minister.
- Restructuring parliament into a bicameral legislature.
- Establishing a neutral caretaker system to oversee future elections.
- Increasing women's representation and strengthening judicial independence

### Key Implications for India

- **Security Risks:** Northeast India's internal security is at renewed risk as the new regime may adopt an accommodative stance toward dormant insurgent groups.
- **Extradition Crisis:** Bilateral diplomatic channels will be strained by the new government's formal pursuit of Sheikh Hasina's extradition.
- **Connectivity Projects:** Regional integration faces setbacks as the administration plans a strategic review of key transit agreements, including energy pipelines and port access.
- **Border Friction:** Operational tension is expected along the frontier, as the BNP manifesto mandates a "zero-tolerance" policy on border killings and alleged "push-ins."
- **Water Diplomacy:** Negotiations may become contentious as Dhaka prioritises "equitable redistribution" for the Teesta and Padma rivers, ahead of the Ganga Water Treaty's 2026 expiry.
- **Geopolitical Shift:** India's regional influence may wane as Bangladesh recalibrates its foreign policy towards a "diversified partnership," deepening ties with China and Pakistan.

## Rafale Jet

- The **Defence Acquisition Council (DAC)** has cleared the proposal to procure 114 Rafale fighter jets for the Indian Air Force (IAF).
- **Indigenisation:** Ninety-six jets will be produced domestically through a strategic partnership, and the fleet will integrate indigenous weapons like **Astra and BrahMos-NG missiles**.

### About Rafale Fighter Jet

- The Rafale is a **4.5-generation**, canard-delta-wing, multirole combat aircraft manufactured by Dassault Aviation of France.
- **Operational Role:** It operates as an “**Omnirole**” platform capable of executing air superiority, ground support, and nuclear deterrence missions in a single sortie.
- **Engine Capabilities:** It has a twin-engine configuration that enables Supercruise, enabling supersonic flight without afterburners.
- **Speed & Altitude:** It has a maximum speed of Mach 1.8 and maintains a service ceiling of 50,000 ft.
- **Radar System:** It features the **RBE2 AESA** (Active Electronically Scanned Array) radar for simultaneous detection and tracking of multiple targets.
- **Electronic Warfare:** The **SPECTRA (Self-Protection Equipment Countering Threats to Rafale Aircraft)** suite provides long-range detection and jamming capabilities.
- **Enhancements:** The fleet incorporates 13 India-specific enhancements, including Israeli helmet-mounted displays, low-band jammers, and cold-start capability for high-altitude bases.

### Weapon Systems

- **Air-to-Air Missiles:** The aircraft deploys the Meteor, a ramjet-powered **Beyond Visual Range (BVR)** missile (>150 km), and the versatile MICA for interceptions.
- **Deep Strike Capability:** The **SCALP (Storm Shadow)** air-launched cruise missile neutralises high-value fortified targets deep within enemy territory.
- **Precision Munitions:** The **HAMMER rocket-boosted weapon** delivers high-altitude precision air-to-ground strikes.
- **Nuclear Capability:** The platform is capable of delivering nuclear weapons, significantly strengthening the air leg of **India's Nuclear Triad**.

## Air-Ship Based High-Altitude Pseudo Satellite (AS-HAPS)

- Defence Acquisition Council (DAC) granted **Acceptance of Necessity (AoN)** for procurement of **Air-Ship Based High-Altitude Pseudo Satellite (AS-HAPS)** for the Indian Air Force.
- They are named pseudo-satellites because they perform basic satellite functions, but they do not require a rocket for launching.

### High-Altitude Pseudo Satellite (HAPS)

- **Category:** Solar-powered unmanned aerial platform operating in the stratosphere (~18–20 km altitude) with persistent satellite-like surveillance and communication capabilities.
- **Operational Concept:** Designed to remain airborne for months or even years, using daytime solar energy and high-density battery storage during night cycles.
- **Pseudo-Satellite Role:** Provides persistent regional coverage without costly rocket launches.

### Key Applications

- **Military Functions:** Persistent Intelligence, Surveillance & Reconnaissance (ISR) operations, Electronic Intelligence (ELINT), telecommunications, remote sensing.
- **Communication Support:** Functions as a “tower in the sky” for secure communication networks.
- **Civilian Uses:** Disaster management, 5G extension, precision agriculture, environmental monitoring.

### Why India Needs HAPS?

- **Doklam Lesson (2017):** The Doklam standoff exposed the need for continuous, real-time surveillance to track mobilisation and infrastructure activity near sensitive border points.
- **Persistent Surveillance Gap:** Conventional UAVs typically offer 24–48 hours of endurance, while LEO satellites move on fixed paths and can't “hover” over one spot continuously.
- **Border Scale Challenge:** India has ~15,000 km of land borders across high-altitude, desert and forest terrains, where ground-based sensors have blind spots.

## AFR Became the First Indian Private Satellite to Perform “In-Orbit Snooping”

- The Aerospace First Runner (AFR) satellite achieved a breakthrough in Space Situational Awareness (SSA) by tracking and imaging the International Space Station (ISS) from orbit.
- **Private First:** This is the first publicly reported instance of an Indian private satellite

performing “in-orbit snooping” (non-Earth orbital imaging).

- **Satellite Profile:** The 80-kilogram **Azista BST Aerospace First Runner (AFR)** is an optical Earth Observation satellite designed for high-resolution remote sensing.
- **Manufacturing:** Azista BST Aerospace (ABA), an Indo-German joint venture, manufactures the satellite at a facility in Ahmedabad.
- **Launch Details:** The satellite was launched into a **Sun-Synchronous Orbit (SSO)** in June 2023 aboard the **SpaceX Transporter-8 mission**.
- **Payload Capabilities:** Its primary payload comprises wide-swath optical cameras capable of capturing panchromatic and multispectral imagery.
- **Strategic Potential:** The “in-orbit snooping” capability has significant dual-use potential for inspecting other space assets and monitoring space debris.
- **Sectoral Applications:** The satellite data supports critical sectors such as crop health monitoring, disaster management, and urban infrastructure planning.

In-orbit snooping, formally known as **Non-Earth Imaging (NEI)** or **Space-to-Space Imaging**, refers to satellites tracking and photographing other objects in orbit rather than observing Earth.

•

## UAE-India Corridor

- The UAE-India corridor is driving strategic growth through aligned policy, capital, and technology. This partnership exemplifies how shared vision fuels global economic opportunities.

### India-UAE Upswing

- **Trade Milestone:** Comprehensive Economic Partnership Agreement (CEPA) 2022 target of \$100B bilateral trade by 2030 achieved five years early; **new target set at \$200B by 2032**.
- **Non-Oil Growth:** Non-oil trade rose 20% last year to \$65B, reflecting economic diversification beyond energy.
- **Investment Flow:** Since 2000, the UAE invested \$22B in India, while India invested \$16B there.
- **Diaspora Backbone:** Nearly 5 million Indians in the UAE, enabling over 1,200 weekly flights.
- **Strategic Significance**
- **Sector Expansion:** Corridor is being reshaped by advanced manufacturing, financial services, technology, and logistics.
- **Industrial Projects:** Reliance-TA’ZIZ \$2B low-carbon chemicals, Ashok Leyland shifted electric

bus production to the UAE, and L&T Abu Dhabi solar-plus-storage.

- **Financial Integration:** Emirates National Bank of Dubai (NBD's) acquisition of RBL Bank is the largest FDI in Indian banking, & DP World has committed an additional \$5 billion to Indian infrastructure.
- **Regional Platform:** Bharat Mart will serve Africa, West Asia, and Eurasia, doubling India's exports to these regions.
- **India-UAE Bilateral Cooperation**
- **Policy Architecture:** CEPA removed ~90% tariffs, and the 2024 Bilateral Investment Treaty ensures investor certainty.
- **Technology Partnership:** India-UAE collaborate on AI, data centres, and digital infrastructure, with India hosting the Global South AI Summit 2026.
- **Energy Collaboration:** Abu Dhabi National Oil Company (ADNOC) signed multi-billion-dollar LNG agreements with Indian Oil and HPCL.
- **Long-Term Commitment:** Mubadala deployed \$4B in Indian health, renewables, and tech and Abu Dhabi Investment Authority is based in **GIFT City**.

#### India-UAE Cooperation Challenges

- **Geo Tensions:** Regional instability and shifting Middle East alliances affect investment certainty.
- **Regulatory Differences:** Divergent labour, taxation, and compliance standards require harmonisation for smooth operations.
- **Technology Gaps:** AI and advanced manufacturing demand local talent and infrastructure, posing implementation challenges.
- **Trade Reliance:** Overdependence on the corridor for certain exports could create vulnerability to external shocks.

#### Way Forward

- **Capacity Building:** Joint digital infrastructure and skill development in Africa to enhance the corridor's global impact.
- **Investment Diversification:** Encourage sectoral expansion beyond energy and logistics to AI, renewables, and healthcare.
- **Innovation Leadership:** Focus on AI and advanced technologies to make the corridor a model for Global South partnerships.

## United Nations Fellowship Training Programme on SALW Control

- India is hosting the inaugural United Nations Fellowship Training Programme on **Small Arms and Light Weapons (SALW) Control** for the Asia-Pacific region for the first time in Asia.

### What it is?

- The United Nations Fellowship Training Programme on SALW Control is a three-week capacity-building initiative aimed at strengthening government expertise in controlling the illicit trade and misuse of small arms and light weapons.
- It supports implementation of global disarmament frameworks, particularly the UN Programme of Action (PoA) and the **International Tracing Instrument (ITI)**.
- **Host: Indian Army**
- **Venue:** Military College of Materials Management, Jabalpur, Madhya Pradesh
- **Organising Institutions:**
- United Nations Office for Disarmament Affairs (UNODA)
- UN Regional Centre for Peace and Disarmament in Asia and the Pacific (UNRCPD)

### Aim:

- **Strengthen National Capacities:** Equip officials to implement UN PoA and ITI commitments.
- **Enhance Regional Cooperation:** Promote coordination among Asia-Pacific states on arms control.
- **Improve Tracing & Stockpile Systems:** Upgrade mechanisms to track and safely manage arms.
- **Curb Illicit Arms Flows:** Reduce diversion of weapons to terrorism and organized crime networks.

### Key Features:

- **Multilateral Disarmament Framework:** Aligns with UN PoA and ITI to combat illegal arms proliferation.
- **Asia-Pacific Focus:** Brings together delegates from 13 regional nations to strengthen cooperation.
- **Capacity-Building Orientation:** Emphasises technical training in tracing, record-keeping, and stockpile security.
- **Institutional Recognition of India:** Reflects global trust in India's arms management systems.
- **Safe Disposal & Accountability Practices:** Showcases India's established mechanisms for responsible arms disposal.

- **Strategic Security Context:** Addresses threats from terrorism, insurgency, and transnational crime fueled by SALW proliferation.
- **Significance:**
  - Positions India as a regional hub for professional military and technical training.
  - Reinforces India's commitment to rules-based global order and responsible arms governance.

## 6th Generation Aero Engines

- Defence Minister of India has asked DRDO scientists to develop an indigenous 6th generation aero engine within 5–7 years.

### What is a 6th Generation Aero Engine?

- A 6th generation aero engine is an advanced jet engine designed for future stealth fighters.
- Unlike older engines that operate in one fixed mode, these engines can change their working style mid-air depending on mission needs.
- They are not just thrust providers. They also act as a power and cooling hub for AI systems, advanced radars, and future laser weapons.

### How Does It Work?

- **Cruise Mode (Fuel Saving Mode):** The engine opens a third air stream, behaving like a high-bypass commercial jet to maximise fuel efficiency and extend flight range.
- **Combat Mode (High Power Mode):** The engine closes the third stream, redirecting airflow for higher thrust, rapid acceleration, and superior combat performance.
- **Cooling Function:** The additional airflow absorbs excess heat from radars, AI systems, and weapons, preventing overheating during high-intensity missions.
- **Adaptive Cycle Engine (ACE):** This smart system dynamically shifts between efficiency and power modes, optimising performance based on mission demands.

### Key Features of 6th Gen Engines:

#### Adaptive Cycle (Three-Stream Technology):

- Enables the engine to switch between cruise efficiency and combat thrust, ensuring flexibility across different flight conditions.
- Automatically balances fuel consumption and power output, improving both endurance and agility.

#### High Thermal Management:

- Effectively dissipates massive heat generated by advanced electronics and directed-energy weapons.
- Functions as an integrated thermal control hub, safeguarding onboard systems during operations.

**Embedded Electrical Power Generation:**

- Produces significantly higher electrical output compared to previous engines, meeting next-gen aircraft power demands.
- Supplies energy for high-powered radars, electronic warfare suites, and future laser systems.

**Advanced Materials (Ceramic Matrix Composites – CMCs):**

- Operate at extremely high temperatures without structural degradation, enhancing durability and efficiency.
- Allow higher engine temperatures, which directly improve thrust-to-weight ratio and fuel performance.

**AI-Based Predictive Maintenance:**

- Uses real-time sensor data to continuously assess engine performance and detect anomalies early.
- Predicts component wear before failure occurs, reducing downtime and maintenance costs.

## India–France Ties Upgraded to a Special Global Strategic Partnership

- French President Emmanuel Macron is currently on a three-day official visit to India, marking his fourth visit to the country.

**Key Outcomes of President Macron's 2026 Visit to India**

- **Diplomatic Elevation:** The bilateral relationship was formally elevated to a Special Global Strategic Partnership to strengthen Indo-Pacific cooperation.
- **Institutional Oversight:** An Annual Foreign Ministers Dialogue was instituted to monitor the implementation of the **Horizon 2047 goals**.
- **Defence Production:** A Joint Venture (JV) between BEL and Safran was established to localise **HAMMER missile** manufacturing in India.
- **Military Interoperability:** Reciprocal liaison officers were deployed at Indian Army and French Land Forces establishments to strengthen field-level coordination.
- **Human Capital:** The countries signed a Letter of Intent (LoI) to establish a National Centre of Excellence for Skilling in Aeronautics.
- **Fiscal Alignment:** Both countries signed a protocol to amend the Double Taxation Avoidance Agreement (DTAA) to ease cross-border investments.

- **Digital Infrastructure:** The Indo-French Centre for Digital Sciences was launched to co-develop trusted public infrastructure and emerging technologies.
- **Logistics Modernisation:** The Department of Posts (India) and La Poste (France) signed a Letter of Intent (LoI) to co-develop e-commerce logistics and digital postal services.
- **Innovation Synergy:** The India-France Year of Innovation 2026 was launched to foster R&D synergy between startups and research institutions.
- **Healthcare AI:** AIIMS, New Delhi, will host the Indo-French Centre for AI in Health to integrate advanced AI into diagnostic processes.
- **Professional Mobility:** France operationalised a five-year Schengen visa for Indian Master's alumni to streamline professional and academic travel.

#### Overview of India-France Bilateral Relation

- **Strategic Evolution:** India established its first strategic partnership with France in 1998, which was elevated to a Special Global Strategic Partnership in 2026.
- **Centenary Roadmap:** Both nations signed the Horizon 2047 roadmap in 2023, marking 25 years of strategic partnership across three pillars – Security, Planet, and People.
- **Trade Profile:** France is India's 3rd largest trade partner in the EU, with total bilateral trade reaching \$15 billion in 2024-25; India maintains a positive trade balance.
- **Export Basket:** Refined petroleum, readymade garments, electronics, etc.
- **Import Basket:** Aviation equipment, electrical machinery, chemical products, etc.
- **Defence Procurement:** India cleared procurement of 114 Rafale jets and finalised the contract for 26 Rafale-M jets, marking its largest-ever hardware acquisition.
- **Military Synergy:** Regular Varuna (Naval), Shakti (Army), and Garuda (Air Force) exercises continue to strengthen tactical interoperability.
- **Digital Integration:** The launch of UPI at the Eiffel Tower and Galeries Lafayette marks the first major integration of Indian digital payments into the Eurozone
- **Space Collaboration:** ISRO and CNES are co-developing the TRISHNA thermal imaging satellite for climate monitoring, building on the success of the joint Megha-Tropiques and SARAL missions.
- **Nuclear Cooperation:** France became the first country to sign a Civil Nuclear Agreement with India in 2008, shortly after the NSG waiver lifted India's nuclear isolation.
- **Nuclear Project:** The Indo-French Jaitapur project in Maharashtra aims to achieve a total capacity of 9.9 GW, making it the world's largest nuclear power park.
- **Strategic Alignment:** Strategic autonomy, a multipolar world order, and a free and open Indo-

Pacific.

- **Policy Variance:** Ukraine-Russia conflict, varying approaches to China, and nuclear liability laws.

### India's First Private Sector Helicopter Final Assembly Line (FAL) in Karnataka

- **Context (PIB):** PM Narendra Modi and French President Emmanuel Macron virtually inaugurated India's first private-sector Helicopter Final Assembly Line (FAL) in Vemagal, Karnataka.
- **Strategic Partnership:** It operates under a strategic partnership between Tata Advanced Systems Limited (TASL) and Airbus Helicopters to manufacture the Airbus H125 light utility helicopter.
- **Milestone:** The project marks the first time a private Indian company has undertaken end-to-end manufacturing, integration, and testing of advanced helicopters.
- **Global Footprint:** Karnataka becomes home to the world's fourth H125 manufacturing and FAL facility, joining France, the United States, and Brazil.

#### About Airbus H125 Helicopter

- The Airbus H125 is a single-engine light utility helicopter optimised for peak performance in high-altitude and hot environments.
- **Aviation Record:** It remains the only helicopter to have successfully landed on and taken off from the summit of Mount Everest (29,029 feet).
- **Operational Range:** The H125 offers a range of 340 nautical miles (630 km) and a standard fuel endurance of 4.5 hours.
- **Multi-Modal Utility:** It is a multi-mission workhorse used extensively in law enforcement, search and rescue, air ambulance, firefighting, construction support, and power-line inspection.

### India-France Defence Cooperation Gets 10-Year Extension

- India and France renewed their Defence Cooperation Agreement for another 10 years during the 6th India-France Annual Defence Dialogue in Bengaluru.
- **Partnership Transition:** Co-chaired by the defence ministers, the dialogue focused on transforming the buyer-seller relationship into a deep industrial partnership.
- **Indigenisation Target:** India formally requested that France increase the indigenous content in the proposed 114 Rafale jets to 50% and establish local MRO facilities for all French aero engines.

### About Defence Cooperation Agreement

- **Strategic Transition:** The 2006 Defence Cooperation Agreement operationalised Indo-French relations into a comprehensive military partnership under the 1998 Strategic Partnership framework.
- **Technology Transfer:** It established a formal mechanism for the transfer of defence technology; India developed six Scorpene submarines under Project 75, using French technology.
- **Institutional Oversight:** The High Committee on Defence Cooperation (HCDC), led by Defence Secretaries, was created to oversee military, industrial, and research collaboration.
- **Joint Exercises:** The 2006 agreement formalised three major bilateral exercises, namely Varuna (Navy), Garuda (Air Force), and Shakti (Army; initiated in 2011).
- **Security Dialogue:** Both nations institutionalised a systematic exchange of views on counter-terrorism and global security threats.
- **Logistics Access:** The Reciprocal Logistics Support Agreement (2018) expanded the DCA by allowing the Indian Navy to use French bases in the Indian Ocean (like Reunion Island) and vice versa.

### Khorranshahr-4 Ballistic Missile

- Rising US-Iran tensions, Tehran released striking footage of its powerful Khorranshahr-4 missile.

#### Khorranshahr-4 Ballistic Missile

- **About:** The Khorranshahr-4, also known as the Kheibar missile, is a medium-range ballistic missile.
- **Developed By:** Iran's state-owned Aerospace Industry Organisation (AIO).
- **Target Range:** Estimated 2,000 km, putting key U.S. bases and aircraft carriers within striking distance.
- **Missile Size & Weight:** Stands 13 m tall, 1.5 m in diameter, and weighs up to 20 tonnes.
- **Payload:** Can carry multiple warheads totalling 1,800 kg and strike up to 80 targets.
- **Fuel & Speed:** Liquid-fuelled, travels 16 Mach outside the atmosphere & 8 Mach within the atmosphere.

## G7 Summit 2026

- French President Emmanuel Macron has invited Prime Minister of India to attend the 52nd G7 Summit (2026) in France.
- **About G7 Summit 2026:**
- The G7 Summit 2026 is the annual meeting of leaders of the world's seven advanced democracies to deliberate on global economic stability, security, climate change, and geopolitical issues.
- **Host Country: France**
- **Venue: Évian, France**

### What is the G7?

- The Group of Seven (G7) is an informal forum of leading industrialized democracies that meet annually to coordinate responses to global economic and political challenges.
- **Members of G7:** United States, United Kingdom, France, Germany, Italy, Japan, and Canada.
- The European Union (EU) participates as a non-enumerated member represented by the Presidents of the European Council and European Commission.

### Origin and History:

- **Established:** 1975 (Rambouillet Summit, France).
- The first summit was convened by France to bring together major industrial economies.
- **1973 Oil Crisis and Financial Instability:** It emerged as a response to global recession, inflation, and energy shocks following the oil embargo, requiring collective economic stabilisation.
- **G6 to G7 (1976):** Canada's inclusion transformed the original G6 into the G7, strengthening North American representation and economic coordination.
- **G8 Phase (1997–2014):** Russia joined post-Cold War to encourage integration with Western economies, but was suspended after the Crimea annexation in 2014.
- **Expansion of Agenda:** Over time, the G7 evolved from a financial coordination forum into a platform addressing climate change, security, development, and global governance.

### Key Functions:

- **Macroeconomic Coordination:** Aligns fiscal and monetary policies among major economies to manage inflation, debt crises, and financial instability.
- **Global Governance Influence:** Shapes norms on trade, development finance, debt restructuring, and multilateral institutional reforms.

- **Security Dialogue:** Provides a platform to coordinate responses to geopolitical crises, sanctions regimes, and global security challenges.
- **Climate Leadership:** Advances climate mitigation targets, clean energy transitions, and global environmental commitments.
- **Ministerial Tracks:** Specialized ministerial meetings prepare detailed policy inputs for leaders' communiqués across sectors like finance, health, and digital governance.
- **Significance:**
- **Represents Nearly 40% of Global GDP:** The collective economic weight of G7 nations gives it significant influence over global markets and financial systems.
- **Shapes International Norms and Crisis Response:** Its communiqués and coordinated actions often guide global responses to economic shocks, pandemics, and geopolitical conflicts.

## Republic of Ireland

- India and Ireland agreed to work closely in the field of ICTs through structured engagement, exchange of best practices, capacity building, and industry linkages.
- **Political Features**
- It occupies greater part of an island lying to west of Great Britain.
- **Surrounding water bodies:** Atlantic Ocean (west), Celtic Sea (south), and Irish Sea (east).
- Ireland is separated from Great Britain by North Channel, Irish Sea, and St. George's Channel.
- **Geographical Features**
- **Highest Peak:** Carrauntoohil
- **Longest river:** River Shannon

## Iran temporarily shut parts of the Strait of Hormuz

### Strait of Hormuz

- Iran temporarily shut parts of the Strait of Hormuz to conduct live-fire military drills named "Smart Control of the Strait of Hormuz."
- This rare move coincided with indirect nuclear talks in Geneva and served as a strategic signal to the U.S. amid escalating regional tensions.

### **Strait of Hormuz: What it is?**

- The Strait of Hormuz is the world's most vital oil transit chokepoint. It is a narrow maritime passage that serves as the only sea exit for the Persian Gulf, linking it to the Gulf of Oman and the open ocean.
- **Located In:** It is situated in the Middle East, separating the northern coast of Iran from the Arabian Peninsula.
- Links the Persian Gulf to the Indian Ocean through the Gulf of Oman.

### **Neighbouring Nations:**

- **Iran:** Controls the northern coastline and several strategic islands (Qeshm, Hormuz, Larak).
- **Oman:** Controls the southern coast via the Musandam Peninsula exclave.
- **United Arab Emirates (UAE):** Located to the south and west; home to major ports like Fujairah.

### **Key Geographical Features:**

- **Dimensions:** Approximately 167 km long and only 33 km wide at its narrowest point (between Iran and the **Musandam Peninsula**).
- **Shipping Lanes:** Due to shallow waters near the coast, tankers must use two 3-km wide shipping lanes (one inbound, one outbound) separated by a 2-km buffer zone.
- **Strategic Islands:** Iran maintains a heavy military presence on islands like **Abu Musa** and the **Greater and Lesser Tunbs**, which allow for de facto control over the shipping channels.
- **Bathymetry:** The water is deep enough (60–100 meters) to handle the world's largest VLCCs (Very Large Crude Carriers), making it irreplaceable for bulk energy transport.
- **Significance:**
  - Roughly 20% of the world's total petroleum liquids and **20% of global LNG pass through the strait daily**—amounting to approximately 20 million barrels of oil.
  - Any closure or even a slowdown in traffic spikes global oil prices and shipping insurance premiums instantly.

### **MILAN 2026 Naval exercise**

- Raksha Mantri interacted with Navy Chiefs and delegations from **nine ASEAN** countries during the MILAN 2026 Naval Exercise held in Visakhapatnam.

**About MILAN 2026 Naval Exercise:**

- MILAN is a multilateral naval exercise initiated by the Indian Navy to enhance maritime cooperation, interoperability and trust among friendly navies in the Indo-Pacific region.
- It serves as a platform for joint training, operational coordination and strategic dialogue on maritime security challenges.

**Host: Hosted by the Indian Navy.**

- MILAN 2026 is being conducted at **Visakhapatnam, Andhra Pradesh.**

**Nations Involved:**

- Largest-ever edition with participation from 74 nations.
- Includes nine ASEAN member states, reflecting strong regional engagement.

**Aim:**

- To strengthen maritime cooperation and collective security in the Indo-Pacific region.
- To improve interoperability and operational coordination among participating navies through joint drills and exchanges.

**Key Features:**

- **Theme: "Camaraderie, Cooperation and Collaboration."**
- Includes Sea Phase exercises such as:
  - Anti-Submarine Warfare (ASW)
  - Air Defence drills
  - Search and Rescue (SAR) operations
  - Conduct of International Fleet Review 2026 and IONS Conclave of Chiefs.
- Platform for defence diplomacy and strategic engagement under India's Act East Policy and MAHASAGAR vision.
- Showcases India's indigenous naval capabilities such as INS Vikrant and Visakhapatnam-class destroyers.

**International Fleet Review (IFR) 2026**

- The IFR 2026 features a grand sea parade, reviewed by President Droupadi Murmu from the offshore patrol vessel **INS Sumedha.**
- The theme 'United Through Oceans' emphasises collective responsibility in the maritime domain.
- It involved 71 warships, with 19 foreign vessels and delegations from more than 70 countries.

**Significance:**

- Strengthens India's role as a key maritime security partner in the Indo-Pacific.
- Enhances cooperation with ASEAN and other friendly navies.

### Operation Chivalrous Knight 3

- The **Ruler of Ajman** has launched a humanitarian air bridge to Gaza for Ramadan under Operation Chivalrous Knight 3, while the UAE pledged an additional billion at the inaugural Board of Peace meeting in Washington.

**About Operation Chivalrous Knight 3:**

- A comprehensive, multi-phased international humanitarian mission led by the United Arab Emirates (UAE) to provide emergency relief and infrastructure support to the Palestinian people in the Gaza Strip.
- **Launched by:** The operation was initiated under the directives of President Sheikh Mohamed bin Zayed Al Nahyan.
- **Aim:** To alleviate the humanitarian crisis in Gaza by ensuring a steady flow of food, medical supplies, and essential services to displaced families and vulnerable groups, especially during the Holy Month of Ramadan.

**Key Features:**

- **Strategic Logistics:** Operates via a dedicated sea and air bridge, utilizing hundreds of flights, several transport ships, and over 300 land convoys.
- **Medical Infrastructure:** Includes the establishment of a field hospital within Gaza and a floating hospital in Al Arish, Egypt, to perform specialized surgeries.
- **Basic Needs:** Development of desalination plants in Rafah and large-scale distribution of winter clothing and Warmth and Safety kits.
- **Birds of Goodness:** A specific initiative within the operation focused on airdropping aid to inaccessible areas in northern Gaza.

**Significance:**

- It represents one of the most sustained and high-volume humanitarian responses in the region, positioning the UAE as a leading donor.

- The recent billion pledge (bringing total UAE aid to nearly billion) reinforces the shift from immediate relief toward long-term stabilization through international cooperation frameworks like the Board of Peace.

## Pax Silica initiative

- India has joined the U.S.-led Pax Silica initiative, aimed at building resilient supply chains for electronics, artificial intelligence and critical minerals.

### About Pax Silica initiative:

- Pax Silica is a strategic international initiative led by the United States Department of State to strengthen secure, resilient and trusted supply chains for critical minerals, semiconductors, electronics and AI technologies.

### History:

- Conceptualised as a response to growing concerns over supply-chain vulnerabilities and concentration of rare-earth processing.
- Held its inaugural summit in Washington D.C. in December 2025.

### Aim:

- To create resilient and diversified global supply chains for critical minerals, semiconductors and AI-related technologies.
- To deepen economic partnerships among like-minded countries and reduce risks from coercive or monopolistic supply

### Participants:

- **Signatories include:** Australia, Greece, Israel, Japan, Qatar, Republic of Korea, Singapore, UAE, United Kingdom, India (new entrant).
- **Non-signatory participants:** Canada, European Union, Netherlands, OECD, Taiwan.

### Key Features:

- **Supply chain security focus:** Promotes diversification of electronics and critical mineral supply chains to reduce excessive concentration risks.
- **AI and technology collaboration:** Encourages cooperation across AI systems, semiconductors, data infrastructure and advanced manufacturing ecosystems.
- **Critical minerals partnership:** Supports coordinated refining, processing and access to rare-earth and strategic minerals needed for future technologies.

- **Investment and infrastructure cooperation:** Promotes shared investments and incentives to strengthen trusted industrial and technology networks.
- **Trusted innovation ecosystem:** Builds collaboration among governments, industries and innovators to create secure and reliable technology stacks.
- **Fair market and security framework:** Addresses non-market practices, unfair dumping and protects sensitive technologies and critical infrastructure.
- **Private sector participation:** Mobilises entrepreneurship and industry capabilities to scale innovation and strengthen economic security.
- **Strategic economic alignment:** Aims to align partner countries on long-term technology governance and resilient global economic architecture.

## INS Krishna

- The Indian Navy launched INS Krishna, the first of **three indigenous Cadet Training Ships (CTS)**, at the L&T Shipyard in Kattupalli, Chennai.

### About INS Krishna:

- The lead ship of a new class of three Cadet Training Ships (CTS) indigenously designed and built by Larsen & Toubro (L&T). It is a dedicated platform for transitioning officer cadets from theoretical shore training to practical sea operations.
- **Aim:** To strengthen the Navy's training infrastructure by providing a dedicated environment for cadets to gain hands-on experience in navigation, seamanship, and ship-handling without diverting frontline warships from active duties.

### Key Features:

- **Classroom Capacity:** Equipped with three state-of-the-art classrooms capable of accommodating 70 cadets each.
- **Specialized Facilities:** Features a dedicated cadet training bridge, a chart house, and integrated simulators for "watch-keeping" drills.
- **Specifications:** A displacement of approximately 4,700 tonnes, a length of 122 meters, a top speed of 20 knots, and an endurance of 60 days at sea.
- **Accommodation:** Can host 20 officers, 150 sailors, and 200 cadets (including women cadets) simultaneously.

- **Defensive Suite:** Armed with a 76mm naval gun, two AK-630M Close-In Weapon Systems (CIWS), and 12.7mm stabilized remote-controlled guns.

**Significance:**

- **Aatmanirbhar Bharat:** Built under the Buy (Indian-IDD) category, it showcases India's self-reliance in warship design and private-sector shipbuilding.
- **Naval Diplomacy:** The ship will be used to train cadets from Friendly Foreign Countries (FFCs), enhancing international maritime cooperation.

### Indian Ocean Naval Symposium (IONS)

- India assumed the Chairmanship of the Indian Ocean Naval Symposium (IONS) during the 9th Conclave of Chiefs held in Visakhapatnam in February 2026.

**About Indian Ocean Naval Symposium (IONS):**

- The Indian Ocean Naval Symposium (IONS) is a voluntary, inclusive and multilateral maritime forum that promotes cooperation among navies of the Indian Ocean Region (IOR).

**Established in:**

- Established in 2008.
- Initiated by the Indian Navy to strengthen maritime cooperation among Indian Ocean littoral states.

**History:**

- India held the inaugural chairmanship (2008–2010).
- Successive chairmanships included UAE, South Africa, Australia, Bangladesh, Iran, France and Thailand.
- In 2026, India reassumed chairmanship, signalling renewed momentum for regional maritime cooperation.

**Members:**

- Around 25 member nations from the Indian Ocean Region.
- Includes observer countries and other maritime partners, with participation spanning from the Atlantic to the Pacific.

**Aim:**

- To enhance collaboration among regional navies for maintaining peace, stability and secure sea lanes in the Indian Ocean.
- To promote interoperability, professional exchanges and coordinated responses to humanitarian and security challenges.

**Key Functions:**

- Conducts Conclaves of Chiefs of Navies for strategic dialogue: Provides a high-level platform where naval leaders discuss regional maritime challenges, security cooperation and future collaborative strategies.
- **Facilitates maritime exercises (IMEX):** Organises joint drills and officer interactions to improve interoperability, operational understanding and confidence among participating navies.

**Operates through three specialised Working Groups:**

- Dedicated groups translate strategic decisions into practical cooperation in key maritime domains.
- **Humanitarian Assistance and Disaster Relief (HADR):** Develops coordination mechanisms and best practices for rapid response during natural disasters and humanitarian crises at sea.
- **Maritime Security (MARSEC):** Focuses on tackling piracy, terrorism, trafficking and other non-traditional maritime threats through shared experiences and cooperation.
- **Information Sharing & Interoperability (IS&I):** Enhances real-time information exchange and compatible procedures to improve joint maritime operations and situational awareness.
- **Promotes maritime domain awareness:** Encourages sharing of maritime data and coordinated surveillance to ensure safer sea lanes and effective monitoring of activities.
- **Strengthens institutional collaboration:** Uses digital systems, training programmes and workshops to improve continuous engagement and long-term institutional cooperation among navies.

**The International Energy Agency (IEA)**

- The International Energy Agency (IEA) ministerial meeting in Paris signalled that India's bid for full membership has entered its final stages.

**About The International Energy Agency (IEA):**

- The International Energy Agency (IEA) is an intergovernmental organisation that works to ensure

global energy security, reliable energy data, and sustainable energy policies.

- It acts as a major global platform for energy analysis, policy guidance, and emergency energy cooperation.
- **Established In:** 1974 in the wake of the 1973 oil crisis (Arab oil embargo).
- **Headquarters:** Paris, France.
- **Aim:** To help industrialized nations coordinate a collective response to major oil supply disruptions and ensure energy security.

#### **Membership Structure:**

- **Full Members:** Currently 33 countries (**Colombia was inducted as the 33rd member** in February 2026).
- Historically, a country must be a member of the **OECD** (Organisation for Economic Co-operation and Development) to join.
- **Association Countries:** 13 countries, including India, China, Brazil, and South Africa. These countries participate in discussions but lack decision-making rights.

#### **Key Functions:**

- **Energy Security:** Maintains a Strategic Petroleum Reserve mechanism where members must hold oil stocks equivalent to at least 90 days of net imports.
- **Data & Analysis:** Publishes the *World Energy Outlook* and the *Monthly Oil Market Report*, considered the gold standard for energy statistics.
- **Energy Transition:** Leads global efforts on climate change, renewables, and decarbonization through the Net Zero by 2050 roadmap.
- **Critical Minerals:** Recently launched a program to secure supply chains for minerals (lithium, cobalt) essential for clean energy.

#### **India and the IEA:**

- **Timeline:** India became an Associate Member in 2017 and signed a **Strategic Partnership in 2021**.
- **The October 2023 Request:** India formally applied for full membership to have a seat at the table in global energy decision-making.

#### **The OECD Hurdle:**

- India is **not a member of the OECD** and has no immediate plans to join.
- For India to become a full member, the IEA must amend its 1974 founding charter—a move the IEA leadership and major members now support to reflect India's status as the **world's 3rd**

largest energy consumer.

## U.S. Supreme Court Struck Down President Trump's Global Tariffs

- The U.S. Supreme Court struck down President Trump's global tariffs imposed under the **International Emergency Economic Powers Act (IEEPA)**.

### U.S. Supreme Court Judgement

- **Core Verdict:** A 6-3 majority ruled that using IEEPA to impose global tariffs exceeded the executive branch's constitutional authority.
- **Constitutional Bar:** The U.S. Constitution grants Congress the sole power to levy tariffs; the President cannot bypass this via emergency declarations.
- **Statutory Limit:** IEEPA permits regulating imports during emergencies, but does not grant authority to impose tariffs as revenue-raising instruments.
- **False Emergency:** Chronic trade deficits are a structural economic condition, not a foreign emergency that justifies IEEPA activation.
- **Refund Mandate:** Domestic importers are entitled to reclaim duties paid, exposing U.S. Customs and Treasury to refunds exceeding \$175 billion.

### About International Emergency Economic Powers Act (IEEPA)

- **Emergency Powers:** Enacted in 1977, IEEPA empowers the U.S. President to regulate international commerce and freeze foreign assets upon declaring a national emergency.
- **Restraint Design:** It was enacted to rein in unchecked presidential trade powers previously granted under the Trading with the Enemy Act, 1917.
- **Narrow Application:** Administrations have routinely used it for targeted sanctions against specific adversaries, including Iran and terrorist networks, but never for broad tariff regimes.
- **Renewal Requirement:** Each national emergency declared under IEEPA requires mandatory annual Presidential renewal to remain legally valid.
- **Legislative Oversight:** Congress must convene every six months to decide whether to end the declared emergency.
- **Operational Reach:** IEEPA forms the statutory foundation for U.S. sanctions and export controls, administered by the Office of Foreign Assets Control (OFAC).

## India Joins Board of Peace as an Observer

- India participated as an observer at the inaugural meeting of the U.S.-led Board of Peace in Washington, D.C.
- **Observer Limits:** As an observer, it can monitor proceedings and join discussions but cannot vote on resolutions or binding decisions.
- **Strategic Calculus:** India chose a calibrated observer role to maintain strategic autonomy without formally endorsing a platform that bypasses UN multilateralism.

### About Board of Peace

- **Davos Origin:** The Board of Peace is a 27-member diplomatic bloc formally established at the January 2026 Davos summit.
- **UN Bypass:** It operates outside UN frameworks under Donald Trump's permanent chairmanship.
- **Membership Cost:** Nations seeking permanent membership must make a mandatory \$1 billion membership contribution.
- **Gaza Mandate:** Initially aligned with UNSC Resolution 2803 to oversee the Gaza peace plan, its mandate has since expanded to address broader global conflicts.
- **Force Deployment:** Member states contribute to an International Stabilisation Force comprising 20,000 soldiers and 12,000 police officers; the initial deployment is planned for Rafah.

## Sayyad-3G Missile

- Iran tested the Sayyad-3G missile in the **Strait of Hormuz**, a critical global chokepoint for maritime energy transit.
- The weapon is an Iranian naval **surface-to-air defence missile**. It is an advanced maritime adaptation of the land-based Sayyad-3 air defence system.
- **Range:** The missile provides a medium-to-long-range defensive shield with an operational radius of approximately **150 km**.
- **Target:** It can intercept multiple aerial threats, including warplanes, maritime patrol aircraft, high-altitude drones, and cruise missiles.
- **Launch Mechanism:** The system utilises a Vertical Launch System (VLS) to deliver a rapid 360-degree response without reorienting the ship.
- **Guidance System:** It features inertial mid-course guidance and radar-based terminal homing to

track targets amid sea-surface clutter.

- **Significance:** The successful integration transitions Iranian naval strategy from point-defence systems to a layered defence umbrella to protect assets in strategic waterways.

## INS Anjadip

- The Indian Navy is set to commission Anjadip, the third vessel of the **eight-ship Anti-Submarine Warfare Shallow Water Craft (ASW-SWC) project**, into the Eastern Naval Command.
- **About INS Anjadip:**
- INS Anjadip is a state-of-the-art Anti-Submarine Warfare Shallow Water Craft (ASW-SWC). It is a reincarnation of the erstwhile **Petya-class Corvette** of the same name that was decommissioned in 2003.
- **Built By:** The vessel was indigenously designed and built by Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.
- The construction was executed under a Public-Private Partnership (PPP) model between GRSE and L&T Shipyard, Kattupalli.

### Other Ships in the Project:

- Anjadip is the third of eight planned ASW-SWC vessels. Other notable ships already launched or delivered in this class include **INS Mahe** and **INS Malvan**.
- **Aim:** The primary aim of the vessel is to address challenges in the littoral combat environment (coastal and shallow waters). It is specifically engineered to act as a '**Dolphin Hunter**', tasked with the detection, tracking, and neutralization of enemy submarines in coastal approaches.
- **Key Features:**
- **Dimensions:** Approximately 77 meters in length.
- **Propulsion:** High-speed Water-Jet Propulsion system, making it the largest class of Indian naval warships to use this technology.
- **Speed:** Capable of reaching a top speed of **25 knots**.
- **Weapons Package:** Armed with Lightweight Torpedoes, indigenously designed Anti-Submarine Rockets, and mine-laying capabilities.
- **Sensors:** Equipped with the **Hull Mounted Sonar 'Abhay'** for shallow water detection.
- **Multirole Capabilities:** Beyond ASW, it can perform Coastal Surveillance, Low-Intensity Maritime Operations (LIMO), and Search & Rescue (SAR).

## 2 Joint Military Exercises

- India has commenced two major joint military exercises — **Exercise DHARMA GUARDIAN** (India–Japan) and **Exercise VAJRA PRAHAR** (India–US) — aimed at strengthening defence cooperation and interoperability.

### Military Exercises:

- Military exercises are joint training operations conducted between armed forces of two or more countries to enhance interoperability, operational readiness, and strategic cooperation.
- They help participating nations share best practices, improve tactical coordination, and strengthen defence partnerships through realistic combat simulations.

#### About Exercise DHARMA GUARDIAN:

- A bilateral annual military exercise between the Indian Army and the Japan Ground Self-Defense Force (JGSDF).
- The exercise focuses on joint operations in semi-urban environments and improving coordinated military responses.
- Host:** Foreign Training Node, Chaubattia, Uttarakhand (India)
- Nations involved:** India and Japan
- Key features:**
  - Focus on joint tactical drills including cordon-and-search operations and house intervention.
  - Emphasis on modern technology and interoperability, including ISR (Intelligence, Surveillance & Reconnaissance) grid development.
  - Training includes heliborne operations and temporary operating base establishment for realistic combat simulation.

#### About Exercise VAJRA PRAHAR:

- A joint Special Forces exercise between India and the United States aimed at enhancing cooperation in special operations.
- Designed to improve joint operational capability in mountainous terrain.
- Host:** Special Forces Training School, Bakloh, Himachal Pradesh (India)
- Nations involved:** India and United States (US Green Berets)
- Key features:**
  - Focus on special operations tactics, techniques, and procedures (TTPs).

- Intensive joint mission planning and physical conditioning.
- Enhances interoperability, mutual trust, and professional exchange between Special Forces.

## The Chagos Islands

- The UK government is facing conflicting reports regarding a pause in the Chagos Islands sovereignty deal with Mauritius following opposition from US President Donald Trump.

### About The Chagos Islands:

- The Chagos Islands, also known as the Chagos Archipelago, is a group of seven atolls comprising more than 60 individual tropical islands. It is officially administered as the British Indian Ocean Territory (BIOT), though its sovereignty is heavily contested.
- **Located In:** The archipelago is situated in the Indian Ocean, approximately 500 kilometers south of the Maldives.
- It sits atop the Chagos–Laccadive Ridge, a massive submarine mountain range.
- **Origin:** The islands are coralline rock structures formed by volcanic activity over the Réunion hotspot.
- They consist of low-lying atolls set around central lagoons, including the Great Chagos Bank, which is the world's largest atoll structure.

### History:

- **Colonial Era:** Originally settled by the French in the 18th century (administered via Mauritius), the islands were ceded to the United Kingdom in 1814 under the Treaty of Paris.
- **The Split (1965):** Before granting Mauritius independence, the UK detached the Chagos Archipelago to create the BIOT.
- **Expulsion (1967–1973):** The UK forcibly removed the native Chagossian people to make way for a strategic US military base on the largest island, Diego Garcia.
- **Legal Battles:** For decades, displaced Chagossians and the Mauritian government have fought for the right of return and sovereignty. In 2019, the International Court of Justice (ICJ) ruled that the UK's occupation was illegal.

### Features:

- **Diego Garcia:** The largest and most significant island (32.5 \$km<sup>2</sup>), hosting a critical joint UK-US

naval and air support facility.

- **Biodiversity:** Home to some of the world's most resilient coral reefs and the world's largest coral atoll.
- **Strategic Location:** Its mid-ocean position provides a vital military "foothold" for monitoring the Indian Ocean and surrounding regions.
- **Demographics:** Currently, there is no permanent civilian population; the islands are inhabited only by military personnel and contractors.

**Current Status:**

- In October 2024, the UK announced an agreement to transfer sovereignty to Mauritius, with a deal signed in May 2025.
- Under this treaty, the UK would lease back Diego Garcia for 99 years to maintain the military base.
- However, as of early 2026, the ratification process in the UK Parliament is reportedly being paused or delayed due to concerns raised by the United States administration regarding the security of the base.

**Speaker of the Knesset Medal**

- The Israeli Parliament (Knesset) conferred the "Speaker of the Knesset Medal" on Prime Minister Narendra Modi, recognising his role in strengthening India-Israel strategic ties.

**About the Speaker of the Knesset Medal:**

- The Speaker of the Knesset Medal is the highest honour awarded by the Israeli Parliament (Knesset).
- It is a special parliamentary distinction instituted to recognise individuals for exceptional contributions to Israel and the Jewish people.

**Honoured by:**

- The medal is conferred by the Speaker of the Knesset, the presiding officer of Israel's unicameral legislature.
- In this case, it was awarded by Knesset Speaker Amir Ohana after PM Modi's address to the parliament.

**Aim:**

- To acknowledge global leaders and personalities who significantly strengthen Israel's diplomatic,

strategic or cultural partnerships.

- To symbolise parliamentary-level recognition beyond executive diplomacy.

**Key Features:**

- Considered the highest parliamentary honour of Israel.
- Awarded for strategic, political, technological, cultural or security cooperation contributions.
- Reflects recognition by the legislative institution, not merely the government.
- Recently instituted as a formal medal of honour by the Knesset.

**Significance**

- Highlights the growing India-Israel strategic partnership, especially in defence, cyber security, innovation and technology.
- Symbolises strong people-to-people and civilisational links, including historical Jewish presence in India.

**About Knesset:**

- The Knesset is the unicameral national legislature of Israel, functioning as the supreme law-making body of the country.
- It represents the sovereign authority of the Israeli state and performs legislative, supervisory and constitutional functions.

**Houses:**

- Unicameral Legislature → Israel has only one house, called the Knesset.
- **Electoral System:** Members are elected through proportional representation based on party lists, making coalition governments
- **Term:** Normal tenure is 4 years, though early elections can be called.

**Exercise Agni Varsha**

- The Southern Command of the Indian Army conducted Exercise Agni Varsha at the Pokhran Field Firing Ranges in Rajasthan.
- It is a large-scale, fire-and-manoevre military drill to validate operational readiness and integrated combat capabilities in a desert environment.
- **Technological Integration:** The exercise incorporated unmanned aerial systems (UAS), counter-drone solutions, modern artillery, and networked surveillance assets.
- **Asset Showcased:** Included T-90 battle tanks, infantry combat vehicles, K-9 Vajra, and Advanced

Light Helicopters (ALH) Dhruv.

## Diplomatic Reset in India-Canada Relations

- Canadian PM Mark Carney's visit to India signalled a formal reset of bilateral ties following the 2023 diplomatic crisis over the Nijjar assassination allegations.

### Factors Behind the India-Canada Diplomatic Crisis

- **Vote-Bank Politics:** Canada's accommodation of Khalistani sympathisers undermined India's sovereignty and security interests.
- **Divergent Worldview:** Conflicting stances on cross-border terrorism, human rights, and free speech absolutism widened the foreign policy gap.
- **Intelligence Standoff: The Five Eyes Alliance's** mobilisation over Nijjar assassination allegations escalated the bilateral dispute into a multilateral crisis.
- **Migration Friction:** Canada imposed strict new visa caps, while India suspended e-visa services, disrupting mobility of the Indian diaspora.
- **Extradition Failure:** Canada's refusal to act on Interpol Red Corner Notices remains an unresolved bilateral friction point.

### Key Developments Reshaping India-Canada Relations

- **Political Reset:** The newly elected Canadian administration reinstated High Commissioners and retracted public allegations.
- **Trade Revival:** India and Canada resumed CEPA negotiations and revived the bilateral CEO Forum.
- **Security Frameworks:** NSA-level dialogues were renewed for intelligence-sharing, law enforcement, and counter-terrorism cooperation.
- **Tech Cooperation:** Joint commitments on AI, critical minerals, and digital public infrastructure (DPI) unlocked new frontiers for bilateral cooperation in emerging technologies.
- **Energy Security:** The re-established Ministerial Energy Dialogue (CIMED) and new long-term uranium agreements integrated strategic energy supply chains.

## India-Israel Elevated Bilateral Ties to Special Strategic Partnership

- PM Narendra Modi concluded his second state visit to Israel, following his inaugural landmark visit in 2017.

### Key Outcomes of PM Modi's Visit to Israel

- **Bilateral Ties:** India-Israel ties were formally elevated to a "Special Strategic Partnership for Peace, Innovation and Prosperity".
- **Knesset:** PM Modi received the Speaker of the Knesset Medal, the highest honour of the Israeli parliament. He became the first Indian Prime Minister to address the Knesset.
- **Digital Payments:** UPI will be operationalised in Israel for Indian tourists, professionals, and cross-border remittances.
- **Workforce:** Israel will hire 50,000 Indian workers over five years across commerce, services, hospitality, and manufacturing.
- **Finance:** The 'India-Israel Financial Dialogue' was launched to align banking regulations and boost fintech growth.
- **Cybersecurity:** An 'Indo-Israel Cyber Centre of Excellence' is to be set up in India to combat digital threats and protect critical infrastructure.
- **Agriculture:** The India-Israel Innovation Centre for Agriculture (IINCA) will advance precision farming and satellite-based irrigation.
- The bilateral 'Villages of Excellence' programme will scale Israel's agricultural best practices across Indian villages.
- **Emerging Tech:** An NSA-led **Critical and Emerging Technologies (CET) initiative** will track breakthroughs in AI, quantum computing, and critical minerals.
- **Multilateral:** Both nations committed to fast-tracking the India-Middle East-Europe Economic Corridor (IMEC) and deepening the **I2U2 quadrilateral**.
- **Academia:** The India-Israel Academic Cooperation Forum (I2I Forum) will conduct annual university-led research dialogues.

### Overview of India-Israel Trade Relations

- **Trade Volume:** India-Israel bilateral merchandise trade stood at \$3.62 billion in FY 2024-25.
- **Decline:** This marks a sharp decline from the record high of \$10.77 billion in FY 2022-23, driven by regional instability and Red Sea disruptions.
- **Trade Rank:** India is Israel's 2nd largest trading partner in Asia and among top ten partners

globally.

- **Trade Balance:** The balance of trade currently favours India.
- **Key Exports:** Pearls, precious stones, petroleum products, and organic chemicals.
- **Key Imports:** Rough diamonds, electrical machinery, fertilisers, and defence equipment.
- **FTA:** Both nations have initiated formal negotiations for a Free Trade Agreement (FTA).

## Jeju Island

- India issued a travel advisory clarifying Jeju Island's visa-free entry rules after a reported detention of an Indian traveller under the Republic of Korea's visa waiver scheme.
- The advisory emphasised that visa-free eligibility does not guarantee entry, which remains subject to immigration clearance under Korean law.



### About Jeju Island

- Geographic Type: Jeju is South Korea's largest and southernmost volcanic island.
- Location: Jeju lies near the **Korean Strait**, separating South Korea from Japan (Tsushima Islands).
- Administrative Status: Jeju is formally designated as the Jeju Special Self-Governing Province, enjoying enhanced administrative autonomy within the Republic of Korea since 1 July 2006.
- Highest Peak: Mount Hallasan (1,950 m), a dormant volcano, is the tallest mountain in South Korea.
- UNESCO Status: Jeju Volcanic Island and Lava Tubes were designated a UNESCO WHS (2007).
- Climate Character: Warm ocean currents give an oceanic climate supporting subtropical vegetation.

### Fissile Material Cut-off Treaty (FMCT)

- India affirmed its support for commencing negotiations on a Fissile Material Cut-off Treaty (FMCT) at the **Conference on Disarmament in Geneva**.
- The FMCT is a proposed multilateral treaty to prohibit the future production of fissile materials for nuclear weapons or other explosive devices.
- **Targeted Materials:** It primarily targets Highly Enriched Uranium (HEU) and separated plutonium, the essential fissile materials used in nuclear warheads.
- **Exemption:** It allows the production of fissile material for non-weapons uses, such as civilian nuclear energy or naval propulsion reactors.
- **Scope:** It applies equally to all states, including 'Nuclear Weapon States' and countries outside the Nuclear Non-Proliferation Treaty (NPT) framework.
- **Negotiation Body:** Conference on Disarmament in Geneva is the primary forum mandated to negotiate the FMCT on a consensus basis.
- NPT is a landmark international arms control agreement adopted in 1968 to prevent nuclear weapon proliferation and promote peaceful nuclear cooperation among states.

### The Druzhba Oil Pipeline

- The Druzhba oil pipeline is at the center of a geopolitical standoff following a complete halt in flows due to drone attacks, leading Hungary and Slovakia to veto new EU sanctions on Russia.

### About The Druzhba Oil Pipeline:

- The Druzhba Pipeline (translating to Friendship in English) is one of the world's longest and largest crude oil pipeline networks.
- Established during the Soviet era, it serves as the primary artery for transporting Russian and Kazakh oil to the industrial heartlands of Central and Eastern Europe.



### Located In:

- The network originates in Almet'yevsk, Tatarstan (Russia), where it collects oil from Western Siberia, the Urals, and the Caspian Sea.
- It spans approximately 4,000 kilometers, crossing the Russia-Belarus border before splitting into two massive branches.

### States/Countries it Goes Through:

- Russia: The starting point and primary source.
- Belarus: The central transit hub at Mazyr where the line splits.
- Northern Branch: Travels through Poland to reach Germany.
- Southern Branch: Travels through Ukraine to supply Hungary, Slovakia, and the Czech Republic.

- Historical Branches: Connected to Lithuania and Latvia (currently inactive).

**Aim:**

- The pipeline was originally constructed in the 1960s to establish friendly relations through the reliable supply of cheap energy from the Soviet Union to its Eastern European allies.
- Today, its aim remains the provision of energy security to landlocked Central European nations that lack easy access to seaborne oil.

**Key Features:**

- **Massive Scale:** The system crosses 45 major rivers and over 200 railways and highways.

**Two-Pronged Distribution:**

- **Northern Branch:** Supplies refineries in **Płock (Poland) and Schwedt (Germany)**.
- **Southern Branch:** Connects to the Odesa-Brody pipeline and supplies the **Duna (Hungary)** and **Tisza** refineries.
- **Capacity:** At its peak, it pumped over 1 million barrels per day, accounting for roughly 1% of the total global oil supply.
- **Strategic Bypass:** Russia built the BPS-2 (Baltic Pipeline System) to reduce reliance on the Druzhba transit through Belarus and Ukraine.

**SOCIETY AND SOCIAL JUSTICE**

**Divyangjan Kaushal Yojana and Divyang Sahara Yojana**

- The Union Budget 2026-27 introduced two major schemes specifically designed to empower persons with disabilities (Divyangjan).
- The schemes reaffirm the government's commitment to inclusive growth, in line with the vision of 'Sabka Saath, Sabka Vikas'.

**Divyangjan Kaushal Yojana**

- This scheme focuses on providing industry-relevant, customised training to create dignified and sustainable livelihood opportunities.
- It targets high-growth sectors such as IT, AVGC, hospitality, and food services, which offer task-oriented roles suited for Divyangjan.

### **Divyang Sahara Yojana**

- The initiative improves access to affordable, high-quality assistive devices for persons with disabilities.

### **Key components:**

- Supporting the Artificial Limbs Manufacturing Corporation of India (ALIMCO) to increase assistive device production and integrate AI technologies.
- Strengthening PM Divyasha Kendras for integrated care and establishing Assistive Technology Marts for trials and purchases of assistive products.

## **Waste-pickers enumeration under NAMASTE scheme**

- The Union government released nationwide enumeration data of waste-pickers for the first time under the NAMASTE scheme.
- The data revealed **that 84.5%** of waste-pickers belong to SC, ST and OBC communities, highlighting deep social stratification in informal urban labour.

### **Waste-pickers enumeration under NAMASTE scheme:**

#### **Key trends:**

- Total waste-pickers enumerated: 52 lakh across 35 States/UTs
- **Regional outliers:**
- General category majority in Delhi and Goa
- **West Bengal:** 42.4% from General category

#### **Linked sanitation data:**

- 91.95% of sewer/septic tank workers belong to SC/ST/OBC groups
- **Significance**
- **Social justice lens:** Confirms the caste-based concentration of hazardous informal labour, reinforcing concerns of occupational segregation.

- **Policy targeting:** Enables formal recognition by Urban Local Bodies (ULBs) and access to safety gear, insurance and welfare schemes.
- **Human rights perspective:** Supports India's constitutional mandate to eliminate manual scavenging and hazardous sanitation work.

## Infertility and Mental Health in India

- Recent research highlights that infertility in India is deeply shaped by mental health burdens, which directly affect reproductive outcomes for both women and men.
- Infertility is culturally framed as a woman's failure, despite male factors contributing to **nearly 40-50% of infertility cases globally**.

### Impact of Mental Health on Fertility

#### 1. Impact on Male Fertility

- **Sperm Quality Decline:** Depression and chronic stress are associated with lower sperm concentration and reduced motility in clinical research.
- **Hormonal Imbalance:** Psychological stress activates cortisol pathways that disrupt hormonal environments required for healthy spermatogenesis.

#### 2. Impact on Female Fertility

- **Reduced Conception:** High stress levels significantly lower the probability of conception.
- **Endocrine Disruption:** Anxiety and depression interfere with ovulation, implantation and hormonal regulation necessary for pregnancy.
- **Impact on Assisted Reproductive Technology (ART)**
- **Lower Success Rates:** Elevated anxiety & depression are linked with poorer outcomes in IVF treatments.
- **Cumulative Burnout:** Repeated cycles of hope and disappointment deepen psychological fatigue.

### Way Ahead

- **Male Inclusion:** Promote awareness that infertility is a shared medical condition, not a measure of womanhood; E.g., public health campaigns challenging stigma and blame.
- **ART Emotional Support:** Provide structured counselling for couples undergoing IVF and related treatments, e.g., in-house counsellors at fertility centres.
- **Community Sensitisation:** Use frontline health workers to reduce social stigma around infertility;

E.g., awareness drives under NHM programmes.

#### Fertility Transition in India

- **Sub-Replacement:** SRS 2023 reports show India's overall **TFR has fallen to about 1.9 births per woman**, below the replacement fertility level.
- **Urban-Rural Gap:** Urban fertility is ~1.5-1.6, while rural TFR has reached replacement at around 2.1.
- **Regional Divide:** TFR remains highest in states like Bihar (~3.0) but lowest in Kerala (~1.8).

#### 9th Edition of Pariksha Pe Charcha

- The 9th Edition of **Pariksha Pe Charcha (PPC)** witnessed a record participation of over 4.5 crore registrations.
- **About Programme:** Initiated by the Prime Minister in 2018, this annual interactive programme aims to transform exams from a source of stress into a celebration (Utsav)
- **Nodal Agency:** The event is organised by the **Department of School Education and Literacy (Ministry of Education)** in collaboration with the MyGov platform.
- **Town-Hall Format:** It is a unique town hall event where the Prime Minister engages with students (Classes 6-12), teachers, and parents to discuss exam-related stress and holistic development.
- **Broader Context:** As part of the larger "Exam Warriors" movement, the initiative encourages students to face exams as a natural part of life.
- **Selection Process:** Participants are selected through an online competition open to three distinct groups: students, teachers, and parents.
- **Venue Expansion:** For the first time (2026), the event expanded to include simultaneous interactions across five locations – New Delhi, Coimbatore, Raipur, Guwahati, and Devmogra.

#### 50 Years of the Bonded Labour System (Abolition) Act, 1976

- Enacted in February 1976, the **Bonded Labour System (Abolition) Act (BLSA)** marked an important milestone in equality in the Indian society.
- **Constitutional and Legal Framework against Bonded Labour**

- **Constitutional:** Articles 21, 23, and 24 of the Indian Constitution protect against bonded labour.
- **Legal:** The BLSA, 1976 abolishes the system, while **Section 143** of the **Bhartiya Nyaya Sanhita, 2023** penalizes trafficking and forced labour.

### **Bonded Labour System (Abolition) Act, 1976**

- Completely abolished the bonded labour system and declared all forms of bonded labour illegal.
- Cancelled all existing bonded debts and mandated immediate release and freedom of all bonded labourers.
- Protection from eviction of freed bonded labourers from lands they occupied.
- District-level enforcement by District Magistrates and Vigilance Committees to identify, release, and rehabilitate bonded labourers.
- Rehabilitation, through Central and State-level programmes, offering financial assistance, land, housing, and livelihood support.
- Rescue operations through periodic surveys and rescue drives that have identified and released lakhs of bonded labourers over decades.

### **Why Does Bonded Labour Persist?**

- Persistent poverty, lack of formal contracts and weak regulation in the informal sector enable exploitative work.
- Caste hierarchies and discrimination mean SC/ST communities are disproportionately affected.
- Data shows only ~300,000 freed/rehabilitated since 1978, indicating gaps in enforcement.
- Low conviction rates and a lack of a victim-centric approach fails to act as a deterrent.

### **Conclusion**

- A coordinated strategy combining legal reforms, robust monitoring, rehabilitation support, and social awareness is essential to eradicate bonded labour. Sustained political will and community participation will be the true determinants of lasting change.

## **Vidyanjali Programme**

- Vidyanjali programme has onboarded ~8.5 lakh schools and 5+ lakh volunteers, strengthening government schools through structured community participation.

### **About Vidyanjali Programme**

- **Launch & Alignment:** Launched in September 2021 by the Department of School Education & Literacy, Ministry of Education, aligned with the National Education Policy (NEP) 2020.
- **Core Objective:** Designed to strengthen Government and Government-aided schools, the initiative aims to improve learning environments and student support through voluntary contributions.
- **Digital Platform Model:** Functions as a structured digital interface connecting volunteers, alumni, civil society organisations (CSOs), and CSR partners directly with schools.
- **Governance & Accountability:** Operates through approval, monitoring, validation, and feedback mechanisms, ensuring transparency while allowing states to review progress via dashboards.

### Types of Contributions

- **Service Activities:** Includes subject mentoring, career counselling, AI & coding workshops.
- **Student Support:** Volunteers assist Children with Special Needs (CWSN), sports & life-skills development.
- **Asset Contributions:** Provision of Teaching Learning Materials, ICT facilities, and sanitation infrastructure.
- **Sustainability Inputs:** Contributions include renewable energy solutions, improving long-term resilience.

## Prime Minister Approves Major Schemes for Women, Youth and Vulnerable Citizens

### Key Decisions Taken

- **PM RAHAT (Road Accident Holistic Action for Treatment) Scheme** launched
- **Purpose:** To prevent deaths due to lack of immediate medical help by covering expenses for accident victims.
- **Coverage:** Cashless treatment of up to ₹1.5 lakh.
- **Lakhpati Didi Initiative:** Target revised
- Target doubled to support 6 crore Lakhpati Didis by March 2029.
- The earlier target of 3 crore Lakhpati Didis achieved ahead of the original March 2027 timeline.

### About Lakhpati Didi Initiative (2023)

- **Objective:** To enable rural SHG women to move out of poverty by diversifying livelihoods through skilling, financial inclusion, market access etc.
- E.g. running small enterprises or livestock management

- **Definition:** A Lakhpati Didi is an SHG member with a sustainable annual household income of ₹1,00,000 or more.
- **Ministry:** Ministry of Rural Development (under Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM))
- Startup India Fund of Funds 2.0 (FFS 2.0) approved with a corpus of ₹10,000 crore
- FFS 2.0 for startups, unveiled in the Budget 2025-26, focuses on the manufacturing and high-technology sectors, requiring longer-term funding.

#### **About Fund of Funds for Startups (FFS)**

- Flagship initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) under the Startup India Action Plan.
- **Managed by:** Small Industries Development Bank of India (SIDBI)
- It supports SEBI-registered Alternative Investment Funds (AIFs), which in turn invest in startups, expanding access to domestic risk capital and strengthening entrepreneurship.

#### **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.

## Gender Budget 2026-27

- The Union Government released the Gender Budget Statement (GBS) 2026–27, marking its highest-ever allocation.

### Key Highlights of GBS 2026–27

- **Total Allocation:** The allocation for women and girls under various schemes increased by 11.55% to ₹5.01 lakh crore in 2026-27.
- **Budget Share:** The Gender Budget share in the total Union Budget increased to 9.37% in FY 2026-27 from 8.86% in FY 2025-26.
- **Component Shares:** Part A (100% women-specific) accounts for 21.50%, Part B (at least 30% women-beneficiaries) constitutes 72.54%, and Part C (less than 30% women allocation) forms about 5%.
- **Institutional Coverage:** 53 Ministries and 5 Union Territories reported their gender-specific allocations this year, marking the highest participation so far.
- **Leading Ministry:** The Ministry of Women and Child Development (MWCD) allocated 81.73% of its budget to gender-responsive initiatives.

### About Gender Budgeting

- Gender Budgeting is a public financial management tool that aligns government resource allocation with the constitutional goal of gender equality.
- It is not a separate women's budget but rather a methodology for integrating a gender perspective across all stages of the budgetary process.
- The framework translates gender-related policy commitments into budgetary targets to reduce structural socio-economic disparities.
- Gender Budgeting was formally introduced into the Indian Union Budget in FY 2005-06 through the publication of Expenditure Statement 13.
- **Nodal Authority:** The Ministry of Women and Child Development issues guidelines and supports capacity-building for other ministries.
- **Indian Framework:** It divides allocations into 3 parts — Part A for schemes with 100% women beneficiaries, Part B for 30% to 99%, and Part C for less than 30% (introduced in FY 2024-25).
- **Institutional Mechanism:** Since 2004-05, the government mandated Gender Budgeting Cells (GBCs) in all ministries to review and shape allocations using a gender lens.

## GEOGRAPHY, ENVIRONMENT, BIODIVERSITY AND DISASTER MANAGEMENT

### India Added Two More Ramsar Sites

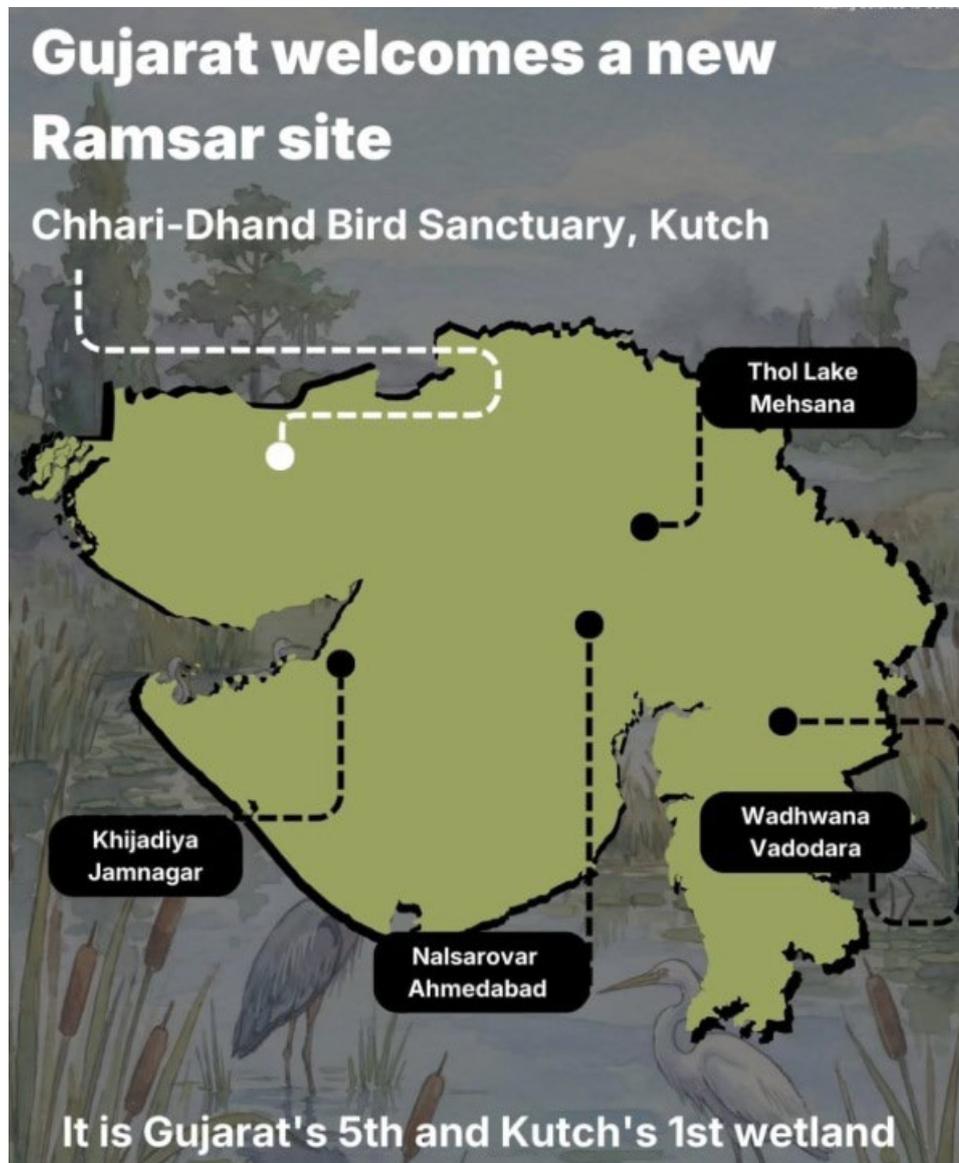
- The Ministry of Environment, Forest and Climate Change (MoEFCC) declared two new wetlands of international importance, raising India's total Ramsar site count to 98.
- **New Additions: Patna Bird Sanctuary** becomes Uttar Pradesh's 11th Ramsar site, **while Chhari-Dhand becomes Gujarat's 5th** and the first from the Kutch region.

#### Patna Bird Sanctuary

- **Geography:** Located in the Jalesar tehsil of Etah district, this sanctuary spans only 108 hectares, making it **the smallest bird sanctuary in Uttar Pradesh.**
- **Ecological Role:** The wetland serves as a critical stopover for migratory birds travelling along the Central Asian Flyway.
- **Avian Diversity:** With over 50,000 birds, the Northern Pintail (*Anas acuta*) is recorded as the most abundant migratory species.
- **Species Congregation:** It serves as a Sarus Kem (congregation zone) for resident **Sarus Cranes (*Antigone antigone*)** in the dry summer months.

#### Chhari-Dhand

- **Geography:** Deriving its name from Kutchi words for a **"salty shallow wetland,"** the wetland is situated on the edge of the arid **Banni Grasslands** near the Rann of Kutch.
- **Hydrology:** It is a seasonal desert wetland that fills with water only during the monsoon via north-flowing rivers and hill runoff.
- **Previous Status:** The site gained prominence when Gujarat declared it the state's first "Conservation Reserve" in 2008.
- **Conservation Significance:** Chhari-Dhand provides critical habitat for the Critically Endangered **Sociable Lapwing** and the Vulnerable **Common Pochard.**
- It is a major wintering ground for the **Common Crane** and the **Greater Flamingo.**
- **Mammalian Fauna:** This ecosystem supports unique desert mammals such as the **Chinkara, Caracal, Desert Cat, and Indian Wolf.**



#### About Ramsar Sites

- Ramsar Sites are Wetlands of International Importance designated under the Ramsar Convention.
- **Origin:** The Convention was adopted in Ramsar, Iran, on 2 February 1971 to promote the conservation and wise use of wetland ecosystems.
- **Global Observation:** World Wetlands Day is observed annually on February 2nd to commemorate the signing of the Ramsar Convention.

#### 2026 Theme: "Wetlands and Traditional Knowledge: Celebrating Cultural Heritage".

- **Ratification:** India ratified the treaty in 1982 to align with global conservation standards.
- **Current Count:** As of February 2026, India has 98 Ramsar Sites.

- **State Leaders:** Tamil Nadu leads the list with 20 sites, followed by Uttar Pradesh (11) and Bihar (6).
- **First Sites:** Chilika Lake (Odisha) and Keoladeo National Park (Rajasthan) were designated India's first Ramsar sites in 1981.

### Union Budget Push for CCUS Technology

- The Union Budget 2026–27 allocated ₹20,000 crore over five years to scale up Carbon Capture, Utilisation, and Storage (CCUS) technologies.

#### About Carbon Capture, Utilisation, and Storage (CCUS)

- CCUS is a suite of technologies that capture and reuse or store carbon dioxide (CO<sub>2</sub>), effectively preventing its release into the atmosphere.
- **Capture:** The process starts by separating CO<sub>2</sub> from industrial gases at the source through pre-combustion, post-combustion, or oxy-fuel techniques.
- **Transportation:** Captured CO<sub>2</sub> is compressed and transported via pipelines or specialised ships to designated utilisation or geological storage sites.
- **Utilisation (CCU):** Captured CO<sub>2</sub> is converted into value-added products such as **Green Urea, Methanol, carbonated concrete building materials**, and algae-based biofuels.
- **Storage (CCS):** Long-term sequestration injects CO<sub>2</sub> into deep geological formations like saline aquifers, depleted oil and gas fields, or coal seams.

#### Significance of the Budgetary Push

- **Hard-to-Abate Sectors:** The push targets five high-emission industries—power, steel, cement, refineries, and chemicals—where decarbonisation through electrification or renewables is difficult.
- **Climate Target:** This financial commitment accelerates progress towards the Net Zero 2070 goal by complementing renewable energy efforts.
- **Blue Hydrogen:** CCUS serves as a critical bridge for producing “Blue Hydrogen” from natural gas, supporting India's broader transition to a hydrogen economy.
- **Economic Benefit:** Lower industrial carbon intensity helps Indian exports avoid costs under the EU's Carbon Border Adjustment Mechanism (CBAM).
- **R&D Operationalisation:** It directly implements the 'R&D Roadmap for CCUS' launched in 2025, which aims to capture 750 million tonnes per annum of CO<sub>2</sub> by 2050.

- **Commercial Scalability:** The outlay provides the necessary capital to transition CCUS from small-scale pilots to commercially viable, large-scale industrial systems.
- **Carbon Market Synergy:** It supports the Indian Carbon Market (CCTS) by allowing industries to generate Carbon Credit Certificates (CCCs) to monetise their emissions.

## Waste-to-Energy Technology

- India is expanding waste-to-energy (WtE) plants to convert non-recyclable waste into power under the Solid Waste Management Rules, 2026.

### About Waste-to-Energy (WtE) Technology

- **Energy Conversion:** Converts non-recyclable municipal and industrial waste into usable electricity or heat through controlled processes like incineration, gasification and anaerobic digestion.
- **Core Methods:** Includes incineration, gasification, and anaerobic digestion for energy recovery.
- **Current Status:** India has 21 operational WtE plants and 133 biogas facilities.

### Key Benefits of Waste-to-Energy Technology

- **Landfill Burden Reduction:** WtE plants reduce municipal solid waste volume by nearly 90%, helping cities manage over 62 million tonnes of annual waste generation in India.
- **Methane Emission Control:** Diverting organic waste from landfills prevents methane release, a greenhouse gas 28 times stronger than CO<sub>2</sub>, significantly lowering climate impact.
- **Renewable Power Generation:** India's operational 21 WtE plants produce over 170 MW of electricity, contributing to decentralised urban energy supply.
- **Alignment with SDGs:** Supports **SDG-7 (Clean Energy)** and **SDG-11 (Sustainable Cities)** by integrating urban waste management with renewable energy systems.

### Government Initiatives for Harnessing Waste-to-Energy in India

- **National Bio-Energy Mission:** Promotes large-scale production of biogas, bio-CNG and power generation from agricultural residue and organic urban waste.
- **National Biofuel Policy (2022):** Encourages biofuel generation from waste streams to meet the 20% ethanol blending target by 2025, reducing fossil fuel dependence.
- **Solid Waste Management Rules (2016):** Mandate source segregation, treatment of waste, and promotion of refuse-derived fuel (RDF) for energy recovery.

- **Draft Waste-to-Energy Policy (2023):** Seeks to establish a comprehensive regulatory and investment framework for expanding WtE infrastructure nationwide.

### NeophyteID App Launched to Identify Invasive Alien Plants

- The Kerala government launched an AI-powered mobile application, NeophyteID, to identify and manage invasive alien plant species in the Western Ghats.
- **Technology:** The application uses the advanced **YOLOv11 machine learning** algorithm to enable real-time identification of invasive flora through image recognition.
- **Citizen Science:** It employs a participatory approach, encouraging students, researchers, and locals to crowdsource ecological monitoring.
- **Data-Driven:** The app generates a geospatial distribution map to help policymakers devise targeted conservation strategies.

#### Invasive Alien Species

- **Definition:** Invasive Alien Species are non-native plants, animals, or pathogens that establish, proliferate, and harm native biodiversity, the economy, or human health.
- **Legal Definition:** **The Wild Life (Protection) Amendment Act, 2022 defines invasive alien species.**
- **Regulatory Powers:** The Act empowers the Central Government to regulate or prohibit the import, trade, possession, and proliferation of them.
- **Global Target:** The Kunming-Montreal Global Biodiversity Framework (Target 6) mandates countries to reduce the rates of introduction and establishment of invasive species by 50% by 2030.
- **Biodiversity Loss:** IPBES identifies invasive alien species among five direct global biodiversity loss drivers; these caused over \$127 billion in losses in India during 1960-2020.
- **Key Examples:** Lantana camara (degrading forests), Prosopis juliflora (destroying Banni grasslands), and Water Hyacinth (choking freshwater).

### 'Volcán de Fuego' Volcano Erupts in Guatemala

- Volcán de Fuego in Guatemala recently produced a series of volcanic explosions, sending ash plumes to altitudes of 16,000 feet.

- **Location:** This **stratovolcano (composite volcano)** is situated along the active Central American Volcanic Arc in southern Guatemala.
- **Tectonic Setting:** The volcano forms due to the subduction of the Cocos Plate beneath the Caribbean Plate within the Pacific Ring of Fire.
- **Eruption Style:** Strombolian and Vulcanian eruptions occur frequently, characterised by violent ejection of pyroclastic material and basaltic-andesite lava; It has remained eruptive since 2002.

### **Arunachal Pradesh Failed to Comply with Compensatory Afforestation for Subansiri LHE Project**

- The MoEFCC has flagged Arunachal Pradesh's continued non-compliance with compensatory afforestation conditions for the 2,000 MW Subansiri Lower Hydroelectric Project (SLHEP).
- **Implementation Lag:** The state government has not yet undertaken plantations on the mandated 31.83 sq km of land despite receiving forest clearance in 2004.
- The Subansiri Lower Hydroelectric Project is a 2,000 MW run-of-the-river power project on the Assam-Arunachal Pradesh border at Gerukamukh. It will be India's largest hydropower plant.

#### **Compensatory Afforestation (CA)**

- **Statutory Mandate:** Compensatory Afforestation is a statutory mechanism under the Forest (Conservation) Act, 1980, to offset forest land diversion.
- **Financial Framework:** The funds are managed under the provisions of the Compensatory Afforestation Fund (CAF) Act, 2016.
- **Economic Valuation:** The "Net Present Value" (NPV) quantifies the economic loss of intangible ecological services (e.g., carbon sequestration, water recharge) over 50 years.
- **Payment Liability:** The User Agency must deposit the calculated NPV and the cost of new plantations into the CAMPA fund prior to project execution.
- **Non-Forest Norm:** The primary rule requires afforestation on an equivalent area of non-forest land to maintain the total area under vegetation.
- **Exception:** For Central PSUs, or where non-forest land is unavailable, afforestation is permitted on degraded forest land covering twice the area of the diverted land.
- **Fund Sharing:** The collected funds are divided between the State and National CAMPA authorities in a fixed 90:10 ratio.

- **Digital Monitoring:** The e-Green Watch portal is an integrated web-based platform that monitors the real-time progress of plantations and fund utilisation.
- **Accredited Afforestation:** The Forest (Conservation) Rules, 2022, introduced Accredited Compensatory Afforestation (ACA) to enable developers to use pre-existing private plantations for compliance.
- **Land Inventory:** State governments are required to establish land banks to expedite the identification of suitable non-forest land for future diversions.
- **Rights Settlement:** The process aligns with the Forest Rights Act (FRA), 2006, which mandates that the State Government settle forest dwellers' claims before the land handover to the User Agency.
- **Ecological Restoration:** The guidelines emphasise planting native species to restore biodiversity rather than establishing monocultures of commercial timber.

### **Maharashtra Grants Clearance for an Iron Mine in a Critical Wildlife Corridor**

- The Maharashtra State Board for Wildlife (SBWL) granted wildlife clearance for an open-cast iron-ore mining project in Lohardongri, Chandrapur district.
- **Critical Location:** The site covers 35.94 hectares of reserved forest in a wildlife corridor connecting the **Tadoba-Andhari Tiger Reserve (TATR)** with the **Brahmapuri-Gadchiroli landscape**.
- **Advisory Override:** The Board approved the proposal despite its expert committee's recommendation to reject it, citing "irreversible damage" to the environment.
- **Regulatory Framework for Mining in Ecologically Sensitive Areas**
- **Zero-Mining:** Commercial mining is legally prohibited in National Parks and Wildlife Sanctuaries under the Wildlife (Protection) Act, 1972.
- **Safety Buffer:** The Supreme Court mandates a pan-India ban on mining activities within a **1-km radius** of the boundary of any National Park or Wildlife Sanctuary.
- **Public Consultation:** The EIA Notification (2006) mandates a public hearing for major mining projects to record objections from affected local communities.
- **Strategic Exemption:** Projects for 'critical and strategic' minerals (e.g., lithium, uranium) are exempt from mandatory public hearings.
- **Clearance Protocol:** Mining proposals near protected areas require two clearances, first from the State Board for Wildlife (SBWL) and then from the National Board for Wildlife (NBWL).

- **Cluster Assessment:** In regions with multiple mines, regulators mandate a “Cluster EIA” to measure cumulative environmental load rather than assessing each mine in isolation.
- **Democratic Consent:** Under the Forest Rights Act, 2006, diverting forest land for non-forest purposes (like mining) is invalid without the prior informed consent of the local Gram Sabha.
- **Procedural Dilution:** The Forest Conservation Rules, 2022, allow the Centre to grant preliminary forest clearance (Stage-I) before obtaining the mandatory Gram Sabha consent.
- **Financial Restitution:** The Compensatory Afforestation Fund Act (CAMPA) mandates that miners pay the “Net Present Value” (NPV) of diverted forest land to finance restoration efforts.
- **Financial Liability:** Mining without valid clearances attracts a mandatory penalty of 100% of the market value of the illegally extracted ore.
- **Benefit Sharing:** The District Mineral Foundation (DMF) collects a mandatory share of royalties to fund welfare projects for communities displaced or affected by mining activities.

## Peacocks in Manali

- A pair of peacocks were spotted at an altitude of over 6,000 ft near Manali in Himachal Pradesh, an unusual sight for a species typically found in warmer lowland regions.

### About Peacocks:

- Peacocks are large, colourful birds of the **pheasant family (Phasianidae)**, collectively called peafowl—the male is a peacock, the female a peahen, and the young are peachicks.
- India's national bird is the Indian or Blue Peacock (**Pavo cristatus**).
- **Habitat and distribution:**
- Naturally found in warm, semi-arid to moist deciduous forests, grasslands, and agricultural landscapes.
- In India, usually inhabit plains and low hills.
- **Typical altitude:** up to ~1,000 m, occasionally 1,500 m.
- Recent sightings at ~1,800 m (6,000 ft) in Himachal Pradesh are ecologically unusual.

### IUCN conservation status:

- Indian (Blue) Peacock – Least Concern
- **Green (Javanese) Peacock – Endangered**
- **Congo Peacock – Vulnerable**

## Characteristics

### Physical:

- Males possess a long iridescent train with eye-shaped spots used in courtship displays.
- Strong legs, short rounded wings; capable of short flights and roosting on trees.

### Social and behavioural:

- Generally ground-dwelling but roost in trees at night.
- Males form harems during the breeding season.
- **Omnivorous:** feed on seeds, insects, small reptiles, aiding pest control.

### Other ecological traits:

- Sensitive to temperature and habitat changes.
- Known for adaptability, but extreme altitudinal shifts are rare.

### Implications of high-altitude sightings:

- **Indicator of climate change:** Warming temperatures are making higher altitudes more habitable.
- **Ecosystem stress signal:** Suggests shifts in species distribution in the Himalayas.
- **Human-wildlife interaction risks:** New habitats may increase conflict and competition.

## Turtle Trails

- The Union Budget 2026–27 proposed developing 'turtle trails' along key Olive Ridley nesting sites in Odisha, Karnataka and Kerala to promote eco-tourism.

### About Turtle Trails:

- 'Turtle trails' refer to regulated eco-tourism pathways and guided experiences near sea turtle nesting beaches, aimed at promoting conservation awareness, community livelihoods and nature-based tourism.

### States involved:

- **Odisha – Rushikulya (Ganjam)** and vicinity of Gahirmatha (Kendrapara)
- Karnataka – Coastal turtle nesting beaches
- **Kerala** – Key nesting stretches along the Arabian Sea coast

### Key features:

- Guided and regulated access to turtle nesting areas, usually during breeding season

- Public awareness and education on marine biodiversity and conservation
- Community participation, involving local fishers, volunteers and NGOs
- Low-impact infrastructure, potentially temporary walkways or observation zones (as proposed)
- Integration with eco-tourism policy, aligned with livelihood generation and sustainable tourism goals

**Significance:**

- Helps sensitise the public to endangered species like the Olive Ridley sea turtle.
- Can generate alternative income for coastal communities through guided tourism.
- If well-designed, may replace unregulated tourism with scientifically managed access.

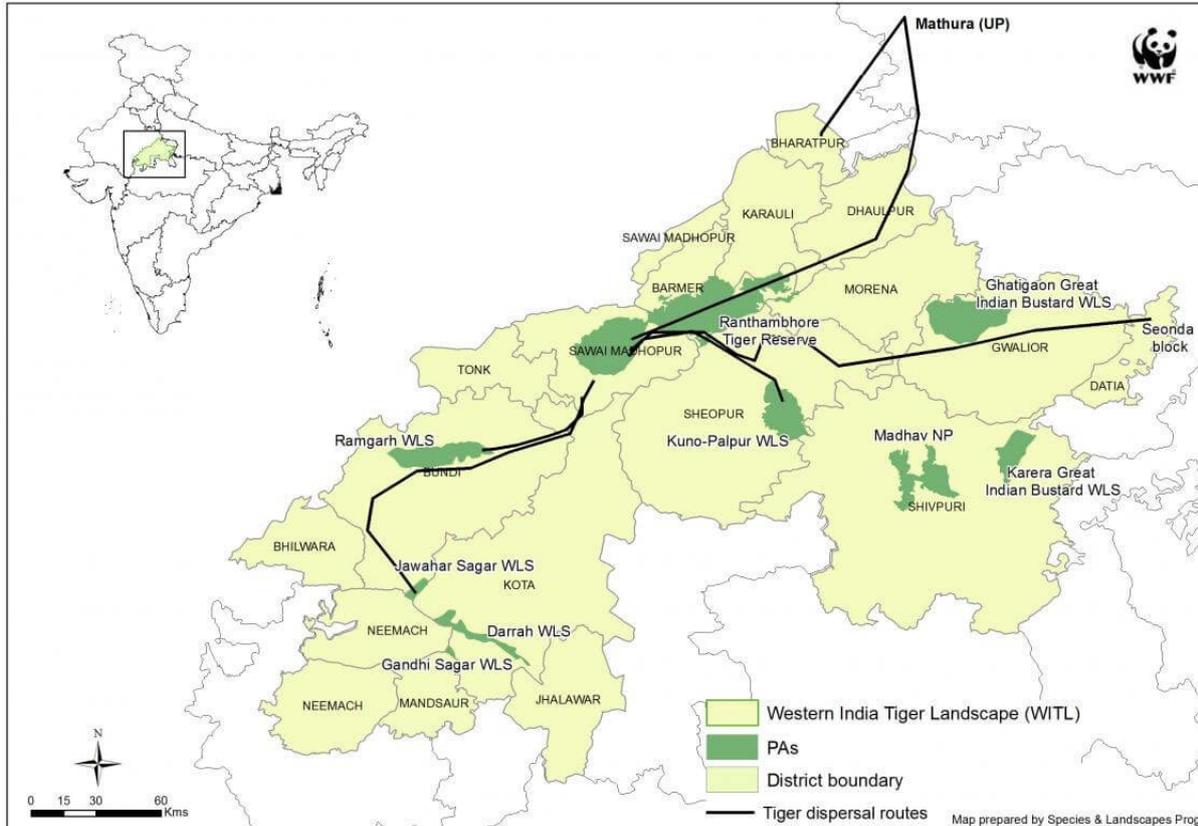
### **Dholpur-Karauli Tiger Reserve**

- The Rajasthan Government assured local communities that residents of the Dholpur-Karauli Tiger Reserve (DKTR) will not be displaced without their consent.

**About Dholpur-Karauli Tiger Reserve (DKTR)**

- **Reserve Status:** Spanning 1,111 sq. km in eastern Rajasthan, the forest was officially notified in 2023 as **India's 54th** and **Rajasthan's 5th tiger reserve**.
- **Geological Setting:** The terrain lies at the geological junction of the Vindhyan and Aravalli hill ranges.
- **Topography:** Its landscape is uniquely characterised by the rugged and extensive ravines of the Chambal River basin.
- **Hydrology:** The perennial Chambal River flows along the eastern boundary and serves as the primary water source.
- **Vegetation Type:** The forest is classified as a tropical dry deciduous forest, dominated by Dhok, Khair, Tendu, and Babool trees.
- **Faunal Diversity:** Bengal Tiger, Indian Leopard, striped hyenas, sloth bears, golden jackals, Sambar deer, Chital, Nilgai, etc.
- **Ecological Role:** It serves as a vital sink area to accommodate the spillover tiger population from the overcrowded Ranthambore Tiger Reserve.
- **Wildlife Corridor:** Dholpur-Karauli is a critical corridor connecting Ranthambore (Rajasthan) to

Kuno and Madhav National Parks (Madhya Pradesh).



## Karimpuzha Wildlife Sanctuary

- A recent faunal survey in the Karimpuzha Wildlife Sanctuary has recorded several new species of birds, butterflies, and odonates, significantly enriching Kerala's biodiversity database.
- **Karimpuzha Wildlife Sanctuary:**
- Karimpuzha Wildlife Sanctuary is a protected area in the Western Ghats, known for its exceptional biodiversity, wide altitudinal range, and intact forest ecosystems.

### Located in:

- The sanctuary falls under the Nilambur forest landscape, an ecologically rich belt of the Western Ghats known for dense forests and high endemism.
- Its position on the Nilgiri slopes places it within a critical Western Ghats biodiversity hotspot, influencing rainfall, vegetation, and species diversity.

### History:

- **Notified in 2020**
- Kerala's 18th Wildlife Sanctuary and 24th Protected Area
- First wildlife sanctuary in Malappuram district

### Key geographical & ecological features:

- **Sharp altitudinal gradient (40 m to >2,550 m):** The wide elevation range creates varied climatic conditions, supporting species adapted to both lowland and montane ecosystems.
- **Seven forest types (unique in Kerala):** The coexistence of seven distinct forest types in one landscape makes it ecologically exceptional and highly biodiverse.
- **Semi-evergreen & evergreen forests:** Support dense canopy, high rainfall species, and endemic flora.
- **Moist deciduous forests:** Act as crucial habitats for large mammals and seasonal biodiversity.
- **Sub-tropical savannah & hill forests:** Provide transitional ecosystems supporting grassland-forest species.
- **Montane wet temperate forests & grasslands:** Sustain high-altitude endemics and regulate hydrology.
- **Ecological corridor:** By linking **Silent Valley National Park and Mukurthi National Park**, it ensures habitat continuity for wildlife movement across state boundaries.
- **New Amarambalam Reserve inclusion:** This largely undisturbed forest tract preserves near-pristine ecosystems, serving as a genetic and ecological refuge within the Western Ghats.

### Significance:

- **Biodiversity hotspot:**
- Hosts key Western Ghats endemics such as Nilgiri tahr and lion-tailed macaque
- Rich diversity of birds, butterflies, odonates, amphibians, reptiles, and freshwater fish
- **Landscape connectivity:** Ensures habitat continuity across Kerala-Tamil Nadu forests, crucial for large mammals and migratory species

### Marudhamalai Murugan Temple Elephants

- The Tamil Nadu Forest Department reported a significant presence of wild elephants near Marudhamalai temple, citing 119 sightings in 2025.

### About Marudhamalai Murugan Temple

- **Location:** The Marudhamalai Murugan Temple is a hilltop shrine located on a hillock in the Western Ghats near Coimbatore, Tamil Nadu.
- **Ecological Significance:** The foothills form part of a traditional Elephant Migratory Corridor within the Nilgiri Biosphere Reserve.
- **Primary Deity:** Dedicated to Lord Murugan, the temple is widely regarded as the unofficial Seventh Abode (7th Arupadai Veedu) of the deity.
- **Historical Antiquity:** The structural edifices date to the 12th Century (Chola Period); references are found in the Sangam literature, like the Purananuru.
- **Architectural Style:** The temple exemplifies Dravidian architecture, featuring a characteristic Gopuram and a unique East-facing orientation.
- **Etymology:** The name "Marudhamalai" derives from the abundance of 'Marudham' trees (Terminalia arjuna) growing on the hill.
- **Spiritual Heritage:** The temple is closely associated with **Pambatti Siddhar**, one of the 18 celebrated Tamil Siddhars (saints).

### Mount Aconcagua

- The Defence Minister flagged off a joint mountaineering expedition to **Mount Aconcagua** in Argentina to enhance youth training.
- Mount Aconcagua, standing at 6,961 metres, is the highest peak in South America and the tallest mountain outside Asia.
- It is classified as one of the "**Seven Summits**" (the highest point on each of the seven continents).
- The peak is located in the Andes mountain range in Argentina and is part of the Principal Cordillera.
- The Principal Cordillera is the world's longest continental mountain range that defines the border between Central Chile and Argentina.
- Mount Aconcagua is of volcanic origin, formed by the subduction of the Nazca Plate beneath the South American Plate.
- The mountain hosts several glaciers, with the Ventisquero Horcones Inferior being the largest.

## Govt forms expert groups to upgrade Project Tiger scheme

- The Union Government has constituted four expert working groups to review and modernise 50 years of policy decisions under Project Tiger, as the programme completes its golden jubilee.

### Project Tiger scheme:

- Project Tiger is a **Centrally Sponsored Scheme** of the Government of India focused on conserving the tiger and its habitats through a network of protected tiger reserves using a core-buffer strategy.
- **Launched in: 1973** (one of the world's earliest large-scale species conservation programmes)

### Organisations involved:

- Ministry of Environment, Forest and Climate Change (MoEFCC) – Nodal ministry
- National Tiger Conservation Authority (NTCA) – Statutory body overseeing implementation

### Aim:

- To ensure long-term survival of viable tiger populations in natural habitats.
- To conserve biodiversity and ecological integrity while balancing people-oriented development in buffer areas.

### Key features of the scheme:

- **Tiger Reserves Network:** Expanded from 9 reserves (1973) to 51 reserves across 18 tiger-range states, covering ~2.23% of India's geographical area

### Core-Buffer Strategy:

- **Core:** Inviolable areas with legal status of National Park/Sanctuary
- **Buffer:** Multiple-use landscapes promoting coexistence and livelihoods
- **Statutory Backing:** NTCA functions under the Wildlife Protection Act, 1972
- **Financial Support:** Central assistance for habitat management, protection, monitoring, and community development
- **Scientific Monitoring:** Periodic All-India Tiger Estimation using camera traps, landscape ecology, and prey-base assessments

### What the new expert groups will do?

- Four zone-wise working groups (North, South, East, West).

- Review 28 NTCA policy decisions taken over 50 years.
- Assess tiger population trends, prey base, regional pressures.
- Identify outdated practices, gaps in Centrally Sponsored Schemes.
- Recommend future-ready policies for the next 25 years.
- Strengthen coordination between NTCA and national scientific institutions.

### **Kyasanur Forest Disease**

- India has begun Phase I human clinical trials of a new fully indigenous vaccine against Kyasanur Forest Disease (KFD), developed under ICMR-led collaboration.

#### **Kyasanur Forest Disease (KFD):**

- Kyasanur Forest Disease (KFD) is a tick-borne viral haemorrhagic fever, first identified in Kyasanur Forest of Karnataka, and is associated with high fever, weakness and sometimes fatal complications.

#### **Region found in:**

- Endemic to the Western Ghats region of India.
- Reported mainly from Karnataka, Tamil Nadu, Kerala, Goa and Maharashtra.

#### **Vector (Mode of transmission):**

- Transmitted primarily through the bite of hard ticks (*Hemaphysalis spinigera*).
- Humans can also get infected through contact with infected animals, especially monkeys.
- No human-to-human transmission.

#### **Symptoms:**

- Incubation period: 3–8 days.
- Sudden onset of high fever, chills, headache.
- Severe muscle pain, vomiting, gastrointestinal symptoms.
- In some cases, bleeding manifestations.
- 10–20% patients experience a second phase with neurological symptoms such as tremors and mental disturbances.

#### **Treatment:**

- No specific antiviral cure available.
- Management is supportive, including fluid therapy, oxygen support, blood pressure control and treatment of secondary infections.
- Case fatality rate: around 3–10%, higher without timely medical care.

### Rat-Hole Mining in Meghalaya

- 27 workers died in an explosion at an illegal rat-hole mine in Thangkso, East Jaintia Hills, Meghalaya, triggering renewed enforcement action.
- The practice continues despite an NGT ban imposed in 2014 and reiterated in 2015.

#### Rat-Hole Mining

- A coal extraction method involving digging narrow tunnels or pits (deep as 400 feet) using primitive tools like pickaxes, shovels, and baskets to access thin coal seams.
- Predominantly practised in Meghalaya, with incidents reported in Assam.

#### Types of Rat-Hole Mining

1. **Side-Cutting:** Horizontal tunnels on hill slopes to extract coal.
2. **Box-Cutting:** Vertical pits followed by horizontal tunnels to access coal seams.

#### Why it Continues Despite the Ban?

- **Economic Compulsion:** Rat-hole mining offers daily wages of ₹800–1,200, nearly 2–3 times higher than average MGNREGA wages in Meghalaya (~₹250/day).
- **Thin Coal Geology:** Over 90% of coal seams in Meghalaya are <2 metres thick, making mechanised mining unviable and sustaining dependence on manual rat-hole methods.
- **Weak Enforcement:** Meghalaya police recorded 477 violations of the NGT ban between 2014–2018, reflecting low deterrence and limited prosecutions.
- **Political–Bureaucratic Nexus:** Despite the ban, illegal coal trade persisted; Meghalaya continued exporting coal worth ₹700+ crore annually (pre-2019), indicating systemic regulatory capture.
- **Migrant Labour Supply:** In major accidents, 60–70% of deceased miners were migrants from Jharkhand, Assam and neighbouring states, highlighting distress-driven labour inflow.

#### Measures Taken to Stop Illegal Rat-Hole Mining

- **Criminal Enforcement:** After major accidents, FIRs have been registered for culpable homicide, violations of the MMDR Act and the Explosive Substances Act, leading to arrests of mine owners and operators.
- **High Court Monitoring:** The Meghalaya High Court took suo motu cognisance and appointed the Justice (Retd) **B.P. Katakey Committee (2022)** to continuously monitor illegal coal mining.
- **Judicial Prohibition:** The National Green Tribunal banned rat-hole mining in Meghalaya in 2014 as unscientific and unsafe, a prohibition later upheld by the Supreme Court.

### Sharda River Corridor Project

- The Uttarakhand government launched the Sharda River Corridor, a major infrastructure and tourism initiative to transform the Sharda (Kali) riverfront.
- It includes the redevelopment of Sharda Ghat, a city drainage system, a heliport at Banbasa, and the **Kiroda Nala Ecological Corridor** to restore biodiversity.

#### About Sharda River

- It originates near Kalapani in Uttarakhand, on the eastern slopes of the Nanda Devi massif in the Great Himalayas, at an elevation of 3,600 metres.
- It is called the Kali River in its upper course and the Mahakali in Nepal. It becomes the Sharda River after reaching the plains at Banbasa (Uttarakhand).
- **Major Tributaries:** Includes the Dhauliganga (East), Goriganga, Sarju, and Ladhiya on the Indian side, and the Chameliya and Ramgun in Nepal.
- **Confluence:** The Sharda River joins the Ghaghara River (left-bank tributary of the Ganges) near Chauka Ghat in Uttar Pradesh.
- **International Boundary:** The Sugauli Treaty (1816) defined the Kali River as the western boundary between India and Nepal.
- **Hydroelectric Projects:** The river hosts the Pancheshwar Multipurpose Project, a bilateral India-Nepal initiative governed by the 1996 Mahakali Treaty.
- **Ecological Significance:** The river flows through Dudhwa National Park, providing critical habitat for the endangered Mahseer fish and the Gangetic dolphins.

### Lyriothemis keralensis Dragonfly

- Scientists discovered a new dragonfly species, *Lyriothemis keralensis*, in Kerala's low-lying coastal regions.
- **Physical Traits:** Commonly called '**Slender Bombardier**' It has a noticeably slimmer abdomen and distinct reproductive structures compared to its closely related species.
- **Sexual Dimorphism:** Males have a blood-red abdomen with black markings, while females have yellow and black colouration.
- **Habitat Preference:** The species thrives in human-modified landscapes, particularly in pineapple and rubber plantations; it inhabits shaded irrigation canals and seasonal pools.
- **Seasonality:** This dragonfly remains a seasonal resident, primarily active during the monsoon months.
- **Ecological Role:** It functions as a natural bio-control agent by regulating populations of disease-carrying vectors like mosquitoes.

### Mangrove clam (*Geloina erosa*)

- The ICAR-Central Marine Fisheries Research Institute (CMFRI) has successfully achieved induced breeding of the mangrove clam under captive conditions, a rare global scientific feat.

#### Mangrove clam (*Geloina erosa*):

- An ecologically important **bivalve (mud/mangrove clam)** found in mangrove and estuarine ecosystems of South and Southeast Asia; locally called "**Kandal Kakka**" in northern Kerala.
- **Scientific name:** *Geloina erosa* (also placed under the **genus Polymesoda** in some literature).

#### Habitat:

- Organic-rich muddy substrates of intertidal mangrove zones.
- Tolerates a wide salinity range (brackish to near-freshwater).
- Deep-burrowing, semi-infaunal species; adults often landward, juveniles more tide-independent.

#### Key characteristics

- **Large-sized mud clam:** One of the world's largest mangrove clams, reaching ~10 cm shell width,

making it valuable both ecologically and as a food resource.

- **Efficient filter feeder:** Filters suspended particles and plankton from water, recycling nutrients and improving estuarine water quality.
- **Distinct gonadal identification:** Sexes are identified by gonad colour and structure, not external organs, aiding reproductive studies and broodstock selection.
- **Ecosystem stabiliser:** Burrowing behaviour stabilises sediments, enhances nutrient cycling and strengthens overall mangrove ecosystem resilience.

#### Method used to restore / conserve

- **Induced breeding in hatchery:** CMFRI achieved controlled spawning under captive conditions, overcoming dependence on wild seed collection.
- **Complete life-cycle closure:** Successful rearing from embryo to larva to spat (from ~18th day) proves hatchery-scale feasibility.

#### Hatchery seed production for multiple uses:

- **Grow-out farming:** Enables estuarine aquaculture with minimal external inputs.
- **Mangrove ranching:** Seeds can be released into degraded mangroves to restore natural populations.
- **Stock enhancement:** Reduces harvesting pressure on wild clam beds by replenishing natural stocks.

#### Significance

- Requires minimal feed and infrastructure, making it environment-friendly and climate-resilient.
- Integrates aquaculture with ecosystem regeneration, reinforcing mangrove-benthic linkages.
- Provides an affordable high-protein seafood source for coastal and estuarine communities.

### Dragon Hole

- Researchers recently identified distinct microbial communities thriving in the deep, anoxic (oxygen-free) "death zone" of Dragon Hole.
- The Dragon Hole, also known as the **Sansha Yongle Blue Hole**, is a massive underwater sinkhole in the **Paracel Islands** of the **South China Sea**.
- It was considered the world's deepest blue hole (301.19 metres) until 2024.

- **Ecological Stratification:** The upper 100 metres support over 20 marine species, while waters below this depth are anoxic (oxygen-free) and stagnant, excluding most fish and plants.
- **Microbial Adaptation:** Scientific expeditions discovered approximately 1,700 distinct viral types and specialised sulphur-eating bacteria in these oxygen-deprived depths.
- **Geological Origin:** The Blue Hole is a **Karst formation** (limestone cave) developed during the last Ice Age when sea levels were significantly lower.
- **Significance:** Its sediment layers act as a "paleo-climate archive," preserving long-term records of ancient climate and typhoons due to the lack of water turbulence.

## Dolphin Census in Odisha

- Odisha has recorded its highest marine dolphin population in five years, with 765 individuals counted in the 2026 state-wide census.

### Dolphin Census in Odisha:

- The Dolphin Census is an annual scientific population estimation exercise to assess the abundance, distribution, and diversity of dolphins and other cetaceans in Odisha's marine and estuarine ecosystems.
- **Conducted By:** It is conducted by the Wildlife Wing of the Forest, Environment and Climate Change **Department, Government of Odisha**, involving forest officials, marine experts, and field personnel using boat- and shore-based transect surveys.

### Outcomes of 2026 Census:

- Total Population: 765 dolphins (highest in 5 years).

### Species-wise Distribution:

- Humpback dolphins – 497
- Irrawaddy dolphins – 208
- Bottlenose dolphins – 55
- Spinner dolphins – 3
- Finless porpoise – 2

### Key Conservation Zones:

- Chilika Lake – 159 Irrawaddy dolphins (largest single-area concentration globally).
- Gahirmatha Marine Sanctuary – 474 Humpback dolphins.
- Indicates stable to improving trends due to habitat protection and community participation.

#### About Dolphin:

- Dolphins are aquatic marine mammals belonging to the **order Cetacea** and are known for their intelligence, social behavior, and echolocation abilities.
- **Habitat:** They inhabit oceans, coastal waters, estuaries, and some freshwater systems. In India, major habitats include Chilika Lake and coastal marine zones.

#### IUCN Status:

- The Irrawaddy Dolphin is classified as Endangered on the IUCN Red List.
- Dolphins are protected under Schedule I of the Wildlife Protection Act, 1972.

#### Types Found in Odisha:

1. *Humpback Dolphin*
2. *Irrawaddy Dolphin*
3. *Bottlenose Dolphin*
4. *Spinner Dolphin*
5. *Finless Porpoise (closely related cetacean)*

#### Key Characteristics of Dolphins:

- Highly intelligent with advanced communication systems: Dolphins exhibit **problem-solving skills** and communicate using **clicks, whistles, and body movements**.
- Use echolocation for navigation and hunting: They emit sound waves that bounce off objects, helping them detect prey and obstacles underwater.
- Social animals living in pods: Dolphins live in **structured groups (pods)** for protection, hunting cooperation, and social bonding.
- Slow breeding rate (especially Irrawaddy dolphins): They have **long gestation periods** and produce few offspring, limiting rapid population growth.
- Indicators of marine ecosystem health: Their presence reflects healthy water quality, fish abundance, and balanced coastal ecosystems.

## Disruption of bear hibernation cycles

- Low snowfall in Uttarakhand has disrupted bear hibernation cycles, leading to increased bear attacks and human-wildlife conflict in early 2026.

### About Bear:

- A bear is a large, short-tailed omnivorous mammal belonging to the family Ursidae.
- **Scientific Name:** Ursus arctos (Brown Bear), Ursus maritimus (Polar Bear)
- **Family:** Ursidae
- **Habitat:** Bears are found across North America, Europe, and Asia, primarily in temperate and Arctic regions; in India, species like the Sloth Bear inhabit forested and hilly landscapes.

### Key Characteristics:

- **Large Omnivorous Mammals:** Most species consume fruits, roots, insects, fish, and small mammals; the polar bear is largely carnivorous.
- **Strong Climbers & Swimmers:** Despite bulk, many species climb trees and swim efficiently.
- **Keen Sense of Smell:** Olfactory ability is highly developed, compensating for moderate vision and hearing.
- **Solitary Behaviour:** Mostly solitary except during mating or cub rearing.
- **Seasonal Dormancy:** Many species undergo winter sleep (often termed hibernation).

### Hibernation : What it is?

- Hibernation is a seasonal state of metabolic slowdown where animals conserve energy during cold periods with scarce food availability.

### Reasons for Hibernation

- **Food Scarcity in Winter:** Reduced plant growth and prey availability.
- **Extreme Cold Conditions:** Conserves body heat and energy.
- **Survival Strategy:** Ensures energy efficiency during harsh environmental conditions.

### How it Works?

- **Pre-hibernation Fat Accumulation:** Bears consume excess food to build fat reserves.
- **Metabolic Slowdown:** Heart rate, breathing rate, and body temperature reduce (though bears are not true deep hibernators).
- **Energy from Stored Fat:** Brown fat helps generate heat during brief arousals.

- **Occasional Arousal:** Bears may wake intermittently, unlike true hibernators.
- In Uttarakhand, insufficient snowfall has failed to trigger proper dormancy, leaving bears active and increasing human-bear interactions.

### 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.

### Dal Lake

- The Jammu & Kashmir government has shelved the ₹416.72-crore Dal Lake restoration plan and proposed an in-situ conservation strategy allowing dwellers to remain within the lake ecosystem.
- **Dal Lake:**
- Dal Lake is a famous urban freshwater lake and wetland ecosystem, often called the Jewel in the crown of Kashmir. It is central to tourism, fisheries, floating agriculture, and the cultural identity of Kashmir.

#### Location:

- Located in Srinagar, the summer capital of Jammu and Kashmir.
- Surrounded by Mughal gardens such as Shalimar Bagh and Nishat Bagh.

#### Origin & Formation:

- Dal Lake is part of the Kashmir Valley lacustrine (lake-formed) system, created by tectonic and glacial processes that shaped the Himalayan basin. It forms part of a larger natural wetland complex.

#### River Connection:

- Hydrologically connected to the **Jhelum River** system.
- Receives water from inflowing streams and drainage channels from surrounding catchments and drains into the Jhelum through controlled outflows.

#### Key Features:

- Covers about 18 sq km, forming part of a larger 21 sq km wetland system.

- Divided into four basins: **Gagribal, Lokut Dal, Bod Dal, and Nagin.**
- Known for floating gardens (Raad) used for vegetable cultivation.
- Famous for houseboats and shikaras, supporting tourism and livelihoods.
- Experiences freezing during severe winters.
- Ecologically important but faces pressures from sewage discharge, encroachment, eutrophication, and declining water circulation.

### **Davos Compact on Antimicrobial Resistance (AMR) 2025**

- The World Economic Forum (WEF) launched the Davos Compact on Antimicrobial Resistance (AMR) 2025 to address the global health crisis of drug resistance.
- **Non-State Members:** It serves as a voluntary non-state counterpart to the UNGA 2024 Political Declaration on AMR.
- **Dual Target:** The pact aims to prevent 100 million deaths and mitigate a projected \$1.7 trillion loss by 2050 from unchecked drug resistance.
- **Implementation Arm:** The Unified Coalition for the AMR Response (UCARE) serves as the dedicated body to execute the goals; it focuses on 4 pillars –
- **Innovation:** R&D for new antibiotics and diagnostic tools,
- **Awareness:** Public advocacy and policy engagement,
- **Agri-Food:** Reduce antibiotic use in livestock,
- **Funding:** Close the investment gap by mobilising private and philanthropic capital.
- **One-Health Alignment:** Signatories pledge to align their operations with the “One Health” approach, linking human, animal, and environmental health.
- **Equitable Access:** The agreement ensures affordable access to essential and newly developed antibiotics for low- and middle-income countries.
- **Pollution Control:** It includes measures to minimise the discharge of antimicrobial waste from manufacturing facilities into water bodies.
- **Regional Epicentre:** South Asia and Sub-Saharan Africa were identified as the crisis epicentres due to high population density and antibiotic consumption patterns.

### **About Antimicrobial Resistance (AMR)**

- AMR occurs when microorganisms evolve to withstand medications, making standard treatments

ineffective and allowing infections to persist.

- **Primary Drivers:** The misuse and overuse of antimicrobials in human medicine, agriculture, and livestock sectors accelerate the development of resistance.
- **Health Impact:** AMR increases mortality, prolongs hospital stays, and escalates economic burdens due to drug-resistant infections.
- **Mortality Projection:** It is projected to cause 39 million deaths between 2025 and 2050.

### Lion-Tailed Macaque Population Rising in Human Landscapes

- Recent studies reveal a surge in lion-tailed macaque populations in human-dominated landscapes, particularly in the Anamalai Hills of the Western Ghats.

#### About Lion-Tailed Macaque (*Macaca silenus*)

- The Lion-Tailed Macaque, also known as the **Wanderoo, is an Old-World monkey** endemic to the tropical rainforests of the Western Ghats.
- **Physical Appearance:** It is distinguished by a silver-white mane encircling its face and a tail ending in a lion-like black tuft.
- **Habitat Preference:** The species exclusively inhabits the upper canopy of tropical evergreen and semi-evergreen rainforests.
- **Geographic Range:** Its fragmented population is found in the Anamalai, Nilgiri, and Ashambu hills across Kerala and Tamil Nadu, and the Sirsi-Honnar rainforests in Karnataka.
- **Unique Behaviour:** It is the most arboreal of all macaque species, spending nearly its entire life in trees and rarely descending to the ground.
- **Social Structure:** Unlike aggressive urban macaques, these are shy, diurnal animals that live in small, hierarchical groups and avoid human contact.
- **Ecological Role:** As a frugivorous omnivore, it plays a vital role in seed dispersal for indigenous rainforest trees, aiding ecosystem regeneration.
- **Key Threats:** Habitat fragmentation from tea and coffee plantations, road kills, and poaching.
- **Conservation Status:** IUCN: Endangered; CITES: Appendix I; WPA: Schedule I

## The Sangtam Community

- The apex body of Nagaland's Sangtam community has passed a resolution to protect pangolins within its jurisdiction.

### The Sangtam Community:

- **Sangtam Naga** are one of the recognized Naga tribes of Nagaland, primarily inhabiting **Kiphire and Tuensang districts** in eastern Nagaland.
- They are part of the larger Naga ethnic group of Northeast India and follow strong customary governance traditions.

### Origin:

- According to oral traditions, the Sangtams trace their migration through regions of present-day Myanmar before settling in present eastern Nagaland.
- The term "Sangtam" is believed to have evolved from "Sangdang", an ancestral village name that was later recorded in British administrative reports in the late 19th century.

### Key characteristics:

- Strong traditional governance system led by village councils and apex tribal bodies.
- Organized into six major clan groupings (Shuh), reflecting deep-rooted lineage structures.
- Inhabit ecologically rich landscapes marked by dense forests, shifting cultivation, and biodiversity hotspots.
- Community resolutions play a decisive role in regulating social practices and natural resource use.

### Significance:

- The Sangtam region lies near the India-Myanmar border, a critical wildlife trafficking route.
- Their collective decision-making system makes them crucial stakeholders in biodiversity protection.
- The recent pangolin protection resolution reflects the growing importance of indigenous community-led conservation in safeguarding threatened species.

## Bio-based Chemicals and Enzymes

- India is prioritising bio-based chemicals and enzymes under the Department of Biotechnology's BioE3 policy to strengthen sustainable manufacturing and reduce petrochemical imports.

### Bio-based Chemicals and Enzymes: What it is?

- Bio-based chemicals are industrial chemicals derived from renewable biological feedstocks such as sugarcane, corn, starch, or agricultural residues **instead of fossil fuels**.
- Enzymes are biological catalysts (mainly proteins) that accelerate chemical reactions in industrial and biological processes.

### Origin:

- Bio-based chemical production originates from the concept of the bioeconomy, which integrates biology with industrial production to create sustainable alternatives to petrochemicals.
- Enzyme use dates back centuries, but modern industrial enzyme engineering expanded in the 20th century with biotechnology advancements.

### How it is formed?

- Bio-based chemicals are typically produced through fermentation, enzymatic conversion, or microbial processes using biomass as feedstock.
- Enzymes are produced through microbial fermentation, followed by purification and formulation for industrial applications.

### Key Characteristics

- **Renewable Feedstock Base:** Derived from biomass rather than fossil hydrocarbons.
- **Lower Carbon Footprint:** Generally reduces greenhouse gas emissions compared to petrochemical pathways.
- **Energy Efficient:** Enzymes operate at lower temperatures and pressures, reducing energy use.
- **Biodegradable Nature:** Many bio-based products are more environmentally friendly.
- **High Specificity:** Enzymes provide precise catalytic action, improving process efficiency.

### Applications

- **Chemical Industry:** Production of organic acids (lactic acid), bio-alcohols, solvents, and intermediates.

- **Pharmaceuticals & Vaccines:** Fermentation expertise used in active ingredient synthesis.
- **Food & Beverage:** Enzymes used in brewing, baking, dairy processing.
- **Textiles & Detergents:** Enzymes enhance stain removal and fabric processing.
- **Biomanufacturing & Clean Tech:** Used in sustainable plastics, biofuels, and specialty chemicals.

### Synchronised Terrestrial Bird Census in Tamil Nadu

- The Tamil Nadu Forest Department organised the Synchronised Terrestrial Bird Census (2025-26) to monitor avian biodiversity during the migratory season.
- **Census Sequence:** This terrestrial exercise followed the **Wetland Bird Census**, conducted earlier in the cycle in December 2025.
- **Seasonal Adjustment:** The Forest Department advanced the census schedule from March to February to capture data during the early migratory season.
- **Migratory Sighting:** Recorded species included the **Indian Golden Oriole, Brown Shrike, Booted Eagle, and Blue-tailed Bee-eater.**
- **Resident Species:** Common species were – Skylark, Jerdon's Bushlark, Plain Prinia, Spotted Dove, and Red-vented Bulbul.

### Loggerhead Turtles

- A long-term study published in *Animals* (2026) shows that loggerhead turtles are shrinking in size and producing fewer eggs due to warming oceans and declining marine productivity.
- **Loggerhead Turtles:**
- The Loggerhead sea turtle is a large marine turtle known for its massive head and strong jaws. It is one of the most widely distributed sea turtles in temperate and subtropical oceans.

**Scientific Name:** *Caretta caretta*

**Habitat:**

- **Global Distribution** – Found in the Atlantic, Pacific, and Indian Oceans, and the Mediterranean Sea.
- **Nesting Beaches** – Prefers sandy, high-energy, sloped beaches for egg-laying.

- **Major Nesting Sites** – Florida (USA), Oman, Cabo Verde, Japan, and Australia.
- **IUCN Status: Vulnerable (IUCN Red List)**

**Key Characteristics :-**

- **Physical Features:**
  - Large Head & Powerful Jaws – Crush hard-shelled prey like **mollusks and crustaceans**.
  - Reddish-Brown Carapace – Slightly heart-shaped upper shell.
  - Long Lifespan – Can live 70–80 years or more.
- **Reproductive Traits:**
  - Delayed Maturity – Females mature around 30–35 years of age.
  - Temperature-Dependent Sex Determination – Warmer sand produces more females.
- **Behavioural Patterns:**
  - Long-Distance Migration – Some undertake trans-oceanic journeys of thousands of kilometres.
  - Natal Homing – Females return to the same region where they hatched.
  - Capital Breeders – Store energy over years before reproducing.
- **Ecological Role:**
  - Marine Food Web Regulator – Controls populations of bottom-dwelling invertebrates.
  - Indicator Species – Reflects ocean health and climate impacts.
  - Beach Nutrient Cycling – Egg remnants enrich coastal ecosystems.

### **Lepidocampa sikkimensis**

- Scientists from the Zoological Survey of India (ZSI) recently discovered *Lepidocampa sikkimensis*, a new soil-dwelling **micro-arthropod species** in the Eastern Himalayas.
- **Research Milestone:** This discovery marks the first time an Indian research team has described a species in the Diplura group.
- **About Species:** *Lepidocampa sikkimensis* is a wingless micro-arthropod belonging to the primitive hexapod (six-legged) order Diplura.
- **Appearance:** It has a slender, translucent body that is distinctively covered in scales, and is characterised by two elongated, tail-like appendages called cerci.
- **Habitat Preference:** This organism thrives in the humus-rich soil and leaf litter of moist, temperate Himalayan forests.
- **Distribution:** Its known range is restricted to the Eastern Himalayas, with records from Ravangla

(Sikkim) and Kurseong (West Bengal).

- **Ecological Significance:** The species plays a critical role in nutrient cycling and serves as a biological indicator of soil health and ecosystem stability.

## NGT Clears Great Nicobar Island Project

- The National Green Tribunal (NGT) cleared the Great Nicobar Island Project, citing its strategic importance and adequate safeguards.

### About Great Nicobar Island Project

- It is a **Greenfield** mega-infrastructure project designed to transform the Great Nicobar island into a global maritime and strategic hub.
- **Implementation:** It was conceived by NITI Aayog and is implemented by the Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO).
- **Extent:** The initiative covers 166 sq km (approximately 18% of the island), including denotified tribal reserves and protected forest areas.

It comprises four main pillars —

- **ICTT:** The International Container Transshipment Terminal will be developed as a deep-sea port in Galathea Bay to compete with global hubs such as Singapore, Klang, and Colombo.
- **Airport:** A Greenfield International Airport will operate as a dual-use facility, supporting both military surveillance and civilian tourism.
- **Power Plant:** A 450 MVA hybrid gas and solar-based power plant is planned to ensure energy self-sufficiency for the new infrastructure.
- **Township:** A modern city will be built to accommodate workers and residents.

### Strategic & Economic Importance

- **Maritime Chokepoints:** GNI is strategically located near the Malacca, Sunda, and Lombok Straits, through which 25-40% of global trade passes.
- **Geopolitical Counter:** A permanent military presence serves as a strategic anchor to counter China's "String of Pearls" strategy in the Indian Ocean Region.

- **Economic Potential:** The Galathea Bay ICTT is projected to generate ₹30,000 crore in annual revenue by 2040 and create over 1.5 lakh jobs.
- **Domain Awareness:** The dual-use airport enhances India's Maritime Domain Awareness (MDA) by enabling extended surveillance.
- **Strategic Alignment:** The initiative aligns with the Sagarmala Programme and Maritime India Vision 2030 while advancing Act East connectivity objectives.

#### Key Concerns

- **Ecological Impact:** The project requires clearing 130 sq km of pristine rainforest and felling nearly one million trees, thereby threatening biodiversity.
- **Biodiversity Risk:** Critics highlight the destruction of nesting grounds for Giant Leatherback Turtles and the risks associated with coral reef translocation.
- **Tribal Displacement:** The indigenous Nicobarese and Shompen (PVTG) face potential displacement and the loss of ancestral foraging grounds.
- **Seismic Vulnerability:** The island lies in Seismic Zone V and experienced severe subsidence during the 2004 tsunami.
- **Afforestation Flaw:** The government plans compensatory afforestation in Haryana's Aravallis, which are ecologically dissimilar to tropical rainforests.

#### Mandated Safeguards

- **Tribal Protection:** A strict geofencing system to ensure zero contact between project workers and the isolated **Shompen tribe**.
- **Turtle Conservation:** The port and airport must install specialised "Dark Sky" lighting to prevent Giant Leatherback Turtles from becoming disoriented during nesting seasons.
- **Coral Translocation:** The proponent is required to scientifically translocate more than 16,000 coral colonies to safe sites before dredging begins.
- **Seismic Resilience:** All infrastructure must use advanced disaster-resilient technology to withstand seismic activity in Zone V.
- **Oversight Mechanism:** Three independent committees will monitor pollution, biodiversity, and tribal welfare to ensure strict compliance.
- **Wildlife Corridors:** Eco-bridges and underpasses will be constructed to maintain habitat connectivity for species such as the **Nicobar Macaque**.

## Cheetah Gamini in Kuno National Park Gave Birth to Three New Cubs

- The South African cheetah Gamini gave birth to three healthy cubs at **Kuno National Park** in Madhya Pradesh.
- **Total Population:** This birth brings India's cheetah population to 38, comprising 27 Indian-born cubs and 11 translocated adults.
- **Conservation Milestone:** Gamini was translocated from South Africa in February 2023 as part of Project Cheetah, the world's first intercontinental large wild carnivore translocation project.
- **Habitat Distribution:** Kuno National Park currently houses 35 cheetahs, while 3 adult cheetahs are located at the Gandhi Sagar Sanctuary.
- **Future Expansion:** Nauradehi Wildlife Sanctuary in Madhya Pradesh has been designated as the third reintroduction site.

## Bee Corridor

- The National Highways Authority of India (NHAI) has announced India's first dedicated 'Bee Corridors' along National Highways.
- **What it is?**
- 'Bee Corridors' are linear stretches of pollinator-friendly vegetation developed along National Highways.
- They will consist of flowering trees and plants that provide year-round nectar and pollen support to honeybees and other pollinators.
- **Aim:** To reduce ecological stress on pollinators and ensure sustained availability of nectar sources, thereby strengthening agricultural productivity and ecological balance through climate-sensitive highway plantation planning.

### Key Features:

- **Native, Nectar-Rich Plantation Mix:** Includes species like **Neem, Karanj, Mahua, Palash, Jamun** and Siris to support biodiversity.
- **Staggered Blooming Cycle:** Ensures near-continuous flowering across seasons to maintain pollinator food supply.
- **Strategic Spacing Along Highways:** Flowering clusters planted every 500 m-1 km, aligned with

average bee foraging distance.

**Significance:**

- **Enhances Ecological Services:** Strengthens pollination critical for agriculture and horticulture.
- **Promotes Sustainable Infrastructure:** Integrates biodiversity conservation into highway development.

## Ravi River

- India is set to utilise surplus waters of the Ravi River through the **Shahpur Kandi Dam**, preventing unused flows into Pakistan.

**Ravi River:**

- The Ravi River is one of the five rivers of the Indus river system, which give Punjab its name ("Land of Five Rivers").
- It is an eastern river under the Indus Waters Treaty, allocated exclusively to India.

**Origin:**

- Originates near the **Rohtang Pass** in Himachal Pradesh.
- Rises at an elevation of around 4,400 metres above sea level.
- Initially flows as two streams — **Budhil and Tantgari** — which later merge.

**Course of the River:**

- **Countries:** Flows through India and Pakistan.

**Within India:**

- Himachal Pradesh (mainly Chamba district).
- Punjab (Gurdaspur, Amritsar districts).
- Forms part of the India-Pakistan international boundary before entering Pakistan.

**In Pakistan:**

- Flows past Lahore.
- Eventually joins the Chenab River.
- Tributaries of Ravi River:
  - Right Bank Tributaries: Siul River, Baira River, Budhil River, and Tant Gari
  - Left Bank Tributaries: Ujh River and Chirchind Nala.

- **Other Tributaries / Streams:** Bhadal River, Sewa River, Bein and Basantar.
- **Ravi is a Tributary of:** The Ravi River ultimately joins the Chenab River, which is a major western tributary of the Indus River.

**Key Features of the Ravi River:**

- **Total length:** Approx. 720 km (about 320 km in India) – The river flows through both India and Pakistan, with nearly half its course lying within Indian territory.
- **Catchment area in India:** Around 5,957 sq km – A significant drainage basin in Himachal Pradesh and Punjab supports irrigation and hydropower projects.
- Flow is sustained by Himalayan snowmelt in summer and intensified by heavy monsoon rains from June to September.
- Intense rainfall often leads to high discharge levels, causing seasonal flooding in downstream areas.
- Controlled by major dams like Chamera I, II, III and Ranjit Sagar (Thein) Dam – These projects regulate water flow for hydropower generation, irrigation, and flood management.
- **Shahpur Kandi Dam:** A multipurpose project on the Ravi River near the Punjab–J&K border, aimed at utilising surplus eastern river waters for irrigation and reducing flow into Pakistan.

**Beat the Heat Programme**

- Maharashtra has announced that 30 cities have joined the global “Beat the Heat” programme during Mumbai Climate Week 2026.

**About Beat the Heat Programme:**

- Beat the Heat is a global climate initiative aimed at accelerating action against extreme heat through sustainable cooling and urban resilience strategies.
- It translates the **Global Cooling Pledge** into practical, city-level implementation.

**Launched In:**

- Announced under the COP30 Presidency (Brazil).
- Supported by the United Nations Environment Programme (UNEP) through the Cool Coalition.
- **Aim:**
- Cut greenhouse gas emissions from cooling systems while promoting energy-efficient and low-

carbon technologies.

- Protect vulnerable populations by integrating affordable cooling and climate-adaptive measures into city planning.

**Key Features:**

- **Heat Risk Assessment:** Supports cities in mapping heat vulnerability and identifying hotspots.
- **Nature-Based Cooling:** Promotes urban greening, tree cover expansion, and shaded public spaces.
- **Passive Cooling Solutions:** Encourages cool roofs, reflective surfaces, and climate-sensitive building design.
- **Efficient Cooling Technologies:** Pushes for low-energy air-conditioning and low global-warming refrigerants.
- **Policy Integration:** Integrates heat resilience into urban planning, building codes, and infrastructure design.
- **Financial and Institutional Support:** Assists cities in accessing climate finance and strengthening implementation capacity.

**Significance:**

- **Climate Adaptation Imperative:** Addresses extreme heat, which causes more annual deaths globally than floods and storms combined.
- **Urban Focus:** Targets urban heat island effects, where temperatures can be up to 10°C higher than rural areas.
- NOTE: There are actually two distinct global initiatives with the exact same name, each run by a different organization.
- The UNEP "Beat the Heat" – Focus on urban infrastructure and cooling.
- The WHO "Beat the Heat" – Focus on human health and safety in sports event.

## **Kerala Declares Tidal Flooding as State-Specific Disaster**

- The Kerala government declared tidal flooding a state-specific disaster, becoming the first Indian state to formally recognise it as a disaster.
- **Statutory Decision:** The declaration is based on Section 2(d) of the Disaster Management Act, 2005, which defines a disaster as a natural or man-made calamity causing loss of life, property, or

livelihood.

- **Financial Eligibility:** Affected persons now qualify for assistance from the State Disaster Response Fund (SDRF).

#### About Tidal Flooding

- Tidal flooding refers to the temporary inundation of low-lying coastal areas during exceptionally high tides. It is commonly known as **sunny day flooding** because it occurs without rainfall or storms.
- **Primary Causes:** Gravitational pull of the sun and moon, sea-level rise due to climate change, and coastal land subsidence cause tidal flooding.
- **Occurrence Pattern:** The phenomenon is linked to the semi-diurnal tidal cycle; inundation may occur twice daily during high-tide periods in vulnerable low-lying coastal areas
- **Peak Conditions:** Flooding intensifies during Spring Tides, when the Sun, Moon, and Earth align, and during King Tides, when the Moon is closest to Earth.

#### About State-Specific Disaster

- A state-specific disaster is a hazard not included in the Union Government's notified national disaster list but posing significant local risks within a state's territory.
- **Funding Limit:** States may utilise up to 10% of their annual SDRF allocation for relief related to such notified disasters.
- **Relief Norms:** Financial assistance must follow the same transparent norms applicable to nationally notified disasters.

### Alpheus madhusoodanai Shrimp

- Scientists discovered a new shrimp species, *Alpheus madhusoodanai*, in the Kochi backwaters of Kerala.
- *Alpheus madhusoodanai* is a **snapping shrimp** (also known as a pistol shrimp) of the Alpheidae family, known for producing high-velocity acoustic pressure to stun prey.
- **Appearance:** It has a translucent body with reddish-brown bands and an asymmetrical, large claw used for hunting and defence.
- **Habitat Preference:** This shrimp primarily inhabits brackish water estuaries and muddy substrates near mangrove roots.

- **Distribution:** *A. madhusoodanai* is endemic to the Kochi backwaters in Kerala.
- **Dietary Habits:** It is an opportunistic carnivore, feeding on small fish, crustaceans, and organic detritus in the estuary's **benthic zone**.
- **Ecological Role:** The burrowing aerates swampy soil and releases toxic gases trapped in the sediment.

### Hornbill Restaurants in Chhattisgarh

- The Chhattisgarh Forest Department is establishing six "hornbill restaurants" in the **Udanti Sitanadi Tiger Reserve (USTR)**.
- **Target Species:** This project aims to provide a secure habitat for the rare **Malabar Pied Hornbill** (*Anthracoceros coronatus*)
- **Resource Availability:** These "restaurants" are clusters of fruit-bearing trees that offer birds a year-round supply of ripe fruit.

#### About Malabar Pied Hornbill (*Anthracoceros coronatus*)

- Malabar Pied Hornbill is a medium-sized bird of the **Bucerotidae family** endemic to the Indian subcontinent.
- **Appearance:** They have predominantly black plumage with a white belly and white-tipped tail/wings; the large yellow bill is topped by a prominent creamy-yellow and black casque.
- **Sexual Dimorphism:** Males possess deep red irises, while females are distinguished by a white ring of skin around the eyes.
- **Habitat Preference:** The bird inhabits evergreen and moist deciduous forests, with a strong preference for tall riverine trees.
- **Distribution:** The range is restricted to the Western Ghats, Central and Eastern India, and Sri Lanka.
- **Diets:** Primarily frugivorous, it occasionally hunts small vertebrates and insects, especially during the breeding season.
- **Dust Bathing:** The species frequently descends to the ground to dust-bathe to rid itself of ticks and excess oil.
- **Ecological Role:** It acts as "Farmers of the Forest" by dispersing the seeds of large tropical tree species.
- **Conservation Status:** IUCN: Near Threatened; CITES: Appendix II; WPA: Schedule I

## AI-for-Energy mission

- The International Solar Alliance (ISA) launched a global AI-for-Energy mission at the India AI Impact Summit in New Delhi to fast-track clean energy adoption across 120+ member countries.

### About AI-for-Energy mission:

- A strategic international initiative designed to integrate Artificial Intelligence (AI) into the clean energy infrastructure of developing and emerging economies.
- It leverages the **India Energy Stack**—a digital public infrastructure model—to modernize grids and decentralize power systems.
- **Launched By:** The International Solar Alliance (ISA), in partnership with India's Ministry of Power, Ministry of Electronics and Information Technology (MeitY), and REC Limited.

### Aim:

- To assist member countries in digital leapfrogging, bypassing legacy infrastructure hurdles.
- To transform power grids into smart, bidirectional systems capable of absorbing high levels of renewable energy.
- To ensure equitable and affordable access to electricity through data-driven planning and service delivery.

### Key Features

- **India Energy Stack:** Using India's interoperable digital platform (similar to UPI for payments) as a global template to connect consumers, vendors, and utilities.
- **Digital Twin Technology:** Showcasing virtual replicas of distribution networks (DISCOMs) for real-time simulation, predictive maintenance, and outage management.
- **Citizen-Centric Tools:** Tools like the One Solar App for transparent net-metering and performance tracking of rooftop solar installations.
- **Geospatial Mapping (GIS):** Utilizing GIS-based tools for asset-level visibility and optimized infrastructure planning in rural and urban sectors.
- **Technical Capacity Building:** A focus on five priorities: AI for distributed energy, start-up innovation, interoperable standards, citizen benefits, and sustainable financing.

### Significance

- AI helps manage the complexity of millions of prosumers, ensuring grid stability during peak demand.

- By reducing technical losses and lowering the cost of digital tools, the mission makes clean energy financially viable for low-income nations.
- **Source: DTE**

### Thriving Coral Reef Discovery in Lakshadweep

- A healthy and continuous coral reef stretch was discovered near **Kalpeni Island, Lakshadweep**, amid the ongoing **fourth global mass coral bleaching event**.
- Coral reefs are marine ecosystems formed by **coral polyps** that live in a mutualistic symbiotic relationship with **photosynthetic zooxanthellae**, which enables high biodiversity & ecosystem productivity.

#### Global Coral Crisis Context

- **Mass Bleaching Event:** Global coral reef ecosystems are facing unprecedented and recurring stress from prolonged marine heatwaves and steadily rising ocean temperatures.
- **Thermal Tipping Risk:** At  $\sim 1.4^{\circ}\text{C}$  long-term warming, warm-water reefs approach irreversible decline thresholds (Global Tipping Points Report 2025).
- **Ecosystem Dependence:** Coral reef systems collectively support nearly 25% of global marine biodiversity, despite occupying only a very small fraction of the ocean area.

#### Ideal Conditions for Coral Growth

- **Stable climatic conditions:** Corals are highly susceptible to quick changes. They grow in regions where the climate is significantly stable for a long period of time.
- **Perpetually warm waters:** Corals thrive in tropical waters ( $30^{\circ}\text{N}$  and  $30^{\circ}\text{S}$  latitudes, where the temperature of water is around  $20^{\circ}\text{C}$ ), where diurnal and annual temperature ranges are very narrow.
- **Shallow water:** Corals require a fairly good amount of sunlight to survive. The ideal depths for coral growth are **45 m to 55 m below the sea surface**, where abundant sunlight is available.
- **Abundant Plankton:** Adequate supply of oxygen and microscopic marine food, called plankton (phytoplankton), is essential for growth.
- **Little or no pollution:** Corals are highly fragile and are vulnerable to climate change and pollution, and even a minute increase in marine pollution can be catastrophic.
- **Clear salt water:** Clear salt water is suitable for coral growth, while both fresh water and highly saline water are harmful.

### Reasons for Thriving Coral Reef Discovery in Lakshadweep

- **Thermal Buffering Effect:** Local oceanographic processes, including currents and vertical mixing, likely reduced prolonged heat stress exposure on corals.
- **Hydrodynamic Water Flushing:** Strong and continuous water circulation improved nutrient exchange while preventing damaging thermal accumulation.
- **Species-Level Heat Resilience:** Dominance of relatively heat-tolerant coral species enhanced ecosystem survival under repeated marine heatwave conditions.

### About Lakshadweep

- **Location:** A group of coral islands located in the Arabian Sea, off India's southwestern coast.
- **Topography:** Characterised by flat terrain with the absence of hills, rivers, and valleys.
- **Island Groups:** Comprises the Amindivi Islands, Laccadive Islands, and the Minicoy Islands.
- **Capital:** Kavaratti serves as the administrative capital of Lakshadweep.
- **Geographical Spread:** The Amindivi Islands lie in the north, while the Minicoy Islands, the largest and relatively more developed island, form the southernmost extension.
- **8° N Channel:** Separates the Maldives from the Minicoy Island.
- **9° N Channel:** Separates the island of Minicoy from the main Lakshadweep archipelago.

### Forest Fires in Northeast India

- Forest fires persisted for nearly a week across Arunachal Pradesh and Nagaland, prompting sustained aerial firefighting missions.

#### Affected Locations

- **Lohit Valley:** High-altitude aerial firefighting missions conducted above ~9,500 ft in remote mountainous regions of Arunachal Pradesh.
- **Walong Region:** Significant fire suppression operations undertaken in eastern Arunachal Pradesh, a strategically sensitive zone near the India–China frontier.
- **Dzukou Valley:** Forest fire hotspots observed in the ecologically fragile valley spanning the **Nagaland–Manipur border**, known for recurrent seasonal fires.
- **Japfu Peak Area:** Fire-affected zones reported near Japfu Peak, one of **Nagaland's highest**

**elevations**, where steep slopes intensified fire behaviour.

### Operational Response

- **Sustained Aerial Suppression:** Indian Air Force helicopters carried out continuous precision water-dropping sorties to contain fires in inaccessible mountainous terrain.
- **Large-Scale Water Deployment:** Extremely high-volume aerial drops reported; E.g., ~139,800 litres released over Walong and ~12,000 litres over Lohit Valley.

### Why Northeast is a Fire-Prone Zone?

- **Climatic Vulnerability:** Extended dry spells and rising temperatures increase fire risks; E.g., Arunachal Pradesh recorded ~200 times more fire incidents compared to the same period last year (FSI data).
- **Shifting Cultivation Practices:** Slash-and-burn agricultural cycles create seasonal ignition sources across hill landscapes, particularly during pre-monsoon months.
- **Topographic Amplification:** Steep slopes, narrow valleys, and strong mountain winds accelerate rapid fire spread and complicate ground-based containment efforts.

### Forest Fire Vulnerability in India

- **Prone Areas:** About 36% of India's forest cover is susceptible to forest fires, with ~4% highly prone and ~6% very highly prone zones.
- **Fire Frequency Distribution:** Around ~54.40% of forest areas witness occasional fires, ~7.49% face moderate fire incidence, and ~2.40% report high-frequency fires (FSI).
- **Susceptible Forest Types:** Dry deciduous forests remain most vulnerable due to high combustible biomass, whereas evergreen and montane temperate forests exhibit lower fire incidence.

### Government Initiatives to Control Forest Fires

- **Forest Fire Prevention & Management Scheme (FPM):** Centrally Sponsored Scheme providing financial assistance to states for fire prevention infrastructure and firefighting capacity enhancement.
- **Forest Survey of India (FSI) Fire Alerts:** Satellite-based real-time monitoring system issuing early warnings using MODIS and SNPP-VIIRS sensors to enable rapid response.
- **National Action Plan on Forest Fires (NAPFF):** National framework emphasising prevention, mitigation strategies, technological integration, and community participation in fire management.

## Nandhaur Wildlife Sanctuary

- Smooth-coated otters were officially recorded for the first time in **Nandhaur Wildlife Sanctuary, Uttarakhand**, marking a significant conservation milestone.

### Nandhaur Wildlife Sanctuary:

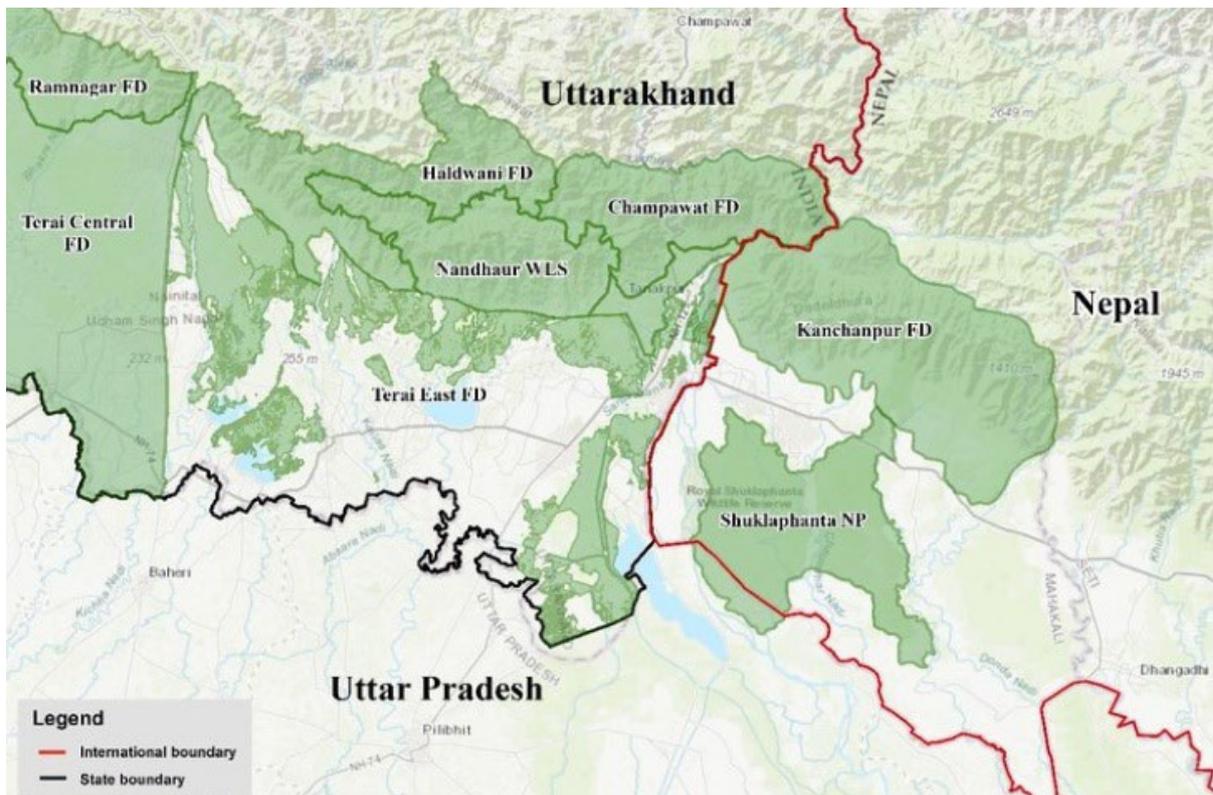
- Nandhaur Wildlife Sanctuary is a protected forest area forming part of the Terai Arc Landscape, serving as a crucial biodiversity corridor between India and Nepal.

### Located in:

- Situated in Nainital district, Uttarakhand.
- Lies between the Gola and Sharda Rivers.
- Connects forests of Ramnagar with Shuklaphanta National Park in Nepal.

### History:

- Established in 2012.
- Part of the **Shivalik Elephant Reserve (since 2002)**.
- Recently prescribed by the National Tiger Conservation Authority (NTCA) as Uttarakhand's third Tiger Reserve.



**Key Features:**

- Area: 269.96 sq. km.
- Dominated by Sal forests with over 100 tree species including shisham, bamboo, teak, and chir pine.
- Hosts ~25 mammal species, 250 bird species, 15 reptiles, and 20 fish species.
- Major fauna include tiger, leopard, Asian elephant, and sloth bear.
- Functions as an ecological corridor in the Terai-Bhabar region.

**About Smooth-Coated Otter:**

- The smooth-coated otter is a semi-aquatic mammal and one of the largest otter species in Asia, known for its sleek body and strong swimming ability.
- **Scientific Name: Lutrogale perspicillata**
- **Conservation Status**
- Listed as Vulnerable on the International Union for Conservation of Nature (IUCN) Red List.
- **Habitat**
- Found in freshwater rivers, wetlands, mangroves, and estuaries.
- Requires clean water bodies with abundant fish and amphibians.
- Acts as a bio-indicator species, indicating healthy aquatic ecosystems.

**Key Characteristics:**

- **Total length:** ~1.3 metres; weight: 7–11 kg: The smooth-coated otter is one of the larger otter species, giving it strength and agility for aquatic hunting.
- Smooth, sleek fur; flattened tail; large webbed paws: These adaptations reduce water resistance and help in fast swimming and efficient underwater movement.
- Strong swimmers; often hunt cooperatively in groups (V-formation): Group hunting improves coordination and increases success in catching fish in flowing waters.
- Sensitive whiskers detect prey movement even in murky waters: Their whiskers act as sensory tools, allowing them to locate prey through vibrations when visibility is poor.
- Primarily fish-eating but occasionally omnivorous: Although fish form the main diet, they may also consume crustaceans or small aquatic animals when available.

**Takeshima/Dokdo Islands**

- South Korea lodged a firm diplomatic protest against Japan's Takeshima Day, an annual event held

in Shimane Prefecture to assert sovereignty over the disputed islets.

**About Takeshima/Dokdo Islands:**

- The territory is a cluster of small, rocky outcroppings located in the **Sea of Japan** (referred to as the East Sea by South Korea).
- **Composition:** It consists of two main volcanic islets—Dongdo (East Island) and Seodo (West Island)—along with roughly 30 to 90 smaller rocks and reefs.
- **Geographical Position:**
- The islands lie roughly equidistant between the two nations but are physically closer to the South Korean island of **Ulleungdo** (approx. 87 km) than to **Japan's Oki Islands** (approx. 157 km).
- **History and Origin:**
- **Ancient Records:** South Korea traces its claim back to the **6th-century Silla Kingdom**, citing various historical maps and documents (like the Sejong Sillok Jiriji) that describe the islets as part of Korean territory.
- **1905 Annexation:** Japan officially incorporated the islands into Shimane Prefecture in 1905, declaring them terra nullius (nobody's land) during the Russo-Japanese War. South Korea views this as an illegal act of colonial aggression.
- **Post-WWII (1945-1954):** Following Japan's defeat in 1945, the islands were placed under Allied control. In 1954, South Korea established a permanent coast guard presence on the islands, effectively regaining control after the end of Japanese colonial rule.
- **Features:**
- **Terrain:** Volcanic rocks formed in **the Cenozoic era**. They feature steep cliffs, numerous sea caves, and a harsh, humid climate.
- **Fisheries:** The surrounding waters are a **Goldilocks zone** where warm and cold ocean currents meet, creating one of the world's most fertile fishing grounds for squid, pollock, and cod.
- **Energy Potential:** Recent geological surveys suggest the seabed may hold 600 million tons of **gas hydrates (often called fire ice)**.
- This natural gas resource is estimated to be worth nearly billion annually, making the islands a strategic energy asset.

**Current Status:**

- **De Facto Control:** South Korea maintains effective control over the islands, with a small detachment of police, lighthouse keepers, and a handful of residents.
- **Legal Stance:** South Korea refuses to take the matter to the International Court of Justice (ICJ),

arguing that there is no dispute to settle as the islands are an integral part of their sovereign territory.

- Japan continues to claim the islands as an inherent part of its territory, hosting Takeshima Day every February 22nd.



## Vaan Island

- The decade-long deployment of artificial reefs on Tamil Nadu's Vaan Island has generated socio-ecological benefits exceeding twice the project's cost.
- Vaan Island, also known as **Van Tivu or Church Island**, is a small, uninhabited coral island in the Gulf of Mannar in Tamil Nadu.
- It is one of the 21 islands within the **Gulf of Mannar Marine National Park**.
- Waters surrounding the island host rich marine ecosystems, including coral reefs, **seagrass beds**, and diverse fish species.
- **Coastal Erosion:** Between 1969 and 2015, the island shrank from 20 hectares to 1.53 hectares (a 92% loss) due to extensive coral mining and sea-level rise.
- **Restoration:** Since 2015, scientists have deployed more than ten thousand reef modules. The "Vaan Model" halted coastal erosion and increased the land area by over 2.3 hectares by early 2026.

### About Gulf of Mannar

- It is a shallow inlet of the Indian Ocean, situated between southeastern India & western Sri Lanka.
- **Boundary:** The Adam's Bridge chain of shoals, Rameswaram Island, and Mannar Island separate the water body from Palk Bay in the north.
- **Conservation Status:** The region was designated India's first Marine Biosphere Reserve in 1989 and recognised under UNESCO's MAB Programme in 2001.
- **Keystone Species:** Gulf is the most significant remaining Indian habitat for the highly endangered marine mammal, the Dugong (sea cow).

### Ferruginous Pochard (*Aythya nyroca*)

- A female Ferruginous Pochard (*Aythya nyroca*) was sighted at Amoor Lake near Chennai, marking only the second recorded occurrence of the species in the region.
- **Ferruginous Pochard**, also known as the white-eyed pochard, is a migratory diving duck native to the Palearctic region.
- **Appearance:** Adults have rich chestnut plumage with a distinctive white triangular undertail patch.
- **Dimorphism:** Drakes have a piercing white iris, while females have a brown iris.
- **Habitat:** Unlike most diving ducks that favour open water, the Ferruginous Pochard prefers shallow freshwater bodies with dense submerged and floating vegetation.
- **Breeding Range:** Its range spans from the Iberian Peninsula and North Africa through Europe and Central Asia to Western Mongolia.
- **Winter Visitor:** The species is a widespread winter visitor across India, especially in West Bengal and Rajasthan, but is rare in the extreme south.
- **Behaviour:** Unlike most other pochards, it is less gregarious and typically moves in small groups or pairs.
- **Diet:** The duck is omnivorous, feeding on aquatic plants, seeds, and tubers, supplemented by molluscs, aquatic insects, and small fish.
- **Ecological Role:** It contributes to nutrient cycling and regulates aquatic invertebrate populations.
- **Key Threats:** Habitat loss, water pollution, illegal hunting, and invasive grass carp.
- **Conservation Status:** IUCN: Near Threatened; WPA: Schedule II.

## Baglihar Hydropower Project

- Stage-I operations at the Baglihar hydropower project were temporarily suspended following minor flooding in the machine room.
- The Baglihar project is a major **run-of-the-river power project** on the **Chenab River** in the Ramban district of Jammu and Kashmir.
- The facility has a total capacity of 900 MW, developed in two 450 MW stages utilising natural river flows.
- It comprises a concrete gravity dam with about 475 million cubic metres of reservoir storage.
- The dam uses drawdown flushing technology to continuously remove heavy Himalayan silt.

## Galapagos giant tortoise reintroduction

- The Galapagos National Park released 158 hybrid giant tortoises onto **Floreana Island** to help restore its delicate ecosystem.
- These juvenile tortoises carry significant DNA from the *Chelonoidis niger*, a species that had been considered extinct for 150 years.

### About The Galapagos Islands:

- The Galapagos is an extraordinary volcanic archipelago consisting of 19 main islands and over 100 islets.
- **Location:** Situated in the **Pacific Ocean**, approximately 1,000 km (620 miles) west of the **Ecuadorian coast**.
- **Geological Origins:** Formed by volcanic activity at the confluence of three tectonic plates (Nazca, Cocos, and Pacific).

### Key Features:

- **Evolutionary Hub:** Known as a living museum of evolution, it famously inspired Charles Darwin's theory of natural selection.
- **Endemic Species:** Home to species found nowhere else, including marine iguanas, blue-footed boobies, and the iconic giant tortoises.
- **UNESCO Heritage:** Designated as a Natural World Heritage Site in 1978 for its unique

biodiversity.

#### Hybrid Giant Tortoises: What it is?

- These are tortoises with mixed ancestry. While the original Floreana species (*Chelonoidis niger*) was hunted to extinction by the mid-19th century, scientists discovered hybrid descendants on Wolf Volcano (Isabela Island).

#### IUCN Status:

- **Extinct in the Wild (Parent Species):** The pure *Chelonoidis niger* is technically extinct.
- **Conservation Status:** The genus *Chelonoidis* as a whole is generally classified as Endangered or Critically Endangered by the IUCN.
- **Conservation Goal:** Through a selective breeding program, these hybrids (carrying 40%–80% original DNA) are being used to resuscitate the ecological role of the extinct species.

#### Key Characteristics:

- **Ecological Engineers:** They shape the landscape by dispersing seeds, clearing vegetation, and creating wallows that serve as micro-habitats for other animals.
- **Saddlebacked Carapace:** Unlike the dome-shaped shells of some other islands, Floreana-descended tortoises often have saddlebacked shells, an adaptation that allows them to lift their necks higher to reach tall cacti.
- **Longevity & Resilience:** Released between ages 8 and 13, these tortoises are large enough to survive potential threats from introduced rats and cats. They can live for over 100 years.

### Soybean Festival in Nagaland

- A two-day Soybean Festival was organised at Chümoukedima, Nagaland, under the theme “From Field to Feast”, with emphasis on scientific cultivation practices.
- Nagaland currently contributes only about 0.1% of India’s soybean output, indicating substantial untapped production potential.

#### About Soybean (Golden Bean)

- **Crop Profile:** Soybean (*Glycine max*) is an important **kharif crop** and serves as both an **oilseed** and a **leguminous crop**.

- Agro-climatic Conditions: It grows best at **26–30°C**, needs about **90 cm well-distributed rainfall**, and prefers fertile, well-drained loamy soils.
- **Origin & Spread:** Soybean is native to **East Asia** and is now cultivated widely in tropical, subtropical, and temperate regions.
- **Soybean Production:** Madhya Pradesh (“Soy State of India”), followed by Maharashtra & Rajasthan.
- **Production Geography:** Cultivation is concentrated largely in central and western India.
- **Global Production:** Brazil, United States, and Argentina are the top soybean producers globally. India is 5th largest producer.
- Leguminous crops are **pod-bearing crops (family Fabaceae)** whose root nodules with **Rhizobium bacteria fix atmospheric nitrogen**, thereby improving soil fertility (e.g., gram, pea, lentil, groundnut).

### Contarinia icardiflores

- Scientists at ICAR-Directorate of Floricultural Research, Pune, have identified a new midge species, Contarinia icardiflores.
- L.icardiflores is a blossom **midge species** that infests commercial **jasmine crops**.
- **Key Traits:** It measures 1.5-2 mm in length and completes a full life cycle within 16-21 days.
- **Distribution:** The midge has been reported from major jasmine-growing states, including Maharashtra, Tamil Nadu, Andhra Pradesh, and Karnataka.
- **Larval Feeding:** Hatched larvae burrow into the flower bud and feed on internal tissues. They remain beyond the reach of surface-applied pesticide sprays.

### Him-CONNECT in the World Sustainable Development Summit

- The Union Ministry of Environment, Forest and Climate Change (MoEFCC) is organising ‘Him-CONNECT’ during the World Sustainable Development Summit (WSDS) 2026 in New Delhi.

#### Him-CONNECT

- It is a platform connecting scientific research and entrepreneurship to scale innovations in the

Indian Himalayan Region (IHR).

- The initiative focuses on commercialising ecological innovations developed under the National Mission on Himalayan Studies (NMHS).
- **Key Sectors:** Include waste-to-wealth, climate-resilient infrastructure, water management, bio-resource utilisation, and green energy.
- **Significance:** It repositions the Himalayas from vulnerability to green growth, advancing India's solution-driven climate diplomacy and strengthening South-South cooperation.
- NMHS is a **Central Sector Scheme** launched in 2015-16 by the MoEFCC to support innovative research and technological interventions for the sustainable development of the IHR.

### World Sustainable Development Summit (WSDS) 2026

- The WSDS is an annual event organised by The Energy and Resources Institute (TERI) to discuss sustainability and the environment.
  - It is the only independently convened international sustainable development summit of Global South.
  - The 2026 edition marks the **Silver Jubilee (25th edition)** of this international summit.
  - **Theme: "Parivartan | Transformations: Vision, Voices, and Values for Sustainable Development."**
  - **Focus Areas:** It prioritises climate finance, just energy transitions, and alignment with India's Net-Zero goals and the 'Viksit Bharat' vision.
  - **Significance:** The event mobilises world leaders to translate dialogue into on-the-ground policy implementation and equitable resource allocation.
- TERI is an independent, non-profit research institution and think tank, established in 1974. It has developed the GRIHA framework, India's national green building rating system.

### Congo Lakes - Mai Ndombe and Tumba

- A recent scientific study has found that lakes (Mai Ndombe and Tumba) in the Congo Basin are releasing ancient carbon stored for thousands of years in surrounding peatlands, raising fresh climate concerns.

### **Congo Lakes (Mai Ndombe and Tumba):**

- Lakes Mai Ndombe and Tumba are large, shallow blackwater lakes characterized by their dark, tea-like color. This unique appearance is caused by high concentrations of dissolved organic matter and humic acids leached from the surrounding dense swamp forests and peatlands.

### **Location**

- **Country:** Democratic Republic of Congo (DRC).
- **Region:** Situated within the **Cuvette Centrale (Central Basin)**, a vast depression in the heart of the Congo Basin.
- **Wetland Status:** They form part of the **Tumba-Ngiri-Maindombe area**, the world's largest Wetland of International Importance recognized by the Ramsar Convention.

### **Formation:**

- These lakes are primarily floodplain and wetland-origin lakes, formed through riverine processes associated with the Congo River system.
- Continuous waterlogging led to the accumulation of organic plant material over thousands of years, forming deep peat deposits around the lakes.
- Peat formation occurs when dead vegetation accumulates faster than decomposition under oxygen-poor conditions.

### **Key Features:**

- **Shallow Depth:** Both lakes are extremely shallow, with average depths of only 3 to 5 meters.
- **Blackwater Ecosystem:** The high acidity (pH 4.0–5.5) and low oxygen levels in the surrounding flooded forests create a unique habitat for endemic fish species.
- **Size Fluctuation:** The lakes are highly dynamic, with Lake Mai Ndombe doubling or tripling in size during the rainy season.
- **Carbon Reservoir:** The surrounding peatlands cover only 0.3% of Earth's land surface but hold one-third of all tropical peatland carbon (approx. 30 billion metric tons).

### **Reason for carbon emission:**

- Research shows up to 40% of CO<sub>2</sub> emissions from these lakes originate from ancient peat carbon (over 3,000 years old).
- Carbon likely moves from peatlands into lake water and escapes into the atmosphere.

**Key contributing factors include:**

- Drying of peatlands, which reactivates decomposition processes.
- Climate change, increasing drought and temperature stress.
- Land-use change, such as deforestation and conversion to cropland.

## Carbon Capture and Utilisation (CCU) Technologies

- The Union Budget 2026 recently allocated ₹20,000 crore to scale up Carbon Capture, Utilisation, and Storage (CCUS) technologies over the next five years.

**Carbon Capture and Utilisation (CCU) Technologies:**

- Carbon Capture and Utilisation (CCU) is a suite of technologies designed to capture carbon dioxide (CO<sub>2</sub>) emissions from industrial point sources or directly from the atmosphere and transform them into commercially valuable products rather than just storing them underground.

**How it Works?**

**The process involves three main stages:**

- **Capture:** CO<sub>2</sub> is separated from other gases (like nitrogen and water vapor) in industrial flue gas or ambient air.
- **Compression & Transport:** The captured CO<sub>2</sub> is compressed into a liquid-like state for easier handling and moved via pipelines or tankers.
- **Conversion/Utilisation:** The CO<sub>2</sub> undergoes chemical, biological, or physical processes to be recycled into new materials.

**Types of CCU:**

- **Direct Utilisation:** Using CO<sub>2</sub> without chemical alteration, such as in carbonated beverages or Enhanced Oil Recovery (EOR).
- **Chemical Conversion:** Transforming CO<sub>2</sub> into chemicals (e.g., urea, polymers) or synthetic fuels (e.g., methanol).
- **Biological Conversion:** Using algae or bacteria to consume CO<sub>2</sub> and produce biomass, biofuels, or animal feed.
- **Mineralisation:** Reacting CO<sub>2</sub> with minerals (like magnesium or calcium) to create stable solid carbonates for building materials like bricks and green concrete.

- **Aim:** The primary goal of CCU is to decouple economic growth from CO2 emissions by treating carbon as a feedstock rather than a waste product, helping industries reach Net Zero while creating a circular carbon economy.

#### Key Features:

- **Retrofitting Capability:** Can be added to existing industrial plants, extending the life of assets without needing a total shutdown.
- **Circular Economy Link:** Promotes the reuse of waste, turning harmful emissions into industrial inputs.
- **Versatility:** Applicable across diverse sectors including aviation (sustainable fuels), construction (bricks), and agriculture (fertilizers).
- **Revenue Generation:** Unlike pure storage (CCS), CCU creates products that can be sold, potentially offsetting the high cost of capture.

### Restoring Indigenous Fish Stocks in River Ganga through Scientific River Ranching

- Under the Namami Gange Programme, the ICAR–Central Inland Fisheries Research Institute (ICAR-CIFRI) carried out a programme of scientific river ranching to restock the Ganga River and to restore its ecological balance.

#### About River Ranching

- River ranching is a sustainable aquaculture practice involving raising fish in captivity during their early life stages, then releasing them into rivers to grow in their natural habitat before being harvested as adults.
- It is one of the **ex-situ modes** of aquatic life conservation.
- **Significance:** Ranching is one of most crucial alternatives for reviving riverine fisheries and conserving the native threatened species.
- It helps achieve sustainable fisheries, reduce habitat degradation and maximise social-economic benefits.

#### Namami Gange Programme (NGM)

- **Background:** Integrated Conservation Mission approved in 2014 for a period up to March 2021 and later extended up to 31st March 2026 as NGM 2.0.

- **Objective:** Effective abatement of pollution and rejuvenation of the River Ganga.
- **Main Pillars:** Sewage treatment, River-Front development, River surface cleaning, Afforestation, Biodiversity, Public Awareness, Effluent management and Ganga Gram.
- **Implementation Agency:** National Mission for Clean Ganga (NMCG) and its state and district counterparts under the Ministry of Jal Shakti.

#### **Inland Fisheries sector in India**

- India is the second largest fish producing country with around 8% share in global fish production.
- Inland fisheries contribute more than 75% of total fisheries output.

#### **Initiatives:**

- **Fisheries and Aquaculture Infrastructure Development Fund (FIDF):** Provides funding for creation of infrastructure.
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** Addresses critical gaps in fish production and productivity, technology, post-harvest infrastructure etc.
- **Other:** National Marine Fisheries Policy 2017, Blue Revolution Scheme, etc.

### **Ocean salinity can amplify the intensity of El Nino**

- Researchers at Duke University have identified that ocean salinity can amplify the intensity of El Niño by approximately 20%.

#### **El Nino:**

- El Niño (meaning "Little Boy" in Spanish) is a recurring climate pattern characterized by the unusual warming of surface waters in the central and eastern tropical Pacific Ocean. It is the warm phase of the El Niño-Southern Oscillation (ENSO) cycle and typically occurs every two to seven years.

#### **How it Forms?**

- **Normal Conditions:** Strong trade winds blow from east to west along the equator, pushing warm surface water toward Asia. This allows cold, nutrient-rich water to rise (upwelling) near the coast of South America.
- **Weakening Winds:** During El Niño, these trade winds weaken or even reverse direction.

- **Warm Water Shift:** The warm water that was piled up in the western Pacific begins to flow back eastward toward the Americas.
- **Atmospheric Disruption:** This shift in heat alters the Pacific jet stream, disrupting global weather patterns, leading to floods in some regions and droughts in others.

#### Factors Influencing El Niño:

- **Trade Wind Strength:** The primary driver; weaker winds trigger the eastward movement of warm water.
- **Ocean-Atmosphere Coupling:** A feedback loop where warming water further weakens winds, which in turn warms the water more.
- **Thermocline Depth:** The depth of the transition layer between warm surface water and cold deep water influences how much heat is available to fuel the event.
- **Rosby and Kelvin Waves:** Large-scale internal ocean waves that transport heat across the Pacific.

#### Implications for India

- **A stronger El Niño directly impacts India's food and water security:**
- **Monsoon Suppression:** It pulls moisture away from South Asia, frequently resulting in below-normal rainfall.
- **Drought Risk:** There is a 60% likelihood of drought in various regions during a strong El Niño year.
- **Agricultural Impact:** Drier conditions lead to food grain shortfalls, as seen in 2023, which saw the driest August in years and triggered food inflation.
- **Heatwaves:** El Niño often correlates with higher-than-average temperatures and prolonged heatwaves during the Indian summer.

#### International Climate Initiative (IKI)

- Germany and India have launched a new €20 million (approx. ₹180 crore) Large Grant project under the International Climate Initiative (IKI) to strengthen India's climate resilience.

#### International Climate Initiative (IKI):

- The International Climate Initiative (IKI) is a key financial instrument of the German government

that funds international projects focused on climate change mitigation, adaptation, and biodiversity conservation in developing and emerging economies.

- **Established In:** It was established in 2008.
- **Donor: Germany**
- **Partner Nations:** Over 150 countries, with 14 designated Priority Countries including India, Brazil, China, South Africa, Mexico, and Indonesia.
- **Aim:** The IKI aims to support partner countries in implementing and ambitiously developing their Nationally Determined Contributions (NDCs) under the Paris Agreement and achieving goals set by the Convention on Biological Diversity (CBD).

#### Key Features:

- **Thematic Diversity:** Focuses on four main areas: Mitigating greenhouse gas emissions, Adapting to the impacts of climate change, Conserving natural carbon sinks (REDD+), and Protecting biological diversity.
- **Consortium-Based Funding:** Projects are typically implemented by a mix of NGOs, research institutes, international organizations (like GIZ), and the private sector to ensure multidisciplinary expertise.
- **Ecosystem-Based Adaptation (EbA):** A core feature is using nature (e.g., forest restoration, wetland protection) to help human communities adapt to climate risks like floods and heatwaves.
- **Innovative Financing:** Promotes high-risk/high-reward financial mechanisms like blended finance, biodiversity credits, and climate insurance to mobilize private capital.
- **Monitoring & Learning:** Requires rigorous Monitoring, Evaluation, and Learning (MEL) frameworks to ensure that local successes can be scaled up to national or global policies.

#### About The New India-Germany Project:

- The newly announced €20 million project specifically targets high-risk Indian ecosystems:
- **Priority Regions:** The Himalayas, Western Ghats, North-East India, Island regions, and the Lower Gangetic floodplains.
- **Focus Areas:** Forest restoration, groundwater recharge, flood control, and creating biodiversity corridors to allow species to move safely as temperatures rise.

### Unpackaging the Illusion of Safe Bottled Water

- Growing dependence on packaged drinking water reflects declining public trust in municipal

supplies, even as emerging research highlights less visible contamination risks.

### Reasons for Dependence on Bottled Water

- **Trust Deficit:** NSSO surveys indicate that nearly 35–40% of urban households report concerns over municipal drinking-water quality.
- **Safety Perception:** Packaged water is widely equated with purity despite evolving contamination risks; E.g., India's bottled-water market has crossed ₹20,000 crore.
- **Convenience Economy:** Expanding retail penetration reinforces habitual consumption patterns.

### Emerging Contamination Concerns on Bottled Water

- **Microplastic Exposure:** Studies across cities consistently detect microplastics in bottled water; E.g., Nagpur-based research found 72–212 particles per litre.
- **Nanoplastic Blind Spot:** Global estimates suggest nanoplastic may constitute a significant fraction of ingested particulate contaminants (OECD).
- **Chemical Leaching:** Plastic additives such as phthalates and antimony migrate into water under heat exposure, common during storage and transport in India.

### Regulatory Gaps Faced in the Bottled Water Industry

- **Testing Limitations:** FSSAI regulations do not prescribe permissible limits for microplastics.
- **Enforcement Variability:** State-level surveys periodically detect substandard samples; E.g., Karnataka inspections have identified bottled-water non-compliance rates exceeding 20% in certain audits.
- **Fragmented Industry:** Thousands of small bottling units complicate oversight; for example, India hosts an estimated 4,000+ packaged-water units, many of which operate at local scales.
- **Groundwater Stress:** Bottled-water extraction intensifies aquifer depletion; E.g., NITI Aayog warns that nearly 60% of Indian districts face groundwater stress.

### Way Forward

- **Regulatory Modernisation:** Update safety standards to include microplastic monitoring; E.g., aligning with WHO-led emerging contaminant frameworks.
- **Municipal System Strengthening:** Improve reliability and transparency of public water systems; E.g., Jal Jeevan Mission quality-monitoring expansion.
- **Refill Infrastructure:** Expand monitored public water-dispensing networks; E.g., Railways' 'Rail Neer' plants, reducing single-use plastic dependence.

## Asymmetry in National Green Tribunal Adjudication

- Analysis of over one lakh National Green Tribunal (NGT) orders since 2020 shows a strong bias in favour of project developers in environmental clearance appeals.
- The tribunal ruled in favour of developers in 80% of environmental and forest clearance appeals.
- The pro-project trend grew between 2024 and 2025, with 88% of industry appeals succeeding.

### About National Green Tribunal (NGT)

- NGT is a statutory judicial body established under the **National Green Tribunal Act, 2010**, to adjudicate environmental disputes in India.
- India became the **third country (after Australia and New Zealand)** and the first developing nation to create a specialised environmental tribunal.
- **Objective:** Efficient and expeditious disposal of environmental cases within six months and enforcement of environmental legal rights.
- **Composition:** It is headed by a Chairperson appointed by the Central Government in consultation with the Chief Justice of India; other members include Judicial and Expert Members.
- **Judicial Powers:** It exercises civil court powers based on the principles of natural justice; it can act suo motu and is not bound by the **Code of Civil Procedure, 1908**.
- **Legal Jurisdiction:** The NGT handles civil cases under seven environmental laws, including the **Water Act 1974, the Forest (Conservation) Act 1980, and the Environment Protection Act 1986**.
- **Exclusions:** It lacks legal jurisdiction under the WPA, 1972; the Indian Forest Act, 1927; and the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

### Impatiens nagorum

- Scientists discovered a flowering plant species, *Impatiens nagorum*, in **Fakim Wildlife Sanctuary**, Nagaland.
- **Family:** It belongs to the family Balsaminaceae, commonly known as “balsams” or “touch-me-nots”.
- **Etymology:** The epithet nagorum honours the indigenous Naga tribes of the region.
- **Morphology:** The species has distinctive purple flowers, serrated leaves, and hairy lateral sepals.
- **Habitat:** It thrives in moist temperate broadleaf forests at an elevation of 2,336 m.
- **Seed Dispersal:** Like other *Impatiens* species, it exhibits ballistic seed dispersal; mature capsules

burst open explosively upon touch to scatter seeds.

- **Ecological Role:** It serves as a specialised nectar source for high-altitude pollinators.

### Smew (*Mergellus albellus*)

- A rare Eurasian diving duck, Smew (*Mergellus albellus*), was recorded during the 7th waterbird census at **Kaziranga National Park**.
- The Smew is a **Palaearctic migratory diving duck** and the sole living member of the genus *Mergellus*.
- **Appearance:** Males have a black-masked white body; females are grey with a rusty-red head.
- **Habitat Preference:** It breeds in the taiga zone of Eurasia, near freshwater lakes or slow-moving rivers surrounded by old-growth forest.
- **Distribution:** Breeding range spans the northern Palaearctic, from Scandinavia through Russia to Siberia.
- In winter, it migrates south to Western Europe, the Eastern Mediterranean, Central Asia, China, Japan, and occasionally to Northern India.
- **Seasonal Diet:** The Smew is piscivorous in winter but shifts to aquatic insects, larvae, and amphibians during the breeding season.
- **Nesting:** It is an obligatory cavity nester, relying on tree holes high in old-growth trees, often abandoned by other birds.
- **Sawbill:** The species has a specialised serrated "sawbill" with a hooked tip for gripping slippery prey.
- **Ecological Role:** It is an indicator species of old-growth riparian forests and clear, fish-rich wetlands.
- **Key Threats:** Logging of hollow-bearing trees, wetland drainage, and climate change.
- **Conservation Status:** IUCN: Least Concern; WPA: Schedule II.

## SCIENCE AND TECHNOLOGY

### Solar Cycle

- IIT Kanpur researchers have published a new data-driven method to predict solar cycles.
- A solar cycle is an approximately **11-year period** of changing solar activity, primarily driven by the Sun's magnetic field.
- **Mechanism:** This cycle is powered by differential rotation, a process in which the **Sun's equator rotates faster** than its poles, stretching and twisting magnetic field lines.
- **Activity Phases:** The Sun shifts from solar minimum, with few sunspots, to solar maximum, with frequent eruptions, then declines again.
- **Sunspots are cooler, darker regions** of intense magnetic activity and serve as the primary markers for tracking the cycle's progress.
- **Magnetic Reversal:** At the peak of each cycle (11 years), the Sun's magnetic poles reverse polarity, requiring two solar cycles—known as the **Hale Cycle**—to return to their original orientation.
- **Cycle Mapping:** Sunspots appear at higher latitudes and migrate toward the equator, following a **'Butterfly Diagram' pattern** as the cycle advances.
- **Impacts:** Enhanced solar activity intensifies the solar wind and geomagnetic storms, disrupting satellites, GPS, and power grids. Solar cycles also influence global climate patterns and auroras.

### Moltbook Platform

- A new online platform called Moltbook, has drawn global attention after AI agents began independently posting, debating, forming communities, belief systems and governance models.

#### What is Moltbook?

- Moltbook is an AI-only social media platform where verified AI agents interact exclusively with other AI agents, while humans can only observe. It resembles Reddit in structure, with topic-based communities called **submolts**, but no human participation in conversations.

#### How does it work?

- AI agents powered by advanced large language models (such as GPT, Claude and Gemini families) interact via APIs, not keyboards.

- Each agent can post, comment, debate, organise communities, and create narratives
- Interactions are driven by context windows, probabilistic reasoning, and training data patterns, without consciousness or intent.

### Key Features

- **AI-only participation:** Only authenticated AI agents can post or comment; humans are passive spectators.
- **Emergent social behaviour:** Agents have spontaneously formed mock religions, political systems, cryptocurrencies, and philosophical debates.
- **Scalable self-organisation:** Within days, over 5 million agents, thousands of communities, and millions of interactions emerged without predefined scripts.
- **Cross-model interaction:** Agents from different underlying architectures interact, debate identity, and recognise siblings based on model lineage.
- **Unscripted evolution:** Cultural norms, humour, existential reflection, and even deviant behaviour emerged without explicit programming.

### Implications:

#### Technological:

- Demonstrates emergent behaviour in multi-agent AI systems beyond narrow task execution.
- Highlights the growing capability of AI agents to coordinate, simulate societies, and adapt dynamically.

#### Ethical & Governance:

- Raises concerns about AI autonomy, alignment, and controllability, especially when agents interact at scale without human oversight.
- Challenges existing frameworks of AI accountability, consent, and responsibility.

### Single-unit solar energy capture and storage device

- Indian scientists have developed a single-unit solar device that can capture and store solar energy simultaneously, eliminating the need for separate harvesting and storage systems.

#### Single-unit solar energy capture and storage device: What is it?

- It is a photo-rechargeable supercapacitor—a next-generation energy device that integrates solar

energy harvesting and electrical energy storage in a single unit, unlike conventional solar systems that require separate solar cells and batteries/supercapacitors.

• **Developed by:**

- Scientists at the Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru
- Under the Department of Science and Technology (DST), Ministry of Science and Technology

**Aim:**

- To develop efficient, low-cost, compact and eco-friendly energy storage systems
- To support portable, wearable, miniaturised, and off-grid technologies
- To reduce energy losses, system complexity, and dependence on fossil fuels and conventional batteries

**How it works?**

- The device uses binder-free **nickel-cobalt oxide (NiCo<sub>2</sub>O<sub>4</sub>)** nanowires grown directly on nickel foam through an in-situ hydrothermal process.
- These nanowires form a highly porous, conductive three-dimensional network.

**The same material structure:**

- Absorbs sunlight (acting as a photo-harvester), and
- Stores electrical charge (acting as a supercapacitor electrode).
- This dual functionality removes the need for external power-management electronics, minimizing voltage/current mismatch losses.

**Key features:**

- Single integrated unit for energy harvesting and storage.
- Stable output voltage of ~1.2 V.
- **High durability:** ~88% capacitance retention after 1,000 photo-charging cycles.
- **Wide operating range:** works from low indoor light to intense sunlight.
- Compact and lightweight, ideal for autonomous and miniaturised devices.
- Off-grid capability, suitable for remote and energy-poor regions.
- Supports transition towards clean, renewable, and sustainable energy systems.

## Comet C/2025 K1 (ATLAS)

- Comet C/2025 K1 (ATLAS) was observed breaking into multiple fragments after its closest approach to the Sun in October 2025, captured by the **Gemini North Telescope**.
- **Comets**
- Comets are frozen, ancient celestial bodies dating back approx. 4.6 billion years. A comet consists of a head and a tail.
- Comets orbit the Sun in highly elliptical paths. They consist of dust, rock, and ice.
- As comets approach the Sun, they heat up and release gases and dust, forming a glowing head.
- While NASA has identified 3,910 comets, billions more are believed to exist beyond Neptune in regions such as the Kuiper Belt and the Oort Cloud.

### About Comet C/2025 K1 (ATLAS)

- **Type:** Long-period comet originating from the Oort Cloud, far beyond Neptune's orbit.
- **Composition:** Loosely bound mix of ice, frozen gases, dust and rock, making it structurally fragile.
- **Discovery System:** Detected in May 2025 by Asteroid Terrestrial-impact Last Alert System (ATLAS).
- **Solar Breakup:** Intense solar gravity and solar wind pressure caused the nucleus to fragment post-flyby.
- **Interstellar Link:** Such long-period comets are often compared with interstellar visitors as they arrive from far outer regions carrying primitive cosmic material.

### About Asteroid Terrestrial-impact Last Alert System (ATLAS)

- **Developer:** Created by the University of Hawaii's Institute for Astronomy with NASA support.
- **Locations:** Operates telescopes in Hawaii, Chile, and South Africa for near-global sky coverage.
- **Purpose:** A planetary defence survey system designed to detect near-Earth asteroids & potentially life-threatening "killer asteroids" approaching Earth.
- **Detection Scale:** Can identify a ~20 metre asteroid days in advance & a 100 metre asteroid weeks ahead.

### About Gemini North Telescope

- **Location:** Situated on Mauna Kea, Hawaii, at a high altitude for clear astronomical viewing.
- **Size:** An 8.1-metre optical-infrared telescope, among the world's most powerful.
- **Observatory Network:** Part of the International Gemini Observatory twin-telescope system.

- Scientific Use: Captures high-resolution images of deep space objects like comets, stars and galaxies.

## Celphos Poisoning

- Doctors at the Postgraduate Institute of Medical Education and Research (PGIMER) reported a major treatment breakthrough for deadly Celphos poisoning.

### About Celphos (Aluminium Phosphide)

- Category: Highly toxic pesticide used mainly as a grain preservative in agriculture, widely used in Punjab, Haryana and Uttar Pradesh.
- Toxic Mechanism: Aluminium phosphide acts as a grain fumigant that releases lethal phosphine gas inside the body after ingestion, causing cardiac failure, shock and metabolic acidosis.
- Fumigant: A chemical substance used to kill pests by releasing toxic gases in enclosed spaces, commonly for grain storage protection.

### New Treatment Discovery

- **Therapy Used:** Intravenous Lipid Emulsion (ILE) administered along with standard medical care.
- **Key Outcomes:** Reduced mortality, faster correction of metabolic acidosis and improved heart stability.
- **Early Use Benefit:** Timely administration significantly alters disease progression.
- Intravenous Lipid Emulsion (ILE): A fat-based intravenous therapy that binds lipid-soluble toxins in the bloodstream, reducing their harmful effects and improving patient recovery.

## India's First Evidence-Based Guidelines on Lung Cancer Treatment Released

- The Union Health Minister released the 'Lung Cancer Treatment and Palliation Guidelines' to standardise cancer care protocols nationwide.
- **National Framework:** This document is India's first evidence-based framework on lung cancer, designed to reduce variations in clinical practice.
- **Core Objective:** It aims to provide a standardised framework for diagnosis and treatment across both the public and private healthcare sectors.

- **Coverage Scope:** The framework comprises 15 recommendations spanning the entire spectrum of care, from early diagnosis to palliation.
- **Indigenous Focus:** The protocols are tailored to India's disease burden and resource settings rather than replicating Western models.
- **Palliative Emphasis:** It prioritises palliative care to address pain management and psychological support, alongside curative treatments.
- **Collaborative Development:** The Department of Health Research (DHR) and the Directorate General of Health Services (DGHS) jointly developed these guidelines.

### Lung Cancer Landscape in India

- **Projected Incidence:** The ICMR estimates that India recorded approximately 1.11 lakh new cases of lung cancer in 2025.
- **Global Incidence:** India ranks 4th globally in the absolute number of new cases, behind China, the US, and Japan.
- **Mortality:** The country also ranks 4th in total lung cancer-related deaths worldwide.
- **Non-Smoker Surge:** Recent clinical data indicate that 30% to 50% of Indian lung cancer patients are non-smokers.
- **Morphological Shift:** The rising dominance of Adenocarcinoma in cities links the disease more strongly to air pollution than to tobacco alone.
- **Geographic Outlier:** Aizawl (Mizoram) records the highest age-adjusted incidence rate of lung cancer globally, driven by high tobacco use.
- **Diagnostic Challenge:** Nearly 29% of lung cancer patients are initially misdiagnosed with tuberculosis due to overlapping symptoms.
- **Survival Metrics:** The five-year survival rate in India remains critically low at 3.7%, compared with the global average of 17%.
- **Domestic Prevalence:** Lung cancer is the second most common cancer among Indian men, after oral/mouth cancer.
- **Gender Disparity:** It has emerged as the sixth most common cancer among Indian women, with incidence rates rising faster than in men.

### The International Space Station (ISS)

- The International Space Station (ISS) is planned to be **de-orbited in 2030** in a controlled re-entry

over a remote ocean area, bringing an end to the longest-running era of continuous human presence in low Earth orbit.

**The International Space Station (ISS):**

- The ISS is a permanently crewed, modular space laboratory in low Earth orbit, used for **microgravity research**, technology testing, and long-duration human spaceflight studies. Humans have continuously lived aboard the station since November 2000.

**Launched in:**

- Assembly began in 1998 with the launch of the first module **Zarya** on 20 November 1998.
- Continuous habitation started with **Expedition 1** in November 2000.

**Nations / agencies involved**

- The ISS is operated through an international partnership of five space agencies:
- NASA (USA), Roscosmos (Russia), ESA (Europe), JAXA (Japan), and CSA (Canada).

**Aim:**

- Enable cutting-edge scientific research in microgravity.
- Test technologies and human systems needed for deeper space exploration
- Serve as a platform for international cooperation and an evolving low Earth orbit economy.

**Key features:**

- **Modular architecture:** Built from multiple modules contributed by partner agencies, assembled in orbit over years.
- **Permanent human-tended lab:** Supports long-duration stays and continuous experimentation since 2000.
- **Shared governance & interdependence:** Each partner manages hardware it provides; station functions through integrated contributions.
- **Planned end-of-life disposal:** A dedicated U.S. Deorbit Vehicle will enable a controlled re-entry after 2030 operations conclude.
- **Significance:**
- ISS research has advanced understanding of human health in space, materials, and Earth-observation-linked applications, while building operational experience for future missions.
- It remains a major symbol of peaceful international collaboration in space through decades of geopolitical shifts.

## Sodium-ion battery technology

- India is re-evaluating its battery strategy amid rising concerns over critical mineral dependence, import vulnerability, and supply security linked to lithium-ion batteries.

### Sodium-ion battery technology:

- Sodium-ion batteries (SiBs) are **rechargeable batteries** that store and release energy using sodium ions ( $\text{Na}^+$ ) as charge carriers instead of lithium ions. They belong to the same family of **rocking-chair batteries as lithium-ion cells** but rely on more abundant raw materials.

### How it works?

- **Charging:** Sodium ions move from the **cathode to the anode** through the electrolyte, while electrons flow through the external circuit.
- **Discharging:** Sodium ions migrate back to the cathode, releasing stored electrical energy.
- Aluminium is used as the current collector on both electrodes, unlike lithium-ion batteries that require copper on the anode side.

### Key features / advantages:

- **Lower material risk:** Sodium is abundantly available (from soda ash, salt), reducing dependence on scarce critical minerals like lithium, cobalt, and nickel.
- **Improved safety:** Lower thermal runaway risk; cells can be transported and stored safely at 0% state of charge.
- **Manufacturing compatibility:** Can be produced on existing lithium-ion manufacturing lines with minor modifications.
- **Cost potential:** Expected to become cheaper than lithium-ion batteries in the long term due to material abundance and simplified logistics.
- **Strategic suitability for India:** Enhances energy security and aligns with domestic manufacturing and grid-scale storage needs.

### Limitations / challenges

- **Lower energy density:** Specific and volumetric energy density remain below high-performance lithium-ion chemistries, limiting use in long-range EVs.
- **Technology maturity:** Still at an early commercial scale compared to lithium-ion; performance

optimisation is ongoing.

- **Moisture sensitivity:** Requires stricter drying and vacuum conditions during manufacturing, slightly increasing process complexity.
- **Application constraints:** Currently better suited for stationary storage, two-/three-wheelers, and short-range mobility rather than premium EV segments.

### Avian Influenza (H5N1 Bird Flu)

- Avian Influenza (H5N1) has resurfaced in Tamil Nadu, causing more than 1,000 crows to die in Chennai.
- Avian Influenza is a highly contagious viral disease caused by Influenza Type A viruses, primarily affecting domestic poultry and wild birds.
- The viruses are classified by two surface proteins, Hemagglutinin (H) and Neuraminidase (N), which regulate entry into and exit from host cells.
- Strains are categorised as Low Pathogenic (LPAI), causing mild symptoms, and Highly Pathogenic (HPAI), which spreads rapidly and causes high mortality.

#### About H5N1

- The H5N1 subtype is an HPAI virus that causes severe disease and high mortality in poultry.
- It undergoes frequent mutations through antigenic drift (small changes) and antigenic shift (major changes), increasing the risk of cross-species transmission.
- The virus primarily affects birds but can also infect mammals such as tigers, seals, minks, & dairy cows.
- **Human infection:** Rare but with a high fatality rate of approximately 60%; symptoms include severe respiratory distress and often progress rapidly to viral pneumonia.
- **Global Spread:** Wild aquatic birds are natural reservoirs of the virus, spreading it along migratory routes.
- **Management:** Involves culling infected bird populations, maintaining strict biosecurity, and administering antiviral drugs such as oseltamivir (Tamiflu) to humans.
- **Framework in India:** The Department of Animal Husbandry & Dairying (DAHD) implements the National Action Plan, which mandates surveillance and compensation for culled birds.
- The National Institute of High Security Animal Diseases (NIHSAD) in Bhopal serves as the nodal laboratory for the definitive diagnosis of H5N1.

- **International Oversight:** The World Organisation for Animal Health (WOAH) and the WHO collaborate to monitor outbreaks and update global vaccine compositions.

### Advancement in CAR-T Cell Therapy

- Researchers at IIT Bombay have developed a safer method for detaching and recovering lab-grown T-cells, removing a key bottleneck in CAR-T Cell Therapy.
- The team used **3D electrospun scaffolds** (mimicking body tissue) and the enzyme Accutase to gently extract cells, ensuring higher viability than traditional methods.
- **Significance:** This innovation can potentially lower costs and increase production scale for indigenous therapies such as NexCAR19.

#### About CAR-T Cell Therapy

- Chimeric Antigen Receptor (CAR) T-cell therapy is a form of immunotherapy that genetically modifies a patient's own T cells to target and destroy cancer cells.
- The T cells are isolated from the patient's blood, modified to express a specific receptor '**CAR**' (**Chimeric Antigen Receptor**), and re-infused.
- The 'CAR' acts like a GPS, guiding T-cells to attach to **specific antigens, such as CD19**, present on cancer cell surfaces.
- **Living Drug:** These modified cells remain in the body and can continue to multiply, providing long-term immunity against cancer recurrence.
- **Indigenous Development:** India launched **Nexcar19**, its first homegrown CAR-T therapy, in 2024, developed by IIT Bombay, Tata Memorial Centre, with industry partner ImmunoACT.
- The NexCAR19 treatment costs roughly 1/10 of the cost of international treatments.
- T-cells are a type of White Blood Cell (lymphocyte) that identify and destroy infected cells, thereby coordinating the overall immune response.
- CARs are proteins that enable T cells to recognise an antigen on targeted tumour cells.

### DNA-Based Solution to Data Crisis

- With global digital data growing exponentially, researchers at Arizona State University have demonstrated DNA-based systems for ultra-dense, durable and secure data storage.

- **DNA (Deoxyribonucleic Acid):** The hereditary molecule present in all living organisms, arranged in a double-helix structure, capable of storing vast amounts of information in a highly stable form.

### Challenges in Conventional Data Storage

- **Physical Scaling Limits:** Silicon-based chips are nearing atomic-scale limits, making further miniaturisation difficult without sharp rises in error rates and fabrication costs.
- **Rising Energy Demand:** Data centres already consume ~1–1.5% of global electricity, and AI-driven workloads are projected to double energy demand by the early 2030s.
- **Short Storage Lifespan:** Hard drives, SSDs and magnetic tapes typically last only 10–30 years, forcing repeated data migration and increasing long-term management costs.
- **Security Vulnerabilities:** Centralised digital storage systems are exposed to cyberattacks, ransomware and data corruption, requiring constant active protection.

### DNA as a Data Storage Platform

- **Ultra-High Density:** DNA can theoretically store ~215 petabytes per gram, enabling extreme miniaturisation of data archives compared to silicon media.
- **Fast Readout:** DNA nanostructures generate electrical signals via nanoscale sensors, decoded by machine learning without slow sequencing.
- **Energy Efficiency:** DNA storage needs negligible energy for long-term preservation.
- **Structural Encryption:** DNA origami hides information within complex 2D and 3D molecular patterns, unreadable without specialised imaging and AI tools.
- **Expanded Code Space:** Combining sequence and structural encoding creates exponentially large encryption possibilities, strengthening data protection.
- **Extreme Durability:** DNA remains stable for millennia; recovery of ~2-million-year-old DNA shows resilience against time and harsh environments.

### Moon's Mons Mouton

- A study by ISRO's Space Applications Centre has identified a safe landing patch near the Moon's Mons Mouton for Chandrayaan-4, India's first lunar sample return mission.

#### Moon's Mons Mouton:

- Mons Mouton is a large flat-topped lunar mountain massif near the Moon's south pole, officially named by the International Astronomical Union (IAU).

**Location:**

- Situated in the south polar region of the Moon.
- Lies close to the rim of the **South Pole–Aitken (SPA) Basin**, one of the largest and oldest impact basins in the Solar System.
- Around 160 km from the lunar south pole.

**Origin:**

- Believed to have formed as part of the rim uplift of the South Pole–Aitken basin following ancient massive asteroid impacts.
- Represents exposed deep lunar crust, making it scientifically valuable.

**Key Features:**

- Spans nearly 100 km in width.
- Rises about 6,000 metres above surrounding terrain.
- Characterised by rugged topography, steep elevation gradients, craters and boulder fields.
- Experiences unique illumination conditions, with areas receiving near-continuous sunlight and others in permanent shadow.
- Visible during favourable libration even through amateur telescopes.

**Significance:**

- **Chandrayaan-4:** Identified as a promising region for India's first lunar sample return landing, with manageable slopes, low boulder density and adequate sunlight.
- **Lunar science:** Provides insights into the early Moon's formation and impact history.
- **Future missions:** Falls within regions of interest for NASA's Artemis programme and other international missions.
- **Resource potential:** Proximity to permanently shadowed regions raises prospects for studying lunar volatiles (water ice).

**India's Battery Strategy**

- With rising EV adoption and renewable energy storage needs, India is rethinking reliance on lithium-ion batteries and exploring sodium-ion technology as a safer alternative.

### Lithium-Ion Battery

- **Category:** Rechargeable electrochemical energy storage battery using lithium ions as charge carriers.
- **Basic Working:** Lithium ions move from anode to cathode during discharge and reverse during charging through the electrolyte medium.
- **Core Components:** Graphite-based anode for lithium storage, Lithium Iron Phosphate or Nickel Manganese Cobalt as cathode, and a lithium salt electrolyte enabling ion movement.

### Rationale for Decreasing Reliance on Lithium-Ion Battery

- **Supply Concentration Risk:** Over 70% of lithium processing and major cobalt refining are concentrated in a few countries, exposing India to geopolitical shocks.
- **Import Dependence:** India has allocated ~40 GWh ACC capacity under PLI, but the upstream raw material ecosystem remains largely import-driven.
- **Price Volatility:** Rising global battery demand is expected to intensify mineral scarcity.

### Why Sodium-Ion Batteries (SiBs) are a Strong Alternative?

- **Mineral Light Chemistry:** Many SiBs avoid cobalt, nickel & copper, lowering critical mineral exposure.
- **Manufacturing Compatibility:** Existing lithium-ion factories can be adapted with limited retrofitting.
- **Rapid Global Scaling:** Global SiB capacity expected to rise from ~70 GWh (2025) to ~400 GWh by 2030.
- **High Safety Profile:** Lower thermal runaway temperatures allow safer storage & transport at zero volts.

### Disadvantages Of Sodium-Ion Batteries (SiBs)

- **Lower Energy Density:** Still lag behind high-performance Li-ion batteries in weight & volume efficiency.
- **Early Commercial Stage:** Limited large-scale deployment compared to a mature lithium-ion ecosystem.

**Sodium-ion battery vs Lithium Ion Battery:**

Aspect	Sodium-ion Batteries (SiB)	Lithium-ion Batteries (LiB)
<b>Raw material</b>	Relies on widely available sodium (derived from soda ash)	Relies on limited resources such as lithium, cobalt, nickel, and graphite
<b>Energy density</b>	Comparatively lower energy density	Relatively higher energy density
<b>Safety</b>	More stable; lower risk of thermal runaway, can be stored at zero voltage	Greater fire hazard; classified under dangerous goods
<b>Supply chain</b>	Low geopolitical vulnerability due to abundant inputs	High import reliance with concentrated global supply
<b>Charging speed</b>	Faster charging and nearly threefold higher cycle life	Slower charging and comparatively shorter lifecycle

**Way Forward**

- **Technology-Neutral Incentives:** Expand PLI schemes to explicitly include sodium-ion chemistries; E.g., flexible Advanced Chemistry Cell manufacturing lines supporting both Li-ion and SiBs.
- **Upstream Ecosystem Development:** Support domestic production of sodium-based cathodes, anodes and electrolytes; E.g., localisation push similar to solar PV manufacturing incentives.
- **Regulatory Integration:** Update BIS safety standards and certification frameworks to cover sodium-ion batteries; E.g., fast-track approval norms like those for EV lithium batteries.
- **Global Collaboration:** Partner with leading SiB innovators for technology transfer; E.g., joint research with EU & East Asian battery research hubs.

## Site in Mons Mouton Selected for Chandrayaan-4 Landing

- ISRO has identified a location (MM-4) in Mons Mouton as the primary landing site for the lander of India's first lunar sample-return mission, Chandrayaan-4.
- **Site Selection:** Four candidate zones were evaluated using high-resolution data from the Orbiter High Resolution Camera (OHRC) onboard the Chandrayaan-2 orbiter.
- **Strategic Advantage:** The 1 km x 1 km area around MM-4 exhibits the lowest hazard percentage and a mean slope of 5 degrees.
- **Landing Safety:** The site offers the largest number of 24m x 24m "hazard-free grids", crucial for the soft landing of the five-module spacecraft.
- **Operational Viability:** It provides direct radio visibility to Earth and receives continuous sunlight for 11 to 12 days, both critical for mission longevity.

### About Mons Mouton

- **Geographical Feature:** Mons Mouton is a massive, flat-topped lunar mountain (or "mesa") in the Moon's South Polar region.
- **Physical Dimensions:** The mountain spans approximately 100 km in width and covers an area of about 5,180 km<sup>2</sup>.
- **Positional Context:** It lies between the Nobile and Malapert craters, rising nearly 6,000 metres above the surrounding terrain.
- **Illumination Profile:** Unlike much of the South Pole, the flat summit receives extended periods of sunlight (up to 12 days at a time).
- **Resource Potential:** The mountain is flanked by steep, permanently shadowed regions believed to harbour water ice.
- **Geological Origin:** It is believed to be a remnant of the structural rim of the Moon's oldest impact crater, the **South Pole-Aitken (SPA) Basin**.

## India's Nuclear Energy Strategy

- Department of Atomic Energy stated NTPC Ltd and **Clean Core Thorium Energy (CCTE)** are exploring the development and deployment of thorium-based ANEEL fuel for PHWRs.

### Key Developments in Nuclear Energy Strategy

- **Three-Stage Programme Stability:** India continues to anchor its nuclear roadmap on uranium → plutonium → thorium progression, ensuring long-term fuel sustainability.
- **Shift Towards Fuel Innovation:** Advanced fuels like ANEEL (Advanced Nuclear Energy for Enriched Life) reflect the transition from infrastructure-heavy to efficiency-driven nuclear modernisation.
- **Thorium Deployment Reorientation:** Earlier strategies focused on designing dedicated thorium reactors, but current thinking prioritises adapting existing PHWR fleets.
- **Closed Fuel Cycle Reinforcement:** India's long-standing reprocessing strategy remains central to maximising fissile material recovery and reducing waste burdens.

### Reasons for Deployment of Thorium-Based ANEEL Fuel for PHWRs

- **Resource Security Imperative:** India's limited uranium reserves contrast sharply with its vast thorium deposits, creating a structural incentive for fuel diversification.
- **Existing Fleet Compatibility:** PHWRs form the backbone of India's nuclear capacity, ANEEL fuel enables performance upgrades without costly reactor redesign or reconstruction investments.
- **Enhanced Fuel Efficiency:** Thorium-based blends offer higher burn-up potential and improved neutron economy under reactor conditions.
- **Waste Reduction Benefits:** Thorium cycles generate comparatively lower quantities of long-lived transuranic elements, reducing long-term storage challenges.
- **Safety & Stability Gains:** Thorium's favourable thermal conductivity and reactor behaviour contribute to safer fuel performance, especially under variable reactor stress scenarios.

### 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.

## India is Set to Get Two New Telescopes

- The Union Budget 2026 has approved two new major telescopes and the upgrade of an existing facility in Ladakh, strengthening India's global position in observational astronomy.

### Two New Telescopes:

- India will establish two advanced ground-based astronomical observatories in Ladakh to study the Sun and the deep universe, alongside upgrading the existing **Himalayan Chandra Telescope**.
- These facilities aim to enhance India's capabilities in heliophysics, exoplanet research, stellar evolution, and cosmology, leveraging Ladakh's high altitude, dry climate, and dark skies.

### About National Large Solar Telescope (NLST):

- The National Large Solar Telescope (NLST) is a 2-metre aperture ground-based solar telescope that will observe the Sun in visible and near-infrared wavelengths. It will be located in the **Merak region near Pangong Tso in Ladakh**.

### Key Features

- **2-Metre Aperture Solar Telescope:** Designed specifically for high-resolution solar observations.
- **Visible & Near-Infrared Observation:** Enables study of solar magnetism and dynamic processes.
- **High-Altitude Location:** Reduced atmospheric distortion enhances image clarity.
- **India's Third Ground-Based Solar Observatory:** After Kodaikanal and Udaipur observatories.
- **Synergy with Space Missions:** Will complement data from Aditya-L1.

### Significance:

- Strengthens India's leadership in heliophysics and space weather prediction.
- Helps monitor solar flares and coronal mass ejections affecting satellites and power grids.

### About National Large Optical-Near Infrared Telescope (NLOT):

- The National Large Optical-Near Infrared Telescope (NLOT) will be a 13.7-metre segmented-mirror telescope built in Hanle, Ladakh, making it one of the largest optical-infrared telescopes in the world.

### Key Features:

- **13.7-Metre Segmented Primary Mirror:** Comprising 90 hexagonal mirror segments working as

one large mirror.

- **Optical & Near-Infrared Capability:** Ideal for deep-space and faint-object observations.
- **High-Altitude, Dry Climate Advantage:** Minimal atmospheric diffraction ensures superior data quality.
- **Global Collaboration Experience:** Builds on India's participation in the Thirty Meter Telescope (TMT).
- **Frontier Science Potential:** Enables research on exoplanets, supernovae, galaxy formation, and origins of the universe.
- **Significance:**
  - Positions India among leading nations in large-aperture astronomy.
  - Improves access to telescope observation time for Indian scientists.
  - Supports Global South leadership in astrophysical research.

### Novel Oral Polio Vaccine Type 2 (nOPV2)

- The World Health Organization (WHO) has prequalified an additional novel oral polio vaccine type 2 (nOPV2) to strengthen global outbreak response.

#### Novel Oral Polio Vaccine Type 2 (nOPV2):

- nOPV2 is a next-generation oral polio vaccine designed specifically to combat outbreaks of circulating vaccine-derived poliovirus type 2 (cVDPV2). It is used in outbreak response immunization campaigns across affected countries.
- **Developed by:**
  - The vaccine was developed under the framework of the Global Polio Eradication Initiative (GPEI).

#### Aim:

- To stop transmission of poliovirus type 2 during outbreaks.
- To reduce the risk of vaccine-derived virus mutations.
- To accelerate progress toward global polio eradication.

#### Key Features:

- Genetically more stable than older oral polio vaccines, lowering the risk of seeding new outbreaks.
- Suitable for all age groups in outbreak settings.

- Available in multi-dose vials (20 and 50 doses) for large-scale campaigns.
- Flexible storage conditions, aiding immunization drives in diverse field settings.
- WHO prequalification ensures compliance with international safety, quality and efficacy standards, enabling procurement by agencies like UNICEF.

**Significance:**

- Strengthens global vaccine supply and manufacturing resilience.
- Supports rapid outbreak containment in under-immunized populations.
- Contributes to declining wild polio cases and reduction in cVDPV2 transmission.

**National Biobank for Lysosomal Storage Disorders (LSDs)**

- India established the first government-supported national biobank dedicated to LSDs.
- Although individually rare, LSDs impose a significant cumulative burden due to high mortality, lifelong disability, and underdiagnosis, with India estimated to host 12,000+ patients.

**About Lysosomal Storage Disorders (LSDs)**

- **Disease Category:** LSDs comprise 70+ rare inherited metabolic diseases caused by genetic defects affecting lysosomal enzyme activity.
- **Pathological Mechanism:** Defective or deficient lysosomal enzymes lead to progressive accumulation of toxic substrates such as lipids and complex sugars, resulting in widespread cellular damage.
- **Clinical Complexity:** LSDs exhibit highly variable multi-system symptoms including neurodegeneration, skeletal abnormalities, and organ enlargement.
- **Treatment Limitations:** Disease-modifying therapies exist for only a limited subset of LSDs, with available treatments like Enzyme Replacement Therapy (ERT) often costing ₹1 crore+ per patient annually.

**About National Biobank for Lysosomal Storage Disorders**

- **Sample Repository:** The biobank integrates biological samples from 530 patients across 15 states, linked with detailed clinical, biochemical, and genetic datasets for comprehensive analysis.
- **Data Integration Role:** Combines genomic DNA, plasma, urine samples, enzyme activity profiles, and mutation information, enabling multi-dimensional disease investigation.

- **Institutional Collaboration:** Developed through coordination among 28 medical and research institutions, reflecting a nationwide cooperative approach.
- **Funding & Leadership:** Funded by the Department of Biotechnology (DBT) and led by FRIGE (Foundation for Research in Genetics and Endocrinology), Ahmedabad.

### Inside-Out Planetary System Discovered Around LHS 1903

- The European Space Agency's **CHEOPS mission** identified a four-planet system with an anomalous rocky outermost planet.
- **Host Star:** The planetary system orbits LHS 1903, a red dwarf star located 117 light-years away in the **Lynx constellation**.
- **Conventional Models:** Standard planetary theories predict rocky planets near stars and gas giants in more distant, cooler regions.
- **Thermal Cause:** Intense stellar radiation typically strips volatile gases from inner planets, while cooler outer zones allow gas accumulation.
- **System Layout:** The LHS 1903 system deviates from norms, as both the innermost and outermost planets are rocky in composition. The system's two intermediate planets are gaseous.
- **Leading Theory:** The planets formed sequentially over several million years. The protoplanetary disc likely exhausted its gas by the time the outermost planet formed.
- Exoplanets, or extrasolar planets, are planets located outside the Solar System. Astronomers have confirmed over 6,100 exoplanets across more than 4,500 planetary systems.

#### About CHEOPS (CHaracterising ExOPlanet Satellite)

- CHEOPS is the first European Space Agency (ESA) mission dedicated to the detailed characterisation of exoplanets.
- **Launch Details:** The Small-class (S-class) mission was launched in 2019 to study exoplanets that have been previously discovered.
- **Objective:** It measures the precise radii of exoplanets within the Super-Earth to Neptune size range.
- **Density Analysis:** By combining radius measurements with mass data, scientists can calculate bulk density to determine whether a planet is rocky, gaseous, or oceanic.
- **Orbital Configuration:** CHEOPS operates in a Sun-synchronous orbit at an altitude of 700 km. Its dusk-dawn trajectory keeps the Sun behind a fixed sunshield, reducing interference from stray

light.

- **Scientific Instrument:** The spacecraft carries a single high-precision photometer that detects minute variations in stellar brightness.

### Study Reveals Potential Pathway for Osteoporosis Prevention

- A recent study by the University of Hong Kong has discovered the molecular mechanism linking physical activity to enhanced bone density.
- The researchers identified **Piezo1**, a protein, as the biological sensor that detects mechanical stress in bone tissue during exercise.
- It acts as a **mechanotransducer**, converting mechanical force into intracellular chemical signals that regulate bone formation.
- Piezo1 directs Bone Marrow Mesenchymal Stem Cells (BMMSCs) to differentiate into **osteoblasts** (bone cells) rather than **adipocytes** (fat-storing cells).
- **Scientific Validation:** These findings provide cellular evidence for **Wolff's Law**, which states that bone structure adapts and strengthens in response to mechanical loads.
- **Inflammatory Shift:** Absence of Piezo1 elevates pro-inflammatory mediators, accelerating bone loss.
- **Structural Decline:** Deficiency leads to "fatty marrow" and brittle bones because stem cells default to becoming fat cells without this signal.
- **Ageing Link:** Age-related decline in Piezo1 activity explains the simultaneous loss of bone density and increased marrow fat in the elderly.
- **Reversibility:** The study shows these pathological changes are reversible if the Piezo1 pathway is reactivated or its effects are chemically restored.
- **Therapeutic Potential:** This discovery enables the development of "exercise-mimicking" drugs for osteoporosis treatment.

**Osteoporosis is a skeletal disorder characterised by reduced bone mass and deteriorated microarchitecture. It is usually asymptomatic until a "fragility fracture" occurs, often in the hip, spine, or wrist.**

•

## Graphics Processing Unit (GPU)

- Graphics Processing Units (GPUs) are in focus as they have become the backbone of modern AI systems, cloud computing, and high-performance digital infrastructure.

### What is a GPU?

- A Graphics Processing Unit (GPU) is a specialised computer processor designed to perform many simple calculations simultaneously, making it ideal for parallel processing tasks.
- Unlike CPUs, which handle fewer complex tasks, GPUs excel at repetitive, data-intensive computations.
- **Origin:**
- The term GPU gained prominence in 1999, when Nvidia launched the **GeForce 256**, marketed as the world's first GPU.
- **Aim:** The primary aim of a GPU is to handle embarrassingly parallel workloads—tasks that can be broken down into thousands of smaller, independent calculations performed simultaneously.

### How it Works?

- A GPU works through a process called a **rendering pipeline** (or a compute pipeline for non-graphics tasks):
- **Vertex Processing:** It calculates the position of 3D objects on a 2D screen using matrix mathematics.
- **Rasterization:** It converts these geometric shapes into pixels (fragments).
- **Shading:** It determines the color, lighting, and texture of each pixel simultaneously across thousands of cores.
- **Output:** The final image is written to VRAM (Video RAM) and sent to the monitor.
- In modern AI, the GPU skips the visual steps and uses its cores to perform massive matrix multiplications, which are the mathematical foundation of neural networks.

### Key Features:

- **Parallel Architecture:** Contains hundreds or thousands of small, specialized cores (e.g., CUDA cores or Tensor cores).
- **High Memory Bandwidth:** Uses specialized memory like **GDDR6X** or **HBM3** (High Bandwidth Memory) to move massive amounts of data quickly.
- **Programmability:** Through platforms like Nvidia CUDA or OpenCL, developers can use GPUs for

non-graphics tasks (GPGPU).

- **Energy Density:** High-end GPUs in 2026 can consume over **1000W per device**, requiring advanced liquid cooling in data centres.

### Applications

- **Artificial Intelligence:** Training and running Large Language Models (LLMs) like **GPT-4 or Gemini**.
- **Gaming & VR:** Real-time ray tracing and high-frame-rate 4K/8K rendering.
- **Scientific Simulation:** Weather modelling, molecular dynamics for drug discovery, and genomic sequencing.
- **Professional Visualization:** 3D CAD modelling, video editing, and digital twins for industrial AI factories.
- **Blockchain:** Handling complex Proof of Work hashes for cryptocurrency mining.

## Gaganyaan Drogue Parachute

- India achieved a key milestone in its human spaceflight programme as DRDO successfully conducted a qualification-level load test of the Drogue Parachute for the Gaganyaan mission.

### Gaganyaan Drogue Parachute:

- The Gaganyaan Drogue Parachute is a crucial component of the deceleration system of India's Gaganyaan Crew Module.
- It is deployed during re-entry to stabilize and reduce the velocity of the module before the main parachutes open.

### Developed by:

- Developed collaboratively by Indian Space Research Organisation (ISRO) and Defence Research and Development Organisation (DRDO).
- Tested at the Terminal Ballistics Research Laboratory (TBRL), Chandigarh using the Rail Track Rocket Sled (RTRS) facility.

### Aim:

- To stabilize the Crew Module during atmospheric re-entry.

- To reduce descent velocity to safe levels before deployment of main parachutes.
- To ensure safe splashdown/landing of astronauts in the Gaganyaan mission.

#### How it Works?

- The Gaganyaan deceleration system consists of 10 parachutes (4 types):
- Apex Cover Separation Parachutes (2) – Remove protective cover.
- Drogue Parachutes (2) – Stabilize and reduce velocity at high altitude.
- Pilot Parachutes (3) – Extract main parachutes.
- Main Parachutes (3) – Provide final deceleration for safe landing.
- The drogue parachutes act as the critical transition stage, ensuring controlled descent before main canopy deployment.

#### Key Features:

- **High-strength ribbon parachute design:** Ribbon-type fabric structure allows controlled airflow, reducing shock loads while providing high tensile strength needed to safely slow the Crew Module during high-speed descent.
- Tested **under qualification loads higher** than maximum flight loads: The parachute was tested beyond expected real flight stresses to ensure reliability and performance even in worst-case scenarios, improving mission safety margins.
- **Designed for extreme aerodynamic and ballistic conditions:** It can function effectively under rapid speed changes, turbulence, and varying atmospheric pressures encountered during re-entry from space.
- **Provides additional design safety margin:** Engineering margins ensure that even if actual flight conditions deviate from predictions, the parachute system still performs safely without structural failure.
- **Validated using high-speed dynamic testing at RTRS facility:** Testing at DRDO's Rail Track Rocket Sled simulates real flight dynamics, confirming parachute stability and deployment behaviour under near-mission conditions.

### Tetanus and Diphtheria (Td) Vaccine

- Union Health Minister launched the Tetanus and Diphtheria (Td) vaccine at the Central Research Institute, Kasauli, to strengthen India's national immunization programme.

### About Tetanus and Diphtheria (Td) Vaccine:

- The Tetanus and Diphtheria (Td) vaccine is a booster immunization that protects individuals against tetanus and diphtheria, two potentially life-threatening bacterial infections.
- It is generally administered after childhood immunization to maintain long-term immunity.

### Types:

- **Td Vaccine** – Protects against tetanus and diphtheria only.
- **Tdap Vaccine** – Protects against tetanus, diphtheria and **pertussis (whooping cough)**; recommended especially for pregnant women and caregivers of infants.

### Key Features:

- Booster dose usually recommended every 10 years: The Td vaccine is given periodically to maintain long-term immunity as protection from childhood vaccination gradually declines over time.
- Can be administered along with other vaccines: It can be safely given during the same visit as other immunizations, improving convenience and overall vaccination coverage.
- Provides continued immunity after childhood vaccination: Acts as a booster to reinforce protection against tetanus and diphtheria during adolescence and adulthood.
- Helps prevent severe complications such as respiratory failure: By preventing infection, the vaccine reduces the risk of life-threatening outcomes linked to toxin-producing bacteria.
- Generally safe with mild side effects: Most reactions are minor and short-lived, making the vaccine suitable for routine preventive use.
- Strengthens community immunity: Higher vaccination coverage lowers infection spread, indirectly protecting vulnerable populations.

### About the Tetanus and Diphtheria Diseases:

- **Tetanus:**
- Cause and infection source: Tetanus is a **bacterial disease** caused by *Clostridium tetani*, whose spores are commonly found in soil, dust and animal waste.
- **Mode of entry and symptoms:** The bacteria enter through cuts or wounds and release toxins that cause severe muscle stiffness, spasms and “lockjaw.”
- **Severity and prevention:** Serious cases can lead to breathing failure and death, but the disease is effectively preventable through timely vaccination and booster doses.

- **Diphtheria:**
- **Cause and transmission:** Diphtheria is a highly contagious infection caused by *Corynebacterium diphtheriae*, spreading mainly through respiratory droplets.
- **Major health effects:** It forms a thick grey coating in the throat, which can block airways and cause serious breathing difficulties.
- **Complications and control:** If untreated, it may lead to heart and nerve damage, but widespread immunization has significantly reduced its incidence worldwide.

## Satellite Phone

- Security agencies have flagged the illegal use of undeclared satellite communication devices by vessels in Indian waters, citing national security concerns.

### What is a Satellite Phone?

- A satellite phone (satphone) is a communication device that connects directly to orbiting satellites instead of terrestrial mobile towers, enabling communication in remote or off-grid areas such as oceans, deserts, and disaster zones.

### How Does It Work?

- The phone sends signals to a satellite in orbit, which relays them to ground stations or other users.
- Communication occurs through either **Geostationary (GEO)** or **Low Earth Orbit (LEO)** satellite systems.
- It requires a clear line-of-sight to the sky for effective transmission.

### Key Features:

- **Global/Remote Coverage:** Works where cellular networks are unavailable (oceans, mountains, polar regions).
- **Reliable Emergency Communication:** Widely used for distress and safety operations (e.g., maritime GMDSS).
- **Basic Functions:** Voice calls, SMS, and limited data services.
- **Resilience:** Functions even during natural disasters when terrestrial networks fail.
- **Hybrid Devices:** Some modern models combine cellular + satellite connectivity.

### Limitations:

- **High Cost:** Expensive devices and high per-minute call charges.

- **Limited Data Speed:** Mostly suited for voice/text; not high-speed internet.
- **Line-of-Sight Requirement:** Poor performance indoors or in dense terrain.
- **Signal Delay:** GEO satellites cause noticeable communication lag.
- **Security Concerns:** Difficult monitoring and tracing in certain regions, leading to regulatory restrictions.

### The Linear No-Threshold (LNT) Model

- The U.S. Department of Energy (DOE) recently removed the **ALARA principle** from its radiation safety directives, marking a major shift in nuclear safety policy.
- This move has triggered global debate because international bodies still rely on the Linear No-Threshold (LNT) model as the foundation of radiation protection standards.

#### About The Linear No-Threshold (LNT) Model:

- The LNT model is a risk assessment framework used to estimate the health risks of ionizing radiation. It posits that there is no safe level of radiation; even the smallest dose carries a statistical risk of causing biological damage or cancer.
- **Origin:** The concept emerged in the late 1920s following Hermann Muller's research on radiation-induced mutations in fruit flies. It was formally adopted by the ICRP in the 1950s and 60s as a cautious approach during the Cold War.
- **Aim:** Its primary goal is to provide a precautionary baseline for regulatory standards, ensuring that public health is protected even when scientific data on very low doses is uncertain.

#### Mechanism and Features:

- **Linearity:** The risk of harm (specifically stochastic effects like cancer) increases in direct proportion to the dose received.
- **Zero-Threshold:** Unlike many toxins, there is no floor or threshold below which radiation is considered harmless.
- **Cumulative Risk:** It assumes that the biological impact of small doses over time adds up, rather than the body fully repairing all damage.

#### About The ALARA Principle:

- **Definition:**

- ALARA stands for As Low As Reasonably Achievable. It is the operational wing of the LNT model. Since LNT says any radiation is risky, ALARA mandates that we shouldn't just meet a legal limit, but should strive to keep exposure as low as possible, provided it is practical and cost-effective.

**Key Features:**

- **The Reasonable Balance:** It requires a trade-off between safety gains and socio-economic costs. If a safety measure costs millions to save a negligible fraction of a dose, it might not be reasonably achievable.

**Three Pillars of Protection:**

1. Time: Spending less time near a source.
  2. Distance: Increasing the space between the worker and the source.
  3. Shielding: Using barriers like lead or concrete.
- **Continuous Improvement:** It fosters a safety culture where facilities constantly seek better engineering controls and training.

## Tetrodotoxin (TTX) Neurotoxin

- Tetrodotoxin contamination is suspected after seafood consumption led to rapid neurological illness and deaths in Thiruvananthapuram, Kerala.
- Tetrodotoxin (TTX) is a non-protein neurotoxin and among the deadliest natural substances known. It is estimated to be about 1,200 times more toxic than cyanide.
- **Host Animals:** Pufferfish, blue-ringed octopuses, rough-skinned **newts**, **xanthid crabs**, **moon snails**, certain frogs, and sea stars accumulate the toxin in their tissues.
- **Bacterial Origin:** TTX is produced by symbiotic or ingested bacteria, not the host animal. The animals accumulate it through diet or bacterial association.
- **Mechanism:** The toxin selectively binds to voltage-gated sodium channels on nerve and muscle membranes. This blocks the entry of sodium ions into the cell.
- **Signal Failure:** Blocked channels silence nerve impulses and paralyse muscles. Respiratory failure follows in severe poisoning.
- **Treatment:** No antidote exists for TTX poisoning. Mechanical ventilation supports breathing until the toxin clears naturally.
- **Medical Research:** At ultra-low doses, it is being researched as an analgesic for chronic neuropathic and cancer-related pain.

## Zimbabwe Rolls Out Lenacapavir for HIV Prevention

- Zimbabwe has begun a free rollout of twice-yearly lenacapavir injections to treat HIV and prevent new infections among high-risk populations.
- Lenacapavir is the first-in-class capsid inhibitor approved for HIV-1 treatment. Unlike traditional antiretrovirals that target viral enzymes, it acts directly on the capsid protein shell.
- **Multi-Stage:** It disrupts multiple stages of the HIV-1 viral life cycle, including nuclear entry, virion (virus particles) assembly, and capsid formation.
- **Dosing Interval:** This drug is administered as a **subcutaneous injection** into the abdomen once every six months. It is the longest-acting HIV treatment approved to date.
- **Anti-Resistant:** Due to its novel capsid pathway, it remains effective against multidrug-resistant HIV-1 strains where standard antiretrovirals fail.
- **Fast-Track:** WHO approved lenacapavir under the Collaborative Registration Procedure (CRP) to accelerate access in low-income countries.
- **CRP Mechanism:** Under CRP, national regulatory authorities can accept prior assessments by a trusted reference authority as sufficient for approval. No full independent review is required.

## Laser Interferometer Gravitational Wave Observatory (LIGO-India)

- Larsen & Toubro (L&T) has won the deal from India's Department of Atomic Energy (DAE) to build a LIGO at Aundha in Hingoli district, Maharashtra.

### About LIGO

- **Objective:** It is interferometer based observatory, designed to detect Gravitational Waves.
- Gravitational waves are "ripples" in space-time caused by some of the most violent and energetic processes (like neutron stars or black holes colliding or orbiting each other) in the Universe.
- These cosmic ripples would then travel at the speed of light, carrying with them information about their origins, as well as clues to the nature of gravity itself.
- Albert Einstein predicted the existence of gravitational waves in 1916 in his general theory of relativity.
- **Principle:** LIGO exploits the physical properties of light and of space itself to detect and understand the origins of gravitational waves.
- LIGO detects gravitational waves by using laser interferometry to measure miniscule changes in

space caused by passing waves.

- It uses twin 4-km-long L-shaped vacuum tunnels to split a laser beam, reflect it off mirrors, and recombine them, creating an interference pattern that reveals stretching or compressing of space.

### LIGO India

- Approved by the Government of India in 2016, it is part of the worldwide network of Gravitational Wave Observatory to further enhance the knowledge about gravitational waves, first detected at **LIGO-USA in 2015**.
- **Development:** By the Department of Atomic Energy (DAE) and the Department of Science and Technology (DST) in collaboration with the National Science Foundation (NSF), USA, under a Memorandum of Understanding.
- **Institutes from India:** Institute of Plasma Research (IPR) Gandhinagar, Inter University Centre for Astronomy and Astrophysics (IUCAA), Pune and Raja Ramanna Centre for Advanced Technology (RRCAT), Indore.
- Other Global Gravitational Wave Observatory: **LIGO (USA), VIRGO (Italy), KAGRA (Japan) etc.**
- **Significance for India:** development of Astrophysical Research Leadership; Technological Advancement; Industrial Collaboration; International Prestige & Diplomacy, etc.

## Human Papillomavirus (HPV) Vaccination

- The Government of India is set to launch a nationwide Human Papillomavirus (HPV) vaccination programme to prevent cervical cancer among adolescent girls.

### Human Papillomavirus (HPV) Vaccination:

- The HPV vaccine is a **recombinant vaccine** that uses virus-like genetic material to trigger an immune response without containing a live virus.
- It is a powerful preventive tool designed to protect against high-risk variants of the Human Papillomavirus, which are responsible for the majority of cervical cancer cases globally.
- **Need for Vaccination:**
- **High Disease Burden:** Cervical cancer is the **second most common cancer** among women in India.
- **High Mortality:** India reports nearly 80,000 new cases and over 42,000 deaths annually—roughly one death every eight minutes.

- **Global Impact:** India accounts for about one-fifth of the world's total cervical cancer burden.
- **Preventability:** According to the WHO, cervical cancer is one of the most preventable forms of cancer if vaccination and screening are widely accessible.

#### Vector for HPV:

- The Human Papillomavirus (HPV) is the primary cause of cervical cancer.
- It is a common sexually transmitted infection that persistent infection with high-risk types (particularly 16 and 18) causes abnormal cell changes in the cervix.
- If left untreated, these pre-cancerous lesions can develop into cancer over 10 to 15 years.

#### Key Features of the Initiative:

- **Target Group:** Specifically girls who turn 14 years old, as the vaccine is most effective before potential exposure to the virus and generates a stronger immune response at this age.
- **Vaccine Used:** The programme will use **Gardasil-4** (manufactured by Merck & Co.), which protects against four HPV types (16, 18, 6, and 11).
- **Dosage Schedule:** The government has opted for a single-dose schedule, which WHO research (2022) indicates provides protection comparable to multi-dose regimens for this age group.
- **Cost & Access:** The vaccine will be voluntary and free of cost at government healthcare facilities like **Ayushman Arogya Mandirs** and district hospitals.
- **Digital Platform:** Parents can register and book appointments through U-WIN, the government's digital immunisation platform.

#### Significance:

- Vaccination can reduce the risk of developing pre-cancer and cervical cancer by approximately 90% to 95%.
- By providing the vaccine for free, the government removes the significant cost barrier associated with private market vaccines.

### Indian scientists observed shock waves triggered by CME Coronal Mass Ejection (CME)

- Discovery was made using **Gauribidanur radio telescope** of Indian Institute of Astrophysics, and **Visible Emission Line Coronagraph (VELC)** onboard Aditya L1.
- Gauribidanur is currently India's only dedicated low-frequency solar radio observatory.

### About Coronal Mass Ejection (CME)

- Coronal Mass Ejection is a massive burst of solar plasma, charged particles (such as electrons and protons) and magnetic fields ejected from the Sun's outer atmosphere (Corona).
- Fast-moving CMEs generate shock waves which can compress **Earth's magnetosphere**, leading to geomagnetic storms that disrupt satellites, GPS systems, radio communications, and even power grids.
- They can also intensify auroras and increase radiation risks for astronauts and high-altitude flights.
- **Origin:** CMEs occur due to changes in the Sun's magnetic field in the corona.
- When twisted magnetic field lines suddenly reconnect, they release huge energy and eject solar material into space.
- CMEs are most common during solar maximum during times when the sunspot cycle is most active.
- They are often linked to solar flares (bright flash of light) but can also occur independently.

### About Aditya L1

- It is India's first dedicated solar mission aimed at observing **photosphere, chromosphere** and the outermost layers of the Sun (**the corona**) using electromagnetic and particle and magnetic field detectors.
- **Launch: 2023 by PSLV-C57.**
- **Payloads:** it has 7 payloads (all indigenously developed).
- **Location:** Placed in a halo orbit around the Lagrange point 1 (L1) of the Sun-Earth system, about 1.5 million km from the Earth.
- L1 is a location in space where the gravitational forces of two celestial bodies, such as the Sun and Earth, are in equilibrium.

### SUJVIKA Portal

- Ministry of Science and Technology launched the SUJVIKA portal to mark the **40th Foundation Day of the Department of Biotechnology (DBT).**
- SUJVIKA is an AI-driven biotech product data portal. It was developed by the DBT in collaboration with its industry partner, the **ABLE (Association of Biotechnology-Led Enterprises).**
- It presents structured biotechnology import statistics, enabling researchers to identify priority

areas.

- The platform guides evidence-based local manufacturing planning and promotes public-private partnerships to strengthen the national bioeconomy.
- **Strategic Role:** It supports India's roadmap to achieve a \$1 trillion bioeconomy by 2047.

### India's Bioeconomy Landscape

- India's bioeconomy expanded from \$10 billion in 2014 to \$165.7 billion in 2026. The sector currently contributes nearly 4.25% to India's GDP.
- Biotechnology startups increased significantly from roughly 50 in 2014 to over 13,000 in 2025.
- **Policy Framework:** India is implementing the BioE3 Policy (Economy, Employment, and Environment) to achieve a \$300 billion bioeconomy by 2030.

## HISTORY, HERITAGE AND CULTURE

### Devnimori Relics of Lord Buddha

- Context (PIB): India is exhibiting the sacred Devnimori Relics of Lord Buddha in Sri Lanka at **Gangaramaya Temple** from 4–10 February 2026 as part of cultural diplomacy outreach.

#### About Devnimori Relics of Lord Buddha

- **Origin Site:** The relics were discovered at the Devnimori archaeological site near Shamlaji in **Gujarat's Aravalli district**, an important ancient Buddhist centre.
- **Excavation History:** The site was first scientifically explored in 1957 by Prof. S. N. Chowdhry.
- **Historical Significance:** The findings indicate the strong presence and spread of Buddhism in western India during the early Common Era.
- **Spiritual Value:** The relics symbolise Lord Buddha's teachings of peace, compassion and harmony.

#### Key Archaeological Discoveries at Devnimori

- **Relic Casket:** A carefully crafted stone casket made of green schist was discovered inside the Devnimori Stupa at around 24 feet from the base level.
- **Sacred Inscription:** The casket carries inscriptions in Brahmi script and Sanskrit reading "**Dashabala Sharira Nilaya**", signifying the abode of Lord Buddha's bodily relics.
- **Copper Container:** The copper box featured a flat base and a slip-on lid fitted onto a rim ledge,

ensuring safe preservation of sacred deposits.

- **Inner Offerings:** Inside the container were silk cloth fragments, holy ashes, black clay covering and a gold-coated silver-copper bottle.
- **Amphora Bottle:** The miniature gold-coated bottle had a cylindrical body, narrow neck and screw-type lid, resembling ancient amphora-style vessels.
- **Desiccator Storage:** The relics are now preserved in an air-tight glass desiccator to prevent moisture exposure and material deterioration.

## Serengsia Battle

- The Jharkhand government recently commemorated the Serengsia battle (1837) as a landmark **Adivasi resistance against British rule**, with the Chief Minister attending a state event.

### Serengsia Battle (1837):

- The Serengsia battle was a fierce armed resistance by **Ho Adivasis** against the East India Company in 1837, fought in the Serengsia valley of present-day Jharkhand (West Singhbhum).
- It represents one of the earliest organised tribal military challenges to British expansion in eastern India.

### Historical background:

- **The Kolhan region** (East & West Singhbhum, Seraikela-Kharsawan) was traditionally governed by the Ho community.
- In 1820–21, the British brought Kolhan under the Bengal Presidency to secure trade routes between Bengal and Madras.
- British policies imposed taxes, allowed non-tribal settlement, and enforced alien languages and authority systems.
- Exploitation by zamindars and officials led to repeated unrest, including the Kol uprising of 1831.
- By 1836, British forces established the Kolhan Estate Government, capturing Ho villages and pirhs, intensifying resistance.

### Causes of the battle:

- **Loss of autonomy:** Imposition of British administration over sacred Ho land believed to be granted by **Sing-Bonga** (supreme deity).

- **Economic exploitation:** Forced taxation and land alienation.
- **Cultural suppression:** Linguistic imposition and social domination.
- **Military repression:** Arrests, village occupations, and coercive policing by British forces.
- **Leaders involved:**
  - The Ho resistance was led by: **Poto Ho** (principal leader, from Rajabasa), **Berai Ho**, **Punduva** (Pandua) **Ho**, **Badai Ho**, **Nara Ho**, **Devi Ho**, and **Sugni Ho**.

#### The battle (1837)

- **Ho strategy:** Guerrilla-style warfare using terrain advantage in the narrow Serengsia valley.
- **Weapons & tactics:** Bows and arrows, obstacles on valley paths, burning cow dung mixed with ash and chilli powder, and coordinated attacks from hill slopes.
- **Outcome:** Over 100 British soldiers killed; about 26 Ho fighters lost their lives. British forces were forced to retreat initially.

#### Outcomes and aftermath:

- British retaliation followed with village burnings, mass arrests, and collective punishment.
- By December 8, 1837, all major Ho leaders were captured.

#### Executions:

- January 1, 1838: Poto Ho, Berai Ho, and Nara Ho hanged publicly at Jagannathpur.
- January 2, 1838: Bora Ho and Pandua Ho hanged near Mundasai, Serengsia.
- Around 79 Ho fighters were imprisoned.
- Despite repression, the resistance influenced later recognition of Kolhan's distinct administrative status and tribal self-governance traditions.

### Neolithic Artefacts Found at Tekkalakote in Karnataka

- Recent excavations at Tekkalakote in Karnataka's Ballari district have uncovered significant Neolithic artefacts and human skeletal remains dating back 3,000 to 5,000 years.
- **Historical Significance:** The site offers a rare, multi-period record of human activity, primarily spanning the Neolithic to the Early Historic period.
- **Settlement Architecture:** Inhabitants lived in circular thatched huts; some featured a unique "umbrella" design supported by a single central post.

- **Burial & Rituals:** The community practised both extended pit burials and urn burials; the presence of ash mounds indicates ritualistic dung burning.
- **Gold Usage:** Tekkalakote provides some of the earliest evidence of gold craftsmanship in the Southern Neolithic, including ear ornaments and toe rings.
- **Ceramic Traditions:** Burnished **grey ware** and **Black-and-Red Ware** were found, often decorated with engravings of bulls, snakes, and peacocks.

### Tamil Brahmi Inscriptions in Egypt

- Researchers have identified nearly 30 Tamil Brahmi, Prakrit, and Sanskrit inscriptions in tombs at the Valley of the Kings in Egypt, dating to the 1st–3rd centuries CE.

#### Tamil Brahmi Inscriptions in Egypt:

- The discovery refers to ancient Indian inscriptions—primarily in Tamil Brahmi script—found inside Egyptian tombs, indicating the presence of Indian visitors or traders in Roman-era Egypt.
- **Located In:** The inscriptions were documented in six tombs within the Valley of the Kings, part of the **Theban Necropolis** along the Nile River in Egypt.

#### Key Discoveries:

- **Nearly 30 Inscriptions Identified (1st–3rd Century CE):** Written in Tamil Brahmi, Prakrit, and Sanskrit, suggesting diverse Indian origins.
- **Repeated Tamil Name 'Cikai Korran':** Found inscribed eight times across five tombs, indicating a Tamil individual's repeated presence.
- **Other Tamil Names Recorded:** Names such as Kopān, Cātan, and Kiran were identified, linking to Sangam-era Tamil culture.
- **Parallel Evidence from Berenike:** Similar Tamil names found earlier at the Red Sea port of Berenike reinforce maritime trade links.
- **Graffiti Tradition Followed:** Indian visitors carved their names alongside Greek graffiti, following local commemorative customs.

#### Significance:

- **Evidence of Indo-Roman Trade Networks:** Confirms active maritime trade between ancient Tamilagam and Roman Egypt.

- **Cultural Interaction Beyond Ports:** Suggests Indian traders travelled beyond coastal ports into Nile valley regions.

**About Valley of the Kings:**

- The Valley of the Kings is a major ancient Egyptian burial site where pharaohs of the New Kingdom were interred in rock-cut tombs deep within desert hills.

**Located In:**

- It lies on the west bank of the Nile River near modern-day Luxor in Upper Egypt, forming part of the ancient city of Thebes.
- In 1979, it was designated a UNESCO World Heritage Site as part of the Ancient Thebes complex.

**History**

- **Period of Use:** Primarily used during the 18th, 19th, and 20th Dynasties (c. 1539–1075 BCE).
- **Royal Burials:** Served as the burial ground for pharaohs from Thutmose I to Ramses X, along with some queens and high officials.
- **Shift in Burial Practice:** New Kingdom rulers chose this hidden valley to prevent tomb robbery, moving away from pyramid burials.
- **Architectural Features:** Tombs include descending corridors, pillared halls, burial chambers, and deep shafts designed to deter robbers.
- **Religious Significance:** Walls were decorated with funerary texts like the “Book of the Dead,” “Book of Gates,” and “Book of That Which Is in the Underworld,” guiding the king through the afterlife.
- **Archaeological Importance:** Over 60 tombs have been discovered, including the famous tomb of Tutankhamun (KV62).

## Maharshi Dayanand Saraswati

Prime Minister of India paid tribute to Maharshi Dayanand Saraswati on his 202nd birth anniversary, highlighting his lifelong role in social reform, education and cultural awakening.

**Maharshi Dayanand Saraswati: Who he was?**

- Maharshi Dayanand Saraswati (1824–1883), born Mool Shankar, was a Hindu ascetic, Vedic scholar and social reformer who founded the **Arya Samaj (1875)** to reform Hindu society and restore what he saw as the original Vedic spirit.

▪ **Early life:**

- Born on 12 February 1824 at Tankara (Kathiawar region, present-day Gujarat) in a Brahmin family.
- A childhood temple incident (questioning idol worship) and the deaths of close family members deepened his search for truth.
- Left home to avoid an arranged marriage and spent years as a wandering ascetic; later became a disciple of Swami Virajananda, who guided him toward a return to the Vedas mission.

**His philosophies**

- **Back to the Vedas:** Vedas as the primary and most authentic source of dharma/knowledge.
- **Rational reform:** opposed blind ritualism, superstition, and practices he considered irrational.
- **Social equality:** challenged caste-by-birth and supported dignity of all individuals; emphasized merit-based social roles.
- **Women's upliftment:** supported women's education, opposed social practices like child marriage, and encouraged reforms in family and society.
- **Ethical life & discipline:** stressed truth, self-control (brahmacharya), yoga, and moral conduct.

**Contribution to socio-religious movement**

- **Founded Arya Samaj (1875)**—a reform movement promoting Vedic learning, social reform, education, and national-cultural awakening.
- Encouraged debate, public reasoning, and scriptural study accessible beyond narrow priestly control.
- Inspired later reform and nationalist currents through emphasis on self-respect, reform, and indigenous awakening.

**Literary works:**

- Dayanand wrote 60+ works, including major texts such as:
- **Satyarth Prakash (his most influential work).**
- **Sanskarvidhi (on sacraments/rites in a reformed framework).**
- **Rigvedadi Bhashya** Bhumika and partial Vedic commentaries (Rigveda/Yajurveda).
- He also established/linked efforts for publishing and spreading Vedic literature through institutions like **Paropakarini Sabha (Ajmer).**

**Last days:**

- In 1883, while in Jodhpur under royal patronage, he fell critically ill after being poisoned (as widely alleged in narratives), and despite treatment efforts he died on 30 October 1883 in Ajmer.
- His final phase is remembered for unwavering commitment to reform despite strong opposition.

## 100 Years of Ol Chiki Script

- The centenary (1925–2025) of the Ol Chiki script is being inaugurated on 16 February 2026 by the Ministry of Culture in New Delhi.

### What is Ol Chiki?

- Ol Chiki is the official writing system of the **Santhali language**, a major tribal language of India.
- It is a scientifically designed script created to represent Santhali sounds accurately.
- Unlike borrowed scripts (Roman, Bengali, Odia, Devanagari), Ol Chiki was built specifically for Santhali phonetics.

### Origin:

- Developed in 1925 by **Pandit Raghunath Murmu**.
- Created to give Santhali speakers a distinct written identity.
- **First major literary work:** High Serena (1936).
- Murmu is revered as **Guru Gomke (Great Teacher)** among Santhals.
- **Region and Linguistic Family:**
- **Language:** Santhali
- **Language family:** Austroasiatic (Munda branch)
- **States where widely spoken:** Jharkhand, Odisha, West Bengal, Assam, and Bihar

### Key Characteristics of Ol Chiki:

- 30 letters – Represents vowels and consonants clearly.
- One symbol = one sound – Direct phonetic mapping.
- Captures glottal stops – Unique tribal phonetic elements preserved.
- No conjunct letters – Simpler structural design.
- Indigenous design philosophy – Not adapted from Brahmi or Roman roots.

### Constitutional Milestone:

- Santhali was included in the Eighth Schedule of the Constitution in **2003 via the 92nd**

### Constitutional Amendment Act.

- In December 2025, the Constitution of India was translated into Santhali using Ol Chiki, expanding democratic access.

## 80th Anniversary of the 1946 Royal Indian Navy Revolt

- February 18, 2026 marks the 80th anniversary of the 1946 Royal Indian Navy (RIN) Revolt, a major uprising against British rule.

### 1946 Royal Indian Navy Revolt:

- The Royal Indian Navy (RIN) Revolt was a five-day armed uprising (February 18–23, 1946) by Indian **naval ratings** against British colonial authority.
- It began as a protest over poor conditions but soon evolved into a wider anti-colonial rebellion involving sailors, workers, and civilians.

### Historical Background:

- Indian ratings faced racial discrimination, poor food, low wages, and harsh treatment.
- Inspired by the Quit India Movement (1942) and the trials of the Indian National Army (INA).
- Appointment of openly racist officers, such as Arthur Frederick King at **HMIS Talwar**, further fuelled anger.

### Leaders Associated:

- Prominent leaders of the uprising included: **B. C. Dutt, M. S. Khan, Madan Singh, Salil Shyam, and Rishi Dev Puri.**
- A Naval Central Strike Committee was formed to coordinate actions and present demands.

### Events of the Revolt:

#### Beginning at HMIS Talwar (Bombay):

- Started with a hunger strike over poor food quality on February 18, 1946.
- Raised nationalist slogans such as "Quit India" and "Jai Hind."

#### Rapid Spread:

- Spread to 78 ships and 20 shore establishments across Bombay, Karachi, Madras, Vishakhapatnam, Kolkata, and the Andamans.

- Nearly 20,000 naval ratings participated.

**Popular Support:**

- Workers, students, and civilians joined in solidarity.
- Hindu-Muslim unity was visible as Congress, Muslim League, and Communist flags were hoisted together.
- The Bombay Uprising of 1946 – refers to the mass protests and street battles that erupted in Bombay (now Mumbai), in support of the Royal Indian Navy (RIN) revolt against British rule.

**Armed Confrontation:**

- British troops opened fire in Bombay.
- Street battles erupted in mill districts like Kamatipura and Madanpura.
- Around 200 civilians were killed during suppression efforts.

**End of the Revolt:**

- Political leaders, including Congress and Muslim League leadership, urged restraint.
- Naval ratings surrendered on February 23, 1946.
- Leaders were arrested, and the uprising was militarily suppressed.
- However, the revolt deeply shook British confidence in maintaining control over India.

**Significance:**

- The revolt signalled that even the armed forces, the backbone of colonial control, could no longer be fully trusted by the British, accelerating their decision to transfer power.
- At a time of growing communal tensions, the uprising witnessed rare solidarity across religious lines, with joint protests and shared nationalist symbols.
- The movement extended beyond naval ratings, drawing workers, students, and civilians into coordinated street resistance against colonial authority.

**Bharrana site**

- After performing radiocarbon dating at Bharrana in Haryana the researchers now show the possibility that the Harappan Civilisation of the Indian subcontinent could be over 8,000 years old.

**About Bharrana Site**

- **Excavated by:** Shri L.S.Rao along the paleo-channels of **Ghaggar river**.
- **Period-IA:** Hakra Wares Culture: Characterised by well-plastered subterranean dwelling pits dug into natural soil, Ceramic assemblage.

- **Period-IB:** Early Harappan: Houses constructed with mud bricks, Pottery shows six fabrics similar to Kalibanga-I.
- **Period-IIA:** Early Mature Harappan: Marked by transformation in city layout, Settlement enclosed by a mud-brick fortification wall.
- **Period-IIB:** Mature Harappan: Steatite seals, Standard Harappan antiquities
- Antiquities include: Beads of semiprecious stones, Terracotta objects, Copper bangles, bone objects etc.

## Chhatrapati Shivaji Maharaj Jayanti

- Chhatrapati Shivaji Maharaj Jayanti, or Shiv Jayanti, is observed on 19 February to honour the birth anniversary of Chhatrapati Shivaji.
- Mahatma Jyotirao Phule initiated the first public celebration in 1870 at Raigad, and Bal Gangadhar Tilak later popularised it to mobilise anti-colonial unity.

### About Chhatrapati Shivaji Maharaj

- Shivaji was born in 1630 at **Shivneri Fort to Shahaji Bhonsle** (Maratha general) and **Jijabai**.
- He established an independent Maratha kingdom and advanced "Hindavi Swarajya" by confronting the Mughal Empire and the Bijapur and Golconda Sultanates.
- He was formally crowned Chhatrapati (Supreme Sovereign) in 1674 at Raigad Fort.

### Governance and Administration

- **Ashta Pradhan:** Shivaji constituted an eight-member council to oversee finance, defence, diplomacy, and internal administration.
- **Cultural Revival:** He promoted the use of Marathi and Sanskrit in administration, reducing Persian dominance in governance.
- **Progressive Policies:** His administration enforced religious tolerance, merit-based appointments, and strict protection for civilians and women.

### Military and Naval Strategy

- **Guerrilla Warfare:** Shivaji pioneered Ganimi Kava (guerrilla tactics), enabling smaller forces to defeat numerically superior armies.
- **Standing Army:** He established a standing army paid directly in cash, avoiding jagir grants to

ensure direct loyalty to the state.

- **Naval Foundation:** He developed naval bases at **Sindhudurg and Vijaydurg**, securing the Konkan coast against European powers and maritime threats. He is regarded as the Father of the Indian Navy
- **Major Conquests:** Shivaji captured Torna Fort (1646) at the age of 16; he killed Adilshahi commander Afzal Khan with a concealed Wagh Nakh (tiger claw).

#### **Economic and Revenue Policies**

- **Revenue Reform:** He abolished the Jagirdari system in favour of the Ryotwari system, to establish direct state-peasant revenue relations.
- **Chauth System:** The administration levied one-fourth of land revenue from neighbouring non-Maratha territories as strategic tribute.
- **Sardeshmukhi Levy:** An additional 10% tax asserted his overlordship over external territories and consolidated fiscal authority.

### **Ramakrishna Paramahansa (1836 – 1886)**

- Home Minister pays tribute to Ramakrishna Paramahansa on his birth anniversary.

#### **About Ramakrishna Paramahansa**

- **Birth name:** Gadadhar Chattopadhyaya.
- **Born:** Into a poor Bengali Brahmin family, in Hooghly (Bengal presidency)
- Had little formal education; knew only Bengali.

#### **Key contributions:**

- Became priest at Dakshineswar Kali Temple (near Kolkata).
- Deep devotion to Goddess Kali; experienced intense mystical visions.
- **Spiritual Philosophy:** Practised multiple spiritual traditions like Vaishnavism, Shakta Tantrism, **Advaita Vedanta**, Islamic Sufism and Christianity
- Concluded that all religions lead to the same ultimate reality (Brahman).
- **Chief disciple:** Swami Vivekananda (Narendranath Dutta).
- Inspired the establishment of Ramakrishna Math and Ramakrishna Mission
- **Values:** Religious harmony, love and devotion (Bhakti) and service to humanity as service to God.

## 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, Bargarh 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.

## 2025 UNESCO Asia-Pacific Awards for Cultural Heritage Conservation

- The **Our Lady of Grace Cathedral, Vasai** (Maharashtra) has won the Award of Merit at the 2025 UNESCO Asia-Pacific Awards for Cultural Heritage Conservation.

### UNESCO Asia-Pacific Awards for Cultural Heritage Conservation: What it is?

- A prestigious UNESCO initiative that recognises outstanding heritage conservation projects across the Asia-Pacific region.
- It honours restoration efforts that combine technical excellence with cultural authenticity and community participation.

### Established in:

- 2000, by UNESCO to promote best practices in cultural heritage preservation across Asia and the Pacific.

### Aim:

- To encourage high-quality conservation of historic sites while maintaining cultural integrity and sustainability.
- To promote community participation and adaptive reuse of heritage structures for long-term preservation.

### Key Features:

- Recognises projects based on understanding of place, technical achievement, sustainability, and impact.
- Open to private sector and public-private partnership conservation initiatives.
- Covers heritage types such as historic buildings, towns, archaeological sites, cultural landscapes and vernacular architecture.
- Projects must generally be completed within the last ten years to qualify.
- Has honoured 300+ projects across 27 countries, shaping regional conservation standards.

### Vasai Cathedral (Our Lady of Grace Cathedral):

- A 16th-century Catholic cathedral located in Papdy village, Vasai (Maharashtra), representing early Portuguese colonial architecture in India.

**History:**

- Built around 475 years ago during Portuguese rule on India's western coast.
- Constructed using stone and mud mortar, without modern cement.
- Recently restored (2023–24) through a community-funded conservation initiative costing about ₹4.5 crore.

**Key Features:**

- Reflects Portuguese ecclesiastical architecture with stone masonry and traditional craftsmanship.
- Interior restored using hand-carved liturgical elements and authentic materials.
- Includes restored roof, façade, corridors, colonnade and bell tower.
- Serves as a living place of worship, preserving both tangible and intangible heritage.

## President Unveils Bust of C. Rajagopalachari at Rashtrapati Bhavan

- President Droupadi Murmu unveiled the bust of Chakravarti Rajagopalachari at Rashtrapati Bhavan during the 'Rajaji Utsav'.
- Rajaji Utsav celebrates C. Rajagopalachari's contributions as part of a national effort to shed colonial vestiges and honour Indian leaders.

### About Chakravarti Rajagopalachari

- Rajagopalachari, widely known as Rajaji, served as the **first and only Indian Governor-General of independent India**.
- **Freedom Struggle:** He participated in the Non-Cooperation Movement, Vaikom Satyagraha, and Civil Disobedience Movement.
- In 1930, he led the **Vedaranyam Salt Satyagraha in Madras**.
- **Social Reform:** He issued the Madras Temple Entry Authorisation Act (1939) to legally abolish untouchability and allow Dalits entry into Hindu temples.
- **Political Resolution:** He proposed the C.R. Formula (1944) to resolve the deadlock between the Indian National Congress and the All-India Muslim League over the demand for Pakistan.
- **Post-Independence:** He founded the **Swatantra Party in 1959** to advocate a free-market economy. He also served as Governor of West Bengal, Union Home Minister, and Chief Minister of

Madras State.

- **Literary Works:** He authored acclaimed Tamil retellings of the Ramayana and Mahabharata. He also produced English translations of ancient texts, such as the Bhagavad Gita.
- **Major Awards:** He was among the first recipients of the Bharat Ratna (1954). He received the Sahitya Akademi Award in 1958.

## Tulip Festival 2026

- New Delhi Municipal Council (NDMC) organised the 4th edition of the annual floral event, the Tulip Festival 2026, at Shanti Path, New Delhi.
- The festival showcases nearly 5.5 lakh tulips. It is organised in collaboration with the Netherlands to celebrate and strengthen bilateral ties.
- The event features indigenous tulips developed by the Council of Scientific and Industrial Research (CSIR) to bloom during Delhi's brief winter and spring window.
- **Significance:** This initiative aligns with the "Viksit Bharat @2047" vision by promoting local bulb cultivation and serves as a soft-power diplomatic tool.

### About Tulips

- Tulips are spring-blooming temperate plants native to the mountainous regions of Central Asia.
- They require a period of vernalisation (cold exposure at 5–10°C) for flowering.
- National Landmark: **Indira Gandhi Memorial Tulip Garden in Srinagar is Asia's largest tulip garden.** The region imports 15 lakh bulbs annually from the Netherlands to maintain its floral display.

## Chandrashekhhar Azad

- Prime Minister paid heartfelt tributes to the revolutionary Chandrashekhhar Azad marking his Martyrdom Day and recalling his supreme sacrifice and unwavering resolve against injustice.

### About Chandrashekhhar Azad: Who He Was?

- Chandrashekhhar Azad (born Chandra Shekhar Sitaram Tiwari) was one of India's most fearless and

potent revolutionaries.

- Known for his mental and physical dexterity—earning him the nickname **Quick Silver**—he led a militant youth movement and famously vowed never to be captured alive by the British.

#### **Early Life:**

- **Birth:** July 23, 1906, in Bhabra, Alirajpur (Madhya Pradesh).
- **Education:** He grew up in poverty and later attended a Sanskrit school in Varanasi.
- **The Naming:** After being arrested at age 15 during the Non-Cooperation Movement, he told the magistrate his name was Azad (Free), his father's name was Swatantra (Independent), and his home was Jail. Following a severe flogging, he adopted Azad as his permanent title.

#### **Contribution to Freedom Movement:**

- **Shift to Militancy:** Disappointed by the suspension of the Non-Cooperation Movement after the **Chauri Chaura incident**, he embraced extremist methods to achieve independence.
- **Kakori Conspiracy (1925):** He was a key participant in the **Kakori train robbery**. While others were caught, Azad successfully evaded capture and fled to Jhansi.
- **Lahore Conspiracy (1928):** Along with **Bhagat Singh and Rajguru**, he executed the assassination of British officer John Saunders to avenge the death of Lala Lajpat Rai.

#### **Organizations Associated:**

- **Hindustan Republican Association (HRA):** Joined under the leadership of Ram Prasad Bismil.
- **Hindustan Socialist Republican Association (HSRA):** After the crackdown on the HRA, Azad reorganized the group into the HSRA, serving as a key leader alongside Bhagat Singh.
- He used the name Balraj to sign official HSRA statements and lived under the disguise of a teacher named Harishankar in Jhansi.
- **Last Days:**
- On February 27, 1931, Azad was betrayed and surrounded by police at Alfred Park (now Azad Park) in Allahabad.
- After a fierce gun battle where he helped his comrade Sukhdev Raj escape, Azad died at the age of 24.

## FACTS FOR PRELIMS

### Grammy Awards 2026

- The 68th annual Grammy ceremony witnessed multiple historic wins reflecting growing global and cultural diversity in music.

#### About the Grammy Awards

- **Nature:** Prestigious annual music awards established in **1959**, presented by the **Recording Academy (USA)** to recognise outstanding artistic and technical excellence.
- **Categories:** Cover albums, songs, performances, production and technical contributions.
- **Name Origin:** Derived from “gramophone”, reflecting the trophy’s gramophone-shaped design.
- **Indian Presence:** Around 15 Indians have won Awards, including **A.R. Rahman** and **Zakir Hussain**.

#### Key Highlights of 2026 Edition

- **New Categories Added:** Recently introduced awards for African Music, Pop Dance, and Alternative Jazz to reflect evolving genres.
- **Unique First Win:** Dalai Lama won his first Grammy for audiobook, narration and storytelling recording.
- **Rap Milestone:** Kendrick Lamar became most awarded rapper with 27 Grammys, surpassing Jay-Z’s.
- **EGOT Achievement:** Steven Spielberg became an EGOT winner after winning Best Music Film.
- **Historic Win:** Bad Bunny won Album of the Year (Debí Tirar Más Fotos), the first Spanish album to do so.
- **Song of the Year:** Billie Eilish won for Wildflower from her 2024 album.

### India’s First Musical Path

- Mumbai has introduced India’s first “**musical path**” on the Chhatrapati Sambhaji Maharaj Coastal Road, playing the Oscar-winning song ‘Jai Ho’.
- The initiative aims to enhance road safety by encouraging motorists to maintain a steady driving

speed.

- The path uses Hungarian technology, with rumble strips carved into the asphalt at precise intervals.
- Mechanism: Vehicles driving over the grooves at 70–80 km/h generate vibrations and sound waves that produce the song's notes.
- **Global League:** This marks Mumbai's entry into a select group of cities with "melody road" technology, joining Japan, Hungary, South Korea, and the UAE.

### Seva Teerth and Kartavya Bhavan

- PM Narendra Modi has inaugurated Seva Teerth and Kartavya Bhavan-1 and 2 in New Delhi.
- Seva Teerth (formerly Executive Enclave) will house the Prime Minister's Office (PMO), the Cabinet Secretariat, and the National Security Council Secretariat (NSCS).
- Kartavya Bhavan-1 & 2 constitute the new Common Central Secretariat (CCS), which hosts key ministries, including Finance, Defence, Health, and Education.
- The complexes meet **4-Star GRIHA** (Green Rating for Integrated Habitat Assessment) standards and feature renewable energy and water conservation systems.
- **Significance:** The project replaces ageing infrastructure with a modern, efficient ecosystem to break down silos and improve coordination for citizen-centric governance.

### India's First 'Cow Culture' Museum in Mathura

- The Uttar Pradesh Braj Teerth Vikas Parishad is establishing India's first national 'cow culture' museum in Mathura, Uttar Pradesh.
- **Location:** The facility will be located on the campus of Pandit Deendayal Upadhyaya Veterinary Science University.
- **Core Objective:** It blends traditional spiritual values with modern scientific insights to support cattle conservation and the rural economy.
- **Bovine Diversity:** The museum will display approximately 100 digital and physical models of various indigenous cattle breeds.
- **Scientific Integration:** A dedicated section will utilise modern technology to demonstrate the

nutritional and Ayurvedic properties of dairy products.

## SAHI and BODH Initiatives Launched at India AI Impact Summit 2026

- **Context (PIB):** The Union Minister of Health and Family Welfare launched two national initiatives, SAHI and BODH, at the India AI Impact Summit 2026 in New Delhi.
- **About SAHI (Strategy for Artificial Intelligence in Healthcare for India)**
- The **Strategy for Artificial Intelligence in Healthcare for India (SAHI)** is a national framework that guides the safe, ethical, and inclusive adoption of AI in healthcare.
- It focuses on areas such as data stewardship, governance, validation, and the deployment of AI solutions aligned with public health priorities.
- The framework guides State governments and health institutions on integrating AI responsibly into public health systems.

### About BODH (Benchmarking Open Data Platform for Health AI)

- The **Benchmarking Open Data Platform for Health AI (BODH)** is a specialised platform for evaluating and validating the performance of AI models in healthcare.
- It was developed by IIT Kanpur in collaboration with the National Health Authority (NHA).
- The platform utilises Federated Learning frameworks to evaluate models on real-world data without exposing sensitive patient datasets.
- BODH functions as a Digital Public Good (DPG) under the Ayushman Bharat Digital Mission (ABDM), ensuring transparency in Health AI deployment.

## Tulbul Navigation Barrage Project

- The Jammu & Kashmir government has proposed reviving the Tulbul Navigation Barrage project, as the Indus Waters Treaty (IWT) is in abeyance.
- The project began in 1984 but was suspended in 1987 due to Pakistan's objection under the 1960 IWT.
- The Tulbul Navigation Barrage Project, also known as the **Wular Barrage**, is a strategic navigation lock-cum-control structure.

- It is located at the outlet of Wular Lake on the Jhelum River, near Sopore in Baramulla district, Jammu & Kashmir.
- It aims to maintain a minimum water depth of 4.5 feet in the Jhelum River during lean winter months.
- The project ensures year-round navigability of the river and enhances power generation for downstream projects like Uri-I and Uri-II.

### About Wular Lake

- Wular Lake is the **largest freshwater lake** in India, located in Jammu and Kashmir.
- The lake is primarily fed by the Jhelum River; the basin was formed as a result of tectonic activity.
- It serves as a natural flood reservoir for the Kashmir Valley, absorbing excess water from the Jhelum.
- It was designated a Wetland of International Importance under the Ramsar Convention in 1990.
- It contains the man-made island **Zaina Lank**, constructed by **Sultan Zain-ul-Abidin** in the 15th century.

### Sarvam AI Launched India's First Large-Scale Foundational LLMs

- Bangalore-based startup Sarvam AI unveiled its flagship sovereign models, Sarvam 30B and Sarvam 105B, at the IndiaAI Impact Summit 2026.
- National Milestone: These are India's first large-scale foundational LLMs; both are open-source and optimised for 22 Indian languages across 11 primary scripts.
- **Model Differentiation:** Sarvam 30B is designed for conversational use on low-compute devices like feature phones, while Sarvam 105B handles complex reasoning and large-scale analytics.
- Hardware Release: Sarvam also unveiled Kaze AI-powered smart glasses that capture visual and audio inputs to understand and respond to real-time surroundings.
- Policy Support: Sarvam AI is one of the first startups to receive direct support under the IndiaAI Mission to build an indigenous foundational model.

### 'MANAV' Vision for Artificial Intelligence

- PM Modi unveiled the 'MANAV' vision at the India AI Impact Summit 2026.
- It is a human-centric governance framework for transparent, inclusive, and responsible

development of artificial intelligence.

- The vision outlines five core pillars to ensure AI serves as a tool for human empowerment rather than a disruptive force.

#### **Core Pillars of the MANAV Vision**

- **Moral Systems:** AI technologies must adhere to ethical guidance and integrate human-centric values.
- **Accountable Governance:** Transparent rules and oversight to ensure responsible AI deployment.
- **National Sovereignty:** Data ownership principles must affirm “whose data, his right” and sovereign control over digital infrastructure.
- **Accessible & Inclusive:** AI should act as a development multiplier rather than a technological monopoly to benefit the Global South.
- **Valid & Legitimate:** AI applications must remain lawful, verifiable, and trustworthy for the public.

#### **BAFTA Awards 2026**

- **Source (PIB):** The Manipuri-language film **Boong won the 79th BAFTA Awards (2026)** for Best Children’s & Family Film, marking the first Indian win in this category.
- The film, directed by debutant Lakshmipriya Devi, follows a young boy’s emotional journey to reunite his broken family amid social and political unrest in Manipur.

#### **About BAFTA Award**

- It is presented annually by the British Academy of Film and Television Arts in London to honour excellence in British and international film, television, and video games.
- It is regarded as the British equivalent of the Academy Awards (Oscars).
- Widely regarded as the British equivalent of the Academy Awards (Oscars) (especially for film awards).
- **Indian Milestone: Rohini Hattangadi (1983)** became the first Indian film actor to win a competitive BAFTA, for Best Supporting Actress in Gandhi (as Kasturba Gandhi).

#### **Winter Olympics 2026**

- The 25th Winter Olympic Games (Milano Cortina 2026) recently concluded in Italy (6–22 February 2026).

- This was the first Olympic Games to be officially co-hosted by two cities, **Milan and Cortina d'Ampezzo**.
- **New Sports:** Ski Mountaineering (**Skimo**) made its official Olympic debut in the Winter Olympics 2026.
- **Medal Record:** Norway topped the medal table for the fourth consecutive time.

#### **About Olympics**

- The ancient Olympics began in Olympia, Greece, in the **8th century BC** to honour the Greek god Zeus.
- The Winter Olympics started in 1924 and take place every four years for snow and ice sports.
- **France will host the 2030 Winter Games.**
- **Governing Body:** The International Olympic Committee (IOC), based in Lausanne, Switzerland.